TITLE
INSTITUTION PUB DATE NOTE

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IDENTIFIERS

Basic Mathematics Machine Calculatcr Course. Windsor Public Schools, Conn. 69
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ABSTRACT
This series of four text-workbooks was designed for tenth grade mathematics students who have exhibited lack of problem-solving skills. Electric desk calculators are to be used with the text. In the first five chapters of the series, students learn how to use the machine while reviewing basic operations with whole numbers, decimals, fractions, and percents. The rest of the chapters present word problems in simple consumer mathematics, business activities, installment buying, banking, stocks and bonds, insurance, taxes, and utilities. A chapter on the use of formulas is included. (DT)

## BASIC <br> ATHEMATICS

 machine calculator course

## atext-workbook BOOK 1

## FORHORD

The machine calculator course, originally introducad for tenth grade mathomatica students in Soptember of 1966, has undergone an ambitious reviaion conducted by a mathomatics resoarch and development team undor the RSEA, Title I, grant. Under the direction of G. William Saxton, Director of Secondery Eduoation, Hartford Board of Education, the course matorial: have boon doveloped by the following toam mombers: Stophon J. Jcich, chaimman of the team, department of mathematics, Hartford Public High School; Robort C. Mogensens dopartment of mathematics, Hartford Public High School; Marie M. Gubitz, departmont of mathematics, Weavor High Sohool; William R. Johnson, chairman, dopartmont of mathomatics, Windaor High School.

The course is intended to moet the needs of students who have exhibited a lack of problem-solving skiils. Employing olectric desk oslculators to rid students of the frustration of computational drudgery, a new leaming setting in which students can succeed has released them to read and anslyze problems to a greater extent. These problems are directly related to the world of work that these atudents may onter upon graduation.

The efforts of the first curriculum team in the summer of 1966 were directed toward authentic, practical, probloms obtained from business and industry in the greater Hartford area. With a jear of valuable exporience as a guide, the team has roorganizod the course content from ita: originsily exclusive problom-solving approach to a text-workbook format.

It was felt that students needed a basic review of arithmetic skills before they attemped to solve problems. In the first four chapters sturients learn how to use the machine while reviewing the basic operations with whole numbers, decimal numbers, fractions, and per cents. Next, a transitional cinapter stresses the comoining of these operations, so necessary for the solution of the detailed problems that follow.

In chapters 6 and 7 students first encounter problems that are within the Iramework of their own experience and are then gradually introduced to the more simple ousiness oriented aprlications.

Chapters ${ }^{*}$, 9, and 10 deal with the use of formulas and measurement of plane surfaces and solid figures, preparing students to extend tinis knowiedge into tine mathematics of everyday living and the more difficult practical problens from ousiness and industry.

The intent of tinis order of course materials is to allow students to move toward indepencient achievment with greater confidence in solving problems that are new to them, thus creating the realistic atmosphere of the business world.

The objectives of the course are to be evaluated by pre-test and post-test scores on a mathematics achievment test designed by the team. The results should indicate fine direction of possible future revisions to insure that educational offerings in mathe:natics are continually updated to meet the needs of our youth.

Looking ahead, the possibility of extending machine oriented mathematics courses to students in other grades certainly should not be discounted. Research in this field may reveal a need to offer the college bound student, as well as the sturlent who will immediately enter the labor market, an opportunity to pursue mathematics for a deeper and more meaningful understanding of its principles.


August, 1967

FORWORD

## 1968, Revised Mrition.

The important features of tile edition inolude the addition of asi introduation to Nowohacting in Chaptors I and II and a complote reviaion or that portion of Chaptor II dealing with diviaion of deoimals. Optional problors ware also added to stimulate student intereat.

The following mombere of the Windsor High Sohool Mathomatios Dopartment worked as a team during a vorkohop on Hay 22, 1968, to provide much of the material for the roviaion of Chapter II; Mrs. Joanno Ooetz, ohairmans Mias Carol Eurbocks Mr. Donald Cunningham; Mr. Hichard Jopson; Mrso Sylvia Koohlero


Chairman, Mathemátics Dopt. Windsor High Sohool

August, 1968。

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## Introduction to the Student

"Machines in a math class" - whoever heard of such an idea?
What is the purpose of using a machine in mathematics?
First, you should understand that the important thing in this math class is you - not the machine. It is not the purpose of this course to have you learn how to become a machine operator. ihis is a high school math course - not a business training course. The purpose of this course is to present you with an opportunity to increase your mathematical ability - the machine is to be used only to help you with your arithmetic.

Luckily, the machine never gets tired. It is at your service to do all the long and tiresome computations that you remember doing in your past math classes. That is its only purpose. liowever, you must still do the thinking for the machine. I'ne following problem will help to illustrate this:

If there were 7 ig jars each containine $3,450,73 y$ beans, how many beans would there be altogether?

First think of how you are going to ro the problem. After jou have done the thin!inc, you are ready to calculate.

Next, take a piece of scrap paper and get ready to do the arithmetic. Your teacher will tell you when to start. when you are through, raise your hand to show that you have the answer.
vihen your teacher tells you to, turn to the botton of page 24 for the answer.
'i'gre a guess as to how lonf you think it would terk to to this same problem on your machine? "urn io the bottom of pape $45 a^{\text {for }}$ ihe answer.

The purpose of roine this example is to show that you car er an accurate animer in a mattor of socon's usine a rachine, ou: that the answer is no better than the thir inf you did in decidine now to do the proble:n. iherefore, in this course jou will spent a reat deal of time reading, thinking, and blannine nut a very short tine in calculatinf: Zou are coing to find that mathematics is enjoyable when you have a monine to inelp you with jour arithatic problem.i.
"here are nany problems in this course that norinally would not be includer in a nath course because tiley are too long and detailet. 'ike probicms in the first part of the bot are one. that you nay recorni:; fron your own eyperience. Later in the text you will tackle problems that are taken rirectly !rom business establishments in the freater fiartford area. ifter you graduate from hirh school, you may neet these problems afain when you work - you may even use this same machine to nerform calculations. These are real problems - problems that will require a hifh derree of concentration because of their special language and the combinations of operations that are required to solve them. ithey were obtained by a croup of teaciners under the direction of the Hartford board of bducation and written into ti:e text through a combined effort ot itartford and windsor hi:-h school teachers.
'Ihis is atext - worlbook. It is yours to keep. You will be doing most of your wor: in the lest itself. ht limes you will be asked to do jour ciasswork and homewory usin:: percil and paper and to then cineck jour eror! on the machine.

It is hoper that this combination of pencil work and macinine work will increase your ability to solve provlems and to help you gain a better understanding of the principla:; of mathematics.

Chapter I

USING THE MACHINE CALCULATOR

ERIC

## Machine Operation and Classroom Procedure

1. Follow directions carefully. Do not try to do things with the machine unless the directions tell you to do so. Do not experiment with the machine.
2. This machine can be jamned if the wrong keys are punched. If the machine is jammed it cannot be used until a repair man fixes it.
3. Always be sure your keys are in their NORAAL position. If they are not, your machine will not give correct answers, elr may not give answers at all. NORuIL position of keys will be explained in chapter one.
4. Follow this procedure when learning how to use the machine:
a) Read the entire paragraph first, but do not do any work on the machine.
b) Read the paragraph again and this time perform the work of the paragraph on the machine.
c) isk your teacher for help if you do not understand the explanations.
5. Do not open the top of the machine.
6. Your teacher will show you how to tear off the tape and also how to advance the tape.
7. If your machine runs out of tape, ask your teacher to put in a new roll Later in the course you will be allowed to replace your own tape.

چ. If you tear off any tape during the period or at the end of the period, be sure to throw it in the baskets. Do not leave tape insice the desk, under the machine, or on the floor. Éveryone likes to work in a clean, business-like atmosphere.
3. Never write on the machine. This is a serious offense.
10. Do not walk in between the rows of desks where the electrical cords are plugged in. You may hurt yourself if you trip over the cords.
11. If a cord is pusled out of the floor plug, do not put it back in. The prongs may have become bent, and if you try to insert the prongs you may receive a serious shock. Ask your teacher to fix the prongs. Teachers are shock-proof.
12. You may adjust the position of the machine on your disk. If you do, be careful not to get the machine too close to the edge of the desk.

CHAPTER 1
Using The Machine Calculator

## 1-1 Normal Position of Keys

Below is a picture of the keyboard. On the keyboard there are three (3) keys that you must set, before you use the machine. When you come into class each day, the first thing you must do is to make sure that these keys are set correctly. If they are not set correctly you will not get correct answers when you use the machine.


The three keys are shown in their NORMAL positions. If they are not set like this now, you must put them in their normal positions. Once these keys are set you do ret have to re-set them. They will stay in these positions as long as you do not move them.

T'o move the Automatic Total Key, just move it to the left or right. The same is true for the repeat Key.
i'o move the rutomatic uub.r Total wever, press it, down and lower it. To refurn the Automatic jub-Total wever to its NOKM4L position, press it, down and raise it.

Bet your keys to NORAML position now.

## 1-7 Addition of whole Numbers

This u.s a picture of the keys that you will use to add numhores.


Beforn you hefin, ane your keys in their NORIAL positions? Irsol: at paron 1 if yon are not. sura.

The next thing yon rust ric is to CLEAR THE MAOTINFE Someone may have been using, tinis machine hefore you. There may be some numbers left river in the machine. You minst. clear out these numbers by puncining the Thtal kny, T. Punch tidncw.

Be sure to PUNOH the intal hey. jo not press it or else it. will just stay down. PUNEH it with a oluj.ck jat of the finger. l'he Total key will come beck up after you have punched it.

Example 1: Adत \& and 3
inlutinn:
a) Funch the number $\%$.
b) Punch the Add Bar. This tells the machine that you want to Add 8.
c) Punch the number 3 .
d) Punch the Add Bar. This tells the machine that you want to Add 3 to the 8.
e) Punch the Total Key. Kead your answer, ll, on the tape. Your answer should look like t.his:
$8+$
$31+$
11
When adding numbers you may use the Add Bar or the Thumb Add Bar. Both bars do the same thing in addition problems. Find the Thumb Add Bar on page 2.

Example 2: idd 42 and 10
Solution:
a) First clear your machine by punching $T$.
b) Punch 4, then punch 2. This is the number 42.
c) Punch the Add Bar.
d) Punch 1 , then punch one zero. $T$
e) Funch the Add dar. $42+$

f) Punch the Total Key. The answer is: | 10 |  |
| :--- | :--- |
| 5 | + |

The letter T after 52 means Total. It also means that your machine is cleared. There are no other numbers left over in the machine.

If your tape reads 52 T then you may do E:rample 3. If your tape does not read 52 T , do the problem over again. cxample 3: Add 503 and 240

Bolution:
a) Punch 503 and then punch the Add Bar.
b) Punch 240 and then punch the Add Dar. $\begin{aligned} & 503+ \\ & 240 \pm \\ & 743+\end{aligned}$
c) Punch T]. The answer is 743 T .
if your answer foes not rad 7 m 3 " when you mas to the problem over again.

Exampla 4 : Aतd 000 and 4000.
soiution:
a) Funch $\bar{z}$, then two zeros, wher $\dot{5}$. Punch the fidd Bar. iotics that you could punch $\square$ two times, or you sould have puncher er only once.
b) Funch $l$ and tinee of these $[6]$, or punch $l$ and one of these nof. Punch the idd Bar.
c) Punct The answor is 13006 i

Notice that the machine does not print a comma between t.he 3 and the zero in the number l3006. If you want to put in commas on your tare, you may ro so with your pencil. This may help you to rad the number. Kemember, for whole numbers you put in commas for every group of three digits as you count from rignt to left. This number would then be written as 13,0n6.

Example 5: Arid, $3047+6300+9503+5000$.
Solutien:
a) Punch 3047 and the Add Bar.
ь) " 6300 " $\because \quad$ " ".
c) " 9303 " " " ".
d) " 5000 " " ".
e) Punch The answer is 24,150 . The comma has been put in after the first group of three digits. The answer is read as "twenty four thousand, one hundred fifty."


## 1-3 Flowcharting

A flowchart is a pictorial outline of a serion of ateps to be performed on a machine to alve a problem. The machine may be dosic caloulator suoh as you aro using, or it may be a high apeod digital computor such as is uredi in business and industry.

Each flowchart contains cortain atandard symbole with a brief explanation writton inaide the aymbol to explain the step to be porformod. The aymbol and the explanation prosent a claar, viaual instruction of how to solve a given problem.



2. S.ecners r.r.mplicntat mathematical problems to more: Pasiar wancomanery: ractinnan
3. Ansman

 :rorkinc; on tha ame probler.a
 holpeul fif pren have to etap at onme point an a problom and rinish ?it at acme othar tiran



TERMINAL: liarks tho heginning and tive ending oí the problenn.


CPERATTON: Insturitions to perform a certain oparationn


PRINTED OUTPUT: Item or answer printed on machine tape。


DECISION: Used where a decision has to be made.


## CONNEGTOR: Used to identify exit from or entry into different parts of a program.

FLOW: Used to show direction to the next step.

Sample flowchart:
Flowchart of Trip from New York to Chicago


Note the following about the flowchart on page 7:

1. The flowchart has a titio.
2. The symbols have writing in theme
3. The connectors are numbered.
4. The arrow heads show the direction of flow.
5. Tho beginning, Now York, and the end, Chicago, are marked by terminals.

## 1-3 EXERCISES: Flowchart the following:

1. How I get to school in the morning.
2. What do wo do in our class on Mondays.
3. How I do my homework.
4. Planting a flower.
5. Catching a fish.
6. How to set your hair 。
7. How to change a tire.
8. How to bake a cake.
9. Making pancakes.
10. Parking a car in a tight space.

1-4 Flow charting Addition
Let us now go back to page 4 and make a flowchart for example 4.



1-1 A EXERCISES: Flowchart the following addition problems:

1. $756+592=$
2. $1005+25+3892 *$

FLOWCHART FOR ADDITION OF WHOLE NUMBERS


Note:

1. Unless stated otherwise, keyboard should always be in NORMAL position
2. The use of a DECISION step in the above flowchart.

1-4 B EXERCISES: Make a copy of the above flowchart and use it to do the following

1. 59672

27635
58936
2: 9735

24359
6634
9876
2456
3. $302+590+298=$

40 $527+51+3526+9327=$
5. $84695+29654+972732+4444444=$

1-5 Checking Answers in Addition
If you want to check an addition problem, you do not have to do the problem all over again. Just check your tape. Your answer will be correct if your tape shows:
a) that you have punched the correct numbers, and
b) that a plus sign $(+)$ is to the right of each number.

E::ample: Add, $320+409+377+500+691$.
̇olution: $T$

The tape should look like this:

| 320 | + |
| ---: | ---: | ---: |
| 409 | + |
| 37 | $\div$ |
| 500 | $\div$ |
| 691 | + |
| 2297 | $T$ |

a. Has each number been punched correctly?
b. Is there a + sign after each number? The answer must be correct. You do not have to do the problem over again to check your answer.

## IIKPORTANT REMINDUR:

How can you tell that the meinine was cleared before the probiem was started? If it we/e not cleared, would the answer be correct?

1-6 The Column Indicator,
The Column Indicator is 1 . cated above the number 7 on the keyboard. It is behind the plastic window.

The Column Indicator shows how many digits you have punched into the machine. (The digits in our number system are $0,1,2,3,4,5,6,7,2,9.1$

For instance, if you wanted to punch the number 456 into the machinc, you would first punch 4. Punch in h now. $\mathrm{D}_{0}$ yo: soe that a red number has appeared in the column indicator. This red number shows that a "one digit number" has been punched.

Now punch in the number 5. ihe column indicator shows that a "two digit number" has been punched.

Now punch in the number 6. The column indicatior shows that a "three digit numbe-" has been punched.

The column indicator is a reminter of how many digits you have punched.

Example 1: Punch in the ten dirit number 3,149,000,000. When you are all through punching in this number, what does the column indicator show? It shows the red number ro." Thic neans 910 difit number has been entered into the machine.

Example 2: Punch in any twelve digit number.
The colurun indicator shors the red number r2." This
means a 12 digit number.
Thie machine cannot print a number that has more than twelve digits. However, later you will find that the machine can print an answer that has 13 digits.

## 1-7 The Clear Key

Suppnse yo: wanted to punch in the number 798 but instead you punched in 799. You can clear this number out of the machine hy punching the liear key. since you have now clearet out the mistake, you can punch in the right number.

Funch in any numher, large or swall, and then clear it by punching the Clear Key. $\mathrm{v}_{\mathrm{o}}$ this now.
llow :0 you know for blue that the nimber has been ojeared? You can find out by punching the Aud finy. For example:
a) Punch in the number 456.
b) Clear it.
c) Punch the add Key.

Was the number printed on the tape? The tape shows that the number was clcared out and was not printed.

Does the column indication aleo show that the number was cleared? [io the example cuer again and see.

1-3 The Back-ispace l.ey
i'he Back..j:ace Koy is located just above the ficar key. It has a whiice ar: uw on it.
suppose yol wantcd to punch the number l002, but instead yols puached 1005. [:' you punchef the clear key, the entire number 1005 wenld be cleared. If you punch the Back-Space key once, only the 5 will be cleare:i.

The machine now has the number 100 in it. All you have to do is to punch in 2. Check this now by punching the Add Key. Your tape should read 1002.

If you aic not sure that you have back-spaced correctly, the easiest way to clear your error is to clear the entire number by punching the Clear Key.

1-9 Subtraction of Whole Numbers
Find the subtraction key on your machine. It is a red key.
Look at the following examples. See if you can decide how to subtract one number from another.

Example 1 is done like this:
a) Punch 7 and then the Add Key.
b) Punch 5 and then the Subtraction Key. $\quad \begin{aligned} & 7 \\ & 5 \\ & 2\end{aligned}$
c) Punch The answer is 2.

Notice that the larger number is always put in first.
FLOWCHART FOR SUBTRACTION OF WHOLE NUMBERS


1-9 EXERCISES: Find the difference between the following numbers. Copy your answers from your tape to this page.


Add the following numbers. Put answers on this page.

17. | 302 |
| ---: |
| 07 |
| 194 |
| 70 |
| 400 |
| 45 |
18. 4000
6002
304
5010 7985 31:?
19. 

| 21 |
| ---: |
| 1073 |
| 9 |
| 400 |
| 42 |
| 7480 |
| 212 | 74 212

20. ? 4100 980
60000 5000 4.00 20
21. $5000+6004 ?+302+400+10+90+400=$ $\qquad$
$2 \therefore 100000+1000+1000+100+10+1=$ $\qquad$
22. $3000000+30000+30000+3000+300+30+3=$ $\qquad$
23. $13+22+33+44+5 j+66+77+68+90=$ $\qquad$
24. $200+20+400+40+600+60+800+50=$ $\qquad$
25. 797,999,990,090 $+9=$ $\qquad$
7.-10 Reveraing the forder of Subtracti.ag Numbeis

Thare is only sne way to subtract namber: correctiy on the machane ar bhis iimo.

You must always enter the longer number first, and the small $\sin$ number secere
\#̈xample 1: ※htrac: 405-227.
Gorpect Solution: $405^{+}$The larger number first. ind $T \quad$ The smaller number second.

This is the correct way to subtract.
Example 2: jubtrač, 405-227.
Incorrest jolution: $\quad 227+\quad$ Smaller number 405 - Larger number 17今 T Incorrect answer

NOME: This is the wrong way to subtract. If you do the problem this way, your teacher will count it wrong.

Later in the course you will find out what the answer 178 c T really means.

1-11 Cancelling A Wrong Entry
Suppose you were adding some numbers and you found that you had printed one number wrong. Instead of doing the addition all over again, you can cancel out your mistake by subtraction.

Example 1: Add $1+2+3+4+5+6+7$.
This is the way the problem But this is what you did:
should have been done:

| 1 | + |
| ---: | :--- |
| 2 | + |
| 3 | + |
| 4 | + |
| 5 | + |
| 6 | + |
| 28 |  |

$1+$
$2+$
$3+$
$4+$
$5+$
$6+$
$8+$
8

You have made a mistake by adding 8 instead of 7 . Cancel out your mistake by subtracting 8 . Now you can add in 7 and get the correct answer.

Here is how your tape would look:


1-11 EXERCISES
Practice with these. Write your answers on this page.
1.


The circled number 9 is wrong. It should have been 8.

Subtract 9.
Then add in 5 and find the total.

6. 200

309
473
589
508
001
723
7. 14070 7800


7920
13000
8. 324000 87000 900000 $\frac{31000}{\frac{7000}{9000}-70000}$
9. $347+209+80+200+\frac{400}{405}+77=$ $\qquad$
10. $3042+2977+3143+\frac{5132}{5123}+6073=$ $\qquad$
11. $40300+50000+\frac{(62000}{16200}+73000+90000=$ $\qquad$
12. $34780+29070+34200+31400+\frac{67800}{63700}=$

1-12 Multiplication of Whole Numbers
This is a picture of the keys that you will use to multiply
numbers.


## multiplicatian

is performed by entering the multiplier on the keyboard and depressing the Multiplier Key (8). The multiplicand is entered next and the Blue Equals Key (9) depressed. The product is automatically printed.

Example: $23 \times 789=18147$
Step 1 Enter 23 on keyboard, depress $x$ key.
Step 2 Enter 789 on keyboard, depress = key. Product, 18147, is automatically printed.
Note: In general, to achieve maximum speed of operation, the number having the fewest digits should te entered as the multiplier when possible.

FLOHCHART FOR MULTIPLICATIOM OF WHOLE NUMBERS


IMPORTANT: Do not use this key, $\frac{p}{r}$, when multiplying numbers. This is a "Division Equals" Key and can only be used for division.

1-12 EXERCISES: Multiply the following numbers. Put your answers in the morkbook.

| 1. $8 \times 2=$ | 7. $12 \times 4$ | *13. $21 \times 16$ |
| :---: | :---: | :---: |
| 2. $3 \times 8=$ | 8. $3 \times 15=$ | *14. $16 \times 21$ |
| *3. $5 \times 8=$ | 9. $8 \times 10=$ | 15. $37 \times 43$ |
| *4. $8 \times 5$ | 10. $9 \times 25$ | 16. $82 \times 90$ |
| 5. $6 \times 9$ | 11. $32 \times 8$ | 17. $70 \times 80$ |
| 6. $8 \times 8=$ | 22. $47 \times 7=$ | 18. $100 \times 100$ |

(What do you notice about the examples with a star?)

| 19. | $63 \times 403=$ | 25. $347 \times 890=$ |
| :---: | :---: | :---: |
| 20. | $209 \times 98=$ | 26. $804 \times 1000=$ |
| 21. | $337 \times 78$ | 27. $1000 \times 307=$ |
| 22. | $47 \times 100$ | 28. $8430 \times 4242$ |
| *23. | $39 \times 203=$ | 29. $19876 \times 6789=$ |
| *24. | $203 \times 39=$ | 30. $17200 \times 4070=$ |

31. $40,000,000 \times 30,000=$ $\qquad$
Count the number of digits in your answer. Ihere should be 13 digits.
32. $400,000,000 \times 30,000=12,000,000,000,000$

When you punch the $\pi$ key for this example, the key will just
stay down. The machine can not print the answer because the answer has more than 13 digits in it.

This machine can only print answers that have 13 digits or less. 1-12 REVIEW EXERCISES: Perforn the indicated operations. Put answers on this page.

5. $3952+8370=$ $\qquad$

1-13 Division of Whole Numbers
This is a picture of the keys used for division.
"Division Equals"


DNISION
is performed by entering the dividend with the Addition Key (marked with a $D$ to identify its ro!e of dividend entry) then entering the divisor and depressing the Division Key (11). The quotient and remainder, if any, will automatically print in that order.

Examplest $145 \div 12 \div 12$ and 1 remainder
Step 1 Enter dividend, 145, depress Add Key.
Step 2 Enter divisor. 12, depress Division Key. Ountient, 12, is automatically printed followed by remainder 1.
Note: The quotient is always automatically entered into the memory.
FLOWCHART FOR DIVISION OF WHOLE NUMBERS


Example 2: Divide 12 by 3.
a) Press 12 and then the $D$ Key.
b) Press 3 and then the $\frac{\circ}{9}$ key. Your tape should look like this:


When 12 is divided by 3 , the answer is 4 . Is there any remainder? Let us see how the machine shows us this.

Example 3: What is 36 divided by 9?
Solution: Enter into the machine $36\left[\mathrm{D} 9\left[\frac{\square}{\square}\right.\right.$
Your work is printed like this


Since there are exactly 4 nines in 36 , there is no ramainer. The machine shows that there is no remainder by not printing a number to the left of the last $T$ on the tape. It does not print $0 T$.

NOTE: In every division problem, your tape will show two T's on the tape.
a) The first $T$ shows the whole number part of the answer.
b) The last $T$ shows the remainder, if any.

Exampl.e 4: What is $120 \div 10$ ?
Other ways to state the same problem are:
a) Divide 120 by 10 .
b) What is 120 divided by 10 ?

Solution: Enter into the machine 120 D $10 \square \frac{\circ}{\square}$ The answer is, 12 T

$$
\mathrm{T} \longleftarrow \text { No Remainder }
$$

Example 5: Find the quotient of $2 3 \longdiv { 1 2 8 8 . }$ Do your remember: Divisor $\xlongequal{\frac{\text { Quotient }}{\text { Diviclend }}}$
Fill in the blanks:
a) 128 \% is the $\qquad$ .
b) 23 is the $\qquad$ .
c) We are finding the answer, or $\qquad$ .
Solution:
a) Enter the Dividend first, 1288, and then punch D.
b) Einter the $\nu_{\text {ivisor second, }}$ 23, and then punch $\frac{\circ}{\circ}$

The Quotient (the answer) is 56 T Think: $2 3 \longdiv { 5 6 \mathrm { R } \mathrm { O } }$
Example 6: How many 10's are there in 2500?
Solution: The Dividend is 2500.
The trivisor is 10.
a) Enter the ${ }^{\text {ividend first }}, 2500$, and then punch D.
b) Kinter the $\mu_{i}$ visor second, 10 , and then punch $\frac{\square}{\square}$ The Cuotient is $250 \underset{T}{T}$ What is the Memainder?

While the machine is dividing, do you notice that the Column Indicator shows when the division is all done?

1-13 EXERCISES: Find the Quotients and Remainders for these division problems. Put answers on this page.

1. Divide 16 by 4. R $^{R}$ -
2. " 32 by 16. $^{\mathrm{R}}$
3. " 50 by $10 . \mathcal{R}^{\mathrm{R}}$
4. n. 84 by 4. $\mathrm{R}^{\mathrm{R}}$
5. " 66 by 66. - $^{\mathrm{R}}$ -
6. What is 64 divided by $16 . \mathrm{R}^{\mathrm{R}}$ —
7. " $n 45$ divided by $3 . —^{R}$
8. " " 96 divided by $16 . \quad$ R
9. " " 75 divided by 75. $\sim^{\mathrm{R}}$
10. " " 98 divided by 2. _ ${ }^{\mathrm{R}}$.
11. What is $144 \div 9 ? \ldots R$ $\qquad$
12. " " $162 \div 18$ ? R $^{\mathrm{R}}$
13. $n$ " $175 \div 25$ ? $\mathrm{R}^{\circ}$
14. " " $360 \div 8$ ? ${ }^{\mathrm{R}}$
15. " " $270 \div 45$ ? R $^{\mathrm{R}}$
16. 


18.

17.

19.

20. How many 10's are there in 320. $\qquad$ R $\qquad$
21. " " 100's are there in 3,400 . __ $R$ $\qquad$
22. " " 890's are there in 78,320 . $\qquad$ R $\qquad$
23. How many 21's are there in 9,3o6. $\qquad$ R $\qquad$
24. " " 1000's are there in 624,000. $\qquad$ $\mathrm{R}_{-}$
25. " " 100's are there in 9,500, 000 . $\qquad$ R
26. What is 4466 divided by 77 . $\qquad$ in $\qquad$
27. What is $367,836 \div 04$. $\qquad$ h $\qquad$
23. How many 40's are there in 26320. $\qquad$ $R^{R}$
29. Divide 320,000 by 64. $\qquad$ $R-$
30. $3 0 3 \longdiv { 1 3 8 , 1 6 5 }$
31. $9 \longdiv { 9 9 9 , 9 0 9 , 9 0 9 , 9 9 9 }$

1-14 REVIEW EXSRCISES

A Addition

| 34 | 2. | 62 | 3. | 40 | 4. | 444 |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| 8 | 10 | 50 |  | 44 |  | 606 |
| 21 | 7 |  | 60 |  | 4 | 60 |
| 9 |  | 5 |  | 70 |  | 44 |
| 37 |  | 20 |  | 90 |  | 444 |

6. $50+109+232+75+9+60+3+500=$ $\qquad$
7. $3,472+8,004+90,000+63,002+40,777=$ $\qquad$
8. $32+437+5,389+60,732+598,400=$ $\qquad$
9. $995,000+80,000+7,000+107,000=$ $\qquad$

B Subtraction

15. $852-625=$
16. $1008-29=$

56. Divide 445 by 8.

$\qquad$
R
$\qquad$
57. Divide 156 by 13. $\qquad$ R $\qquad$
58. Divide 45,900 by 102. $\qquad$ R $\qquad$
59. Divide 3420 by 9 . $\qquad$ k $\qquad$
60. Divide 3600 by 24 . $\qquad$ R $\qquad$
61. Divide 109,200 by 104 . $\qquad$ R $\qquad$
62. $756 \div 756=$ $\qquad$ R $\qquad$
63. $80732 \div 00732=$ $\qquad$ R $\qquad$
64. $903150 \div 45=$ $\qquad$ R $\qquad$
65. $164160 \div 360=$ $\qquad$ R $\qquad$
66. $288,000,000 \div 32=$ $\qquad$ R $\qquad$
67. $984,000,000 \div 12=$ $\qquad$ R $\qquad$
68. How many tens are there in 10700. $\qquad$ R $\qquad$
69. How many hundreds are there in 19200. $\qquad$ R $\qquad$
70. How many thousands are there in 90000.
71. How many 100's are there in 102000. $\qquad$ ir $\qquad$
72. How many 100's are there in $8,400,000$. $\qquad$ R $\qquad$
73. How many thousands are there in $12,345,000$. $\qquad$ R $\qquad$
74. How many huncireds are there in $834,200$. $\qquad$ iz $\qquad$
75. How many tens are there in 900030. $\qquad$ R $\qquad$

Answer to problem in Introduction to the Student
3456789 Beans in one jar $3 \begin{array}{r}x 789 \\ 3111101 \\ ~ J a r s ~\end{array}$
27654312
24197523
2727406521
76. (Optional) Find the miasing numbera in osoh of the following.

$$
\begin{aligned}
& 8 = 3 \longdiv { 8 } = \frac { + 1 } { 2 4 } = \frac { + + } { 2 1 + \ldots } \\
& 1 0 = 4 \longdiv { 1 0 } = 4 \longdiv { 2 } + \sqrt { 2 0 + 2 } = 4 \longdiv { 4 8 - 2 } \\
& 1 3 = 5 \longdiv { 1 3 } = 5 \longdiv { 1 0 + } \quad \frac { 5 + + 5 - } { \ldots + \ldots } = 5 \longdiv { \ldots + 2 5 + \ldots - \ldots } \\
& 6 = 4 \longdiv { 7 + 3 - } \quad = 4 \longdiv { 4 4 - \ldots } = 4 \longdiv { - 7 + - 6 } \\
& 25=\ldots \times 5=\ldots \div 4=\ldots+7=62 \ldots \ldots \\
& 31=\ldots \times 6+1=17+77-\ldots 39 \ldots+18 \\
& 1 5 = 1 1 \longdiv { I _ { \ldots } + 1 1 0 } = 1 2 \longdiv { I _ { \ldots } + 1 0 8 } = 1 3 \longdiv { 1 3 0 ^ { + } + } \\
& 1 2 = 7 \longdiv { + } \frac { 6 + } { + 1 4 } = 8 \longdiv { L _ { + } + \ldots } = 9 \longdiv { 1 8 0 - \ldots } \\
& \ldots = 2 \times 1 0 + \ldots = 5 \longdiv { 1 5 0 } = \ldots \times 5 + 0
\end{aligned}
$$

Chapter II

DECIMALS

## CHAPTER II

Decimals

## 2-1 Addition of Decimals

To add decimals on the calculating machine, we must keep the decimal points in the same column.

Example: $\quad 43.60$ Add these numbers on the machine and $\begin{array}{r}43.60 \\ 216.93\end{array}$ 216.93 copy your answer from the tape into 10216 102.16 your workbook under the example. $362 \$ 69$

Place the decimal point in the same column in your answer as you have in the numbers being added. Your answer should be 362.69.

2-1 EXERCISES: Add these problems. Flace the decimal point in the correct position in each number on the tape, so that you can read your answer in dollars and cents. Then copy the answer for each problem in your workbook.

| 1. $\$ 7.35$ | 2. $\$ 5.85$ | \$15. 61 | \$15.03 | \$ 6.14 |
| :---: | :---: | :---: | :---: | :---: |
| 1.82 | . 72 \% | 1.89 | 22.88 | 3.25 |
| 3.06 | 2.47 | 26.23 | 30.21 | 41.30 |
|  |  |  |  | . 43 |
| 6. $\$ 3.09$ | 7. $\$ 505.07$ | 8. \$ 340.00 | 9. $\$ .58$ | 10. $\$ 49.55$ |
| 23.45 | 61.60 | 450.00 | 7.93 | 9.10 |
| 46.18 | 89.00 | 700.00 | 40.51 | . 73 |
| 30.23 | 901.40 | 501.20 | 4.89 | 8.62 |
|  | 469.28 | 2770.43 | 6.37 | 11.59 |
|  |  |  | 11.10 | 68.43 |

2-2 Adding $\dot{\text { Leros }}$ To Numbers To Keep Decimal Points In Line
When you add $\$ 21.60, \$ 1, \$ 52.50$ and $\$ 3$ you need to fill the spaces for cents with zeros to keep decimal points under each other and keep columns straight.

Example: $\$ 21.60$
1.00
52.50
3.00
$\$ 78.10 \quad$ Check this answer on your machine.
2-2 EXERCISES: In the following problems copy the numbers in columns in the space provided. Be careful to copy decimal points under each other; then add with pencil to find the answers.

1. $32.6+7.14+0.8+14$
2. $43.6+413.83+102.16$
3. $61.4+3.25+41.3+.692$
4. $55.1+46.3+53.91+16$
5. $2.3+3.14+45.18+4.05+4+23.125$
6. $8.13+4.25+5.625+3+1.2+78.94$
7. 
8. 
9. 
10. 
11. 
12. 

Now add each of the above problems on the machine and check your answers. Remember to fill the spaces with zeros, so that the decimal points will be in a straight line. Place the decimals correctly on the tape.

## 2-3 Horizontal Addition of Decimals

First find the number in the problem that has the greatest number of digits after the decimal point. Then add zeros to the other numbers so that each number in the problem has the same number of digits after the decimal point to keep the decimal points in a straight line. Your machine will print zeros following another digit, but you cannot enter a zero on the machine before another digit.

Find the answers to the following problems by putting the numbers directly into the machine.

Example: Add, $8.13+4.25+5.625+3 .+.01$
The number 5.625 has three digits after the decimal point. Therefore, you must place 8.130, 4.250, $5.625,3.000$ and .010 in the machine to get the correct $\begin{array}{rrrr}1 & 1 & 3 & 0 \\ 4 & 5 & + \\ 5 & 6 & 2 & 5 \\ 3 & 0 & 0 & + \\ & 1 & 1 & + \\ 2 & 1 & 1 & 5\end{array}+$ ADD: Show all decimal points on the tape; copy answers on this sheet.

```
1. . 6 + .02 + .849 + 1.3=
```

$\qquad$

```
2. 2.7 +. .48+2+19.05=
```

$\qquad$

```
3. \(9+.5+.0041+6.4=\)
``` \(\qquad\)
```

4. $7.8+7.08+.078+.78=$
``` \(\qquad\)
```

5. $1.5 .472+.003+3.6518+20.92=$
``` \(\qquad\)
```

6. $10+.98+2.75+6.49+4+5.6265=$
``` \(\qquad\)
```

7. $.83+7+4.45+.049+26.10+1.5=$
``` \(\qquad\)
```

8. $.06+1.2+46+3.825+.075+125=$
``` \(\qquad\)
```

9. $.83+.375+13+3.9+5.928+1=$
``` \(\qquad\)
```

10. $1.4+26+.39+5.928+.051+7=$
11. $3.3+.07+6+2.63+.174+12.25=$
``` \(\qquad\)
12. \(15.6+.19+4.75+.836+200+6.9=\) \(\qquad\)
13. \(\$ 5+\$ 12.49+\$ 8.03+\$ 72+\$ 43.43+\$ 21.12=\) \(\qquad\)
14. \(\$ 9.07+\$ 10+\$ 34.72+\$ 7.91+\$ 18.05+\$ 19.98=\) \(\qquad\)

2-4 Subtraction of Decimals
Remember that we must keep decimal points in the same column when we subtract decimals.

Example: \(\$ 98.35\) Place 9835 in the machine and press the add key.
-16.69 Place 1669 in the machine and press the red subtraction key. Then press the total key to find the answer.

You will need to fill spaces with zeros to keep decimal points in line when you subtract as you did in addition. 2-4 EXERCISES: Subtract; show all decimal points on your tape. Copy answers here.
\begin{tabular}{ccccccc} 
1. 2.8 & 2. & .63 & 3. & 7.9 & 4. & 47 \\
\(\underline{-1.2}\) & & \(\underline{-.08}\) & & \(\underline{-0.82}\) & & -2.64 \\
5. \(\$ 10\) & 6. & .043 & 7. & .5 & 8. & 4.006 \\
-1.98 & & -.036 & & -.268 & & -.075
\end{tabular}

Copy the following problems in the space provided below, so that the decimal points will be under each other. Use pencil to find the answers. Then check the problems on the machine. Place the decimal point correctly in each number on the tape. Then copy the answers in the workbook.
9. \(32.97-1.82=\) \(\qquad\) 12. \(.582-.096=\) \(\qquad\)
10. 375.2-18.7 = \(\qquad\)
13. . 913 - . \(244=\) \(\qquad\)
11. \(76.75-8.07=\)
14. \(1.456-.792=\) \(\qquad\)


\section*{2-5 Multiplication of Decimals}

When we multiply two decimals, we add the number of digits after the decimal point in the two factors; then we point off that number of decimal places in the product counting from right to left. Example: 21.3 (one place) 5.13 (two places) 2.153 (thrce places)


2-5A EXERCISFS: Place the dooimal point correotly in the answer to each of the following multiplication examples.
1. \(\begin{array}{r}4.27 \\ x 32 \\ 23664\end{array}\)
2. \(\begin{gathered}45.987 \\ 19636449\end{gathered}\)
33. \(\begin{array}{r}7384 \\ 62 \frac{\pi 8048}{61632}\end{array}\)
4. \(\begin{array}{r}7656 \\ \therefore x \quad 38 \\ 290928\end{array}\)
5. \(\begin{array}{r}\quad 777 \\ \times 3 \begin{array}{r}3 \\ 259 \\ 25033\end{array}\end{array}\)
6. \(\begin{array}{r}4.71 \\ \times 62.7 \\ 205317\end{array}\)
7. \(\begin{array}{r}42.18 \\ \times 2953 \\ 2290374\end{array}\)
8. \(\begin{array}{r}87.5 \\ x \quad 345 \\ 301875\end{array}\)
\(9 . \begin{array}{r}9041 \\ \times 0.044 \\ 41404\end{array}\)
10. .5923
\(1 \frac{x}{368231}\)
11. 11.9
\(\times \frac{.824}{90056}\)
12. 7.9
\(\times 80^{3}\)
\(6557^{\circ}\)
13 .0091
\(\times \quad 67878\)
14. 93.76
\(\frac{\pi}{39660423}\)
15.
.0902
\(\pi\)
271051005
16. 0054
\(\frac{\pi 0.0035}{1890}\)

2-5B EXiRCISES: Find the products using the machine. Place the decimal properly in each number on the tape. Then transfer the answer for each problem to your workbook.
\begin{tabular}{rrrrrrr} 
1. 2.1 & 2. 21 & 3. 21 & 4. 2100 & 5. & 2.1 \\
\(\underline{x} 9\) & \(\underline{x} 9\) & \(\underline{x} 90\) & \(\underline{x} .9\) & \(\underline{x} .09\)
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|}
\hline 6. 5.09 & 7. 50.9 & 8. 50.9 & 9. 5090 & 10. & . 509 \\
\hline x1.6 & X. 16 & \(\times 16\) & x1. 6 & & x. 016 \\
\hline
\end{tabular}
\(\begin{array}{rrrrrrr}11.073 & \text { 1.2. } 4.75 & \text { 13. } \\ \times 4.006 & 14 . & 2.125 & 15.18 \\ \underline{x} 6.80 & \underline{x} 3.1 & \underline{x} .45 & \underline{x} 4.9\end{array}\)

2-6. Locating Decimal Point Directly On Tape
You can locate the decimal point in your product directly on the tape in your machine. For example to multiply 156.75 by 13.976 , enter 15675 into the machine and press the tines key; then enter 13967 and press the equals key. Place the decimal in
each number on the tape. With your 218932725 T pencil start from the decimal point in 13.967 (the second factor) and draw \(156.75^{*}<\)
a vertical line down to the product. \(13.967=\) Then move to the left two places in the product, the number of decimal places In the first factor 156.75; the answor is 2189.32725.

2-6 EXERCISES: Multiply the following decimals. Locate the decimal point in the product by using the pencil line on the tape.
\begin{tabular}{|c|c|c|c|}
\hline 1. & \(75 \times 56.17=\) & 6. & \(.4567 \times 4191=\) \\
\hline 2. & \(24 \times 3168\) & 7. & \(1.06 \times 12.52=\) \\
\hline 3. & \(4.80 \times 760\) & 8. & \(1.425 \times .375=\) \\
\hline 4. & \(32 \times 3.1416\) & 9. & . \(064 \times 28.2\) \\
\hline E. & . \(87 \times 5.93\) & 10. & \(36.6 \times .009=\) \\
\hline 11. & \(.26 \times .368\) & 16 & \(1.125 \times 85.26\) \\
\hline 12. & . \(625 \times 32.149=\) & 17 & \(.375 \times 453.40\) \\
\hline 13. & . \(034 \times 70.84=\) & 18 & \(6.25 \times 3.1416\) \\
\hline 14. & \(1.39 \times 7.9582\) & 19 & . \(0025 \times .7854\) \\
\hline 15. & . 26 ct \(\times .924\) & 20 & \(.015 \times 8.504=\) \\
\hline
\end{tabular}

2-7 Multiplication By 10, 100, or 1000
When you multiply by 10,100 , or 1000 , you do not need to use the machine. Just move the decimal point as many places to the right as there are zeros in the multiplier. Example: \(10 \times 28=28 \underline{0} .100 \times 28=28 \underline{00} .1 \underline{000} \times 29=28000\)

2-7 Exercises:
NUMBER X 10 X 100 X 1000
1. 12.50
2. 1.75
3. 17.5
4. 3.84
5. 2068
6. . 14


33
7. . 025
8. 4.01

10. 6.375

2-8 Multiplication By .1, .01, . 001 When you multiply by . 1, . 01 , or .001 move the decimal point as many places to the left as there are decimal places in the multiplier.

Example; . \(1 \times 69=6.9 .01 \times 69=.69 .001 \times 69=.069\)

2-8 EXERCISES:
\begin{tabular}{|c|c|c|c|c|}
\hline & NUMBER & x.1 & x . 01 & x.001 \\
\hline 1. & 6.3 & & & \\
\hline 2. & 12.7 & & & \\
\hline 3. & 325 & & & \\
\hline 4. & 42.61 & & & \\
\hline 5. & 500.5 & & & \\
\hline 6. & 8592.4 & & & \\
\hline 7. & 285.06 & & & \\
\hline 8. & . 465 & & & \\
\hline 9. & 0.035 & & & \\
\hline 10. & 4.925 & & & \\
\hline 11. & . 0345 & & & \\
\hline 12. & 0.9806 & & & \\
\hline 13. & 348.003 & & & \\
\hline 14. & 49.98 & & & \\
\hline & & 46 & 4 & \\
\hline
\end{tabular}

2-9 Division
Many division problem a have decimals. Even though you may be dividing whole numbers, your minor may contain a decimal A whole number really has ex decimal point at the oud of the numbbor. Usually, however, wo do not write it. In division, you must place this decimal point at the end of the number that 1 es the dividend.

To place the decimal point in the proper place in the answer, follow this procedures erasure the divisor is a whole number. If necessary, move the decimal point in the divisor as far to the right as possible. Then move the decimal point in the dividend the same number of places to the righto filling in zeros if noodedn Now place the decimal point in the answer dirootly above the decimal point in the dividend.
\begin{tabular}{lll} 
Example 1.: \(2 \sqrt{4.8}\) & \(2 \sqrt{4.08}\) \\
Example 2: \(2.3 \sqrt{4.6}\) & \(2 \times 3 \sqrt{4 \times 6}\) \\
Example 38 & \(.23 \sqrt{40657}\) & \(23 \sqrt{4 \times 657}\) \\
Example 4: & 7.586587 .4 & \(7 \times 586 \sqrt{987}+400\)
\end{tabular}
( Note the need for additional zeros in the dividend.)

2-9 EXERCISES: Place the decimal point in the proper place in each of the following quotients.
1. \(3 \frac{231}{5.93} \quad\) 2. \(0.3 \frac{231}{16.93} \quad\) in \(.03 \frac{231}{10.93} \quad 4.3 \sqrt{639.3}\)
5. \(3 \sqrt{\frac{231}{.643}}\) 6. .3 \(\frac{232}{69.3} \quad\) 7. \(3 \sqrt{\frac{231}{693}} \quad\) 8. .03 \(\frac{231}{693}\)

9．\(3 . 0 0 3 \longdiv { 2 3 1 } \sqrt { 6 9 3 6 9 3 } \quad\) 10． \(30.03 \sqrt{6.91} \quad\) 11． \(3003 \frac{231}{69.3693}\)

12． \(3.003 \frac{231}{\sqrt{6936.93}} \quad 13.7 \sqrt{1} \quad 1423 . \cdots \frac{1428.0 .0}{1}\)

\section*{2－10 Location of Decimal Point Directly on the Tape}

The method of Section 2－9 may also be used to place the
decime？point in the quotient when you use the machine to divide。 Example：\(1 6 . 5 \longdiv { 2 3 4 . 7 7 8 5 }\)

In doing this problem by hand，you would place the decimad point in the answer in this way： \(16 \times \sqrt[5]{234 \pi 2785}\) To do this problem on the machine，you enter the dividend 2347785 with the＂D＂key。 Then enter the divisor 165 and pross the division equals key．This is the way your tape will


To locate decimal points on your tape， do the following：Count the number of decimal places in the divisor．Then，on your tape， start from the decimal point in the dividend and move the same number of places to the right． Now draw a vertical line down to the answor． （The number printed in front of the first \(T\) ． remember，is the quotient．）Place the decimal point between \(I_{4}\) and 2 in our example so that it reads 14.229.

2－10 EXERCISES：Divide each of the following using only the numbers given．（Use the machine。）Correctly locate the decimal for each answer on your tape．Drop any remainders．
\[
\begin{aligned}
& \text { 1. } 2.3 / \overline{12.11} \text { 2. } 1 . 9 \longdiv { 9 0 . 9 2 } \text { 3. } 6 . 2 \longdiv { 8 3 . 7 4 } \quad \text { 4. } 1 9 . 6 \longdiv { 1 0 1 . 9 2 } \\
& \text { 5. } 2 5 . 4 \longdiv { 8 2 . 2 5 } \text { 6. } 26 / \overline{91.44} \text { 7. } 7 5 \longdiv { 3 1 5 . 7 5 } \text { 8. } 2 4 \longdiv { 1 1 . 6 8 8 } \\
& \text { 9. } 3 . 2 \longdiv { 2 1 . 3 1 2 } 1 0 . 7 . 1 \longdiv { 1 4 . 9 8 1 } 1 1 . 9 . 8 / \overline { 3 2 5 . 6 9 2 } 1 2 . 5 . 1 \longdiv { 4 6 . 9 2 6 } \\
& \text { 13. 7.54. } \begin{array}{l}
9.024 \\
14 . \quad .83 / 4.316 \\
1 5 . 7 . 5 8 \longdiv { 2 0 . 4 6 6 } \text { 16. } 2.43 / \longdiv { 3 0 . 1 3 2 }
\end{array}
\end{aligned}
\]

\section*{2-11 Division Problems Requiring Insertion of Zeros}

In order to get an answer to the desired number of decimal places, it is sometimes necessary to put in additional zeros in the dividend. After locating the decimal point in the quotient, you can determine how many zeros to put in the dividend"to get the required number of decimal places in the answer. (If you are not sure of how many zeros to use, it is better to use too many rather than not enough \({ }_{0}\) )

Example 1:
\(8 \longdiv { 1 3 }\)
\(8 \longdiv { 1 . 6 2 5 }\)

To get an answer with 3 decimal places,

3 zeros were punched as part of the dividend。

Example 2:
\(5 \longdiv { 2 }\)
\(5 \longdiv { 2 . 0 }\)
Example 3:
\(2 . 1 \longdiv { 4 }\)

Note: To get en answer with one decimal place, two extra zeros were punched. If three decimal places were desired, four extra zeros woula need to be punched in the dividend.
2-11A EXERCISES: Use the machine to do the following problems.
Give all anawers to two decimal places.
1. \(8 / 5\)
2. \(8 \longdiv { 7 }\)
3. \(8 \longdiv { 9 }\)
4. \(\$ \longdiv { 1 1 }\)
5. \(4 \longdiv { 3 }\)
6. \(4 \longdiv { 1 7 }\)
7. \(5 \longdiv { 1 3 }\)
9. \(5 \longdiv { 6 2 }\)
9. \(1 0 \longdiv { 6 2 }\) 10. \(1 2 \longdiv { 3 9 0 }\) 11. \(2 6 \longdiv { 6 }\) 12. \(35 / 28\)
13. \(. 1 2 \longdiv { 5 2 1 . 5 6 } 1 4 . \quad . 3 9 \longdiv { 2 6 5 . 2 } \quad 1 5 . . 7 9 \longdiv { 4 . 6 6 1 }\) 16. .96 8.8
17. \(. 5 6 \longdiv { 2 . 4 4 7 2 }\) 18. \(1 . 4 4 \longdiv { 1 3 5 . 0 7 2 }\)
19. \(4 . 1 2 5 \longdiv { . 9 4 8 7 5 }\)
2ن. . \(0 7 9 \longdiv { 2 9 8 }\)
21. \(. 0 4 8 \longdiv { 1 8 . 2 1 7 }\)
22. \(. 9 6 8 \longdiv { 3 6 5 . 9 }\)

2-11B EXERCISES: Use the machine to do the following。
Give all answers with three decimal places.
1. \(1 . 0 5 \longdiv { 7 3 . 5 }\)
2. \(. 9 6 \longdiv { 3 9 . 4 }\)
3. \(1 . 2 5 \longdiv { 5 3 7 . 5 }\)
4. . \(1 6 6 7 \longdiv { 4 0 . 0 2 }\)
5. \(4 . 1 2 5 \longdiv { 9 4 8 7 . 5 }\)
6. \(. 3 8 2 \longdiv { 8 9 3 . 9 9 }\)
7. \(. 9 2 \longdiv { 2 5 1 . 1 2 }\) \&. \(1 . 3 7 5 \longdiv { 2 3 2 }\)
9. \(. 0 4 \longdiv { 1 2 2 . 8 }\) 10. . \(625 / \overline{15}\) 11. .39/265.2 \(12.1 .47 / \overline{37.19 .1}\)
13. \(1 6 \longdiv { 3 } \cdot 1 4 . 1 6 \longdiv { 1 1 }\) 15. \(1 6 \longdiv { 2 5 }\) 16. \(3 2 \longdiv { 4 2 }\)
17. \(4 8 \longdiv { 5 1 }\) 18. \(6 4 \longdiv { 2 0 4 }\) 19. \(9 6 \longdiv { 2 2 2 }\) 20. \(1 2 8 \longdiv { 7 2 }\)

2-12 Division of Decimal by a Whole Number--Placing cero After Decimal Point Before Non-Zero Digits

Sometimes it is necessary to place a zero after the decimal point in the answer before writing the other digits. For example, \(6 \longdiv { . 2 4 6 }\) ihis zero, which is needed before the other digits in your answer, does not appear on the tape. You will need to set up your problem on your paper and locate the decimal point. Then you can decide where to place the first. digit with value and fill spaces with zeros between the decimal point and the first number shown on the tape. To divide \(3 1 \longdiv { . 0 1 5 }\) place the decimal point in the
 int.o 4 , you place a zero above the 4 in your answer after the decimal point: 31 goes into 46 one time, so you place a one above the \(t\) as the first number with value, then complete the division.

2-12 EXERCISES: Use the machine to find these quotientso Be sure to ahow the decims? point in the answer along with any zeros nosded hetwaen the decimal point and the first digit of the anawor.
\[
\begin{array}{lll}
\text { 1. } 1 7 \longdiv { 1 . 2 4 1 } & \text { 5. } 7 3 4 \longdiv { 2 2 . 0 2 } & \text { 9. } 823 / \overline{6.584} \\
\text { 2. } 9 7 \longdiv { 5 . 4 3 2 } & \text { 6. } 5 4 6 \longdiv { 3 2 . 7 6 } & \text { 10. } 815 / \overline{1.5485} \\
\text { 3. } 5 6 \longdiv { . 0 9 3 } & \text { 7. } 3 1 4 \longdiv { 1 9 . 7 3 2 } & \text { 11. } 7 0 9 \longdiv { 4 . 1 0 5 1 1 } \\
\text { 4. } 2 4 \longdiv { 1 . 9 2 } & \text { 8. } 2 4 3 \longdiv { 3 . 0 1 3 2 } & \text { 12. } 72 / 4.680
\end{array}
\]

\section*{2-13 Rounding Off Numbers}

You have been finding your quotients in division to two decimal places or three decimal places. Sometimes you are asked to find an answer to the nearest hundredth or nearest tenth, or nearest whole number.
To find an answer to hundredths, you must find your answer to three decimal places, then round off to two places. To find your answer to the nearest tenth, you need to find your answer to two decimal places, then round off to one place. Remember that if the last figure to be dropped is \(0,1,2,3\), or 4 , you leave the preceding number as it is. If the last fisure to be dropped is \(5,6,7\), 8 , or 9 , then make the preceding figure one greater than it is.

To round off the number \(7 \$ 5.625\)
to the nearest hundredth is 785.63
to the nearest tenth is 785.6
to the nearest whole number is 786

2-13 ENERCISES
\begin{tabular}{lccc} 
& NEAREST & NEAREST & NEAREST \\
NUABER & HUNDREDTH & TENTH
\end{tabular}
1. 376.3929
2. \(15.32 \%\)
3. 24.1358
—_
\(\qquad\)
\(\qquad\)
4. 6.753 \(\qquad\)
\(\qquad\)
5. 0.217
6. 6.4571
7. 7.0709
8. 2.9037
\(\qquad\) \(\xrightarrow{-\cdots}\)
\(\qquad\)
\(\qquad\)
9. 0.599
10. 51.601752
\(\qquad\)
\(\qquad\)

2-14 Rounding Off Quotionta by Use of the Remainder
You may recall that in division which does not come out exactly, the quotient may be written with the remainder expressed as a fraction. For examples

(Note that the remainder over the divisor becomes a fractional part of the quotient.)

Thus, wo may round off a quotient by comparing the remainder to the divisor. If the remainder is half or more than half of the divisor, round upward. If the remainder is less than half of the divisor, leave the quotient and drop the remainder.

Example 1:
 Rounded off to the nearest whole number, the answer is 4 because 1 is half of the divisor 2 . Done on the machine, your tape would look like this:
Anuser: 4 \begin{tabular}{cc}
7 & \(\div\) \\
7 & \(\vdots\) \\
2 & \(\vdots\) \\
3 & \(T\) \\
1 & \(T\)
\end{tabular}

Example 2: \(3 \longdiv { 2 9 . 3 }\) To the nearest tenth, this answer is 9.8 \(\frac{27}{2}\) because 2 is more than half of 3 。 \(\frac{21}{2}\) The tape for this problem would look like this:


Example 3:
\(6 \longdiv { \frac { 7 4 . 6 6 } { 4 2 8 . 0 0 } } \begin{array} { l } { \frac { 4 2 } { 2 8 } } \end{array}\)
24 The tape would look

\[
41-a .53
\]

2-14 EXERCISES: Find the following quotients to the nearest whole number.
\(1 . 1 . 1 5 \longdiv { 8 3 . 5 }\)
2. \(. 9 8 \longdiv { 3 8 . 6 }\)
3. \(1 . 2 5 \longdiv { 5 6 8 . 9 }\)
\(4 0 . 1 6 8 7 \longdiv { 4 0 . 0 7 }\)
5. \(4 . 3 5 2 \longdiv { 9 4 8 7 . 5 }\)
6. . \(3 8 2 \longdiv { 9 8 3 . 9 9 }\)
\(7 0 . 9 3 \longdiv { 2 5 2 . 2 2 }\)
8. \(1 . 3 5 4 \longdiv { 2 3 2 }\)
9. \(. 0 6 \longdiv { 1 2 2 . 8 }\)
10. \(6 2 5 \longdiv { 1 5 }\)
11. \(. 3 9 \longdiv { 2 5 4 . 4 }\)
12. \(1 . 4 7 \longdiv { 3 6 5 4 0 1 }\)

Find the following quotients to the nearest hundredth. Be sure to show the decimal point in the proper place 。
130. \(1 2 \longdiv { 5 6 2 . 5 7 } \quad 1 4 0 . 3 8 \sqrt { 2 6 5 . 2 } \quad 1 5 0 . 7 9 \sqrt { 4 6 6 1 }\)
16. \(. 9 6 \longdiv { 8 . 8 8 }\) 17. . \(56 \sqrt{24473}\) 18. 1.444 \(\overline{135.007}\)
19. \(4 . 1 2 5 \longdiv { . 9 6 8 7 5 } \quad 2 0\). \(0 0 7 9 \longdiv { 2 8 9 } \quad 2 1 . . 0 4 8 \longdiv { 1 8 . 2 2 7 }\)

OPTIONAL: Here is a flowchart for multiplying decimals.

22. Make a flowchart for dividing with decimals.

\section*{2-25 Rounding off Quotionte}

\section*{EXERCISES: Find the following quotionts. Show all deoimal points on your tape.}

Round off to the nearest hundredth:
6. \(25.1 \div 36=\) \(\qquad\)
7. \(8.154 \div 19=\) \(\qquad\)
8. \(11.669 \div 4.7=\) \(\qquad\)
9. \(8.0629 \div 50.7=\) \(\qquad\)
10. \(2.7125 \div 3.43=\) \(\qquad\)

Kound off to nearest tenth:
11. \(9.945 \div 1.17=\) 16. \(65.751 \div 3.03=\) \(\qquad\)
12. \(173.52 \div 2.4=\) 17. \(45.2751 \div 5.07=\) \(\qquad\)
13. \(65.178 \div 5.4=18 . \quad 18.061 \div 2.5=\) \(\qquad\)
14. \(53.935 \div 8.05=\) \(\qquad\) 19. \(3409.44 \div 4.8=\) \(\qquad\)
15. \(36.84 \div 4.46=\) 20. \(181.69 \div 7.8=\) Round off to nearest whole number:
21. \(32.4 \div 1.9=\) \(\qquad\)
22. \(27.95 \div .43=\) \(\qquad\)
23. \(48.024 \div .036=\) \(\qquad\) 26. \(19,8877.012 \div 318.6=\) \(\qquad\) 27. \(401.6187 \div 1.47=\) \(\qquad\) 28. \(\quad 3.1416 \div .7854=\) \(\qquad\)

\section*{24. \(53.89 \div 1.9=\) \\ \(\qquad\)} 29. \(101.849 \div 2.35=\) 30. \(10.444 \div .28=\) \(\qquad\)

\section*{2-16 Review}

Add: Show decimal points on your tape.
1. \(2.651+3.278+41.89+6.132=\) \(\qquad\)
2. \(39.25+4.391+27.6+5.945=\) \(\qquad\)
3. \(129.36+3.785+21.55+418.602=\) \(\qquad\)
4. \(\$ 123+\$ 1.23+\$ 12.30+\$ 1.23=\) \(\qquad\)
5. \(.12+\$ 91+\$ 6+\$ 8.04+\$ .50=\) \(\qquad\)
6. \(17.09+43.76+14.105+7.89=\) \(\qquad\)
7. \(2.3+3.14+45.165+4.05+4+23.15=\) \(\qquad\)
8. \(10+.98+2.75+6.49+4+5.6265=\) \(\qquad\)

Subtract: Show decimal points on tape.
1. \(302.475-109.70 \%=\) \(\qquad\)
2. \(8.4-.25=\) \(\qquad\)
3. \(\$ 25-\$ .47=\) \(\qquad\)
4. \(\$ 8.36-\$ 4=\) \(\qquad\)
5. \(\$ 45-\$ 2.75=\) \(\qquad\)
6. \(\$ 315,729.26-\$ 204,156.10=\) \(\qquad\)
7. \(500.72-209.5675=\) \(\qquad\)
8. 7604. ① -405 8. \(497=\) \(\qquad\)

Multiply: Show decimal points on tape. Round off answers to nearest hundredth.
1. \(52 \times 74.6=\)
2. \(.306 \times .481=\) \(\qquad\)
3. \(58.4 \times .079=\) \(\qquad\)
4. \(49.6 \times 9.5=\) \(\qquad\)
5. \(7.82 \times .57=\)
8. \(78 \times 3.6=\) \(\qquad\)
6. \(7.48 \times 80.6=\)
9. \(.78 \times 36=\) \(\qquad\)
7. \(2.72 \times .196=\) \(\qquad\) 10. \(9.28 \times .075=\) \(\qquad\)

Divide: Show decimal points on tape. Draw horizontal line to the right in the dividend, then the vertical line to locate the decimal point in the quotient. Find the quotients to the nearest whole number.
1. \(1.8 / \overline{73.8}\)
2. \(. 4 7 3 \longdiv { 2 8 3 8 }\)
3. \(5 . 4 6 \longdiv { 3 2 . 7 6 }\)
4. . 591 \(\longdiv { 2 3 6 4 }\)
5. \(. 9 3 \longdiv { 9 . 1 6 9 8 }\)
6. 1.977/1178.1

Divide: Find quotients to the nearest tenth.
7. \(. 0 4 8 \longdiv { 1 8 . 2 1 7 }\)
\(8 . 7 9 \longdiv { 2 9 8 }\)
9. \(5 . 9 2 \longdiv { 9 . 6 4 }\)
10. \(5 . 6 8 \longdiv { 3 6 5 . 9 }\)
11. \(5 . 6 \longdiv { 2 . 8 5 6 }\)
12. \(1 9 \longdiv { 2 5 . 8 1 }\)

Divide: Find quotients to nearest hundredth.
13. \(3 . 1 4 \longdiv { 8 . 4 9 } \quad 1 4 . . 0 6 1 \longdiv { 1 4 } \quad\) 15. \(13 / \longdiv { 5 6 . 3 }\)
16. \(1.853 / \overline{9.647} \quad\) 17. \(4 . 5 / 7 4 4 . 8 \quad 1 8 . 1 5 \longdiv { 2 1 1 3 }\)

Answer to problem in Introduction to the Student
It would take you about 4 seconds to enter the numbers into the machine. It would take the machine 5 seconds to give the answe: Total time: 2 seconds

\title{
Chapter III
}

FRACTIONS

3-1 Locating the Decimal Point in an Indicated Division You probably have noticed that the calculator has no keys marked for fractions. Does this mean that you will not be able to do examples having fractions using the machine? The answer is that you can do fraction work, and as a matter of fact, the examples will now be much easier to do.

Of course, the calculator cannot think by itself, for it is just a machine. It is very happy to do the tiresome computations for you, but it leaves the planning and decisions for you. You have already seen. for example, that the machine does not place decimal points in your answers. You are responsible for that.

Since the calculator cannot handle fractions directly, you must change them into a form that it can handle, that is, into decimal numbers. You remember that to change a fraction to decimal form, you must divide the numerator by the denominator. Fractions like \(\frac{2}{3}, \frac{3}{4}, \frac{5}{8}, \frac{1}{10}\), etc. are called proper fractions because the numerator is less than the denominator. When the numerator is larger than the denominator, as in \(\frac{5}{3}, \frac{7}{2}, \frac{10}{7}, \frac{22}{9}\), etc. the numbers are called improper fractions.

A little practice in locating the decimal point in the answer to a division example might oe worthwhile now. To help you understand the idea better, you will be asked to use pencil and paper for the next set of examples.

Examples: Determine, by pencil and paper, where the decimal point belongs in the following divisions. (A fraction indicates division.)
1. \(\frac{3}{8}\)
Solution:
\(8 \longdiv { 3 . 0 0 }\)
2. \(\frac{5}{16}\)
\begin{tabular}{l} 
Solution: \\
Sol \\
\\
\hline\(1 6 \longdiv { 5 . 0 0 }\)
\end{tabular}
3. \(\frac{2}{39}\)
\(\frac{2}{39}\)
Solution:
\(\underline{200}\)
4. \(\frac{16}{1101}\)
ilolution: \(\quad 1 1 0 1 \longdiv { 1 6 . 0 1 }\)

You only need to do the division until you reach the first non-zero digit.

3-1 EXERCIBEB: Using pencil and paper, locate the decimal point in the following, nuotients.
\(\begin{array}{lllll}1 . & \frac{1}{2} & \frac{3}{11} & \text { 17. } \frac{3}{100} & 25 . \\ 350\end{array}\)
2. \(\frac{\frac{2}{2}}{3}\) 10. \(\frac{5}{12} \quad\) 18. \(\frac{7}{200} \quad\) 26. \(\frac{502}{2100}\)
3. \(\begin{gathered}5 \\ 8\end{gathered} 11 . \begin{gathered}\frac{4}{15}\end{gathered}\) 19. \(\frac{9}{312} \quad\) 27. \(\frac{19}{1500}\)
4. \(\frac{1}{7}\)
12. \(\frac{2}{17}\)
20. \(\frac{11}{300}\)
28. \(\frac{560}{5000}\)
5. \(\frac{3}{5}\)
13. \(\frac{6}{25}\)
21. \(\frac{16}{25}\)
29. \(\frac{482}{1692}\)
6. \(\frac{4}{9}\)
14. \(\frac{7}{30}\)
22. \(\frac{42}{100}\)
30. \(\frac{16}{925}\)
7. \(\frac{5}{6}\)
15. \(\frac{5}{91}\)
23. \(\frac{55}{102}\)
31. \(\frac{405}{90000}\)
8. \(\frac{9}{10}\)
16. \(\frac{8}{70}\)
24. \(\frac{91}{250}\)
32. \(\frac{365}{45000}\)
\begin{tabular}{lllll} 
33. \(\frac{119}{26835}\) & 35. \(\frac{2565}{32962}\) & 37. \(\frac{3827}{152135}\) & 39. \(\frac{9105}{300625}\) \\
34. \(\frac{3720}{56800}\) & \(36 . \frac{5268}{92121}\) & 38. \(\frac{7624}{126814}\) & 40. \(\frac{7109}{507281}\)
\end{tabular}

3-2 Changing Proper Fractions to Decimals
To change a fraction to decimal form, you must divide the numerator by the denominator. You have learned how to dj.vide one number by another by machine, so this will be no new problem. Be sure you put the numerator in first, for that will always be your dividend. ifter the division is done, you must use the rule you learned in Chapter Two to locate the decimal point in your guotient.

Example 1: Find the decimal value of \(\frac{2}{7}\) to the nearest hundredth.

Solution: a) since you want the answer to hundredths, you must carry the division to thousandths, or 3
decimal places. This means we must add 3 zeros to 2.
b) Punch 2 and 3 zeros and the dividend
bar.
c) Punch 7 and then the division key.

Your tape will now read: 2000 + 2000 :
\(285 \quad \mathrm{~T}\)
You read this: \(2 \$ 5\) with a remainder of 5 .
d) Because the numbers you were dividing were both wnole numbers, you can use the vertical line idea to place your decimal point.


You obtain .285, which when rounded off gives .29. Then we write \(\frac{2}{7}=.29\) Answer.

Example 2: Find the decimal value of \(\frac{13}{250}\) to two decimal places.

Solution: a) Since the answer is to oe accurate to 2 decimal places, you must carry the division to 3 places. Therefore you add 3 zeros to 13.
b) Punch 13 and 3 zeros and then the dividend bar.
c) Punch 25 and 1 zero and the divisor key. Your tape should read: \(\begin{array}{r}13000 \\ 13000 \\ 3 \\ 250 \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \end{array}\)

This is read 52 with a 0 remainder.
d) Use your vertical line idea to place
the decimal point, since the numbers being divided were whole numbers.

You obtain .052 because you must put the 0 in the empty space. Rounded off this becomes .05. You write \(\frac{13}{250}=.05\) Ans.

3-2 EXERCISES: Find the quotients to the nearest hundredth of the examples in 3-1 Exercises, using the calculator.

3-3 Changing Improper Fractions to Decimals
An improper fraction is a fraction which has a numerator greater than the denominator, such as \(\frac{5}{4}, \frac{22}{7}, \frac{12}{3}, \frac{9}{1}\), etc. The decimal value of such fractions is always greater than 1 , that is, there is a whole number part and a decimal part. What is the whole number part of a proper fraction?

The decimal value of improper fractions can be found by longhand division.

Example 1: Find the value of \(\frac{15}{7}\) to the nearest hundredth longhand.
Solution: \(\quad 7115.1420\) The whole number part 140
10
730
38
\(\frac{7}{20}\)
24 is 2. I'he decimal part is . 142 Rounded off to hundredths: 2.14 Answer. Example 2: rind the value of \(\frac{18}{5}\) to the nearest hundredth longhand.
Solution: \begin{tabular}{rl}
\(5 \sqrt{18.000}\) & 'he whole number part \\
\(\frac{15}{30}\) & is 3. the decimal part \\
\(\frac{30}{0}\) & is .600. Hounded off to
\end{tabular} hundredths: 3.60 Answer

3-3 EXERCISE A: Find the value of the following improper fractions to the nearest hundredth longhand.
1. \(\frac{13}{7}\) 6. \(\frac{4}{3}\) 11. \(\frac{25}{12}\) 16. \(\frac{77}{14}\)
2. \(\frac{18}{8}\) 7. \(\frac{9}{8}\) 12. \(\frac{92}{16}\) 17. \(\frac{96}{25}\)
3. \(\frac{14}{9}\) 3. \(\frac{16}{5}\) 13. \(\frac{29}{15}\) 18. \(\frac{102}{15}\)
4. \(\frac{12}{7}\)
9. \(\frac{42}{7} 14 . \frac{40}{19}\)
19. \(\frac{215}{33}\)
5. \(\frac{17}{12}\)
10. \(\frac{17}{3}\)
15. \(\frac{33}{26}\)
20. \(\frac{193}{42}\)
'lo find the decimal values of improper fractions by machine, follow your regular rules for division.

Lxample 1: Find the decimal value of \(\frac{251}{92}\) to the nearest hundretth by machine.

Solution: a) To find the answer to the nearest hundredth means carrying the division to thousandths. therefore you must adत 3 zeros to the 251.
b) Press 251, then 3 zeros, then the dividend bar.
c) iress 92 and the diwision key.

Your taye should zead:


This means 2.728 with a remainder of 24.
d) Youw answer becomes 2.73 when rounded
off to hundredths. Write: \(\frac{251}{92}=2.73\) answer Be careful about the decimal point. If you are dividing only whole numbers, use the vertical ine inea.

3-3 EXERUISB B: To the examples of 3-3A but use the calculator.

3-4 rixed Numbers
As you can see iy the name, mixed number, such ? number is a mivture of a whole number and a fraction. we use miyed numbers in many every day conversations, as \(4 \frac{1}{2}\) days, \(2 \frac{1}{4}\) pounds, \(5 \frac{1}{2}\) per cent, \(5 \frac{3}{4}\) feet, and so forth.

Probably the simplest way of finding the decimal value of mixed numbers is to find the decimal value of the fraction and then add it to the whole number part. For instance, \(4 \frac{1}{2}\) becomes 4.5 since \(\frac{1}{2}=.5\) and we add it to the whole number 4 .

Wie can change mixed numbers to decimal numbers in longhand in the following way.

Example 1: Find the decimal equivalent of \(7 \frac{1}{15}\) to the nearest hundredth longhand.
volution: a) Find the decimal value of \(\frac{1}{15}\) to thousandths: \(\quad 1 5 \longdiv { 1 . 0 6 6 }\)
\(\frac{\frac{180}{100}}{\frac{90}{10}}\)
b) Hound off \(.06 t\) to hundredths: .07
c) Aid .07 to 7 and get 7.07 Answer
3-4 EXBRCISEA: Find the decimal values of the following mixed numbers longhand to the nearest hundredth.
\[
\text { 1. } 4 \frac{1}{6}
\]
- \(1 \frac{4}{15}\)
il. \(227 \frac{5}{9}\)
16. \(1000 \frac{5}{61}\)
2. \(3 \frac{2}{5}\)
7. \(10 \frac{5}{12}\)
12. \(49 \frac{8}{17}\)
17. \(1 \frac{2}{57}\)
3. \(6 \frac{1}{8}\)
8. \(19 \frac{1}{4}\)
13. \(71 \frac{12}{15}\)
18. \(2 \frac{1}{105}\)
4. \(12 \frac{5}{8}\)
9. \(3 \frac{10}{13}\)
14. \(\$ 06 \frac{1}{17}\)
10. \(6 \frac{2}{205}\)
5. \(9 \frac{3}{7}\)
10. \(100 \frac{6}{7}\)
15. \(240 \frac{2}{39}\)
20. \(1 \frac{7}{500}\)

Of course, you can use the calculator to find the decimal value of the fraction part of the mixed number. Then you just add this decimal to the whole number part.

Example 1: Find the decimal value of \(3 \frac{13}{16}\) to nearest hundredth by machine.
solution: a) Find the decimal value of \(\frac{13}{16}\) by dividing 13.000 by 16 . Your answer rounded to hundredths should be . 8 l
b) Add . 81 to the whole number part 3 and ge= 3. gl Answer
3-4 EXeRCISE B: Do the same examples in \(3-4 A\) out use the calculator this time.

3-5 Changing Nixed Numbers to Improver Fractions Does \(\frac{2}{1}=2\) ? Does \(\frac{4}{2}=2\) ? Does \(\frac{6}{3}=2\) ?

How many other indicated divisions can be used to write the number 2?

You could organize all the possible ways like this: \(2=\frac{2}{1}=\frac{4}{2}=\frac{6}{3}=\frac{8}{4}=\frac{10}{5}=\)

In the same way, you could represent the number 3 li! es this: \(3=\frac{3}{1}=\frac{6}{2}=\frac{9}{3}=\frac{12}{4}=\frac{15}{5}\)

Notice that you use the same denominators each time: 1, 2 , 3, 4, ......... To help you see that any whole number can be written as an improper fraction in countless ways, try the following exercise.

3-5 EX:REIS: A: Write the following numbers as improper fractions using the denominators \(1,2,3,4,5,6,7,8,9,10\)
1. 2
6. 12
2. 5
7. 8
3. 6
8. 3
4. 4
9. 1
5. 10
10. 11

Since any whole number can be written as an improper fraction, we make use of this fact to change a mixed number to an improper fraction. For instance, we know that \(5=\frac{20}{4}\). Therefore to change \(5 \frac{3}{4}\) to an improper fraction we think \(5 \frac{3}{4}=5+\frac{3}{4}=\frac{20}{4}+\frac{3}{4}=\frac{23}{4}\).

Example 1: Change \(7 \frac{2}{3}\) to an improper fraction.
Solution: a) Since the fraction has a denominator of 3 , we change 7 to an improper fraction having a denominator of 3 . Thus \(7=\frac{21}{3}\).
b) \(7 \frac{2}{3}=7+\frac{2}{3}=\frac{21}{3}+\frac{2}{3}=\frac{23}{3}\)
\(7 \frac{2}{3}=\frac{23}{3}\) Answer

An easier way to chenge a miver number to an improper fraction is to use the idea explained above, but to do the work mentally.
exanple 2: Uhange \(5 \frac{7}{9}\) to an improper fraction. Solution: a) Bultiply 9 by 5 and then add 7 to get 52.
i) Put the result, 52, over the denominator, 9 , and obtain \(\frac{52}{9}\). write: \(5 \frac{7}{9}=\frac{52}{9}\) inswer

نxample 3: Change \(12 \frac{2}{5}\) to an improper fraction. solution: a) multiply 12 by 5 and then add 2 to obtain 62.
b) Fut the result, C ?, over the denominator 5 to get \(\frac{62}{5}\). write: \(12 \frac{2}{5}=\frac{62}{5}\)

3-5 EXEREI: B : Change the following miyen numbers to improper fractions by the method used in tixamples 2 and 3 above. 1. \(4 \frac{1}{4}\)
6. \(11 \frac{3}{7}\)
11. \(6 \frac{3}{11}\)
16. \(2 \frac{3}{151}\)
2. \(7 \frac{3}{5}\)
7. \(15 \frac{1}{4}\)
12. \(4 \frac{2}{15}\)
17. \& \(\frac{2}{13}\)
3. \(6 \frac{7}{9}\)
\%. \(19 \frac{3}{4}\)
13. \(7 \frac{3}{10}\)
12. \(4 \frac{13}{10}\)
4. \(10^{\frac{1}{2}}\)
9. \(16 \frac{2}{3}\)
14. \(2 \frac{5}{32}\)
19. \(9 \frac{15}{22}\)
5. \(12^{\frac{2}{3}}\)
10. \(12^{\frac{4}{7}}\)
15. \(1 \frac{9}{100}\)
20. \(7 \frac{9}{250}\)

\section*{3-6 Multiplying With Fractions}

It will help if you now review some examples involving multiplying by fractions. The following types of examples should be included.

A Fraction by Fraction: \(\frac{2}{3} \times \frac{5}{7}\)
Solution: \(\frac{2}{3} \times \frac{5}{7}=\frac{20}{21}=.48\)
B Fraction by whole Number: \(\frac{3}{\xi} \times 21\)
solution: \(\frac{3}{8} \times 21=\frac{3}{8} \times \frac{21}{1}=\frac{\dot{0} 3}{8}=7.88\)
C Fraction by Mixed Number: \(\frac{2}{3} \times 5 \frac{2}{13}\)
Solution: \(\frac{2}{3} \times 5 \frac{2}{13}=\frac{2}{3} \times \frac{67}{13}=\frac{134}{39}=3.44\)
D Mixed Number \(\frac{\text { by }}{\frac{N}{2}} \frac{\frac{N i x e d}{}}{\frac{23}{4}}, \frac{\text { Number }}{\text { Solution: }} 5 \frac{1}{2}=\frac{2}{2}\)

Therefore
\[
\begin{aligned}
& 5 \frac{3}{4} \times 2 \frac{1}{2}=\frac{23}{4} \times \frac{5}{2}=\frac{115}{8} \\
& \frac{115}{8}=14.38
\end{aligned}
\]

Notice that fach of the divisions has been rounded off to hundredths.

Use the following rule whenev you are multiplying fractions by fractions, whole numbers, or mixed numbers.

RULE: When multiplying fractions by whole numbers, mixed numbers or fractions:
1. Change all numbers to fraction form.
2. ifultiply the numerators, then multiply the denominators.
3. Divide the resulting numerator by the denominator to correct decimal value.

3-6 EXERCISE A: Using paper and pencil, multiply the follow. ing natoors and leave your answers in decimal form to nearest hivirecith.
\(\therefore\). \(\frac{2}{5} \times \mu\)
6. \(2 \frac{2}{3} \times 1 \frac{1}{2}\)
11. \(9 \frac{1}{3} \times 7 \frac{1}{2}\)
16. \(18 \frac{2}{3} \times 7\)
\(=\because \times \frac{5}{7}\)
7. \(9 \times 5 \frac{1}{4}\)
12. \(42 \times \frac{7}{13}\)
17. \(12 \frac{3}{8} \times 4\)
3. \(\frac{3}{4} \times \frac{7}{9}\)
8. \(\frac{7}{12} \times 2 \frac{1}{5}\)
13. \(\frac{5}{6} \times \frac{23}{18}\)
18. \(10 \times \frac{15}{2.9}\)
4. \(\frac{10}{13} \times \frac{16}{3}\)
9. \(5 \frac{3}{7} \times 1 \frac{1}{2}\)
14. \(2 \frac{3}{5} \times 79\)
19. \(42 \frac{2}{11} \times 7 \frac{1}{7}\)
5. \(\div \frac{1}{2} \times 7 \quad\) 10. \(60 \times 4 \frac{2}{5}\)
15. \(1 \frac{15}{16} \times 2^{\frac{1}{3}}\)
20. \(19 \frac{3}{16} \times \frac{4}{5}\)

When you use the machine to multiply fractions, you use the same rule as before:

RULE: 1. Change all numbers to fraction form
2. Multiply all numerators, then all denominators.
3. Divide the resulting numerator by the denominator to desired accuracy.
Example 1: Multiply \(\frac{7}{16} \times 925\) to the nearest hundredth. Solution: Think \(\frac{7}{16} \times \frac{925}{1}\)
a) Multiply 7 by 925 and get 6475 .
b) Multiply 16 by 1 mentally and get 16 .
c) Divide 6475000 by 16 and get 404687 .
d) Place decimal point 404.687 and round
off: 404.69 Answer
Example 2: multiply \(5 \frac{2}{7} \times 6 \frac{3}{4}\) to nearest hundredth. Solution: a) Write on paper \(\frac{37}{7} \times \frac{247}{4}\)
b) Multiply 37 by 247 to get 9139 .
c) Aultiply 7 by 4 mentally to get 28.
d) Divide 9139 by 28 to get 320392 .
e) Place decimal point 326.392 and round off: 326.39 Answer

Whenever you are in doubt about a mental calculation, as in changing \(61 \frac{3}{4}\) to \(\frac{247}{4}\), do the multiplication in the machine. Remember, it takes iust one wrong number to make the entire example wrong!

Example 3: Multiply \(19 \frac{12}{17} \times 243\) to the nearest hundredth. solution: a) Multiply 17 by ly to get 323 and then add 12 to get 335.
b) Think \(\frac{335}{17} \times \frac{243}{1}\).
c) Aultipiy 335 by 243 to get 81405 .
d) lultiply 17 by 1 mentally to get 17.
e) Divide 81405 by 17 to get 4788529 .
f) Place decimal point \(47 \$ 9.529\) and round off: 478\%.53 Answer

3-6 EXERCT:SE B: Do the examples in 3-6 Eyercise A using the calculator. You will need paper to write the examples in fraction form.
O.TIONAL TOPIC

3-7 Repeating Decimals and Terminating Decimals
There are some fractions that you probably feel very sure of, such as \(\frac{1}{2}, \frac{1}{4}, \frac{3}{4}, \frac{3}{8}, \frac{9}{10}\), and so on. For fractions like these, we can find exact decimal values. For example, we know from past work that \(\frac{1}{2}=.5, \frac{1}{4}=.25\) and \(\frac{3}{3}=.375\) exactly.

If you were to divide longhand to get the decimal value of \(\frac{3}{8}\) by dividing \(\$\) into 3 , you would find that the division terminates, or ends, when you get to .375 because you would have obtained a zero remainder. If you get a zero remainder, you have what is called a terminating decimal.

Example 1: Can \(\frac{5}{16}\) be written as a terminating decimal?
Solution: By longhand division \(1 6 \longdiv { 5 . 0 0 0 0 }\) \(\frac{48}{20}\)
\(\frac{160}{40}\)
\(\frac{32}{80}\) Remainder.
\(\frac{80}{80}\) is Z GRO
You see that the division resulted in a zero remainder. Then you say \(\frac{5}{16}\) can be written as a terminating decimal. Doing. the same example by machine poses a litile problem. How many zeros should you use in the dividend? In other words, how do you know how far you have to divide to see if there is a zero remainder? You realize, of course, that once you reach a 0 remainder that all the digits in your quotient will be 0 from that point on. jo really it doesn't matter if you add too many zeros to your dividend, since you will be able to see a string of zeros in your quotient. Therefore when doing the problem by machine just add as many zeros to your dividend as is possiole.

> Example 2: Can \(\frac{5}{16}\) be written as a terminating decimal? (Do by machine)

Solution: a) Punch 5 and 12 zeros (the machine will print only ll.)
b) Punch tie dividend key.
c) Punch 16 and then the division key.
d) Your answer reads . 31250000000 and a remainder of 0 .

Since you have obtained a \(O\) remainder, you conclude that \(\frac{5}{16}\) can be written as a terminating decimal.

3-7 EXLRCIBiEA: Use the method of Example 2, above, to decide, by machine, whether the following fractions can be written as terminating decimals.
1. \(\frac{15}{24}\)
6. \(\frac{1111}{2500}\)
2. \(\frac{7}{16}\)
7. \(\frac{87}{125}\)
3. \(\frac{382}{1000}\)
\$. \(\frac{113}{250}\)
4. \(\frac{24}{40}\)

ฯ. \(\frac{10}{625}\)
5. \(\frac{221}{2000}\)
10. \(\frac{303}{625}\)

Now there are also fractions which do not have exact decimal values. Some of the most familiar of these are \(\frac{1}{3}\), \(\frac{1}{6}, \frac{2}{3}, \frac{5}{6}\). No matter how far you carry the division of \(\frac{1}{3}\), that is 3 divided into 1 , you find that the remainder never becomes 0 . In fact, you obtain a string of 3's! 'when you divide 1 by 6 , that is, when you find the decimal value of \(\frac{1}{6}\), what do you find? Your answer comes out .1666.....; the 6 repeats itself endlessly. Decimals like these are called repeating decimals. The fractions \(\frac{1}{3}, \frac{2}{3}, \frac{1}{6}, \frac{5}{6}\) are equivalent to repeating decimals.

Sometimes it is a long job to find out whether a fraction is equal to a repeating decimal. Consider the fraction \(\frac{2}{7}\). Dividing longhand we get:


Whenever you get a remainder which is the same as your orginal dividend, do you see that you are really beginning the example over arlin? The digits will now repeat themselves in the quotient so you will obtain 285714295714 285714.... The division never ends! "'herefore \(\frac{2}{7}\) can never be expressed as an exact decimal, but can only be approximated. such factions as \(\frac{2}{7}\) are equal to repeating decimals.

Let us take the same fraction \(\frac{2}{7}\) and carry out the division still further to see another interesting fact.
\[
\frac{-2.5714285714}{712000006000000}
\]

712000
1.00
\(\frac{46}{40}\)
\(\frac{35}{50}\)
\(\frac{49}{10}\)


Notice the remainder has repeated itself.
Summary:
A fraction is equivalent to a repeating decimal if one of the following is true:
1. The remainder is the same as the original dividend at any step.
2. The remainder becomes exact.ly the same as some other provious remainder.

To illustrate the second case by machine, let us see whether \(\frac{5}{12}\) is equal to a repeating decimal.

Example: Jkow by method of repeating remainders that \(\frac{5}{1 ?}\) is equal to a ropeating decimal. Solution: a) First tr; 5 with no zeros divided by 12. Your remainder is 5.
b) Now try 5 with 1 zero divided by 12. Your remainder is 2.

c) Now try 5 with ? zeros rivided by 12. Your remainder is \(\mathbf{8}\).
d) Now try 5 with 3 zeros divided by 12. Your remainder is 8 .
You see that the remainder has repeater itself in steps \(c\) and \(d\). Thus you may conclude that \(\frac{5}{12}\) is equivalent to a repeating decimal ( \(\left.\frac{5}{12}=.416 \ell_{1} \ldots ..\right)\)

Uf course the method just used is rather long. You have to make reyeated trials with one zero, two zeros, ihree zeros, etc. until you come to a remainder which is the same as a previous one. In actual practice, you will use a different techninue, which you will stury in the next section.

Summary: 1. if fraction is equivalent to a terminating decimal if the remainder ever becomes 0.
2. A fraction is equivalent to a repeating decimal if:
a) the remainder ever is the same as the origin ?l dividend.
b) the remainder ever becomes the same as a previous remainder.

It will be useful to our understanding to try the following problems by longhand division before you take up the machine method.

3-7 EXrailisti B: By actual longhand division, decide whether the following fractions are equivalent to terminating or repeating decimals.
1. \(\frac{2}{9}\)
6. \(\frac{3}{10}\)
11. \(\frac{1}{6}\)
16. \(\frac{5}{9}\)
2. \(\frac{5}{6}\)
7. \(\frac{10}{15}\)
12. \(\frac{4}{15}\)
*17. \(\frac{5}{14}\)
* Very
3. \(\frac{3}{8}\)
8. \(\frac{5}{16}\)
13. \(\frac{7}{20}\)
18. \(\frac{7}{11}\)

LONG DIVISIONS.
4. \(\frac{1}{11}\)
9. \(\frac{2}{11}\)
14. \(\frac{3}{11}\)
19. \(\frac{7}{15}\)
5. \(\frac{7}{12}\)
10. \(\frac{5}{12}\)
15. \(\frac{1}{16}\)
\({ }^{*}{ }_{20} \frac{3}{14}\)
as mentioned earlier, there is a method you can use in actual practice which makes it easier to decide whether a fraction is equal to a repeating or terininating decimal. The machine makes it a fairly simple process. what you co is add as many ceros as is !ossible to the dividend, (no matier how many zeros you punch, only a number having 12 digits can be written) and then c!ivile.

If the decimal is repeating, you can usually spot the pattern of rejeating digits immediately. for example, you cen easily see the repeating digits in \(21353535 \quad 35 \quad 35\) 35, or in 243105 105 105. All you have to do is look at your printed quotient on the tape to decide whether there is a repeating pattern. Example: Is \(\frac{5}{13}\) a repeating or a terminating decimal eq̣uivalent?
solution: a) Funch 5 and 11 zeros, then the dividend bar.
b) Funch 13, then the division bar.
c) Read the quotient: 38461538461 T

7 '
d) Since you are not sure of the next digit following, 1 , take the remainder 7 , and divide it by 13 again. Ihis wi Ll rive you the next rigit in your division.
e) 1 unch 7 and 1 zero and then the dividend bar.
f) I unch 13 and then division key.
g) Read the ouotient:

5 i
\(5^{\prime}\)
h) Fut the quotients of step \(c\) and \(g\)
together to obtain 384615384615
i) Since the risits form a repeating pattern you conclude that \(\frac{5}{13}\) is equal to a repeating decimal.

3-7 EXSRCIS: C: Use the method just explained to decide which of the following fractions are equivalent to repeating decimals.
1. \(\frac{2}{5}\)
6. \(\frac{2}{11}\)
11. \(\frac{9}{16}\)
16. \(\frac{13}{14}\)
2. \(\frac{7}{9}\)
7. \(\frac{3}{7}\)
12. \(\frac{6}{13}\)
17. \(\frac{3}{11}\)
3. \(\frac{2}{4}\)
3. \(\frac{11}{12}\)
13. \(\frac{4}{7}\)
*18. \(\frac{12}{17}\)
4. \(\frac{5}{7}\)
9. \(\frac{4}{13}\)
14. \(\frac{5}{6}\)
*19. \(\frac{41111}{33300 J}\)
5. \(\frac{5}{9}\)
10. \(\frac{6}{11}\)
15. \(\frac{10}{13}\)
*20. \(\frac{231284}{3: 3000}\)
* In examples 18, 19, and 20 you will have to divide twice.

\section*{3-8 Review Exercises}
1. Does the calculator print decimal points?
2. ©ian you punch into the machine a number like. . 0025 ?
3. What is the rule you use for placing the decimal point in your answer when dividing two whole numbers?
4. Consider the examples below:
a) \(\frac{250}{361}\)
b) \(\frac{25}{3.61}\)
c) \(\frac{.25}{.0361}\)
d) \(\frac{.0025}{3.61}\)
i) are the answers going to be the same?
ii) what will be the same about the answers?
iii) Has this got anything to do with doing an example like \(\frac{.0025}{.361}\) in the machine?
5. What is the rule you use for placing the decimal point in your answer when the nu:nbers you are diviring are not both whole numbers?
6. In which decimal place does the first non-zero digit occur when dividtng:
a) \(\frac{4}{5}\)
b) \(\frac{3}{40}\)
c) \(\frac{2}{97}\)
d) \(\frac{37}{192}\)
e) \(\frac{25}{6025}\)
f) \(\frac{371}{19354}\)
7. In which decimal place does the first non-zero digit occur when dividing:
a) \(\frac{1.5}{.36}\)
b) \(\frac{.224}{35}\)
c) \(\frac{.0092}{3.6}\)
d) \(\frac{42.9}{.306}\)
e) \(\frac{.0936}{32.8}\)
f) \(\frac{1.007}{42.9}\)
3. Find the value to the nearest hundredth by longhand method:
a) \(\frac{5}{16}\)
b) \(\frac{12}{19}\)
c) \(\frac{36}{17}\)
d) \(\frac{42}{15}\)
e) \(\frac{601}{351}\)
f) \(\frac{2010}{9055}\)
9. Use the calculator to do the examples in i: 8 .
10. Find the decimal values of the following numbers by longhand method: (nearest huadrecoth)
a) \(20 \frac{5}{9}\)
c) \(900 \frac{4}{7}\)
e) \(6 \frac{200}{702}\)
ن) \(2 \frac{63}{65}\)
d) \(19 \frac{8}{39}\)
f) \(1 \frac{6}{2500}\)
11. Do example \(/ / 10\) by machine.
12. Change the following, :nixed numbers to improper fractions:
a) \(11 \frac{1}{3}\)
b) \(16 \frac{7}{9}\)
c) \(23 \frac{15}{17}\)
d) \(410 \frac{2}{11}\)
e) \(75 \frac{43}{151}\)
f) \(206 \frac{41 \theta_{2}}{900}\)
13. Change the following improper fractions to mixed numbers:
a) \(\frac{943}{4.52}\)
b) \(\frac{75}{23}\)
c) \(\frac{10 \%}{17}\)
d) \(\frac{4054}{63}\)
e) \(\frac{9215}{167}\)
f) \(\frac{4506}{27}\)
14. Using longhand methods, multiply the following: (Leave answers in fraction form.)
a) \(\frac{5}{12} \times 163\)
c) \(9^{\frac{1}{5}} \times 725\)
d) \(2000 \times 42 \frac{1}{3}\)
e) \(\frac{17}{91} \times \frac{43}{60}\)
f) \(\frac{26}{47} \times 19 \frac{3}{16}\)
v) \(4 \frac{1}{7} \times 6 \times \frac{2}{5}\)
15. No example 14 by me chine.
16. (Options)

\section*{RENAME THE FIRST NUMBER}
I. \(24=4 x\) \(\qquad\) \(=\) \(\qquad\) \(\times 2=\) \(\qquad\) \(\times 1=3 x\)
II. \(30=6 \mathrm{x}\) \(\qquad\) \(=2 x\) \(\qquad\) \(=10 \mathrm{x}\) \(\qquad\) \(\times 3=2 \times 3 x\) \(\qquad\)
III. \(72=\) \(\qquad\) \(\because 9=6 x\) \(\qquad\) \(=2 \times 9 x\) \(\qquad\) \(=3 x\) \(\qquad\)
IV. \(45=3 x\) \(\qquad\) \(=5 \mathrm{x}\) \(\qquad\) \(=\) \(\qquad\) \(x 45=3 x\) \(\qquad\) \(\times 5=9 \times\) \(\qquad\)
v. \(64=8 x\) \(\qquad\) \(=4 x\) \(\qquad\) \(x 4=2 x\) \(\qquad\) \(=2 \times 2 \times 2 \times 2 \times 2 \times\) \(\qquad\)
VI. \(4=16+\) \(\qquad\) \(=12+\) \(\qquad\) \(=40+\ldots=\) \(\qquad\) \(+7\)
VII. \(\quad 10=\) \(\qquad\) + \(3=\) \(\qquad\) \(+10=70+\) \(\qquad\) \(=1.40 *\) \(\qquad\)
VIII. \(7=2.2+\) \(\qquad\) \(=70+\) \(\qquad\) \(=7+\) \(\qquad\) \(=\) \(\qquad\) \(+5\)
IX. \(12=\) \(\qquad\) \(+2=\) \(\qquad\) \(+5=\) \(\qquad\) \(\div 7=\) \(\qquad\) \(+10\)
X. \(\quad 15=15 *\) \(\qquad\) \(=135+\) \(\qquad\) \(=105\). \(\qquad\)

\section*{Chapter IV}

\section*{PER CENT}

\section*{CHAPTER IV Per Cent}

\section*{4-1 Meaning of Per Cent}

Per cent is another name for \(\frac{1}{100}, .01\), or hundredths. The symbol for per cent is \%.

Example l: what does \(30 \%\) mean?
Solution: \(30 \%\) means \(30 \times \frac{1}{100}=\frac{30}{100}\)
example 2: vinat does 75: mean?
Solution: \(75 \%\) means \(75: \frac{1}{100}=\frac{75}{100}\)

Example 3: What does \(2 \%\) mean?
Solution: \(2 \%\) means \(2 \times \frac{1}{100}=\frac{2}{100}\)

4-1 EXERCISES A: Change the following per cents to fractions in this manner:
1. \(10 \%\) means \(\quad \times \frac{1}{100}=\overline{100}\)
2. \(37 \%\) means \(\times \frac{1}{100}=\overline{100}\)
3. \(0 \%\) means \(\times \frac{1}{200}=\overline{100}\)
4. \(3 \%\) means \(\times \frac{1}{100}=\overline{100}\)

Do you see an easy way of doing these?
lo change a per cent to a fraction, remove the per cent symbol and put the number over 100 .

Example 1: Change \(44 \%\) to a fraction 。 Solution: \(44 \%=\frac{44}{100}\)
Note: The fraction \(\frac{144}{100}\) does not have a \(\%\) symbol written. next to it.

Example 2: Change lis to a fraction. solution: \(1 \%=\frac{1}{100}\)

4-1 EXERC[GB \(\mathrm{B}:\) Change the following per cents to fractions using this method:
1. \(3 \%=\overline{100}\)
2. \(55 \%=\overline{100}\)
3. \(57 \%=\overline{100}\)

You will recall that a fraction such as \(\frac{35}{100}\) can be written in decimal form as .35. Using this idea, we can also write per cents as decimals.

Example l: Change \(15 \%\) to a decimal.
solution: \(15 \%\) means \(\frac{15}{100}=.15\)
Example 2: Change \(92 \%\) to a decimal.
volution: \(92 \%\) means \(\frac{92}{100}=.92\)

Example 3: Change \(1 \%\) to a decimal.
Solution: \(1 \%\) means \(\frac{1}{100}=.01\)
Note: We must add a zero in this case.

1. \(72 \%=\overline{100}=\) \(\qquad\)
2. \(3 \%=\overline{100}=\) \(\qquad\)
3. \(37 \%=\overline{100}=\) \(\qquad\)

Do you see an easy way of doing these?
To change a per cent to a decimal, remove the per cent symbol and move the decimal point two places to the left.

Example l: Change \(32 \%\) to a decimal.
: solution: \(\quad 32 \%=.32\)
Note: Remember that the decimal point in a whole number is to the right of the ones place. In the number 32,2 is in the ones place, therefore, the decimal is to the right of 2.

Example 2: Change \(17 \%\) to a decimal.
solution: \(17 \%=.17\)
Example 3: Change 50\% to a decimal.
solution: \(50 \%=.50\)
Example 4: change \(5 \%\) to a decimal.
Solution: \(5 \%=.05\)
Note: Tn order to move the decimal to the left in this case, we had to add a zero to the left of 5 .

Example 5: Change \(3 \%\) to a decimal.
Solution: \(3 \%=.03\)
Example 6: Change. \(3 \%\) to a decimal.
solution: \(.3 \%=.003\)

4－1 EXERUISE＇S D：Change the following per cents to decimals：

1． \(8 \%=\) \(\qquad\)
2． \(80 \%=\) \(\qquad\)
3． \(62 \%=\) \(\qquad\)

4． \(39 \%=\) \(\qquad\)

5． \(2 \%=\) \(\qquad\)
6． \(1.2 \%=\) \(\qquad\)
7． \(22.5 \%=\) \(\qquad\)
8．\(\quad 10.7 \%=\) \(\qquad\)
There are times when we must work with per cents such as \(4 \% \%\) ．Recall that \(\dot{女}=.25\) ．（Divide l by 4．）thus， \(4 \frac{1}{4} \%=4.25 \%\) ． But now，removing the per cent symbol and moving the decimal point two places to the left，we have \(4 \frac{\pi}{4} \%=.0425\) ．

Here are some more examples to illustrate this method：
1． \(43 \frac{1}{2} \%=43.5 \%=.435\)
2． \(7{ }^{3} \%\)
4－1 EXERCISES E：Change the following per cents to decimals． J． \(3 \frac{i}{2 \%}\)

2． \(62 \frac{1}{4} \%\)
3． \(20 \frac{1}{5 \%}\)
4． \(8 \frac{1}{8} \%\)

4－1 EXBRUTBLG F：Change the following per cents to decimals．
1． \(55 \%\)
6． \(37 \%\)
11． \(13 \frac{1}{2 \%}\) 16． \(10 \frac{1}{2} \%\)

2． \(5.5 \%\)
7． \(1.9 \%\)
12． \(4.2 \%\)
17． \(3 \frac{1}{4} \%\)
3． \(5 \frac{1}{2 ; i_{0}^{\prime}}\)
3． \(1.09 \%\)
13． \(10.5 \%\)
18． \(5.15 \%\)
4． \(91 \%\)
9． \(1.1 \%\)
14． \(5 \frac{1}{4} \%\)
19．2类品
5． \(3 \frac{3}{4 \%}\)
10． \(1 \frac{1}{10 \%}\)
15．50\％
20． \(23 \frac{1}{4} \%\)

4-2 Finding the Per Cent of a Number

\section*{To find a given percent of a number, change the per cent}
to a decimal and multiply by the number.
Example 1: Find \(30 \%\) of 500 .
jolution: a) \(30 \%=.30\)


Example 2: Find \(79 \%\) of \(\$ 2702\).

\section*{\(T\)}
solution: a) \(79 \%=.79\)
b) \(.79 \times 2762=\$ 21 \$ 1.98\)
(See tape, right.)
When working problems dealing wich per cents, you must be very careful in locating the decimal point in the answer. At this point, you mi.ght wish to review multiplying with decimals as you did in chapter 2. In all your work with per cents, put your dacimal points on your tapes as you work through your example as was done above.
4-2 EXERCIOLS: Compute these amounts to the nearest hundredtis.
1. \(52 \%\) of \(12 \%\)
7. \(1 \%\) of 632
2. \(6 \%\) of .21 .56
n. \(9 \%\) of \(\% 37.89\)
3. \(79 \%\) of 83
9. \(43.5 \%\) of 67
4. \(3 \%\) of \(\$ 27.50\)
10. \(2 \dot{c}\) of \(\$ 3 \vec{R} .11\)
5. looci of 632
11. \(.5 \%\) of 96
6. \(10 \%\) of 632
12. \(33^{\frac{1}{3} \%}\) of \(424 \% .24\)

4-3 Per Cents Greater Than 100\%
What does \(100 \%\) mean? Changing to a decimal we obtain 1.00 or 1 . Thus, you may think of \(100 \%\) as meaning all or the whole of something.

We often have occasion to use per cents greater than 100. To change a :er cent greater than 10 ) to decimal form, you use the same method as in section \(l_{4}\)..l. Namely:
'Io change a per cent to a decimal remove the per cent symbol and move the decimal point two places to the left.

Example l: Change \(125 \%\) to a decimal.
Solution: \(125 \%=1.25\)
Example 2: Change 263\% to a decimal.
Solution: \(263 \%=2.63\)
4-3 EX:ACTSBS A: Change the following per cents to a decimal.
1. \(175 \%=\)
6. \(150^{\circ \%}=\) \(\qquad\)
2. \(200 \%=\)
7. \(125 \%=\) \(\qquad\)
3. \(12.95 \%=\) \(\qquad\) 8. \(250 \%=\) \(\qquad\)
4. \(321.5 \%=\) \(\qquad\) 9. \(137 \%=\) \(\qquad\)
5. \(102 \%=\) \(\qquad\) 10. \(205 \%=\) \(\qquad\)
To find a per cent of a number when the per cent is greater than 100 also requires the same method as in section hal. Namely, To find a given per cent of a number, change the per cent to a decimal and multiply this by the number. Example: Find \(125 \%\) of 500 . solution: a) \(125 \%=1.25\)
b) Your tape should look: like unis:

c) Thus \(125 \%\) of \(500=625\).
4-3 EXSRCISES B: Compute these amounts to the nearest cent.
1. \(110 \%\) of \(\$ 95\)
2. \(375 \%\) of \(\psi 360\)
3. \(132, \%\) of \(311 \% .50\)
4. \(520 \%\) of \(\$ 9280\)
5. \(100 \%\) of \(\dot{\$} 425\)
6. \(1000 \%\) of \(\$ 425\)
7. \(200 \%\) of \(\$ 425\)
8. \(300 \%\) of \(\$ 425\)
9. \(2525 \%\) of \(\mathbf{i l} 19.2\)
10. \(103.5 \%\) of \(\$ 25.20\)
11. \(250 \%\) of \(\$ 2.50\)
12. 250\% of \(\$ 250\)
13. \(150 \%\) of \(\$ 1000\)
14. 150\% or \(\$ 10\)
15. \(100 \%\) of \(\$ 100\)
16. \(100 \%\) of \(\$ 1\)
17. \(100 \%\) of \(\psi .25\)
18. \(125 \%\) of \(\$ 846.34\)
19. \(175 \%\) of \(\$ 192.26\)
20. \(115 \%\) of \(\ddot{\psi} 23.07\)
4-4 Fractions of a ler lent
'There are times when we use per cents less than one per cent. We call these fractional per cents. in e\%ample would be \(\frac{1}{2} \%\). i'hint of this as meaning \(\frac{1}{2}\) of \(1 \%\).
Again, to change a fractional per cent to a decimal simply reouires removing the per cent symbol and moving the decimal point two places to the left.
Example: Change . \(7 \%\) to decimal form.
jolution: \(7 \%=.007=.007\)
If a fractional per cent is in common fraction form, we can first change it to a decimal per cent and then chenge it to a decimal.

Solution: \(\frac{1}{2} \%=.5 \%=.005\)

\(T\)
4-4 EXERCIJE A: Change the following fractional per cents to decimals.
1. \(\frac{1}{4} \%\)
6. \(\frac{1}{2} \%\)
11. \(\frac{1}{0} \%\)
16. \(\frac{1}{7} \%\)
2. \(\frac{3}{4} \%\)
7. \(\frac{3}{5} \%\)
12. \(5 \%\)
17. \(\quad \frac{6}{7} \%\)
3. \(\frac{1}{5} \%\)
8. 零 \(\%\)
13. \(\frac{5}{8} \%\)
18. \(5 \%\)
4. \(\frac{4}{5} \%\)
9. \(\frac{1}{3} \%\)
14. \(\frac{2}{3} \%\)
29. 48
5. \(\frac{1}{8} \%\)
10. \(\frac{2}{r} \%\)
15. \(\frac{7}{8} \%\)
20. 2需 8

The problem of finding a fractional per cent of a number uses the same method as bofore. Namely, change the per cent to a decimal and multiply this by the number. Remember, put your decimal points on your tapes as you to i these problems. Example: Find \(k\) of 25 .

Solution: a) Changing \(\frac{1}{2} f_{i}^{i}\) to a decimal per cent gives. \(5 \%\)
b) In decimal form we then have \(.5 \%=.005\)
c) Multiplying:

d) Check this result and see if you agree. Answer Note that two zeros have to be written on the tape for . 005 .
4-4 E:ERCISES B: Find the following:
1. \(\frac{1}{2} \%\) of 100 (nearest tenths)
2. \(\frac{3}{4} \%\) of 400 (nearest unit)
3. \(\frac{1}{4}\) of 33 (nearest hundredth)
4. \(\frac{1}{5}\) 湯 of 25 (nearest huindrerith)
5. 六 \(\%\) of \(\$ 232.00\) (Give answer to nearest cent.)
6. \(1 \frac{1}{2} \%\) of 512 (nearest hundredth)
7. \(15 \%\) of 512 (nearest tenth)
3. \(115 \%\) of 512 (nearest tenth)
9. \(\frac{1}{3}\) (nearest cent)
10. \(\frac{4}{5} \%\) of .397 (sixth decimal place)
11. \(\frac{3}{4} \%\) of 920 (nearest hundredth)
12. 7.5\% of 920 (nearest unit)
13. \(75 \%\) of 920 (nearest unit)
14. \(62 \frac{1}{i z}\) if of 5280 (nee rest unit)
15. 135\% of 625 (nearest hundrentin)
16. \(5.25 \%\) of \(\$ 32.50\)
17. \(3 \frac{3}{2}\) of 17.70
18. \(103.5 \%\) of 17.70
19. \(\frac{1}{2}\) or \({ }^{-15263}\)
20. 5 of \(\$ 237.75\)

4-5 Per Cents witn Common Fractional Equivalents
Certain commonly used per cents are equivalent to common fractions. These fractions are sometimes more convenient to use in working out problems when a machine is not available.

Let us examine \(12 \frac{1}{2} \%\). In decimal form this would be .125. Also, if we take the fraction \(\frac{1}{8}\) and convert it to a decimal we find it ecuals .i25. It is clear then that since \(12 \frac{1}{2} \%=.125\) and \(\frac{1}{5}=.125\), then \(12 \frac{1}{2} \%=\frac{1}{8}\).
juppose we have the problen of finding \(12 \frac{1}{2} \%\) of 32 . We can now proceed in either one of two ways.

Example: Find 123 of 32 .
solution: (rlethor l)
\(T\)
a) \(123 \%=.125\)
b) sultiplyjng

4 \begin{tabular}{lll}
1 & 2 & 5 \\
3 & 2 & 2 \\
\hline
\end{tabular}
c) Therefore \(12.5 \%\) of 32 is 4 .
jolution: (Metriod 2)
a) \(12 \frac{12}{2} \%=\frac{1}{8}\)
b) Since \(\frac{1}{8} \times 32=\frac{32}{8}\), we have \(\frac{32}{8}=4\).
c) Therefore, again, l2k of 32 is 4 .

Notice that in each case, the result is the same.
Listed below are some of the most commonly used per cents that have convienient frictionai equivalents.
\(10 \%=\frac{1}{10}\)
\(30 \%=\frac{3}{10}\)
\(60_{i}^{c}=\frac{3}{5}\)
\(80 \%=\frac{4}{5}\)
\(12 \frac{1}{2} \%=\frac{1}{8}\)
\(33 \frac{1}{3} \%=\frac{1}{3}\)
\(62 \frac{1}{2 \%}=\frac{5}{8}\)
\(83 \frac{1}{3} \%=\frac{5}{6}\)
\(16 \frac{2}{3} \%=\frac{1}{6} \quad 37 \frac{1}{2} \%=\frac{3}{8}\)
\(66 \frac{2}{3} \%=\frac{2}{3} \quad 87 \frac{1}{2} \%=\frac{7}{8}\)
\(20 \%=\frac{1}{5}\)
\(40 \%=\frac{2}{5}\)
\(70 \%=\frac{7}{10}\)
\(90 \%=\frac{y}{10}\)
\(25 \%=\frac{1}{4}\)
\(50,0=\frac{1}{2}\)
\(75 \%=\frac{3}{4} \quad 100 \%=1\)

You may wish to check some of these results by using your machine to convert the fractions to decimals and then to per
cents. 4-5 E ERCISES: Find the following without the use of your machine by changing the per cents to the common fraction form ard then multiplying. Stow all your work.

Check your work: by doing the same examples in decimal form using your machine.
1. \(25 \%\) of 72
2. \(\% \% \% 350\)
3. 52 铞 0 ? ? ? 4


\(\therefore\) 표

Wo you fer it different result, in this pyamie when you do it using the machine? Gan fou explain the difference in answers?;
find the following wine whichever method you prefer.
3. 37 梼 \(0=52\)
- 2 am of lr
30. nat en of 37 ,

22. 23 \(\frac{1}{3} \%\) of 5 . (rise ansiver in nearest hundredth.)

4-6 Changing Fractions and Decimals to Fer Cents In order to change a decimal to a per cent, we simply reverie our process. To change a decimal to a per cent, move the decimal point two places to the right and write the per cent symbol.

Example 1: Change .57 to a per cent
jolution: \(. \quad 57=57 \%\)
Example 2: Change .325 to a per cent
solution: \(.325=32.5 \%\)
Example 3: Change . 07 to a per cent
solution:, \(07=7 \%\)
Example 4: Change . 9 to a per cent
scilusion: . \(0:=90 \%\)
Note: It is necessary i. 0 add a zero to the right in order to move the decimal \(z\) places to the right. 4-6 EX:RCISES A: Change the following decimals to per cents.
1. \(.65=\)
6. \(.005=\)
2. \(.02=\)
7. \(.05=\)
3. . \(125=\)
a. \(.5=\)
4. \(1.36=\)
9. \(5.0=\)
5. \(.87 \frac{1}{2}=\)
10. \(2.005=\)
'loo change a fraction to a per cent, we can first change the fraction to a decimal and then use the method of the presvious section. Recall that chancing a fraction to a decimal recuires dividing the numerator of the fraction by the denominator.
```

Here are some examples to illustrate this method:
Example 1: Change \frac{1}{8}}\mathrm{ to a per cent.
jolution: By dividing, l by {ै we obtain .125. Check
this result on your machine. woving t:.e
decimal point in .l2.5 two places to the
right and writing the per cent symbol
we then have 12.5%. Thus, \frac{1}{5}=12.5%.
Example 2: Change }\frac{2}{9}\mathrm{ to a per cent.
solution: Dividing 2 by }9\mathrm{ we obtain the
T repeating decimal .2?2. (See tape.)
200000 + .ioving the decimal point two mlaces to
222% % the right and rounding this to one decimal
2 T place we obtain 2.2.2;;

```
    4-6 E:EHCIS: B: Change the following fractions to per
    cents, rounding your answer where necessary to one decimal
place.
1. \(\frac{1}{10}=\)
6. \(\frac{7}{9}=\)
2. \(\frac{4}{5}=\)
3. \(\frac{1}{3}=\)
4. \(\frac{5}{4}=\)
5. \(\frac{5}{6}=\)
7. \(\frac{1}{5}=\)
8. \(\frac{1}{50}=\)
9. \(\frac{1}{500}=\)
10. \(1^{\frac{7}{9}}=\)

4-7 Finding what :er lent One Number Is of Another One method of comparing two numbers requires finding what per cent one number is of another. uxample l: 2 is what per cent of 5?
jolution: a) ivotice the word "of." Ihis indicates that 5, the number following "of", is to be the denominator of a fraction whose nunerator is 2. l'hus, we obtain \(\frac{2}{5}\).
o) Uhanging this too a decimal we have \(\frac{2}{5}=.40\)
c) Hut. \(20=40 \%\).
() Therefore, 2 is 4 ifi of 5 .

Example 2: That per cent of 2 is 12 ?
Note: 2 follows "of" and thorerose is the denominator. solution: a) \(\frac{12}{23}=01295\).
b) \(.12235=4 ? .2 .5 \%\)
c) Trus, \(42.85 \%\) of 27 is 12 .

To check your work, find \(42.85 \%\) of and see if it is 2.
4-7 EKERCIS:B: Find the following per cents. Lirry all divisions to four decimal places and round your final answers to 3 decimal placez.
1. \(\qquad\) \(\%\) of 60 is 30 ?
2. \(\qquad\) \% of 60 is ??
3. \(\qquad\) \(\because\) of 60 is .3 ?
4. \(\qquad\) \% of 60 is 300?
5. \(\square\)
6. \(\qquad\) \(\because\) of 8 is 60?
7.

\(\qquad\)
 So of RUU is 60?
8.

\(\qquad\)
 \(\%\) of \(\$ 29.14\) is \(\$ 3.12\) ?
9. what per cent of 2496 is 927 ?
10. What per cent of \(\$ 1.00\) is 336
11. 78 is what per cent of ..... 137?
12. 65 is what per cent of 245 ?
13. .6 is what per cent of ..... 72?
14. . 6 is what per cent of ..... \(720 ?\)
15. 3.6 is what per cent of 31.8 ?
4-8 Review Exercises
Completion: Fill in the blanks with the correct answer.
1. Per cent is another name for
\(\qquad\) .
2. To change a per cent to a decimal

\(\qquad\)
 the per cent symbol and move the decimal point __ places to the \(\qquad\) .
3. To find a given per cent of a number change the \(\qquad\) to a \(\qquad\) and \(\qquad\) by the number.
4. To find what per cent one number is of another, divide thefirst number by the number following
\(\qquad\) .
Change the following per cents to decimals:
5. 62\% ..... 10. 34
6. 137\% 11. 225\%\%
7. 妾\% 12. .003\%8. \(.6 \%\)13. 27.13\%
9. \(4.5 \%\)24. \(37 \frac{1}{6} \%\)
Find the following to two decimal places：
15． \(13 \%\) of 9 。
15． \(57 \%\) of 618。
17． \(91 \%\) of \(\$ 8.60\) 。
18．61．4\％of \(\$ 12.87\).
ic．2：．9\％0f 650
2． \(3 . \frac{1}{7} \%\) of 375 ．


23．！o\％of 5

250 2.52020



Find the torjoring to triroe cocimal placeso



32． \(24.6 .5 \%\) of \(\$ 18.75\) 。
33．101．1世 م ¢ \＄3．
\(340532.7 \%\) or 0450
35．\(\frac{1}{2} \%\) of 500。
36． \(08 \%\) of \(\$ 70.00\) 。
37． 0 29\％of \(\boldsymbol{m}_{4} 6\) 。
32 。 \(\frac{3}{4} \%\) of \(\$ 505023\) 。
39．． \(1 \%\) of 453.
40．． 3 of of \(\$ 2,000\) 。


Change tito follewing dacimala to porengess


 pheren

6in 9 Sis when poocent of lirs
67．（ct An \(\qquad\) \％ 0 \＆\(n\)

 \(\qquad\)
70．\＄spo is \(\qquad\)

75． 269 1ヶ \(\qquad\) for anco
72．\＄3．70 is \(\qquad\)花 of कloso75：
 \(\qquad\)
74～\＄ 3093 2\＆ \(\qquad\) \％of \(\$ 39.80 p\)
T50 \＄572 2 g \(\qquad\)原 or 6675
rerlorm tne lollowing operations as indicated:
Adn :
7:6. \(\quad 392\) 405 599 32
77. 6007.3
1215.35
1000.05
892.1
77. 60
7. \(5345+567+4421+.976 .23=\) \(\qquad\)
7\%. \(20.16+.44 .20+36.36+.35 .105=\) \(\qquad\)
jubtract:
80. 857
81. 8275
2997
82. \(\$ 69.56\)
\(-9 \hat{2}\)
297
83. 7,1ج9,362-5,297,239 = \(\qquad\)
814. \(14.32-12.666=\) \(\qquad\)
85. Subtract \$02 from y2l. \(\qquad\)
S6. From 4.635 subtract \(7.20 \%\). \(\qquad\)
ialultiply:
87. \(\begin{array}{r}372 \\ \times \quad 45 \\ \hline\end{array}\)
87. \(\begin{array}{r}46.25 \\ \times 2.05 \\ \hline\end{array}\)
89. \(269 \times 296=\) \(\qquad\)
90. \(\$ 72.29 \times 104=\) \(\qquad\)

Divide: Round off answers to the third decimal place
9.1.
\(4 7 \longdiv { 3 6 2 }\)
9.2 .
\[
8 . 2 \longdiv { 4 5 . 6 8 }
\]
83. \(162 \div 95=\)
944. \(.0215 \div 32.2=\)
9.5. \(\frac{129}{35}\) 96. \(\frac{3.625}{.4045}\)

OPTIOHAL: See if you can find the pattern and auppiy the misaing numbors.

\section*{Add Pattorn}
 2. \(28, .33, \cdot 38,1,1 / 2\)

\(4.13 .7,12.6,11.5, \ldots, 1\), 9

Add .03 5.6.3,


7. 68.57,62.63,68.69

8.3.4,3.3.3.2, \(\qquad\) : 9
9. 16.1,29.4,22.7, \(\qquad\)


Add . 17 10.7.6,7.77 \(\qquad\) 0 - 9 - 2
\[
\text { 11. } 8
\]
\(\qquad\) , 2.6 \(\qquad\)


Subt. . 02.12 . 5. 2, \(\qquad\)
13. \(16, .32,46\) \(\qquad\) ,
u. 43.7.43.0.42.3. \(\qquad\) 9 15. 210 . 94. \(\qquad\)

16.92.8.92.5.92.2 \(\qquad\) 9 9 ? 9
\[
77-b
\]

\title{
a text-workbook BOOK 2
}

\author{
1969 \\ revised
}

\section*{\(43!\because\), \(\because \because \because \because: 口\)}

fou:
 ..... 3
 ..... -:
 ..... \(\cdots\)
 ..... 0
 ..... \(\therefore ?\)
ᄃ...t : ..... 3
 ..... \(\because r\)
 ..... \(-16\)
 ..... \(\because\)
 ..... \(?\)
 ..... \(9:\)
 ..... \%
\(\therefore-!\quad\) :  ..... (9).
 ..... 3
Ti.isco ber vers o vernory ..... \(\because\)
 ..... \(i 7\)
 ..... \(9^{\circ}:\)
\(\because \quad\) ソ \(\because \because\)
\(\therefore \therefore\) HAM, sora: ..... ):
Б-l.
1.i.vje ..... \(1^{\prime \prime}:\)
 ? \(\because \therefore-\mathrm{F}\) y i.s.riston ..... ir:
 ..... l. 1
 ..... 20s
 ..... \(1, n^{n}\)
\(\because 3\) 5noi: ..... 0 os
Chapter VI . Dujire and ievinc
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Chopter V

COMBINED OPERATIONS

ERIC

5-1 Summary of the Course
So far, you have reviewed your basic arithmetic using a machine calculator. You have used whole numbers, decimal numbers. fractions, and per cents. The four basic operations that you have used have been addition, subtraction, multiplication, and division. Now you are ready to combine these operations.

Later in the course you will be doing word problems that require combined operations. You are now going to practice combined operations to prepare for these word problems.

5-2 Adding and Subtracting in the Same Problem
Have you ever entered the wrong number in the machine when you are adding a column of numbers? You can correct your mistake without having to repeat the whole problem.

Example:
\(\dot{\$} 67.55\) Suppose you have printed 6755 correctly, but you enterc
43.98 4389 instead of 4398. You changed the order of the 8.
21.49 Instead of starting from the beginning, you can subtra
20.01 the wrong entry 4399 to cancel out your mistake. Ther add the correct entry \(439 \%\).

Your tape will read like this:


Try this problem. Suppose you did this. To correct your mistake.




5-3 A Cancelling a Wrong Entry
EXERCISES: Enter the numbers given to find the correct total. Then to the problem by entering the wrong number and correcting the error. Check totals.
1. \(\$ 34.25\)
6.20 wrong entry
\(62.56 \quad \$ 2.65\).
2. \(\$ 347.01\)
30.37
298.25 wrong entry
19.64
1.18
3. \$19.99
3.05
50.60
wrong entry
\(39.58 \quad \$ 39.52\)
28.32
98.30
4. \(\$ 31.09\)
5. \$405. \(\$ 1\)
6. 3.001
76.40
45.19 \(.0097 \quad .097\)
341.98
2250.89
93.45 wrong entry
43.01 wrong entry 40.3
\(93.45 \quad \$ 93.54\) \(\$ 43.10\) 500.5
201.00
10.03 .08
63.95
3.007
7. 8702
8. 9450
9. 6.233

7802
1.395

2708
270s wrong entry
2708 add 2708 3 times

4072 \(24.9 \quad \begin{gathered}\text { wrong en } \\ .249\end{gathered}\)

5496
5946 7950
4.978
85.36

7950
75907950


5-3 B EXERCISES:
1. Comid this flowchart be used to solve an addition problem? How?
2. Could this flowchart be used to solve a subtraction problem?

How?
3.- Make a flowohart for addition and subtraction of whole numbers only。
\[
79-a
\]

\section*{Additional Practice Problems:}
1) \begin{tabular}{r}
584.21 \\
-11.61 \\
5006.76 \\
319.95 \\
-3.50 \\
-816.00 \\
-59.86 \\
\hline
\end{tabular}
\(\begin{array}{r}39.76 \\ -58.26 \\ 6.6 \\ -11.31 \\ -9.46 \\ \hline\end{array}\)
j) 105.98 21.333 \(-1!.09\) 98.99 \(-8.95\)
516.0046
:
\[
\begin{aligned}
& .4976 \\
& .24! \\
& -.5 \\
& .666 \\
& -.125 \\
& .20 \\
& \hline
\end{aligned}
\]
8)
\begin{tabular}{l}
.0057 \\
.0216 \\
-.05 \\
-.034 \\
. .03 \\
-.0005 \\
\hline
\end{tabular}
7) \(\quad 57.5\)
97.21
-7.6
15.02
\(-9.27\)
6) 58.74
-2.9
-7.965
\(-77.7\)
39.250
5) \begin{tabular}{r}
6.931 \\
-.062 .1 \\
-3.63 \\
.0004 \\
-9.014 \\
\hline
\end{tabular}
\begin{tabular}{l}
\(9)\) \\
\(\quad 6.35\) \\
\(-\quad .386\) \\
\hline
\end{tabular}
10) -8.815
14) -9.84
-17.2
49.62
99
14) -9.8 2.-
11) \begin{tabular}{l}
98.673 \\
-8.9673 \\
\hline
\end{tabular}
15) 123.6 \begin{tabular}{c}
-19.26 \\
-7.41 \\
-8.9 \\
7.321 \\
-18.4 \\
\hline
\end{tabular}
15) 123.6
12) \begin{tabular}{l}
12568 \\
-9837.7 \\
\hline
\end{tabular}
\[
\text { 13) } \begin{aligned}
& 12.3 \\
& -5.94 \\
& -2.3 \\
& 125 \\
& -76 \\
& \hline
\end{aligned}
\]
都

5-4 Deposits and Withdrawals in tae jame Problem
The telier at a bank must add and subtract. in the same problem. When you deposit money in the bank, he adds it to your account. When you write a check, the amount of the check is subtracted from your account.
¿̇хап.ple:
\begin{tabular}{ll}
\(\$ 116.90\) + balance in your account & (Add Key) \\
78.32 + deposit & (Add Key) \\
24.68 - withdrawal & (Subtraction Key) \\
16.05 - withdrawal & (Subtraction Key) \\
45.00 - withdrawal & (Jubtraction Key) \\
28.14 + deposit & (Add hey) \\
\hline\(\$ 1.37 .53\) + new balance & (Total)
\end{tabular}

5-4 EXERCISES: Find the totals. Be sure that you prese the add key to put in numbers without a sign before them. Use the red subtraction key when the number has a minus sign before it. Be alert.
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline 1. & 602 . & 655 & 3. & 8700 & 4. & \$21.43 & & \$472.00 \\
\hline & -50 & 432 & & 3200 & & - 9.70 & & 397.00 \\
\hline & 90 & -791 & & -4800 & & -18.75 & & . 95 \\
\hline & -40 & \(\underline{-106}\) & & 9400 & & 30.05 & & -51.84 \\
\hline 6. & 432,000 & 7. & 321.10 & \$. 702 & 9. & 349,000 & 10. & 21.75 \\
\hline & -670,000 & & -97.05 & 270\% & & 437,0u0 & & -30.28 \\
\hline & 1,200,000 & & 132.90 & -7302 & & 241,0,0 & & 25.98 \\
\hline & 940,000 & & 49.07 & -5496 & & -23,000 & & 29.98 \\
\hline & & & & 1964 & & 197,000 & & -36.51 \\
\hline & & & & & & -542,000 & & 14.34 \\
\hline
\end{tabular}

5-5 iddition and Jubtraction in Balancing a Checking Account Find the balance in this checking account: add the balance at the beginning, add deposjits, and subtract checks in the order given.
\[
\text { Balance at the beginning ........................... . } \$ 75.44
\]

Date
 Deposits

Checks

Oct. 5 \$220.00
Oct. 7
\(\$ 5.00\)
Oct. 9
12.43

Oct. 10 2.47

Oct. \(11 \quad \$ 65.20\)
Oct. 13
67.50

Oct. \(15 \quad 9.92\)
Oct. 16
15.07

Oct. \(17 \quad \$ 50.00\)
Oct. 20
24.00

Oct. 24
15.00

Oct. 29
1.47

New Balance
The numbers added, \(\$ 75.44\) (balance at the beginning,) deposits \(\$ 120, \$ 65.20\) and \(\$ 50\) should have + sign after each of then on the tape. The amounts of the chect:s should have a minus (-) sign after each of them. Check your tape. Put the decimal point in each number on your tape. Be sure that your decimal points are in a straight line. Add zeros in the cents column when there are no cents given. Write your final balance in the space provided in this workbook.

To check this problem:
a) Add the balance at the beginning, and the three deposits \(\$ 120.00, \$ 65.20\), and \(\$ 50.00\).
b) Then add together the amounts of the checks.
c) Subtract the total of the checks from the total of the deposits with the balance at the beginning.
Your answer should be the same as the New Balance that you found on Oct. 2\%. The balance should be \(\$ 157.78\) for both methods.

5-5 EXERCISES B: Find the bazance in this checking account.
Date Deposits Withdrawals (Checks)
Nov. 1 Balance at the beginning \(\$ 34.25\)
Nov. 3
\(\$ 5.00\)
Nov. 5
12.49

Nov. 6
Nov. 8
\(\$ 145.27\)
Nov. 10
72.00

Nov. 14
43.43

Nov. \(15 \quad 75.75\)
Nov. 16
3.40

Nov. 18
25.50

Nov. 20
5.55

Final Balance
Put numbers into the machine in the order given according to the dates. Enter the balance at the beginning and the deposits into the machine using the add key. Enter checks into the machine using the subtraction key. Show the total in the space provided for the final balance. Put the decimal point in each number on your tape.

Check this problen by arding tofether the balance at the beginning and the deposits. Then ad? :ogether all of the checks. Subtract the total anount of the clocks from the total deposits and the balance at tho beginninc. lirss jour final balance check?

5-5 C Addition and subtraction Usinf, the bub-Total key
You may want to know the amount of money in your account after each deposit and afthr fach withdrawal. This is called the sub-tot.al. The machine winl frint the sub-total after each entry, if you press the miontotal ley ( \(\mathrm{Sin}^{\prime}\) ); yet, it will keep the sum in the machine and continue to add or subtract the amounts that you enter until you press the total key.

Example:
Baiance at beginning
Deposit \(\$ 65.00\)
Check 635.15
Check 36.35
Deposit \(\$ 30.00\)

112.5 .5

53 142.5 .5

11285 s
Final 3alance \(142.85 \quad 142859\)
14285 T

Solution:
a) Set 92.38 , press add key; set 6500, press add key, press sub-total key … answer on tape j.s 15738 is
b) Set \(3: 15\), press the suttraction key; press suototal key, answer is 11923 S
c) Set 63今, press the suttraction key; press sub-total key; sub-total is 11285 ,
d) Set 3000 , press add key, press subtotal key; answer is \(142 \$ 5 \mathrm{~S}\)
e) Press the total key after the final entry in the problem. This shows you the total and clears the machine.

5-5 C EXERCIS:SS: Find the sub-totals after each entry:
CHECKS DEPOSITS BALANCE (SubTotals)
\$ 32.47
12.11
23.08
\(\$ 175.46\)
102.41
24.32
\(\$ 3.62\)
62.50
5.75
131.08

Final Balance

\section*{5-6 Addition and Division in \(\because\) india .verites}

When we find averages, we combine addition and division. Example: If your grades last week were \(32,73,95,60\), and 100, what was your average? To find the average you would add together your daily grades and divide the total by the number of grades.
\(82+73+45+60+100=410 ; \quad 410 \div 5=82\)
Your average for the week was \$2.

5-6 EXERCISES: Find the averages of the following: Round
off your answers to the nearest whole number.
1. \(63,75,73,6\) ㄱ, 70
2. \(68,66,72,65,73,73,71,73\)
3. 152, \(166,140,147,130,145,150,159\)
4. 21, 32, 25, 21, 27, 38, 14, 17
5. \(6,4,5,7,8,9,8,7,3,5,7,6,5,8\) \(\qquad\)
6. \(\$ 212,3315, \$ 146, \$ 208, \$ 104\)
7. \(3,7,5,8,10,15,5,7,16,4,6,13\)

Total Áverage
— — —
\(\qquad\)
\(\qquad\)
8. 111, 115, 116, 108, 144, 185, 98, 105 \(\qquad\)

\#9. \(28 \phi, 27 \phi, 33 \phi, 43 \phi, 47 \phi, 51 \phi, 17 \phi, 28 \phi\) \(\qquad\)
\#\#10. 59.5, 60.0, 60.5, 61.0, 59.5, 60.6, 59.8 \(\qquad\)
**11. 33.5, 31.5, 37.0, 37.0, 35.5, 36.0
**12. 5.0, 5.1, 5.0, 5.2, 5.1, 4.9, 5.0, 5.3
\#\#\#13. \(4.20 \%, 4.30 \%, 4.25 \%, 4.32 \%, 4.41 \%, 4.26 \%\) \(\qquad\)
**14. 439.9, 439.9, 440.0, 440.3, 440.1, 440.2 \(\qquad\)
15. 1.2836, 1.2798, 1.2853, 1.2819, 1. 2805

Find average to 4 decimal places.
* Find average to nearest cent.
** Find average to nearest tenth. *** Find average to nearest hundredth per cent

5-7 Addition and Division in Pindine ter Vent of 'roval
In Korvettes, the owners are often interested to know the amount of sales in each of the various departments, and what per cent each department contributes toward the total sales. Example:

Department

a) Add the sales to find the total seles.
b) Divide the sales for each department separatioly by the total sales to find the per cent of the total.

For example in department \(A\), divide 9300 by the total, 31,269. Find the per cent t . five decimal nlaces by ading 5 zeros to the divisor 9300. Then round off to the nearest hundredth per cent (four decimal places).

Since all of these per cents added together should equal 100\% we can obtain greater accuracy if we carry out the nor cents to hundredths of a per cent.


5－8 Multiplication and Addition
In Connecticut a sales tax of \(3 \% \%\) is added to the price of many items that you buy．For example，if you buy a pair of slacks costing \＄4．50，you are charged \(3 \frac{1}{3} \%\) sales tã if you are 26 year 3 of age or older．
a）To find the amount．of tax，since \(450 \times<\)

b）Round offe the tax to the gearest，cent（A．16）－
©）Then and the tex to the oost to find the
 Sーき E？EPGTEES：
Const of Iter jésoles ？e：Total Coet．

2．B：00．OC
2．\(\$ 2 \% .00\)
3． \(\mathfrak{F}\) 35．シ5
4．\(\$ 64.50\)
5．\(\$ 1.1+3\)
6．：

\(\qquad\)


7．\(\$ 3.70 .50\)
r． 417.95
Q．\(\$ 40.90\)



10．\(\$ 35.60\)


11．\(\$ 29\) ． 95 \(\qquad\) ．．
\(\qquad\)

12．：20．09


13．\＄4．4．9 \(\qquad\)
\(\qquad\)

14．\＄ 5.57
15．\(\$ 19.83\)

S-Q Multiplication Follower by iddition
Exampla:
24 bath towels at \(\$ 2.39\) each \(=357.36\)
15 fince cloths nt it . 69 each \(=410.35\)
20 hand towel.s at \(\$ 1.19\) each \(=\$ 23.80\)
To find the total cose of the above items:

b) \(15 \times\) 客, \(6 ?\) to get \(\$ 10.35\).
c) \(20 \times 31.19\) to get \(\$ 23 n 80\)

Each of these products is called an extension.
d) Add the three extensions to find the amount of the t.otal bill 391.51.

5-9 EXLRCISES: Multiply to find the extensions and add the extensions to find the tetais. UNIT PRTCE means the price of one item (or unit).

QUANTITY
1.

35
1.5

57

QUANTTTY
2. 112

62
83

UNTT PRIOE
\(\$ 2.25\)
\$3.15
34.45

Totel
UNIT PRICE
*. 75
\(\$ 1.75\)
33.05

Total

EXTENSION
3 \(\qquad\)
定
\(\qquad\)
\(\$\)
EXTENSION
\$
\(\qquad\)
\$
3
\begin{tabular}{|c|c|c|c|}
\hline \multicolumn{2}{|r|}{QUANTITY} & UNTT PRICE & EXTENSION \\
\hline \multirow[t]{7}{*}{3.} & 175 & \＄12． 50 & \＄ \\
\hline & 43 & \＄ 8.25 & \＄ \\
\hline & 275 & \＄ 9.85 & \＄ \\
\hline & 43 & \＄13．05 & 家 \\
\hline & 360 & 316.65 & \(\underline{\$}\) \\
\hline & & Total & 9 \\
\hline & HOUR3 & HOUREY PAY & EXTENSION \\
\hline \multirow[t]{5}{*}{4.} & 40 & 82.75 & \＄ \\
\hline & 1.0 & \＄3．50 & S \\
\hline & 6 & \＄2．60 & \＄ \\
\hline & & Total & \(\$\) \\
\hline & HOURS & houriy pay & EXIENSION \\
\hline \multirow[t]{6}{*}{5.} & 150 & 81.1 .25 & 家 \\
\hline & 38 & \＄ 7.75 & \＄ \\
\hline & 215 & \＄ 9.60 & 家 \\
\hline & 53 & \＄15．50 & S \\
\hline & 325 & \＄ 9.10 & S \\
\hline & & To气al & \＄ \\
\hline \multirow{5}{*}{6.} & NO．LBS． & COST PER LB． & EXTENSION \\
\hline & 83 & \＄3．75 & \(\underline{\$}\) \\
\hline & 36 & \＄7．70 & S \\
\hline & 65 & \＄ 2.85 & \＄ \\
\hline & & Total & \＄ \\
\hline
\end{tabular}

\section*{(OPTIONAL)}

5-9 B Multiplication Followed by Addition Using the Automatic Sub-Total Key

You can find the total of the products of a series of multiplications in the problems in 5-9 without finding the individual extensions. Shift the automatic sub-total lever down at the lower right corner of the machine,

Example:
24 bath towels at \(\$ 2.39\) each
15 face cloths at \(\$ .69\) each
20 hand towels at \(\$ 1.19\) each
Solution:
a) Set 24 and press the times key: set 239 and press the multiplication equals key: the product \(573 \in\) is printed as a subtotal.
b) Set 15 , press times key; then 69 and multiplication equals key: the number printed on your tape is 677d, the accumulation of the first two products.
c) Then set 20 , press times key, then 119 and the multiplication equals key; the number printed 9151 is the accumulation of the 3 products, which is the total in this problem.
5-9 B EXERCISeS: Ose the automatic sub-total key: find accumulative totals:
\begin{tabular}{ccccc} 
1. Hours & Hourly Pay & 2. No. Lbs. & Cost per lb. \\
40 & \(\$ 3.60\) & 78 & \(\$ .31\) \\
9 & 5.40 & & 64 & \(\$ .39\) \\
8 & 7.20 & & 136 & \(\$ .23\) \\
& Total & & & Total
\end{tabular}

5-10 rdultiplication and Subtraction (Discount)
When you do discount problems, you combine the operations multiplication and subtraction.
a) 'To find the discount, you multiply the rate of discount times the list price.
b) To find the net proceeds, you subtract the discount from the list price.

Example: What are the net proceeds on an item that has a list price of \(\$ 9 \$ .75\) and a rate of discount of \(5 \%\) ?

List price \(\$ 9 \$ .75\)
\(2375 \times<\) 4.93475

Discount ( \(5 \%\) of \(\$ 98.75\) ) \(=\$ 4.94\)
Net Proceeds \$93. R1
Enter 9875 into the keyboard and press the times key. Put 5 into the machine and press the multiplication key.

Be sure to place your decimal points correctly. \(5 \%\) is written .05: since your machine doesn't print a zero before a non-digit number, you must write the zero on your tape with a pencil and locate the decimal point in front of the zero. With your pencil start from the decimal point in the second factor (.05) and draw a vertical line down to the product. Then move to the left two decimal places in the product (because there are two decimal places in the first factor 98.75) Place the decimal point between the 4 and the 9 in the answer 4.9375. Round off the discount to the nearest cent. (4.94)

To find the net proceeds, subtract the discount of \(\$ 4.94\) from the list price of \(\$ 98.75\). The net proceeds are \(\$ 93.81\).

5－10 EXERCTSis：Find the discount and net proceads．Round off the discount to the nearest cent．
\begin{tabular}{|c|c|c|c|}
\hline LIST PRICE & RATE OF DISCOUNT & DISCOUNT & NET PROCEEDS \\
\hline 1．\(\$ 98.00\) & \(10 \%\) & & \\
\hline 2．\(\$ 10.00\) & \(8 \%\) & & \\
\hline 3．\(\$ 3.60\) & 12\％ & & \\
\hline 4．\(\$ 45.00\) & \(20 \%\) & & \\
\hline 5．\＄12．00 & \(18 \%\) & & \\
\hline 6．\＄ 27.00 & \(25 \%\) & & \\
\hline 7．\(\$ 500.00\) & 15\％ & & \\
\hline 8．\＄ 25.75 & 22⿺⿻⿻一㇂㇒丶𠃌2） & & \\
\hline 9．\＄ 40.50 & 5\％ & & \\
\hline 10．\＄ 180.00 & \[
6 \frac{1}{6 \%}
\] & & \\
\hline 1．\(\$ 36.55\) & \(10 \%\) & & \\
\hline 12．\＄115．94 & 23\％ & & \\
\hline 13．\＄ 83.90 & 34 & & \\
\hline 14．\＄ 245.75 & 72\％ & & \\
\hline 15．\＄ 32.90 & 9\％ & & \\
\hline 16．\＄ 250.45 & \(11 \%\) & & \\
\hline 17．\＄ 340.28 & \(19 \%\) & & \\
\hline 18．\＄\＄8．35 & \(30 \%\) & & \\
\hline 19．\(\$ 1134.00\) & \(6 \%\) & & \\
\hline 20．\(\$ 6100.00\) & \(4 \frac{1}{2} \%\) & & \\
\hline
\end{tabular}

5－11 Mnltiplisation and Suhtronoson ！Bank Discount！
Whe：yrul bomen maney from a bable or a finance company，
 Jontoc in adranoe is ealied bank ijecount．The amount of mony yont yod by the borrower is onlod zet procerds．


mant is the ant morococia？
s－numina：





 honl．digeount．ran rere ceat．

\begin{tabular}{|c|c|c|c|c|c|}
\hline 1. & \(¢\) & 309 & \(\%\) & － & mo \\
\hline ？． & \(s\) & 0.50 & \(3 \%\) & －－－－－－ & －－．－－ \\
\hline 3. & 9 & 125 & \(\therefore \%\) & －－．．．．．．－ & \(\cdots\) \\
\hline \(1:\). & 8 & 220 & \(36 \%\) & －－＞－．．．－ & \(\cdots\) \\
\hline j． & 8 & 1000 & 9 & ．－a．．．．．．．．－．．． & －．．．．．．．．． \\
\hline 6. & \＄ & 53.0 & ．i）\(\%\) & & －－－． \\
\hline 7. & \(\%\) & 748 & ？ 0 & － & －－－ \\
\hline 2. & T & 579 & \(6 \%\) & ．．．．．．．．．．．．．．．．． & \(\cdots\) \\
\hline 9. & \＄ & tryon & \(4{ }^{4} \%\) & －．a．．．．．．．－．－ & \\
\hline 10. & & \％ & ここち\％ & － & － \\
\hline
\end{tabular}

5-12 Subtraction and Hivision (ier Uent of increase)
Finding the amount of increase and per cont of increase. Example: If Mott's super market soid \(\$ 1875\) worth of produce on Friday and \(\$ 2310\) worth of produce on Saturday, what was the amouint of increase? Find the per cent of increase,
\(\$ 2310\) jaturday's sales \(\quad \frac{435.000}{375}=.232=23 \%\)

世 435 increase
To find the amount of increase subtract the smaller number Ersm the larger one \$23i. ...
 ner onnt af increass. Acd thren zeros io the numerator of the Fiaction, so whet you canfini the quotipat to three decimal nienec. Then iruiad off the amstor in the nearest whole por exn*.

5-i2 EXCRCISEG:
\begin{tabular}{|c|c|c|c|c|c|}
\hline & & LESG-NOV. & SALES.DEC. & IfCREAEB & \% Or Incriase \\
\hline is. & \$ & 1.890 & 36565 & & \\
\hline 2. & \$ & 1.23\% & \$1225 & & \\
\hline 3. & \$ & E5? & 3002 & & \\
\hline b. & * & \(55!\) & \$ 796 & & \\
\hline 5. & \$ & 23.55 & \(\$ 1499\) & & \\
\hline 5. & 为 & 750 & 50.060 & & \\
\hline 7. & \$ & 3.355 & 23500 & & \\
\hline त. & 4 & \(\bigcirc 900\) & Qi30350 & & \\
\hline 9. & \(\$\) & 7065 & 5580 & & \\
\hline 10. & \$ & 10665 & 811,490 & & \\
\hline 12. & * & 39.95 & 95625 & & \\
\hline 12. & & 21.656 & \(\therefore \geq 3,400\) & & \\
\hline
\end{tabular}
12. \(\$ 21,666\)
\(\therefore \because ?, 460\)

5-13 Subtraction and Division (Per Cent of Decrease)
Find the amount of decrease and per cent of decrease.
Example: If your family spent, 中35 for groceries last week and \(\$ 26.95\) this week, what, was the amount of decrease? Also, what was the mon min of decrease?


To find the amount of decrease, subtract the smaller numbbet from the larger nee. \(\$ 35.00-\$ 26.95=\$ 8.05\)

Divide the decrease thy the previous amount \$35. to find the per cent of decrease. Round off the answer to the nearest whole per cent.

5-13 EXERCISES:
EXPENSES - Dec. EXPENSES - Jan. DECREASE \% of DECREASE
1. \(\$ 88.35\)
2. \(\$ 42.40\)
3. \(\$ 9.00\)
4. \(\$ 10.22\)
5. \(\$ 63.00\)
6. \(\$ 6.45\)
7. \(\$ 14.98\)
8. \$ 1.78
9. \(\$ 46.60\)
10. \$ 7.85
11. \$ 11.49
12. \(\$ 13.28\)
13. \(\$ 14.87\)
14. \$ 88.80
15. \(\$ 112.05\)
\(\$ 71.25\)
\(\$ 36.00\)
\$ 6.65
\(\$ 9.15\)
\(\$ 52.05\)
\(\$ 5.25\)
\(\$ 12.20\)
क 1.40
\(\$ 22.12\)
\$ 5.25
\$ 9.85
\(\$ 12.66\)
\(\$ 12.15\)
\(\$ 65.50\)
124

5-14 Multi-Factor Multiplication
(Soe flowohart at bottom of page 98 )
How would you multiply \(15 \times 12 \times 8\) ? Did you multiply
\(15 \times 12\) to get 180; then multiply \(180 \times 5\) to get the final product 1440? We can simplify tinis problem by using the "TR" key in the "memory" part of the aschine. Enter 15 in the key board, then punch the times key. Enter 12, then punch the "TR" key, and a total will appear on the tape. (TR means Total Retained). \(\begin{aligned} & 15 \times< \\ & 12= \\ & 120\end{aligned}\) The total 180 will be kept. in the memory oft the \(160 \times T\) machine. Thon fut in \(\{\) and press the multiplication \(8=\) equals key to get the final prociuct 1.440 .

Let's iry another problem: \(2 \times 3 \times 5 \times 8\)
a) Punch 2 and the \(x\) key.
b) Punch 3 and the "TR" key. This product will print on the tape \(6 \times 1\). \(6 \times T\)
c) When you punch 5 and the "TR" key again, you are really multiplying \(6 \times 5\), and your product will read \(30 \times \mathrm{T}\). This answer is also held in \(240^{8} \bar{T}\) the memory.
d) Now punch \(\$\) and the multiplication equals key; now you are multiplying \(30 x\) s and the final product 240 T will appear on your tape.
Notice that when you press the "TR" key, the product shows on the tape with an "X" bofore the "T" for Total. The equals key gives you the final total and does not keop the partial product in the memory.

You can multiply together as many factors as you like usinf the "TR" key between each factor. Use the multiplication equals key only after the last factor to find the final product.

5-14 EXERCISES: Find the products using the "TR" key. Check the location of the decimal point in each answer. 1. \(75 \times 29 \times 10=\) \(\qquad\)
2. \(56 \times 4 \times 32=\) \(\qquad\)
3. \(45 \times 15 \times 7=\) \(\qquad\)
4. \(25 \times 35 \times 45=\) \(\qquad\)
5. \(11 \times 22 \times 33=\) \(\qquad\)
6. \(63 \times 9 \times 46=\) \(\qquad\)
7. \(9 \times 12 \times 24=\) \(\qquad\)
8. \(37 \times 35 \times 75=\) \(\qquad\)
9. \(19 \times 315 \times 7\) ó5 \(=\) \(\qquad\)
10. \(376 \times 23 \times 412=\) \(\qquad\)
11. \(.06 \times 45 \times 2.5=\) \(\qquad\)
12. \(.04 \times \$ 50 \times 3.75=\) \(\qquad\)
13. \(.035 \times 70 \times 1.25=\) \(\qquad\)
14. \(3.1416 \times 10 \times 10=\) \(\qquad\)
15. \(3.5 \times 4 \times 3.75=\) \(\qquad\)
16. \(8.8 \times 3.5 \times 4.2=\) \(\qquad\)
17. \(2.6 \times 1.9 \times .75=\) \(\qquad\)
18. \(3.25 \times 2.3 \times 1.82=\) \(\qquad\)
19. \(33 \times 14 \times 9 \times 7.5=\) \(\qquad\)
20. \(48 \times 20 \times 5.5 \times 8.4=\) \(\qquad\)
FLOWCHART FOR MULTI-FACTOR MULTIPLICATION


\section*{5-15 Automatic Jquaring}

To squaref a number, you multiply a number by itself. \((12)^{2}\) which is read "twelve squared" means \(12 \times 12\). You can square a number on the machine without resetting the factor, by using the repeat lever at the lower left atde of the keyboard above the plus bar.

Example: \(12^{2}\)
a) Press 12 on the keyboard.
b) Shift the repeat lever to the left.
c) Press the times ley.
d) Press the multiplica'ion equals key.

Mntice thet the revea:; lever noves to the right (off positionl as soon as the total is obtained.

5-15 EXERCISES: Conplete the An?lowing uable.
\(\therefore j^{2}-i x 1=-2\).
2. \(2^{2}=2 \because\) ? \(=\) \(\qquad\)
11. \(14^{2}:=\) \(\qquad\) \(\xrightarrow{7 n}\)
25 \(15^{2}=\) \(\qquad\) \(=\) \(\qquad\)
?. \(3^{?}=3 x ?=\) \(\qquad\)
16. \(26^{\hat{n}}=\) \(\qquad\) \(=\) \(\qquad\)
4. \(4^{?}\) ? \(=\) \(\qquad\) " \(\qquad\)
5. \(5^{2}=\) \(\qquad\) =- \(\qquad\)
17. \(: 27^{2}=\) \(\qquad\) \(=\)
?.E. \(\quad 10^{2}=\) \(\qquad\) \(=\)
6. \(6^{2}=\ldots \ldots\)
iン. \(19^{2}=\) \(\qquad\) \(=\) \(\qquad\)
7. \(7^{2}=\) \(\qquad\) \(=\) \(\qquad\)
\&. \(g^{2}=\) \(\qquad\) \(:-\)
9. \(9^{2}=\) \(\qquad\) \(=\) \(\qquad\)
10. \(10^{2}=\) \(\qquad\) \(=\) \(\qquad\)
20. \(20^{2}=\) \(\qquad\)
\(\qquad\)
2., \(21^{2}=\) \(\qquad\) \(=\) \(\qquad\)
22. \(22^{2}=\) \(\qquad\)
\(\qquad\)
23. \(23^{2}=\) \(\qquad\) \(=\)
11. \(11^{\text {? }}=\) \(\qquad\) =- \(\qquad\)
12. \(12^{2}=\) \(\qquad\) \(=\) \(\qquad\)
3.3. \(13^{2}=\) \(\qquad\) \(=\) \(\qquad\)
\(24 . \quad 24^{2}=\) \(\qquad\) \(=\) \(\qquad\)
25. \(2.5^{2}=\) \(\qquad\) \(=\)
26. Mako a flow chaxt for qutomatic squaringo

5-16 To Cube A Number
\(12^{3}\) (twelve cubed) means \(12 \times 12 \times 12\). since we have three factors, we can use the "TR" key.

Example: \(12^{3}=12 \times 12 \times 12\)
a) Enter 12, then press the times key.
b) Enter 12 again, press "TR" key.
c) inter 12 again, press multiplication equals key.
the answer is 1723.
5-1.6 ExEROEBE: Complete the following chart:


\section*{5-17 Capacity of the Hachine Lalculator}

You have jeon gerting some very large numbers in your answers. In Chapter I, p. 13 prob. 32, you learned that you can enter 12 digit numbers in the machine, and you can print a 13 digit number when you add. when you multiply two factors together: the machine wili print ail of the digits in your





Exacule \(i\) :




Sintin- \(2^{39}\) on the kephoand, punch \(x\) key, enter 2 , punch :ar" key, enter 2 agrin, purnch "Tri key agojn. Continuo sentting ? , bher "ire" key untiji you have entered "?" into the man chine so tineen It. isn't reaply necessary to count unisil you have entered 39 iwo's. In the column indicator window above the keybeasd, you wili noritre a number one and one red dot.
 multirly \(2 \times 2 \times 2 \times 2=36\) : there \(i n=0\) " \(2 \times\) and two rod dots. To multiply \(2^{\bar{i}}\) there will be a "three" and three rod dotis.
 rad, ? with boles, ant one more soliti ret! e at \(2^{30} \Rightarrow\) 1,073:71.2, 824 you will aotice that there is a "0" with 1.0 dota in the minnow and at \(?^{3 / 4}\) thern wi.j. he a "!." with eleven tots.

When you press the "i?" key after the 3sth two, there will be a. "2." and 12 dots in the window. When you press the "Tin" after the \(39 t h\) two, the machine will not perforin the oferation, because the factor held in the machino was \(549,755,813\), 848 . jince the first digit of this number is 5 , the mechine wilu not print a 13 rigit answer. Do na: force the "Tik" ley if it does not, go down easily. when the "Yr" : gy dors not gim an answer, press the total key to clear the machine. 5..7? FYEPCTBS: Find the value of sach of the following:


5-1* WhJitiplation of Three or Hore Foctors Fnllowed by Uivision
lise the "IRP key when you multiply the three or more factors. Then insert the procuct in the key bcard. Fut the divisor in the machine and press the divisjon equals key.

Example:
\[
\frac{12 \times 78 \times 15}{144}=97 \mathrm{R} 72
\]
solition:
a) Set 12 on the keyboard, press times key.
b) Set 78 , press the "rR" key. \(\quad 938 \times\)
o) Sot 15 , press miliplication equals key.
d) set the product 14040 in the machine, \(14045=\) prese "l" bar.
e) Put in the divisor, 144 , and press the division eouals key.
The machine will print the answer 97 K 72.
\begin{tabular}{|c|}
\hline 14040 \\
\hline 14040 \\
\hline \(\therefore 44\) \\
\hline 97 \\
\hline 72 \\
\hline
\end{tabular}

5-18 EXERCISES: Show the answers with remainders. Place decimal points carefully.
1. \(\frac{72 \times 85 \times 21}{30}=\) 6. \(\frac{6.5 \times 3.75 \times 9.25}{9}=\) \(\qquad\)
2. \(\frac{35 \times 48 \times 12}{152}=\ldots 7 . \frac{9.97 \times 10.02 \times .7854}{27}=\) \(\qquad\)
3. \(\frac{50 \times 4.5 \times 9}{1414}=\frac{3.1416 \times 10 \times 10}{9}=\) \(\qquad\)
4. \(\frac{16 \times 30 \times 8}{27}=\square\)
9. \(\frac{22 \times 6 \times 5 \times 5}{7}\) \(\qquad\)
5. \(\frac{22.5 \times 41 \times 8.5}{7.5}=\)
10. \(\frac{15 \times 33 \times 43 \times 60}{1725}=\) \(\qquad\)

5-10 Multiplication of iwo Factors Followed by Division Example:
\[
\frac{12 \times 78}{15}=62 R 6
\]

To keep the product of \(12 \times 78\) in the machine, move the GUT \(O P F\) automatic total lever to the right \({\underset{\mathrm{F}}{1} \mathrm{OT}}_{\mathrm{A} O \mathrm{~T}}^{\mathrm{O}} \mathrm{OFF} \quad 12 \mathrm{~K}\)
a) Put 12. into the keyboard and press the times key. \(\quad 938=\)
b) Set 75 and press the multiplication equals key.
c) Bet the divisor 15 and press the division equals key. \(6 T\)

The product 936 is printed automatically as the dividend and the divisor and the quotient are printed on the tape. However, you will have to press the total key to print the remainder and to clear the machine.
5-19 EXERCISEB: Find the answer with the remainder as shown in the example.
1. \(\frac{12 \times 28}{8}=\) \(\qquad\) 4. \(\frac{35 \times 48}{192}=\) \(\qquad\)
2. \(\frac{14 \times 125}{9}=\) \(\qquad\)
3. \(\frac{72 \times 85}{2144}=\) \(\qquad\)
5. \(\frac{895 \times 125}{120}=\) \(\qquad\)
6. \(\frac{22 \times 35}{7}=\)
\(\qquad\)
\[
\begin{array}{ll}
\text { 7. } \frac{4.9 \times 1.4}{21} & 0 . \frac{325 \times 42}{27} \\
\text { 8. } \frac{26 \times 45}{32} & \text { 10. } \frac{1.62 \times 14.4}{2.5}
\end{array}
\]

5-20 Djetsicr Eojlowed by hultiplication

 :he anower hy if, you can chenge lin, to a decinal and multiply
 decima? : ithout a remajnde:.




 315.00 .

In thecc erompins tin froctiche were changed to decimala by eddinf; meros to the numerator and dividing by the denominator. so that the decimale came out even. \(\frac{12}{5}=.5 ; \frac{9}{12}=.7\). When you are chang:ng from irections to decjmals that do nct come out even, you will be asked to carry out rhe decimal to a specific number of places.
sxample:
AUT TCT

\section*{OFF}

Divide the fraction to 3 decimal places.
\[
\frac{2305}{12} \times 45=\frac{2305.000}{12} \times 1.5=192.093 \times 45=8643.735
\]

Solution:
a) jet 2305000 and bress the " \(\mathrm{D}: 1\) bar.
h) Jet 12 and press division equals key.
c) The auotient 192.003 is sutomaticalls storod in ting memary \(\quad 10<\).
d）then set 45 and press multiplication equals key．
e）The product 8643735 is printed．Place the decimal point． in the product to read 8643.735 ．Round off the answer to the nearest whole number（ \(\$ 643\) ）．

5－20 EXERCTSES：in the following problems，divide the fac－ dion to 3 decimal．places．Round off the answers to the near．． est hundredth．

1．\(\frac{1 . \bar{k}}{5} \times 28=\)
2．\(\frac{5 \mathrm{~T}}{\mathrm{~T}} \times 85=\)
3．告 \(\times 45=\)
4． \(1 / 4: 125=\)
5．\(\stackrel{3 \mathrm{a}}{\mathrm{F}} \mathrm{F}: \%=\)
6．\(\frac{72}{30} \div 450=\)
7．\(\frac{32}{2} \times 9=\)
只 \(\frac{75}{105} \times 9=\)
9．\(\frac{335}{410} \times 135=\)
3．0．筑：\(\%=\)

\section*{（Optional）}

5－2̂l Successive Divisions
In finding the interest on 3350 at \(5 \%\) for \(\$\) months，you can set up the problen this way：\(\frac{350}{2} \times \frac{5}{100} \times \frac{8}{12}\) ．Aftor you find the produce of the numerators，you have to divide by 100 and also by 12．To do this on the machino：

2） \(\begin{aligned} \text { 2ot } 350 \text { ，then times key．oress 5，then＂Tit＂key，press }\end{aligned}\) S．then the muJtiplication gquals key．
t：）Se：：the procuct 11000 on the keyhoard with the ：D＂bar．
r． 1 Jat 100，prens the tivisios squa ler bove


to pu；the ruoticet in the machire at the dijotrand．
e！Set l2．כrees the divirion souals key，and the final rusult． wijl be printed on the tade（il with a remajnde：8）．
 the＂OUT＂ker for succescjur arisions．Proon docimal ncints accuratel．y in the nonopers，
1． \(4 . \frac{8 \times 1}{3.6} \cdot \frac{5 \times 6}{2.1}\)
i．\(\frac{18}{3 \times 20} \times 3\)
うこの＂～
\(5=\)
2．750KT
2． \(7.89 x=200 \times 2=29\)
8．\(\quad \frac{270}{4} \times \frac{\times 175}{2} \times 5\)
\(\Omega=\)
0
3． \(1.62 \times \frac{1}{-56} \cdot 4-3.5\)
\(\therefore \frac{1.5 .96] \times 7.5}{1.5 \times 0.25}\)
\(\begin{array}{rrrr}34 & 0 & 0 & 0 \\ 140 & 0 & 0 \\ 1 & 0 & 0 & i \\ 1 & 1 & 0 & 8 \\ & & & i\end{array}\)
4．\(\frac{4 ? \times 48 \times 50}{20}\)

5．\(\frac{36 \times 35 \times 72}{55 \times 1 . ?}\)
1］．\(\quad 13.5 \times 3.5 \times .48\) \(140 K 2\)
140
10
\(3:\)
0
0
6．\(\frac{27 \times 10 \times 105}{15 \because 6}\)
12．\(\frac{6 \times 31.5 \times .214}{35 \times .02}\)

\section*{(Optional)}

5-22 Division Followed by Addition
loo find the Fahrenheit temperature when you know the Centigrade temperature, you multiply the centigrade by \(\frac{9}{5}\) and add 32 to the answer.

Example:
\(F=\frac{9}{5} \times 32=32\)
You can write this: \(\frac{9 \times 39}{5}+32\)
Solution:
a) Multiply \(9 \times 34\) which equals 31.2 .
b) Divide 342 by 5. The quotient is printed on the tape. \(\begin{aligned} & 342 \\ & 342\end{aligned}\)
c) Now press the memory "out." key, end press the add key. This puts the quotient into the machine to be added.
d) Set 32 into the !eybnard, press the add key, then the total. key to obtain your result.

5-22 EXERCISES:
1. \(2 \times 24+32=\) \(\qquad\)
2. \(\frac{2 \times 36}{5}+32=\) \(\qquad\)
3. \(\frac{2 \times 25}{5}+32=\) \(\qquad\)
4. \(\frac{2 \times 22}{5}+32=\) \(\qquad\)
5. \(\frac{2 \times 42}{5}+32=\) \(\qquad\)

\section*{5-23 Review}

\section*{1. Find the total: \(\$ 5.21\)}
\[
\begin{array}{r}
-28.30 \\
-52.98 \\
92.43 \\
-55.25 \\
-4.50
\end{array}
\]
2. Find the balance in thia checking account:

Ralaren at the begiming. Mov. l, Sl6l.h?: checks, Now. 3,



\(\therefore\) Find the averaon emperature in Hartiond last week if the roor ererings wers iccos rid es follows:
 Prinay \(30^{\circ}\). Aatianday \(38^{\circ}\). Sunciay \(41^{\circ}\) 。
4. Finf tho total amroizment and the per cent enrollment in
 to three places; then round off the per cent. to the nearest whole per cent.,

CIASG ENRODTHENE DECTHAL PER CENT
\begin{tabular}{|c|c|c|}
\hline Senjors & 2.78 & \\
\hline lunicro & \(35 i\) & \\
\hline Sophorores & 41.6 & \\
\hline Frestmen & 50? & \\
\hline Toさal & & \\
\hline
\end{tabular}
5. rind the total cost of a color television set priced at 395.50 with \(3 \frac{1}{2} \%\) sales tax.
6. Complete the following:
\begin{tabular}{ccc} 
HOURB & HOURLY :AY & EXTENSION \\
40 & \(\$ 3.75\) & \\
44 & \(\$ 2.02\) & \\
37 & \(\$ 2.40\) & \\
52 & \(\$ 1.75\) & \\
& Total & -
\end{tabular}
7. If the list price of a watch is \(\$ 49.50\), and the rate of di.scount is \(15 \%\), whet is the net rerice?
8. If you borrowed 3350 from a finance company which charged \(3 \%\) bank discount, what amount of net proceeds would vou receive?
9. 'ihe minimum pay is \(\$ 1.40\) per hour. If you received \(\$ 1.75\) per hour after you worked six months, what was the inciease? What was the per cent of increase?
10. If you sold \(\$ 3\) copies of the Courant on Bunday, December 1 and 75 copies of the Courant on Sunday, De.. cember 8 , what was the decrease? what was the per cent of cecrease?
11. Find the product using the "TR" key.
a) \(16 \times 12 \times 9 \times 5=\) \(\qquad\) b) \(2 \times .5 \times .9 \times 20 \times 13=-\)
12. Find:
a) \((27)^{2}=\) \(\qquad\) d) \((32)^{5}=\) \(\qquad\)
b) \((53)^{3}=\) \(\qquad\) e) \((46)^{6}=\) \(\qquad\)
c) \((71)^{4}=\) \(\qquad\) f) \((69)^{7}=\) \(\qquad\)
13. show the answer with the remainder:
\[
\frac{12 \times 23 \times 34 \times 45}{56}
\]
14. Find the product:
\[
350 \times \frac{3}{3.00} \times \frac{8}{1.2}=
\]
\(\qquad\)
25. Prepare flowcharts for the operations discussed in:
an Section 5e6
b. Section 5-8
c. Section 5-9
\(d_{0}\) Section 5-9B
Er. Section 5mio
fe Section 5-..22
Go Section 5-16
h. Section 5-38
i. Section 5-19
\(\mathrm{J}_{\mathrm{n}}\) Section 5-20
ko Section 5-21
I。 Section 5-22

\section*{Chapter VI}

\section*{BUYING AND SELLING}

139

\section*{6-1 Introduction To Chapter}

You have now had the practice of combining operations. For the remainder of the course you will be working on many word problems that reouire you to combine operations.

In this chapter you will. recognize many of these word problems. They are problems that people may be involved in whenever they go shopping or when they are working:

6-2 Shopping: The following are kinds of problems encountered while shopping.

6-2 EXERCISLS: Put your answers where indicated.
1. You have done some shopping in a grocery store. Find your total bill if you made purchases of \(\dot{\psi} .40, \ddot{\psi} .28, \dot{\$} .10, \$\) \(\$ .98, \$ 1.19, \$ .68, \$ 1.75, \$ 2, \$ 2, \$ 3.50\) Ans. \(\$\)
2. How much is your total bill if you spent the following amounts: \(\$ 3, \$ 1.55, \% .50, \$ .05, \$ .05, \$ 1.05, \$ 1.50 \$ 4, \$ 2.07\), \$1.98, \$.89, \$1, \$ . 40.

Ans. \(\Psi\) \(\qquad\)
3. A girl spent the following amounts while shopping in a department store. Find the total bill: \$7.49, \$2.50, \$5, \$10,


Ans. \(\$\)
4. Bob bought some items at a hardware store. What amount did he have to spend altogether? \(\$ 1, \Psi 3.15, \Psi .15, \$ 5.98, \$ .98\), \(\$ .70, \$ .40, \$ .05, \$ .05, \$ .85, \$ 2, \$ .28\).

Ans. \({ }^{\$}\)
5. In prouien 4, Bob paid for his purchases with a \(\$ 20\) bill. How much cinange did he receive?

Ans. \(\$\) \(\qquad\)
6. Vir. Cinarles is interested in buying a new car. One model is priced at \(\$ 3185.25\) and another model is priced at \$2905. How mi:ch more does one model cost than the other? Ans. 点
7. John bought a janke: tom wh. 40. Thomas bought a jacknt that was just. like John's, but the paice of fom's jacket. was \(\ddagger \mathrm{H}\). 9 ₹ lese than Iohr's. How much doos Tom's jacket cost?

Ans. \(\$\)
 pricon man racuned to wo. 95 , Hor: newh loney in saved by buring at the salo pusor?

Ans. \(\qquad\)

 Ans. 3 \(\qquad\)
10. What is the tiobal cost of a dozer boarcis, jif each board costo 3 B1. 74 ?

Ains. \$
11. The machine that you are using costs 8350 . There are 23 machines in this room. What is the total cost of all the machinco?

Airs. \$ \(\qquad\)
12. If you bought four pair of slacks at a cost of \(\$ 7.95\) each: :iow much :m!?! you sperc! altogother?

A:1s. \$
13. The price of eight dress shirts is \(\$ 23.92\). How much does each one cost?

Ans. \(\$\)
14. Twenty rolls of insulation cost \(\$ \$ 1.50\). what is the cost per roll? Give answer to nearest cent. Ans. \(\dot{\sim}\)
15. Find the cost of one sport shirt if a dozen costs \$53. Give answer to nearest cent. ins. シ
16. There are 75 apples in a basket. I'he whole basket of apples costs \(\mathbf{~} 2.60\). What would one arple cost? Give answer to nearest cent.

Ans. \(\mathbf{S}^{\text {An }}\)

\section*{17. Find the saving on each item.}

\section*{White Shects:}
\(a-72 \times 108\) Twin Flat, reg. \(3.29 \quad 2.79\)
- \(39 \times 76\) Twin fitted, reg. 3.29. 2.99
\(c-81 \times 108\) Full flat, reg. \(3.59 \quad 3.19\)
d \(-54 \times 76\) Full fitted, reg. \(3.59 \quad 3.39\)
ए-90×120 Queen flat, reg. \(8.99 \quad 4.49\)
\(f-60 \times 80\) Queen fitted, reg. 4.99: 4.69
\(g \rightarrow 108 \times 120\) King flat, reg. \(7.99 \quad 7.19\)
\(h \rightarrow 78 \times 80\) King fitted. reg. \(8.49 \quad 7.99\)
Answers:
\begin{tabular}{lll}
\(a\) & \(d\) & \(g\) \\
\(b\) & \(e\) & \(h\) \\
\(c\) & \(f\) &
\end{tabular}
19.
what would be the total cost of fifteen jugs at the reduced rice?

COLEAAAK GALLOM DUG \$3)
- \(100 \%\) Urothane Insulation
- Fast-Flo Faucot
- Bail Handlo
nee. \(\$ 5.97\)

13. What was the regular price of a gallon of this paint?
SAVE 2.12


GALLON

6-3 Finding the "Better Buy"
ilany times when shopping you are faced with this kind of problem:

Example 1: One 46 ounce can of pineapple juice costs 394. Two 23 ounce cans of pineapple juice cost \(22 \phi\) a can. How much is saved by buying the 46 ounce can?

Perhaps it would help to draw a picture of the problem, like this: (oz. is an abbreviation for ounce.)

46
ounces 'lhe total cost of this can is \(39 \phi\). 23
02. \(\begin{aligned} & 23 \\ & 02 .\end{aligned} \quad \begin{aligned} & \text { The total } \\ & 2 \times 2 \phi=\frac{\text { cost }}{44 \phi} \text { of two cans is }\end{aligned}\)

Now compare the total cost of \(39 \phi\) and \(44 \phi\). The amount saved is \(44 \phi-39 \phi=5 \phi\). The better buy is the 46 ounce can of pineapple juice.

Example 2: A 2 ounce jar of instant coffee sells for 534. A 6 ounce jar sells for \(\$ 1.49\). What would 6 ounces cost when bought in the small, 2 ounce, jars?
Solution: Ask yourself this question first: "How many small jars would I have to buy to get 6 ounces?" Do you see that you would have to buy 2 small jars?

If you bought 3 small jars, how much would this cost you?


This is the answer to the problem, \(\$ 1.59\).

One mori oixation: iow mooh do jou save by buyjing the Large 6 omer int

Sonncem:






 stce?

Ans. © .......




 been:

Ans. S \(\qquad\)

 stations. Hoy muci do you savo pos. gunere if you buy the 10 quart container fram Seara?

Ans. \({ }^{\$}\)
5. A. 3.2 os. bot.tile of Vemmont. Maj.r Bymp costs 32ф. A 36 oz . botitle selis for 76s.
a) How mach wout 36 ow cost if hought in the mall,

b) Hoy much is nava in blaying the limge, 35 onn. bottje? \(116 \quad \because\) Ance
6. A 1 lb. can of Crisco shortening sells for \(\$ .37\). A large \(2 \frac{1}{2}\) lb. can sells for \(\$ .78\).
a) How much does Crisco cost per lb. in the large can?
b) How much is saved per lb, by buying the large can? Ans. \$
7. Grape jelly sells at \(\$ .45\) for a la lb. jar. A small 8 oz. jar costs \(\$\). 20.
a) How much would it cost to buy li k lb. in the small 8 oz. jars?

Ans. \(\$\)
b) How much is saved by buying the large lo l lb. jar? Ans. \(\$\)
8. A 3 lb. box of Tide soap powder costs \(\$\).79. A small 12 oz . bor. costs \(\$ .32\). How much is saved by buying the large 3 lb . how instead of buying 3 lb . of soap powder in the smaller boxes?

9. A 3 lh. box of Bold soap powder sells for 69 . A li lb. box sells for \(42 \phi\). How much would you save by buying the large 3 lb . box? Ans. \(\Phi^{\$}\)
10. A 10 lb . bag of sugar costs \(\$ 1.20\). A small 8 oz . box of sugar cubes costs \(\$ .13\). If you wanted 10 lb . of sugar cubes, how much more would it cost you than the 10 lb . bag? Ans. \(\$\)
- - 4 3to: © Laployens

Stow: 3nnoyicr are continually faced with problems in
 and, for irytance, finding the 'cost of one can if five cans cu.t \%i." D;partent storer slerks become jalveljed in discni:nta, aut: arorage soles pa: yook, Department, store buyers m:st be famj!シャr uith cost, mark-up, profit, ovorhead, and selliniz príce nirerchandiso.

Let, es beejin by di.ecussing saies tar.e.

6-j Snes Tax
Th~ \(\because:\) : e of Connerticut las :any nathods of waising
 One of tlese nathods is the rtaia salcs jax. Whenaver you buy a :axahle inem in a store, you vill pay a littje bit, more than
 in tir sele: \(\because\). in the cost o." the itom. ithe stove must then send this ser mens to the Connocticut Jtate Ta: Depariment.

Would \(\because\) Ou bilieve the": in 3.965 the state of Connecticut colloniod énont \(8357,000,000\) in atato sales tax? Wiere did
 nickies, asa dimes :ises ycu cont-jhuted whenever you boright a taxable i.tem i!? o r.tnre.

Tf yon win a cashier in a store: it, would be your job \(\therefore\) figure ol:: the sales fax for sach purchase. You must then make surc tiat you add shis lax to the customer's bjilu! The sales tax in Connecticut is int at present.

Be sure that in all problems involving sales tax you make sure that you ADI THE TAX to the bill. In the following problems, use a sales tax of \(3 \frac{k}{2} \%\).

Example 1: You have made a purchase of \(\$ 5\).
a) How much is the sales tax?

Solution: the tax will be \(3 \frac{1}{2} \%\) of \(\$ 5\).
\[
3\} \% \times \neq 5 \text { or }
\]
\(3.5 \% \times 3\) or
\(.035 \times \$ 5=\$ .175=\$ .18\), rounded off to nearest cent

Answer: The gales tax is \(\$ .18\)
b) How much will you pay for the purchase?

Solution: You will pay 35 plus the sales tax, or \(\$ 5+\$ .18=\$ 5.18\), inswer

Example 2: Find the sales tax and the final amount that you would pay for an automobile that costs \(\$ 3200\).
Solution: a) The sales tax will be \(3 \frac{1}{2} \%\) of \(\$ 3200\) or \(3.5 \% \times \$ 3200\) or
\(.035 \times \$ 3200=\$ 112\)
b) Final amount that you will pay is:


Purchases on which no tax is paid:
No sales tax is charged on purchases of clothing for children under 16 years of age.

No sales tax is charged on purchases that are mailed from Connecticut to other states.

No sales tax is paid on eopuipment for schools.

6-5 EXERCISES: In each of the following problems, find (a) the sales tax and (b) the final amount of the purchase. Use a sales tax of \(3 \frac{3}{2} \%\) for all problems.
1. Cost of Purchase Tax I'otal
\begin{tabular}{llll} 
a) & \(\$ .50\) & \(\$\) & \(\$\) \\
b) & \(\$ 3.50\) & \(\$\) & \(\$\) \\
c) & \(\$ 15.72\) & \(\$\) & \(\dot{\phi}\) \\
d) & \(\$ 4 \$ .09\) & \(\dot{\$}\) & \(\$\) \\
e) & \(\$ 76.33\) & \(\$\) & \(\$\)
\end{tabular}
2. Four bath towels at a cost of \(\$ 1.98\) each.

Tax \(\qquad\) Total \(\qquad\)
3. Cocktail table at \(\$ 44.38\).

Tax \(\qquad\) Total \(\qquad\)
4. Three piece bedroom suite for \$199.Tax ___
5. Two shower curtains at \(\$ 1.88\) each. Tax \(\qquad\) +otal \(\qquad\)
6. Twin bunk bed for \(\$ 79.88\).

Tax \(\qquad\)
7. Twenty boards at \(\$ 1.49\) each.

Tax \(\qquad\)
8. A \(24^{\prime}\) by \(4^{\prime \prime \prime}\) circular swimming pool at \$399.

Tax _Total \(\qquad\)
9. Seven aluminum storm windows at \(\$ 10.49\) each.
10. New automonile at \(\$ 2135.48\).

Tax.
'l'ax \(\qquad\) Total \(\qquad\)
11. Purchases of clothing of \(\$ 22.21\) for a 14 year old boy.
'Tax \(\qquad\) 'lotal \(\qquad\)
12. A \(\$ 10.95\) pair of shoes for a

9 year old girl.
Tax \(\qquad\) Total \(\qquad\)
13. A purchase of \(\$ 30.24\) sent to a person livine in Vermont.

Tax. \(\qquad\) 'otal \(\qquad\)
14. A purchase of \(\$ .12\).

Tax \(\qquad\) Total \(\qquad\)
15. A purchase of \(\$ 5,000\) for a school. Tax \(\qquad\) total \(\qquad\)

6-6 Discount
secny of you have waited to buy an article in a store unti] it could be bought at a discount. l'he reason, of course, is
that you pay less when a discount is given.
In the newspaper you see many discounts stated as:
I \(5^{0}\) Liscount,
10\%. Off
Reduced \(20 \%\)
\(\frac{1}{2}\) Off
Save \(33 \frac{1}{3} \%\)
All of these mean that------ you save money during a sale!
Example 1: \(k \$ 16.49\) dress is on sale at a discount of \(30 \%\).
a) What is the amount of discount?

A discount of \(30 \%\) means that you will get \(30 \%\) off the regular price.
\(30 \%\) of \(\$ 16.49\) i. \(s\)
\(.30 . x+16.49=\$ 4.947=\$ 4.95\), the amount of discount
b) What is the sale price of the dress?

Bince you are getting \(\$ 4.95\) off, you will pay
\(\$ 16.49-\$ 4.95=\$ 11.54\) for the dress.
Notice that you subtract the discount from the sale price.

Example 2: The regular price of a radio is \(\$ 15.79\). During a sale the radio can be bought at a discount of \(25 \%\). Find how much you will pay if the sales tax is \(3 \frac{1}{2} \%\) 。
a) Amount of discount is:
\(25 \%\) of \(\$ 18.79\)
\(.25 \times \$ 18.79=\$ 4.6975=\$ 4.70\)
b) The sale price is:
\(\$ 15.79-\$ 4.70=\$ 14.09\)
c) How much will you pay if the sales tax is \(3 \frac{1}{2} \%\) ?

Sales tax must be added to the sale price.
\(3 \frac{2}{2} \%\) of \(\$ 14.09\) (Not \(3 \frac{1}{2} \%\) of \(\$ 1 \times .79\) )
\(.035 \times \$ 14.09=\$ .49: 315=\$ .49\), the tax.
You will pay \(\dot{\$ 1} 14.09+\$ .42=\$ 14.58\) for the radio.
IMPORTANT: You must be careful to:
Subtract discounts and
Add sales tax.

6-6 EXSRCISES: In the following problem use the given per cent discounts to find tie sale price.
1. Complete the table:
\begin{tabular}{lcccc} 
& Regular Price & \% Discount & \begin{tabular}{c} 
Amount of \\
Discount
\end{tabular} & Sale Frice \\
a) & \(\$ 12.15\) & \(20 \%\) & \(\$\) & \(\$\) \\
b) & \(\$ 5.49\) & \(25 \%\) & & \\
c) & \(\$ 27.55\) & \(15 \%\) & \\
d) & \(\$ 27.97\) & \(\frac{1}{3}\) off & \\
e) & \(\$ 33.47\) & \(\frac{1}{2}\) off &
\end{tabular}

In the following problems use a sales tax of \(3 \frac{1}{2} \%\) ．
2．The regular price of a radio is \(\$ 20.79\) ．During a sale the radio can be bought at a discount of \(40 \%\) ．What is the cost of the radio if the sales tax is \(3 \frac{3}{2} \%\) ？ Discount \＄ \(\qquad\) Discount Price \(\$\) \(\qquad\) Tax \(\Phi\) \(\qquad\) Cost \＄
3．The regular price of a carpet is \(\mathbf{\#} 180\) ．The discount during a sale is＂\(\frac{1}{3}\) off．＂Find the cost of the carpet when the sales tax is \(3 \frac{1}{2} \%\) 。
\(\qquad\) Discount Price \(\$\) Tax \(\$\) \(\qquad\) Cost 生 \(\qquad\)
4．The regular price of a Black \＆Decker lawnmower is \(\$ 89.95\) ．The lawnmower can be bought on sale at half price． How much would you par for it is sales tax is \(3 \frac{2}{2} \%\) ？ Discount \(\$\) Discount Price \(\underline{\$}\) Tax \＄ \(\qquad\) Cost： \(\qquad\)
5．A Zenith portable TV set regularly sells for \(\dot{\psi} \mathbf{~} 139.95\). During a \(15 \%\) sale how much would it cost you if sales tax is 3 \(2 \%\) ？

Discount \({ }^{\$}\) Discount Price \(\$\) \(\qquad\) Tax 出 \(\qquad\) Cost \(\qquad\)
6．The regular price of a GE alarm clock is \＄3．19． During a sole it is reduced \(55 \%\) ．What is the selling price， if the sales tax is \(3 \frac{1}{2} \%\) ？


7．Star Hardware has reduce त 30－gallon－water－heaters by \(18 \%\) ．If water heaters regularly sell for \(\$ 54.97\) and the sales tax is \(3 \frac{2}{2} \%\) ，find how much one water heater would cost you．

8. F. J. Korvette is offering \(42 \%\) discount on short sleeve shirts. The regular price is \(\$ 3.40\) per shirt. If the sales tax is 3 2\% and you hought four shirts, how much would your bill be? Total Discount \({ }^{\text {S }}\) Discount. Price \(\$\) Tax \$ \(\qquad\) Cost \(\overline{3}\)
9. During pe \(50 \%\) sale a man bought tro pair of summer slarko that regularjy scld for wenghorind his bill. if sales tax is 3 hen Trotal Discount tis Digrount irice \(\$\) \(\qquad\) Tax \(\$\) \(\qquad\) Cost \(\$\) \(\qquad\)
20. Piro galicns of paint, regularly priced at \(\$ 7.99\) per gallon, were bought at o 2 \% discount. Finc the cost, of the paint if. the so.7en tax is 3 thor.

Tóial Djscount \(\qquad\) Dircount PMise \(\$\) Tar \(\$\) Cost ? \(\qquad\)

S-7 Buying in Guantity
A cashier at a supermarket or department stors must aolyo the follering kinds of math problems:

Erompln 1: If two cans of soup cost is . 43 , hov much done one car cost?

Soiution: One can must cost half as much as two cans.
 the cashie: charge for one can then?

He can not charge is . 21 , because tho cans rould then cost \(2 \times 8.22\) or \(\$\) two for B_43.

What he must do is to charge \({ }^{4} \quad 22\) for one can by rounding off 18.215 to \(\$\). 22 。

Simplified golution: Since the bargain price is "two for \(\$ .43^{\prime \prime}\), the cashier knows thet he must divide by futo to find the cost of one can.

Now, \(\$ .4 .3\) is an odd number, since it ends with the odd number 3. the cashier knows that he will get a remainder when he divjutes an oed number by 2.

 soup.
```

Tes un %oy ponthor probiere:

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    critu%. i! the bargaie frice is 3 for $1.00?
    ```

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        Farl ta, ruar i:ighent number that, wan be
    ```


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        3,
        %
            *) wise the brjeo to $1.02
    ```

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        堷年
    Therornm, "hr price ow one nen is \$. 34.

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    the yrjce is l for & , 93?
    Sciutucn: Starit was:m, l:he puice until yen \ddotsl a
        number that ron: can divic'e by 4 a cave
        a0 rematader.
        4-. . . %3
            %
            i2
    ```

Raise the price one penny. \(4 \longdiv { . 9 2 3 }\)
\(\frac{8}{14}\)
\(\frac{12}{2}\) Remainder still not zero.
Raise the price by a penny again.
\(4 \longdiv { . 9 5 }\)
\(\frac{8}{15}\)
\(\frac{12}{3}\) Remainder still not zero.
Raise the price by one more penny.

\(\begin{array}{r}.96 \\ \hline 16\end{array}\)
\(\frac{16}{0}\) The remainder is zero.
Therefore, the price of one can is \(\$ .24\)
After you do many of these problems, you will probably do them by a quicker method. For instance:

Example 4 : What is the cost of 1 can of soup if the bargain price is 5 for \(\$ 1.11\) ?

Solution: Instead of raising the price a penny at a time, simply divide 5 into \(\$ 1.10\) and get \$ .22. You know now that if you had divided 5 into \$l.ll, you would have obtained an answer of \(; .22\) with a remainder. The remainder means that you automatically add another cent. The answer to this problem would then be \(\$ .22+\$ .01=\$ .23\)

Example 5: Using the quicker method, find the cost of 1 can of soup if the price is 4 for \(\% .99\). Solution: Divide 4 into \(\$ .88\) and get \(\dot{\phi} .22\). Since you would have gotten a remainder when you divided \(\$ .82\) by 4 , the price of one can will be \(22 \phi+1 \notin=23 \notin\) Answer

6-7 EXERCISE A: Find the answers to the following using the quicker method.

Answers
1. Find the cost of one item if 2 cost \(\because 31\).


In all of the preceding problems you were "indinf the price of an item when you were buying les.j than the bargain amount.

Now let us do a problem where you are buyini mor? than the bargain amount.

Example 5: In a department store, the price of housecoats is three for \(\$ 8.92\). How much would 4 housecoats cost?

Solution: The first 2 housecoats will cost \(\$ 8.92\), which is the bargain price. Since you are buying four you must find the cost of one and then add the cost of one to the cost of three to find the total cost. The cost of one housecoat will be:
l'nerefore, the cost of 4 housecoats will be:
3 cost \(\$ \% .92\)
1 costs \(\$ 2.98\) Add \(\$ 11.90\) Answer, Cost of 4 housecoats.
IIFORTANT: Do not find the cost of one housecoat and then multifly this cost by 4. If you do, you will get the wrong answer of \(4 \times \$ 2.98=\$ 11.92\). Doing the problem this wrong way does not allow the customer to benefit from the bargain pricing.

Example 6: What is the cost of four blouses at two for \(\$ 4.49\).

Solution: Here you are buying eyactly twice as many as the bargain price.

Since 2 cost \(\$ 4.49\), then 2 more would cost another \(\$ 4.49\).

So four would cost \(2 \times \$ 4.49=\$ \$ .9 \$\)

6-7 ExERCISES B: Find the cost of buying more or less than the bargain amount.
1. Find the cost of one can of soup if two cost \(\$ .47\). Ans. \(\hat{\boldsymbol{p}}\) \(\qquad\)
2. If two cans of dog food cost \(\$ .45\), how much does one can cost?

Ans. \$ \(\qquad\)
3. Three cans of evaporated milk cost 49 f , how much i does one can cost?

Ans. \$ \(\qquad\)
4. Four cans of tomato past cost \(\dot{\Phi}: 61\). Find the cost of one can.

Ans. \(\$^{\$}\) \(\qquad\)
5. Green Giant corn costs 5 for \(\$ 1.06\). Find the cost of one can.

Ans. \(\$\) \(\qquad\)
6. If 6 cans of Campbell's soup cost \(\$ 1.3 y\), find the


1 7. Find the cost of two cons of tomato sauce if four
 \(\qquad\)
8. Find the cost of three bottles of catsup if four cost. \$1.33. Cost of one is \(\$\) \(\qquad\) ; 3 cost 虫 \(\qquad\)
9. Find the cost of three cans of soup if two cost \(\$ .45\). Cost of one is \(\$\) \(\qquad\) ; 3 cost \(\$\) \(\qquad\) (If your cost, for 3 cans is it. 69 you are wrong! ie example 5 on page 127. )
10. Find the cost of six cans of dog food if four cost \$. 59.

Cost of one is 事 \(^{\text {C }}\) \(\qquad\) ; \(\quad 6\) cost \(\$\) \(\qquad\)
11. What is the cost of 4 pillow cases at two for \(\$ .89\) ? (Hint: How meiny "times as many" are you buying?)

Ans. \$
12. What is the cost of 6 blouses if two cost \(\$ 4.49\) ? Ans. \(\$\)
13. How much would 8 bed sheets cost at 2 for \(\$ 4.39\) ? Ans. \(\$\)
14. What would a dozen pair of hosiery cost if three cost \(\$ 2.00\) ? Ans. 安 \(\qquad\)
15. What is the cost of \(1 \frac{1}{2}\) dozen shirts at two shirts for \(\$ 7.00\) ? Ans. \(\underset{\sim}{3}\) \(\qquad\)
16. What is the cost of 2 dozen pair of hosiery at 6 pair for \(\mathbf{\$ 2}\). 50?

Ans. \(\$\)
17. How much would 15 pair of pants cost at three for \(\$ 24.37\) ?

Ans. \(\ddot{P}\)
18. Iwo sweaters cost \(\$ 4.79\). How much would a dozen cost?

Ans. \(\$\)
19. Handkerchiefs sell at 3 for \(\$ 1.00\). How much would 30 cost?

Ans. \#
20. If a dozen pair of socks sell at \(\$ 3.59\), how much would it cost to buy 4 pair? Ans. \({ }^{3}\) \(\qquad\)
21.


\section*{6-8 Counting Lhange}

One of the requirements of working as a cashier is to be able to count change fast and accurately. The following section will help you to do this.

Example l: A customer in a store paid for a \(65 \phi\) purchase with a dollar bill. Show in what order you would take the change out of the cash register drawer and count it back to the customer.

Solution: You do not bother with subtracting 65
from \(\$ 1.00\) with pencil and paper. All you have to do is to start counting from \(65 \phi\) and stof when you reach \(\$ 1.00\).
You say to yourself ............................ \(65 \phi\)
You give the customer 5\&, and say ......... \(70 \notin\)
You give the customer another \(5 申\) and say ... \(75 \phi\)
You give the customer 25t and say ....... \$1.00
That's all there is to it.

Remertios to give the change in order．For instance in the above problem，you would not give 25 f finst．Always give change in this order：

\section*{Pennies}

Nickeis
Dimes
Ruprors
Helire do lars
One dollai bille
Two tolln：－rijus
Five dr？lar billa
To：．roll？－


 Al．r．s！or what you \％ould siny as jou \(E=\%\) out the co aッ： Arimeinen：

Cigzos：You Say：
\(\vdots \% \quad \$ 2.13\)
？． 1.14
i4 2.15
小•我 \(\quad 1.25\)
25！\(\quad 1.50\)
Ј04 2.00
\(\$ 1.00 \quad 3.00\)
\(2.00 \quad 5.00\)
5．00 10.00
\(10.00 \quad 20.00\)

Let us agree to give the fewest number of coins and currency when counting change. For instance:
\begin{tabular}{ll}
\multicolumn{1}{l}{ Give } & Instead of \\
One nickel & 5 pennies \\
One dine & 2 nickels, etc. \\
One quarter & 25 pennies, or 5 nickels, etc. \\
One half dollar & 2 quarters, etc. \\
One \(\$ 2\) bill & Two \$l bills \\
\(\longrightarrow\)
\end{tabular} in our problems.

6-8 EXERCISES: Using the fewest number of coins and currency, list (a) what you would give for change and (b) what you would say.
1. Purchase of \(\$ .12\) paid
for with \(\$ .50\)

\section*{Change You Say}

> 4. Purchase of \(\$ 3.06\) paid for with \(\$ 10.00\)

Change You Say
5. Purchase of \(\$ 7.27\) paid for with \$20.00

Change You Say

3. Purchase of \(\$ 1.57\) paid
 for with \(\$ 5.00\)

Change You Say
6. You have the folsowing ciange in your cash register. You have no dimes, half collars, or twent: c.jlan bills. List, the number of coins and bille yot would give for change.


7. In this problem fon have no dimes, has dollars, two dollar bills, or ten riolinr oills. isist the dame you would give. Cross out the coins and currency shat wh do not hase in the drawer.



6-4 Cash Register Slips
After a cashier in g grocery store adds up all the taxable items in a purchase, he must then find the sales tax at \(3 \frac{1}{2} \%\) and add this to the bili.

Usually this is done automatically by the cash register. however, since it is difficult to do thin kind of problem qucomaticslly on your machire cal:ulator, you will heve top perform line work in a series of atopa,

Gefore we begin, you should ungerstani that net alj items are tayed-for instance, meat producu, end arrain groceries. it. un following sasle ropiste: "epos you will see which itema tio raxable. The tiaxable erocory toms are indiceted like this: On, 43 TX in. . Dthor items are not, taxnd, ard these are Sewn ithe «r!is: 00.50 MT
\[
\begin{array}{ll}
00.37 & \Gamma \pi \\
0.30 & G R
\end{array}
\]

Note: MT means meat; ?R mean nonduce; and GR means groceries. If you do not oeg \(\overline{\text { g }}\) n next to an item it means the item is nct traxable.

Es:ample l: Find the fingl bill fo: the following cash recister slip.
00.45 PR Solution:
00.59 PR a) Which items are taxable?
03..?8 MT

Answer: The lnst 5. jems are taxable.
01.49 TX GR
b) What i.s the total of the 5 taxable items? Add 01.29 TK GR OO.25 TX GR 00.25 TX OR 00.25 TX GR
these up on your machine and you should get \$3e23. This is the amount to be taxed at 3 相. c) The tax is \(37 \%\) of \(\$ 3.53=\$ .12\) d) Write in the tax of \(\$ .12\) under the last item on : 34
the slip. 'the slin should now look like step (e).
00.45 PR e) Add up all the items on the slip now and 00.59 PR you should get an answer of \(\$ 6.47\). This is 01.78 irT the final bill.
01.49 TX GR
01.29 TX Gi
00.25 TX GR
00.25 TX GR
00.25 TX GR
_ 12 Sales Tax (Written in with pencil)
\(\$ 6.47\) Final Bill

6-9 EXERCISES: Find the final bill for the bollowing cash register slips. TX means that the item is taxable at \(3 \frac{1}{2} \%\) sales tax. It may help to put a check mark next to taxable items.
1. Sample Problem:
2. 00.36 MT
3. 00.17 PR
00.79 MT
00.75 MT 00.12 GR 00.25 PR
00.56 PR
\(00.12 \mathrm{GR} \quad 00.76 \mathrm{im}\)

00.30 PR
03.28 MT
00.80 TXGR \(\quad 00.46\) TXGR
01.35 TXGR 01.07 TXOR \(00.85 \mathrm{TXGR} \quad 00.55 \mathrm{TXGA}\)
00.63 mT
01.17 TXGR
\(\$ \xrightarrow{i 10} \begin{aligned} & \text { TAX } \\ & \text { Bill }\end{aligned}\)
TMAX \(\qquad\) may
\(\$\) Bil. 1


Next, you will find some actual cash register slips from a supermarket. In these problems, use a sales tax of \(34 \%\), instead of \(3 \frac{2}{2} \%\).
\begin{tabular}{|c|c|c|c|c|}
\hline (8) & (9) & (10) & (ii) & (12) \\
\hline \(0.2336 R\) & 00.9741 & 00.3568 & 00.6368 & 00.45 CR \\
\hline 00.4968 & 06.678 & 00.4968 & \(00.356 R\) & \(00.3 \mathrm{l}_{68}^{\mathrm{T}}\) \\
\hline 00.4568 & 00.7.7x & 00.5568 & \(003 \% 68\) & \(00.277_{G R}^{T X}\) \\
\hline \(00.336 R\) & 08.6760 & O0A3 \({ }_{\text {GR }}\) & 002.768 & \(00.29_{6 R}^{T x}\) \\
\hline \(00.29{ }^{58}\) & - 00.7 ys & \(00396 R\) & 002968 & \(00.3 \mathrm{l}_{6 \mathrm{~T}}^{\mathrm{TX}}\) \\
\hline 00.2180 & 012404 & 00.2368 & \(0029{ }^{\text {cR }}\) & \(00.176 R\) \\
\hline \(00.47 \%\) & 012205 & 003760 & 002468 & 00.20 GR \\
\hline \(00.47{ }^{6 \times}\) & 08.5488 & \(00.23{ }_{\text {OR }}^{\text {rx }}\) & O-3 3 ¢ \({ }^{\circ}\) & \(00.596 R\) \\
\hline \(00.4{ }^{18}\) & 085541 & 00.4368 & 00.856R & \(00.376 R\) \\
\hline \(00.4]^{\text {Ex }}\) & 01517 & 00.4968 & \(0035{ }^{\text {FR }}\) & 00.49 gR \\
\hline 0035 m & 00.99 Tr & \(003 \% 68\) & 008986 & \(00.436 R\) \\
\hline 00.9 yint & 00.6 \%17 & 00.4.46 & 00.43 CR & 00.8 3TX \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|}
\hline 62 & (14) & (15) & (16) & (17) \\
\hline \(00.258{ }^{\text {\% }}\) & \(00.27{ }^{78}\) & 00.4489 & 00.43 min & 00.8968 \\
\hline 00.2588 & 00.5908 & 08.44 PR & 00.4368 & (1) 0.896 \\
\hline \(00.43{ }^{\text {\% }}\) & 00.3968 & 00.44 PR & 00.4068 & \(00.45{ }^{\text {\% }}\) \\
\hline 00.4988 & 00.2 iPs & \(00.599^{\text {PR }}\) & 00.3388 & 00.47 Pa \\
\hline 00.3968 & 00.598 B & \(01.49{ }^{\text {\% }}\) \% & 01.27 HT & \(00.97{ }^{\text {\% }}\) \\
\hline 00.8168 & 00.2588 & \(01.29{ }^{168}\) & 00.88 mT & 00.2468 \\
\hline \(00.590 \%\) & 00.2286 & 00.7568 & \(00.3 \mathrm{l}^{\text {ix }}\) & 00.2 Lam \\
\hline \(00.54{ }^{\circ}\) & 00.5145 &  & \(00.31{ }^{\circ}\) & 00.98 CK \\
\hline 00.7 mt & 00.654 & (1) 0.4308 & \(00.31{ }^{\text {\% }}\) & 70. 20.25 \\
\hline 00.380 & - 00.5308 & 00.1368 & \(00.31{ }^{50}\) & 00.418 \\
\hline 003598 & 00.5365 & 00.3689 & \(00.31^{70}\) & 00.6368 \\
\hline 00.3 PR & 00.4 等 & 00.898 & \(00.3{ }^{10}\) & 01.1769 \\
\hline 00.18 pa & 00.2 溉. & 08.3568 & \(00.45 \%\) & \(00 . \% 980\) \\
\hline 00.258 R & 00.3768 & 00.2868 & 00.3388 & 0034 li \\
\hline \(00.498 \%\) & 00.3768 & 00.28 \% & 00.8968 & 002468 \\
\hline 30.4368 & 00.584 & 00.9598 & 00.7868 & 00.29 F \\
\hline 00.3 969 & 01.62 m & 00.459 y & 00.9368 & 0025 \\
\hline 08.23 ER & \(8!5 \mathrm{~m}\) & & \(00.830 \%\) & 003968 \\
\hline 00.2768 & & & & 00.75 cR \\
\hline 00.2968 & & & & \(00.396 R\) \\
\hline 00.2498 & & & & 00.516 f \\
\hline \multicolumn{2}{|l|}{(182) (0ytienal)} & & & 00.5168 \\
\hline
\end{tabular}

Tiaing counijing numbars and zero, complete the information with the given ilnitationa.
00.2768 12 - \(\qquad\) \(=\) \(\qquad\)
\(\qquad\)
(a) Using any counting numbers and zero......
(b) Using only even numbers.
(c) Une only odd numbers............................
(d) Uaing only multiples of 3 (incluaing zero)
(e) Using multiples of 7 (including zero).....
(f) Jaing multiples of 6 (including zero).....

The word "average" means something that represents the middle point. In arithmetic, average means a number that can be used to represent the middle point of a group of numbers.

For example, the average of 6 and 8 is 7 , because 7 is in the middle of 6 and 8 . The average of 10 and 11 is 10.5; the average of \(70,80,90\) is 80 ; the average of \(50,60,70,80\) and 90 is 70. In all of these examples, the average is the number that represents the middle point of a group of numbers.

Many times it is difficult to see what the average of a group of numbers is at a glance. For instance, the average test score of the test marks \(94,63,45,78,60,68\), even if rearranged as \(45,60,63,68,78,94\), is not easy to be seen immediately. To find the average, or middle point, of these numbers, simple add the test marks together and divide their sum by the number of tests. The sum of these test marks is 408. Divide 408 by 6 (number of tests) and get 68 an as average.

Example 1: Find the average earnings of a person whoses: pay checks were \(\$ 120, \$ 125, \$ 118, \$ 132, \$ 110, \$ 105\). Round your answer off to the nearest dollar. Solution: Add \(\$ 120\) Divide:

Example 2: Find the average sales per week for the shoe department of a store if sales were \(\$ 240.77, \$ 285.28\), \(\$ 220, \$ 303, \$ 250.29\). Round off answer to nearest cent. Solution: Complete the solution yourself.

Add: \(\$ 240.77\) Divide:
\(2 8 5 . 2 8 \quad 5 \longdiv { } = \$\)
220.00
303.00
250.29
\$ Sum of 5 weeks sales.
The answer is \$249.87.

6-10 EXERCISES A: Find the averages for these problems. Round off your answer as indicated in each problem.
1. Find the average mark for these tests: 68, 79, 35 , 52, 83, 88; 61. (Nearest unit) Ans. \(\qquad\)
2. The heights of 7 boys were \(73^{\prime \prime}, 68^{\prime \prime}, 70^{\prime \prime}, 62^{\prime \prime}, 65^{\prime \prime}\), 75", 71". Find their average height. (Nearest inch) Ans.
3. Find the average sales per week for the dry goods department of a store if sales were \(\$ 190, \$ 187.30, \$ 137.55\), \(\$ 120\), \$05, \$208.43. (Nearest cent) Ans. \(\qquad\)
4. A sales clerk made 25 sales one day. The total amount of the sales was \$1348.32. Find the average amount of a sale. (Nearest dollar)
5. Find the average earnings of a person whose weekly pay checks were \(\$ 84.35, \$ 80.20, \$ 94.60\), \(\$ 89.11, \$ 97.20 \$ 90, \$ 80\), \(\$ 82.25, \$ 87.78\). (Nearest cent)

Some special averages that you are familiar with are:
a) Finding your report card grade for each marking period.
b) Batting averages for baseball players.

Example 3: Find your report card grade if your quiz marks were \(73,79,100,100,55,68,88,93,70\) and your final test mark was 88.

To find your report card grade a special formula is used. The formula is: \(G=\frac{2 D+T}{3}\), where \(G\) is the report card Grade, \(D\) is the Daily average, and \(T\) is the final Test mark. Solution:
a) First find your Daily average \(D\) :

Add: 73 Divide: \(\quad \frac{80.6}{9 \longdiv { 7 2 6 . 0 }}=81\), Daily
79
100
100
55
68
88
93
70
726 Sum of 9 quiz marks
b) Double your Daily average \(2 \times 51 \geqslant 162\)
c) Add 162 to your final Test mark, 88.

Add: 162
\(\frac{98}{250}\)
d) Divide 250 by 3 and get \(83.3=83\), your report card Grade.

Using the formula, your solution would look like this:
\(G=\frac{2 D+T}{3}\) The number 3 represents \(\underline{2}\) daily averages and 1 final test mark.
\(=\frac{2 \times 81+88}{3}\)
\(=\frac{162+88}{3}\)
\(G=\frac{250}{3}=83.3=83\), report card Grade
Notice that your daily average counts twice as much as your final test mark. This fact may help. you to remember how to do this kind of problem if you forget the formula:
a) Find your daily average.
b) Double it.
c) Add your answer to your final test mark.
d) Divide your answer by 3.

6-10 EXERCISES B: Find the marking period grades in the following problems. Round off answers to nearest unit.

Quiz Marks
Daily Final Test Marking Per-
\begin{tabular}{lllllllllll}
\multicolumn{10}{c}{ Quiz Marks } \\
1. & 84 & 92 & 100 & 100 & 80 & 95 & 100 & 90 & 82 & Average
\end{tabular} \begin{tabular}{c} 
Mark
\end{tabular} Marking Per-

Note: In finding daily average, divide by number of quizzes taken.
6. A student had quiz marks of \(62,6 \%, 70\). Whet mark must he get. on his next quiz to have an average of 75 ? (Hint: An average of 75 on four tests gives a total of 300 points ( \(4 \times 75=300\). ) How many total points did the student get on his first three tests?)

Ans. \(\qquad\)
7. A student had quiz marks of \(72,75,78\). What mark must he get on his next quiz to have an arerage of 80 ? Ans.
8. A student's daily average is 70. What mark must he get on this final test to have an average of 80 ? (Remember: The daily average counts twice as much as the final test mark.) Ans. \(\qquad\)
Example 4: A baseball player was "at bat" 252 times and got 85 hits. Find the average number of hits he got; based on the number of times at bat. Round your answer off to the third decimal place. Solution: His average will be:
\(\frac{85}{252 / 85.0000}=.3373\)
This average means that he could be expected to get 337 hits if he were at bat 1000 times, or about 34 hits for 100 times at bat, or about 3 hits for every 10 times at bat.

6-10 EXERCISES C: Find the answers to the following problems and round off as indicated.
1. What is your daily average if your quiz marks were 95, 93, 78, 85, 60, and 68? (Nearest unit) Ans.
2. If you earned \(\$ 97, \$ 93, \$ 89, \$ 90, \$ 95, \$ 72, \$ 79\), and \(\dot{9} 92\) for \(\$\) successive weeks, what is your average pay? (Nearest dollar)

Ans.
3. If you sell \(\$ 10 \% .22\) worth of merchandise in a day by means of eleven sales, how much is your average sale?
```

(Nearest cent)
Ans.

```
4. Find the average sales per week for the clothing department of a store if sales were \(\$ 804, \$ 929.48, \$ 1100.40\), \(\$ \$ 90, \$ 1039.45, \$ 1107.09, \$ 829.98\). (Nearest cent)
5. The total commission earned by a salesman for an eight week period was \(\$ 620\). What was his average commission per week? (Nearest Dollar)
6. A baseball player played in 6 games. The following is his record of times at bat and number of hits. Find his batting average after the siyth game. Round off your answer to the third decimal place. Ans. \(\qquad\)
Game At Bat Hits
1
2
3
4
5
6


1
0
3
3
1
2
7. Find the report card mark for each pupil in the following math class. (Found off answers to nearest unit.)

Pupil's Name

Duiz ilarks

Daily Final Report Card Average Test dark
1. Battle, John \(73 \quad 7587 \quad 9010010080\)

3. Fortin, larry 55 6s \(73 \quad 73737970 \quad 55\)
4. Jacoles, iotn ta to 76 j00 75 99 9? 70
5. Levy, Uharles 45 to \(6265 \quad 73\) 5s to 78
S. idmen, P.ictord 100 d3 92 95 \(75 \quad 75\) -








25. Vencra, linda 5i) 62 5\% 75 70 \(69-50\)
s. A boy had quiz man:s of 73,7 , 63,80, d5, 60 . Whst. mark must he ret on his next quitz to get an average of 75? (Nearest, unit)

Ans.
9. If your daij.y average is 60 , what mark must you get on your finel test toc have a marking period grade of 70? (Nearest. unit)

Ans. \(\qquad\)
10. If your daily quiz marks are \(88,72,78,65,90\), 100, 91,93 , what mark must you get on your final test to have a report card grade of 90 ? Ans.
11. Find the batting averages of the following major league baseball players. (Nearest thousandtin)

\section*{American League}
\begin{tabular}{lccc} 
Player's Name & At Bat & Hits & Batting Average \\
Robinson & 252 & 85 & \\
Kaline & 235 & 77 & \\
Yastrzemski & 295 & 96 & \\
Carew & 293 & 93 \\
Petrocelli & 243 & 71 & \\
Blair & 267 & 79 & \\
Conigliaro & 233 & 68 &
\end{tabular}
\begin{tabular}{lll} 
& \multicolumn{2}{c}{ National League } \\
Cepeda & 303 & 108
\end{tabular}

Clements 304 . 106
Staub \(\quad 27094\)
HeCarver \(23 \%\) त2
Gonzalez \(223 \quad 76\)
Aaron 302100
Rose 290

6-1l Cost, ivarkUp, jelling irice
COST:
Department stores must buy tieir merchandise from a wholesaler. whatever the store pays to buy this merchandise is called the COST to the department store.

WARK UP:
The store now wants to sedl this merchandise to its customers. The store will not sell the merchandise to you for the same COST. If it did, the store would not make a profit on the merchandise. So, the store marks the merchandise at a higher price. This added amount is called MARK Ul. (Later you will see that the mark-up is not all profit.)

SELLING P:ICE:
The SELLLNG FRICE of the merchandise is found by simply adding the riARK UP \(A N D\) THE \(\operatorname{COS}^{\prime 1}\). is a formula, this fact could be written: \(\quad S P=\) viark \(U p+\) Cost

Example 1: Find the jelling Price of a pair of men's slacks if the Cost to the store is \(\$ 8.25\) and the Mark-Up is \(\$ 4.59\).
Bolution: \(\quad \mathrm{SP}=\) Mark Up + Cost
\(3 P=\$ 4.99+\$ 2.25\)
\(\Delta==13.14\), Answer
Example 2: The selling price of a dress is \(\$ 15.37\). The mark-up is \(\$ 5.09\). What did the driss cost the store? Solution: We know the selling price is Pl 15.37 . We also know that part of the selling price is the markup, \(\$ 5.09\). How will we find the missing pert of the selling price - that is, how will we find the Cost?

If you have decided to subtract the tnark-up from the seiling price, you are correct!

So, Cost is \(\$ 15.37-\$ 5.09=\$ 10.28\), Answer
Example 3: Find the mark-up on a handbag that is selling for \(\$ 5.95\) if the department store paid \(\$ 3.52\) for it. Bolution: Find the missing part - which, in this problem, is the mark-up.

Mark Up will be \(35.95-\mathbf{p} 3.52=\$ 2.43\)

Hany times the mark-up is expressed as a certain per cent of the cost.

Example 4: What is the selling price of a bicycle that has a cost of \(\$ 22.98\) and a mark-up that is \(35 \%\) of the cost?

Solution: what do we know?
We know that:
a) The cost is \$22.98, and that
b) The mark-up is \(35 \%\) of the cost, or
\(35 \% \times \$ 22.98\)
\(.35 \times \$ 22.9 \$=\$ 8.0430\)
The Mark Up is \$9. 04 .
c) \(3 F=\) iNark Up + Cost
\(S F=\$ 9.04+\$ 22.98\)
\(3 P=431.02\)

6－ll EXERSJSES：Find the missing values in the following problems．

1．Coist Mark－Up Nelling Price
a）分；．40
\＄2．25
\(\$\)
b）\＄？1． 1.9
87.03
\(\ddot{̣}\)
r） 3
85.10
：32．00
d）\(\$ 374.48\)
3
\(\$ 19.8\) ？
r）\(\$ 3.75 \quad 25 \%\) of Cost
\(\dot{\$}\)
f）出
\(\$ 150.37\)
\(\$ 3.400\)
g） \(\mathbf{p} 927\)
1212 \({ }^{2} ; 6\) of Cost
\(\$\)

2．A department store is selling handbags at \(\$ \mathbf{D} .40\) each． A．偝k－Up of ip． 99 had been included on each handbag．What wes the cost．of the handbags to the store？Ans． \(\qquad\)

3．G．FCr i：Co．i．s selling dresses at \(\$ 7.23\) each．Find tine reak－up in the cest of dresscs is \(\$ 5.70\) each．
fins，

L．A store buys 100 dressea at a total cost of \(\$ 342 . E 0\) ． It wants to have a mark－up of \＄l．00 per dress．What should be the selline price of each dress？ Ans． \(\qquad\)

5．Firowi．．Tromr．son Co．bought 50 dresses at a cost of \＄163． The mark－up on each dress is to be \(3.5 \%\) of its cost．：hat wi．ll bre the selling price of each dress？

Ans．

6．E．J．Korvette purchased a dozen golf bags at a cost of \(\$ 9.39\) each．If the mark－up is to be \(40 \%\) of the cost，what i．s the sollinf price of a golf bag？

Ans． \(\qquad\)
7. Bears Hoebuck しंo. purchased twenty-five portable T.V. sets at a cost of \(\$ 2,46 \%\). 75 . The mark-up on each set is to be \(28 \frac{1}{2} \%\). Find the selling price of a set. Ans. \(\qquad\)
8. A drug store has purchased a carton of toothpaste which contains 6 dozen tubes of toothpaste. The cost of the carton was 340.32 . The mark-up for a tube is to be 19\$. What will a tube of toothpaste sell for?

Ans. \(\qquad\)
9. A drug store purchased bottles of aspirin at a cost of \(69 \phi\) per bottle. The mark-up is to be \(19 \phi\) per bottle.
a) Find the selling price of a bottle of aspirin.
b) How much would a customer pay for a bottle of aspirin if the sales tax is \(3 \frac{3}{4} \%\) ?

Ans. \(\qquad\)
10. A store bought tnree dozen bottles of shaving lotion at a cost of \(\$ 24.98\). The mark-up is to be \(30 \%\) of the cost.
a) Find the selling price of a bottle of shaving lotion.
b) If shaving lotion were on sale at a \(20 \%\) discount, what is the discount price of one bottle? Ans.
c) If you bought one bottle during this sale, how much would you pay for it if the sales tax was \(3 \frac{1}{2} \%\) ? Ans.

6-12 Hlark Up, Frofit, and Overhead
You have now workes! with the relationship between selling price, mark-up, and cost.

In this chapter you will see the relationship between mark-up, PROFIT,and OVERHEAD.

Mark-up is made up of two parts. One part is rrofit and the other part is Overhead. As a formula it would look like this: . Mark-Up \(=\) Profit + Overhead

You can see now why, on page 146, it was stated that Mark-Up is not all Frofit.

First, what is Overhead? Overhead is the expense of running a store. Overhead is found by adding up all the expenses of:
a) Paying the employees who work in the store.
b) The cost of electricity, water, heat, gas.
c) Repair work on the store.
d) Paying off loans on money that the store may have borrowed.
e) Do you know of any other expenses?

All of these expenses a re called the Overhead. The store charges you a little bit extra when you buy merchandise, so really you are paying for the expense of running the store. bach item in the store has a part of the total overhead in its mark-up.

What is Profit? Profit is the money that the store makes after all its expenises are paid.
juminary: the hiark-Up on an item is made up of two parts rofit and Gverhead. The mark-up is found by adding these two parts together. Üo, wark-Up \(=\) srofit + Uverhend
Example 1: Find the mark-up on an item that is to be sold at a profit of \(\$ 7.50\) and has an overhead of \(\$ 9.00\).
Uolution: Wark-11p = Profit + Overhead
Hark-Up \(=\$ 7.50+\$ 9.00\)
Vinrk-Up \(=\$ 16.50\), inswer

\section*{SUNMARY:}

The following table may help you to remember the relationship between selling price, cost, mark-up, profit, and overhead:
\begin{tabular}{|c|c|c|}
\hline \multicolumn{2}{|c|}{ Selling Price } \\
\hline \multirow{2}{*}{ Cost of item } & \multicolumn{2}{|c|}{ Mark Up } \\
\cline { 2 - 3 } & Overhead & Profit \\
\hline
\end{tabular}

From this table you find that:
Belling Price \(=\) Cost + Khark Up, or
Selling Price \(=\) lost + Overhead + Profit, because Mark \(U_{p}=\) Overhead + Profit

6-12 EXERCISiS: Find the missing values in the following problems.
1. What is the mark-up if the profit is \(\$ 6.85\) and the overhead is \(\$ 7.49\) ?

Ans.
2. Find how much a store marked-up the price of a coat if the overhead was 41108 and the profit was to be 514.87. Ans.
3. The ma rk-up on an item is \(\$ 17.45\) and the store made a profit of \(4 \$ .00\). How much was the overhead on the item?

Ans.
4. The mark-up on a toaster is \(\$ 3.49\) and the overhead is \(\$ 1.12\). How much profit can be made?

Ans. \(\qquad\)
5. Profit Overhead Diark-Up Cost Selling Price
\begin{tabular}{|c|c|c|c|c|c|}
\hline a) & \$125 & \$320 & \$ & \$950 & \$ \\
\hline b) & \$ 20 & \$ 24.75 & \$ & \(\$ 120.40\) & \$ \\
\hline c) & \$ 7.19 & \(\stackrel{\rightharpoonup}{\phi}\) & \$10.79 & \$ 29.78 & ¢ \\
\hline d) & \$ & ن 7.24 & \$16.98 & \$53.21 & \$ \\
\hline e) & \$ 5.09 & \(\$ 6.00\) & \(\dot{\$}\) & \$ & \$56.00 \\
\hline f) & \$ 12.78 & * & \$30.00 & \$ & \$123.49 \\
\hline g) & \$150 & \$100.00 & \$ & \$ & \$1500.00 \\
\hline h) & \$ 83.05 & 9109.50 & \$ & \(\ddot{\psi}\) & \% 812.11 \\
\hline i) & \$ & \$ 4.08 & \$12.36 & \$43.22 & \$ \\
\hline j) & \$ & \$ 8.64 & \$ & ¢ 24.08 & \% 32.55 \\
\hline
\end{tabular}
6. A table lamp cost a store \(\$ 18.28\). The profit was \(\$ 3.55\) and the overhead was \$2.45. Find:
a) The mark-up

Ans.
b) The selling price
ans. \(\qquad\)
7. 'i'he selling price of a TV set is \(\$ 160.24\). I'he store bought the set for \(\$ 114.14\). Overhead was \(\$ 15.07\). Find:
a) The mark-up

Àns.
b) The profit

Ans.
\(\qquad\)
\(\qquad\)

6-13 Finding the Selling Price
Many times a store determines the selling \(\tilde{\varepsilon}_{\dot{s}}\) price of its
items in the following manner:
a) The profit is fixed as a per cent of cost.
b) The overhead is fixed as a per cent of cost. Example l: The cost of a table is \(\$ 30\). The profit is to be \(15 \%\) of the cost and the overread is to be \(20 \%\) of the cost. Find the selling price. Solution:
a) We can find the profit easily by taking: 1.5: of the cost 15 啇 \(\times \$ 30\) 。 \(.15 \times \$ 30=\$ 4.50\), Profit
b) We can find the overhead by simply taking: \(20 \%\) of the cost

20\% x \$30
\(.20 \times 330=\$ 6.00, \underline{\text { Overhead }}\)
c) If profit and overhead are added together we
can find the mark-up.
Mark Up = Profit + Overhead
Mark Up \(=\$ 4.50+\$ 6.00\)
Mark Up \(=\$ 10.50\)
d) The selling price can now be found by adding toget!!er the murk-up and the cost.

Selling Price \(=\) Mark No + Cost
Selling Price \(=\$ 10.50+\$ 30.00\)
Selling Price \(=\$ 40.50\), Answer

6－13 EXERCISE3：Find the sclling price in the following problems．

1．A suit cosi 429.75 ．The profit is to be \(15 \%\) of the cost and the overhead is to be \(20 \%\) of the cost．ind the selling price．
ins．
 and overhead cach arc \(15 \%\) ci．tise cost．Find the sell．ing procr． ins． \(\qquad\)
3．A 2？caliber rifle costs a stone 31\}.20. Tine profit is fixed at \(2.2 \frac{1}{2} \%\) and the overhead at \(14 \frac{1}{6} \%\) ind the selling pricr．

ゥクล． \(\qquad\)

1．．The ccst of a sof＝to a store is \(\$ 13\}\) ．Iff the profit． is to te \(3.3 \frac{1}{3} \%\) of the cost and the ororhead is to be \(\frac{1}{3.0}\) of the coct，fint the selling price．
ans．
5．A set of golf clubs cost a store \(\$ 73.42\) ．The over－ head is \(\frac{3}{20}\) of the cost and the profit j．s \(\frac{1}{3}\) of the cost．Find the seli．ing price．

A．is． \(\qquad\)

6－14 Per Crant Hanck リp
The mark－up on an item is \(\$ 10\) and the seling price is \＄40．What is the per cent mork－up，based on the selling price？

This problem asks the question：What rer cont is 310 of \(\$ 40\) ，or，what per cent of \(\hat{p} 40\) is \(\ddot{p} 10\) ？In either case，you are comparinf，a part of the price to the whele price．whenever you compare a part of the price to the whole price，the wincle price automatically becomes the dennminator of a fraction．

The per cent mark-up will then be:
\(\frac{\ddot{\phi} 10}{.340}=.25=25 \%\), answer
In department stores, the mark-up is always bised on the selling price. The selling price is the whole price and is always the denominator of the fraction.

6-14 EXERCISES: Find the per cent markup, based on the selling price. Express answers to nearest \(1 \%\).
1. Markup is \(\$ 12\) and selling price is \(\$ 4 \%\). Ans.
2. Markup is 31 ll and selling price is \$3.3. ins. \(\qquad\)
3. The selling price is \(\$ 60\) and the markup is \(\$ 18\).

Ans. \(\qquad\)
4. The selling price is \(\$ 47\) and the markup is \(\$ 15\).

Ans.

Cost Selling irice Vark-Up Per Cent Mark Up
5. \$10
\(\$ 13\)
6. \(\$ 30 \quad \$ 40\)
7. \(\$ 95.73 \quad \$ 126.40\)
\$. \(\$ 6.98\) \$ 9.17
9. \$60.?5 \& 92.79
10. \(\$ 305.22 \$ 398.89\)
11. \(\$ 620\) \$ \(\$ 45.69\)

\section*{6-15 Per cent Increase or Decrease}

The jewelry department of a store had sales of \(\$ 625\) last week. i his week sills were \(\$ 850\).
a) Did sales increase or decrease? - - . . ins. \(\qquad\)
b) By how much did sales increase?

Sales increased by \(\$ \$ 50-\$ 625=. \quad .225\).
c) What was the per cent increase in sales?

The per cent increase was \(\frac{\$ 225}{\$ 625}=.36=36 \%\) increase
In tie above problem do you find that you must first suptract the amount of sales for the two different weeks? Do you see that the per cent increase in sales is found by divicing the amount of increase ( \(\$ 225\) ) by the amount of sales for the first week ( \(\$ 625\) )?

Example l: In the children's clothing department, sales for one week were \(\$ 1, \$ 40\). During the following week sales were \(\$ 1,695\). What was the per cent increase or decrease in sales?

Solution:
a) Did sales increase or decrease? ins. \(\qquad\)
b) By how much was the increase or decrease? Sales went from 1340 to \(\$ 1695\). This is a decrease of 145 .
c) What was the per cent increase or decrease in sales?
The \% decrease is \(\frac{\$ 145}{\$ 1840}=.07 \%=\$ \%\) decrease Notice that you divide by 11840 , the sales for the first week.

Your answer in this type of problem must state two things:
1) The per cent, and,
2) The word "increase or "decrease"

6-15 EXERCISES: Find the per cent increase or decrease. Be sure to write the word "increase" or "decrease" next to your answer. Hound off answers to nearest one per cent.
1. During the first week of June, sales for the shoe department were \(\$ 245\). During the second week sales were \(\$ 2 \$ 0\). Find:
a) The increase or decrease in sales
ans. \(\$\) \(\qquad\)
b) The per cent increase or decrease ins. \(\qquad\) \(\%\), \(\qquad\)
2. During way of 1966, sales for sporting goods departmint were \(\psi \$, 459\). During say of 1967, sales were \(\$ \$, 059\). what was the per cent increase or decrease in sales?

Ans. \(\qquad\) ci \(\qquad\)
3. The June sales of this year for a grocery store were \(\$ 6,347\). jules for June of last year were \(\$ 5, \$ 46\). What was the per cent increase or decrease in sales? Ans. \(\qquad\) , \(\qquad\)
4. One week a TV set cost \(\psi 187.75\). The week before this, the set cost \(\$ 205.48\). What was the per cent increase or decrease in the cost of the T.V. set?

Ans. \(\qquad\) \(\%\), \(\qquad\)
5. A store was selling jackets priced at \(\$ 18.00\). it decided to have a sale and sell the jackets for \(\$ 13.00\). What was the per cent increase or decrease? Ans. \(\qquad\) \(\%\), \(\qquad\)
6. Mien's shoes were selling at \(\$ 12.89\) a pair and are now priced to sell at \(\$ 9.89\) a pair. What is the per cent increase or decrease?

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Ans. \(\qquad\) \(\%\), \(\qquad\)
7. During a sale, a bedrcom suite was selling for \(\$ 199\). ifter the sale, the selling price was \(\$ 239.95\). What was the per cent increase or decrease? Ans. C_ C_ _ _
8. Last week a machine operator earned \(\$ 163.29\). This week he worked overtime and made 3193.6 ? ithat was the per cent increase or decrease in his earnings? ins. \%, \(\qquad\)
9. Juring the past sciool year, enrollment at a high school was 1579. I'his year, enrollment is expected to be 1790. What is the expected per cent increase or decrease in enrollment?
- ins. \(\qquad\)
10. The number of cars crossing the Oharter ()ak Bridge per week was 18,410 on the average. Because I- 84 highway has been completer, the average number of cars crosising the bridge is now 4,547. What is the per cent increase or decrease in number of weekly crossings? Ans. \%, ___

\section*{6-16 Commission}

Jalesmen are paid in many different ways:
A) 'I'he most simple methor of paying salesmen is to allow them to earn a certain percentage of whatever they sell. 'fhe amount that the salesmen receives is called his commission.

Example 1: A real estate salesman receives a \((\%\) commission when he sells a home, what is his commission when he sells a home that is worth \(\psi 24,000\) ? jolution: The salesman gets \(6 \%\) of \(\$ 24,000\) ?
\[
\begin{aligned}
& 6 \% \times i \$ 24,000 \\
& .06 \times i \geqslant 24,000, \text { or } \\
& \dot{41,440, \text { Answer } \frac{158}{187}}
\end{aligned}
\]
B) The next way a salesman may be paid is to pay him a salary for the week and also a commission on what he sells during the same week.

Example 2: A salesman's weekiy salary is \(\$ \mathcal{Y}\) per week. He also receives a \(2 \%\) commission on his sales. what are his weekly earnings when his sales were \(\psi 2,000\) ? Solution: There are two parts to his weekly earnings.
a) He gets \(\$ 90\) as a salary (even though he may not sell anything).
b) He gets a commission of \(2 \%\) of \(\$ 2000\) \(2 \% \times \$ 2000\) \(.02 \times \$ 2000=\$ 40\)
His weekly earnings are now found by adding his salary and his commission.
\[
\$ 90+\$ 40=\$ 130, \text { Answer }
\]
C) Another way to pay a salesinan is to pay him a salary, plus a commission based on how much he sells over a certain quota.

Example 3: A salesman receives a weekiy salary of \(\$ \$ 5\). In addition, he receives a \(1 \xi \%\) commission on all sales OVER \(\$ 2000\). What does he earn during a week when his sales were \(\$ 12,000\) ?

Solution:
a) He gets \(\$ 85\) per week as salary.
b) He is expected to sell at least \(\$ 5000\) worth of merchandise. For this \(\$ 5000\), he gets no commission!
c) His sales were .jla, 000 for the week. How much OJE R ; 5000 is 32,000 ? Ans. i
d) His comassion will be lat of \(\$ 7000\), or, 4105 . e) His weekly earnings are:
:355 for salary
105 for \(7 \frac{1}{3} \%\) of 67000
\(\therefore 1.00\) for werkly sarnings
6-1.6 EXERCIS: \(3:\) Find the surnings for the iollowing salesmen.
1. Commission is \(6 \%\) of sales and sales are \(\$ 30,000\).
2. Commission is lu\% of ses and sales are ins,700,
3. A salesman's salary is wo a week plus \(1 \frac{1}{2} \%\) of his sales. What are his earnings if his sales were ij?, (OOO? ins.
4. A salesman's commisoion is \(2 \frac{1}{2} \sigma^{\circ}\) of his sales plus a
 uentily earniags. ins. \(\qquad\)
5. A manager of a dairy makes a weekly salary of wl.25, and gets \(4 \%\) on all sales over 67.000 . Compute his weekly earnings for a week when sales were \(\$ 1500\). Ans.
6. A truck rental salesman's weekly salary is 495 . In addition he gets \(1 \%\) of all sales over \(\$ 7000\). If sales were \(\psi 2.4,500\) one week, what are his earnings? fins.
7. i sales nan's weekly salary is \(\$ 105\). His commission is \(5 \frac{1}{2} \%\) of his sales. what does he earn when he sells \(; 2500\) worth of goods? Ans. \(\qquad\)
2. A salesman receives \(\ddagger\) a week plus a cominission. His commission is based on a quota of wipoun. Use the following table to find his commission when his weekly sales were \$15,000:


Find his wetly earnings.
Ans. \(\qquad\)
9. Using the table in problem 8, find the weekly earnings of a salesman whose salary is \(\$ 8,500\), and whose quota is ip s,000. Ans.
10. Using the table in problem 5 , find the weekly earninge of a salesman who gets a salary of 3105 per week if his quota is \(\$ 3000\) and his sales were \(\$ 9500\). Ans.
11. Using the table in problem 8 , find the weekly earnings for a salesman whose salary is \(\$ \mathbf{\beta} .10\) per week. His outta is \(\$ 1000\) and his sales were \(\$ 3500\).
ins. \(\qquad\)

\section*{S-l.7 Review Exercises}
1. Find hov much change you would receive if you paid for the following purchases with a 320 bill: w. 09 , 32, w. 87 ,


Ans. \(\qquad\)
2. Find ire cost of five gallons of floor varnish at a cont of pi k. 2 p per gallon .

Ans. \(\qquad\)
3. The price of dozen shirts jos \(\$ 39\). what is the price of a shirt?

Ans.
4. Flour con be bought in 2 lib. begs for 25 . i in lib. her costa bbl. io lb. bar:

Ans. \(\qquad\)
 finn costs a is. Hew much can lo saved by buying the lat lb. jap ineteac of the smadrar jars?
ins.
6. How much would you pay for en purchase of \(\ddagger 1.2 .43\) in ̂ the sales tar. is \(3 \frac{2}{2} \%\) ?
7. If self tan: is 3 hop, how much would 5 lew chairs cost, at a prion of 33.29 each?

Ans. \(\qquad\)
B. During a sale, blankets are marked " है off." what j. \(s\) the discount, price if blankets originally sold for \(\$ 9.49\) :
Ans.
9. The regular price of a toaster is \(\$ 12.15\). During a 20; sale, how much would you pay for the toaster if sales tax is \(3 \frac{1}{2} \%\) ? Ans. \(\qquad\)
10. If four cans of dog food cost \(\$ .89\), how much would one can cost?

Ans. \(\qquad\)
11. Five cans of soup cost \(\$ 1.06\). Find the cost of three cans.

Ans. \(\qquad\)
12. Uix cans of soda cost \(\$\).67. How much would eight cans cost?
13. 'l'he cost of a dozen pair of socks is \(\$ 4.30\). How much would \(1 \frac{1}{2}\) dozen cost?

Ans. \(\qquad\)
14. Two sweaters cost \(\$ 5.25\). How much would 6 sweaters cost? \(\qquad\)
15. Using the fewest number of coins and currency, list what you would give for change and what you would say as you gave the customer his change.
a) Purchase of \(\$ .83\) paid for with a \(\$ 5\) bill.
b) Purchase of \(\$ 3.04\) paid for with a \(\$ 20\) bill.
16. Find the final bills for these grocery slips if sales tax is \(3 \frac{1}{2} \%\).
a) 00.33 PR
b) 01.07 TXGR
c) 00.05 TXGR
00.87 PR
00.30 TXGR
00.05 TXGR
00.39 GR
00.75 MT 00.05 GR
00.47 TXGR
00.69 MT
00.05 GR
01.38 TXGR
00.98 MT
00.15 TXGR
01.08 GR
00.84 MT
00.12 TXGR
01.32 TXGR
01.15 TXGR
00.80 GR
00.25 TXGR
00.12 PR
01.25 GR
17. What is the daily average of the following tests? \(100,95,82,93,65,73,78,80,50,55,68\) Ans.
19. If your daj.ly average is \(\$ 2\) and your final test mark is 70 , what is your marking period grade? Àns.
19. If your daily average is 73 , what mark must you get on your final test to get an average of 80 ?

Ans. \(\qquad\)
20. If a baseball player was at bat 250 times and got 81 hits in 40 games, what was his batting average? Ans.
21. The mark-up on a coat is \(\$ 3.49\) and the cost is \(\$ 29.47\). What is the selling price?

Ans. \(\qquad\)
22. The cost of a dress is \(\$ 4.75\) and the selling price is \(\$ 7.95\). What is the mark-up? \(\qquad\)
23. Sage. Allen ©o. bought 30 dresses at a cost of \(\$ 360\). I'he mark-up is to be \(30 \%\) of the cost. Find the selling price of each dress.
ins.
24. \(k\) store bought a dozen bottles of hend lotion at a cost of 324.20 . The mark-up is to be \(20 \%\) of the cost.
a) Find the selling price on one bottle. Ans.
b) If hand lotion is on sale at a discount of \(10 \%\), what is the discount price of a bottle? Ans.
c) How much would you pay for a bottle during this sale if sales tax is \(3 \frac{1}{2} \%\) ?

Ans. \(\qquad\)
25. The profit and overhead on an item are both to be \(\$ 3.49\). What is the mark-up? Ans. \(\qquad\)
26. The mark-up on an item is \(\$ 14.95\) and the store made a profit of \(\dot{\varphi} 6.37\) when selling it. How much was the overhead on the item? Ans. \(\qquad\)
27. The selling price of an article is 30.98 , the cost is \(\$ 21.60\), and the overhead is \(\$ 6.20\). What is the profit and mark-up?

Profit \(\qquad\) Mark-up \(\qquad\)
28. A coat cost a store \(\$ 18.95\). The profit is to be \(22 \%\) of the cost and the overhead is to be \(18 \%\) of the cost. What is the selling price?
ins. \(\qquad\)
29. If the nark-up is \(\$ 11\) and the selling price is \(\$ 50\), what per cent is tine mark-up of the selling price?

Ans.
30. The cost of an article is 25 and the selling price is \(\$ 43.9 \%\). what is the per cent mark-up, based on the selling price? Ans.
31. During Dec., 1965, sales in a department store were \(\$ 12,470\). During the previous month of Dec., sales were \(\$ 11,080\). What was tie per cent increase or decrease in sales? Ans. \(\qquad\) \(\%\) \(\qquad\)
32. During a sale, a dining room set cost \$135. After the sale, the rice of the set was \(\$ 150\). 'What was the per cent increase or decrease?
ins. \(\qquad\)
\(\qquad\)
33. A real estate salesman's cominission is \(5 \frac{1}{2} \%\) of his sales. What was his commission during a month when his sales were \(\$ 75,000\) ?

Ans. \(\qquad\)
34. A sales nan's commission is \(2 \frac{1}{4} \%\) of his sales. His weekly salary is \(\$ 75\). What are his earnings curing a week when his sales were 32350 ? Ans. \(\qquad\)
35. A salesman's weekly salary is \$105. His co:naission is \(l \frac{1}{2} \%\) of all sales over \(\Psi 5,000\). What is his weekly pay if his sales were \(\$ 11,\{00\) ?
ins. \(\qquad\)

\title{
a text-workbook BOOK 3
}

\author{
1969 \\ revised
}

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\section*{BUSINESS ACTIVITIES}

\section*{7-1 Invoices}

An invoice is a bill that the geller sends to the buyer lis:ing the terms of purchase, the quantity or amount, desonionci, at: the unit price of each item purchased. It also includes:
(1) The extension for each iten founci by multiplying the gumber of eacil iten by its unit price.
(2) The total amount of the bill, found by adding the extensions.

The buyer should always check the invoice when it is receiver to see that the goods listed on it are the ones he ordered and that the prices are those that were agreed upon with the seller.

When the goods are delivered, the items should be checked with the invoice to see if all items have been received. The extensions and the total amount should then be checked to see that no errors have been made.


What is the total amount of the above?
Total amount \(\qquad\)

7-2 sales Tax and Labor Charges
sales tax must also be included on the invoice in those states where it applies. it the present time, the sales tax in Connecticut is 3 数。

Another item that is included on invoices is a charge for labor. Labor costs are not taxable. They should be added after the sales tax has been computed. Example 1:

ESTABLISHED 1830
EDWARD W. MACK \& SON
MANUFACTURER ANU DISTRIBUTOR
Mack's Harvard Brick
WINDSOR, CONNECTICUT
sold to: Atlas Const. Co. bate: \(10 / 10 / 67\) Uethersfield, Com.


7-2 EXLRCISES: The following price list is to be used on the examples that follow.

The retail price is how much an individual automobile owner pays.
The wholesale price is now much a repair shop pays.
A sales tax of \(3 \frac{1}{2} \%\) must be computed for all invoices.
\begin{tabular}{|c|c|c|}
\hline Description & Metail Price & Wholesale Price \\
\hline Muffler & \$17.25 & \(4,13.00\) \\
\hline Tail Pipe & 6.55 & 4.59 \\
\hline Exhaust Pipe & 6.85 & 4.80 \\
\hline Spark Plug & 1.05 & . 70 \\
\hline Points & 3.09 & 2.17 \\
\hline Condenser & 1.03 & . 74 \\
\hline Voltage Regulator & 15.37 & 10.78 \\
\hline Coil & 7.80 & 6.24 \\
\hline Starter & 54.52 & 43.62 \\
\hline Battery & 33.95 & 23.77 \\
\hline Generator & 57.55 & 40.32 \\
\hline Distributor & 29.25 & 20.4\% \\
\hline
\end{tabular}

THE A. C. HINE COMPANY 100 Was'ungton street HARTFORD CONN OGIOS

RUITLMMDE URUEK
N!' 6351
THE ABOVE NUMEE T AMOULO
APPEAMON YOUR INYOICE
ro .... Mr. Themas Whe elem \(\qquad\)
street 55 Yictor Rd.
DATE \(\qquad\) 19-...
cirr. Hertford, conn. ship via Pick Up лов ко \(A\) 731/ PLEASE ENTER OUH ORDER FOR THE FOLLOWING गoв мо.
\(\qquad\)

OUANTIT | ARTICLESAND UTECDIPTION
8 Spart plugs
1 Sat of paints
1 Coadenser
1 Muffler. \(\qquad\)
\(\qquad\)
\(\qquad\)

Br \(\qquad\) Purchapine Argot

PURCHASE ORDE N! 6352 THE ABOVE NUMEE AHOULO
APPEAFON YOUR INVOICE

DATE \(\qquad\) 19 ship via Truch Jos no. A 7312 Cirr Cramwall, Conn.


THE A. C. FINE COMPANY 189 WASHINGTON STREET HARTFORD. CONN. 06106

PURCHASE ORDER
\[
\mathbf{N}^{\prime \prime} \quad 6352
\]

THE ABOVE MUMEET SHOULD
roAr. John Foster
stet. \(/ 6\) Amherst St.
Mirv, Wethers field, Conn. \(\qquad\)
PLEASE ENTER OUR ORDER FOR THE FOLLOWING -


Br \(\qquad\) Parcheane Ament

THE A C. MINE COMPANY lEY WASHINGIUN STREET HARTFORD. CONN. 06106

PURCHASE ORDER
N: 6351
THE ABOVE NUMBER SHOULD
no Gridley's Garage street 400 Maple Ave.
cire Bloom field, Conn.
PLEASE ENTER OUR ORDER FOR THE FOLLOWING -

24 Sparkplugs
1 Generator
Antrats ane ocrcanemon
 ship via PiCot UP OB NO .. \(173 / 4\)

Tail pipe
1. Distributor

2 Condensers
2. Coils
\(\qquad\)

Using the following wholesale prices, complete the following invoices:
\begin{tabular}{lccc} 
Description & Retail Price & Wholesale Frice \\
jet of brake lining, No. 4 & \(\$ \$ 7.75\) & \(\$ 35.10\) \\
Set of brake lining, No. 3 & 24.40 & 14.64 \\
Kear drum & 105.74 & 95.17 \\
Leaf & 16.28 & 14.21 \\
Pin & 2.00 & 1.50 \\
U Bolt & 3.00 & 1.50 \\
Bushing & 2.10 & 1.57 \\
Center bolt & .80 & .60 \\
Clip bolt & .60 & .45 \\
Drag link & 8.10 & 6.83 \\
Castor shim & 1.60 & 1.36
\end{tabular}

Superior Spring © Manufacturing Co., Inc. AUTOMOBILE SPRINGS
397 WASHINGTON STREET

REPAIRING ALTERING RESEATING Hartford, Conn.

New Haven branch: - 90 Goffer St.
THIS IS YOUR ONLY INVOICE

SPRINGS BOLTS
BUSHINGS.

Customer's \(\qquad\)
sold To John Foster
Address 4047 Frank lin Ave \(\qquad\)


Superior Spring © Manufacturing Co., Inc. AUTOMOBILE SPRINGS

REPAIRING
ALTERING RESETTING

377 WASHINGTON STREET Hartford, Conn.

New Haven Branch: - 90 Goff St. THIS IS YOUR ONLY INVOICE

Customer
Order No.
D903
Phone CH 62697 Date 19
Sold to Peachy's Garage
Address 646 Not St
City Wethers field, Conn


\section*{Superior Spring © Manufacturing Co., Inc.}

\section*{AUTOMOBILE SPRINGS}

\section*{COT WASHINGTON STREET Hartford, Conn.}

REPAIRING ALTERING RESETTING

SPRINGS BOLTS BUSHINGS

New Haven branch: - ga Gaffe St.
THIS IS YOUR ONLY INVOICE

sold To Billy's Service Station
Address \(\{\) no c Roose yell Sit.


Labor - 300


7-3 Extended Payment
Bills are usually payable in full within 30 days of the billing date. The billing date is the date the bill was made out by the seller. If a bill is not paid within 30 days, a carrying charge is added to the total amount due. Usually the carrying charge is \(l \frac{1}{2} \%\) of the total due.

Example i: Find the carrying charge on a bill not paid in the 30 day period that carried a liz service charge. The total due was \(\$ 37.65\).

Solution:
\(T\)
Multiply . \(015 \times 37.65\)


Service charge is \(\$ .56\)
(See tape, right)
The new net amount now due will be the original net due plus the carrying charge. In our example above this would be \(\$ 37.65+.56\) or \(\$ 38.21\) now due.

Carrying charges, or penalties, are often charged by cities and towns for taxes not paid in a specified time and also by the water Bureau for late payment of water bills. 7-3 EXERCISES: Complete the following table. Assume the net amounts have not been paid in 30 days.
\begin{tabular}{cc} 
Net Amount & I市\% Carrying \\
Due & Charge \\
Due Net
\end{tabular}
1. \(\$ 33.50\)
2. \(\$ 5.20\)
3. \(\$ 362.50\)
4. \(\$ 8265.70\)
5. \(\psi 79.65\)
6. \$ 129.35
7. \(\$ 26.98\)
\begin{tabular}{|c|c|c|}
\hline Net Amount Due & 1模 Gerrying Charge & !ew Net Due \\
\hline
\end{tabular}

\section*{8. \(\$ 4567.99\)}
9. \(\quad 7.62\)
10. \(\psi 765.43\)

Solve the foilowing problems:
11. If a customer has a bill of \(\$ 37.50\) and has not paid it within 30 days, what amount must he pay?
nnswer: \(\dot{s}^{3}\) \(\qquad\)
12. A customer has a bill of \(\$ 84.32\) at the beginning of a 30 day period and pays the store \(\$ 20.00\) of this amourt. He does not pay the rest of the bill within the 30 riays. How much must he pay after the 30 day period is over?
13. A customer's bill is \(\$ 109.76\) and he pays \(\$ 25.00\) within the 30 days allowed him. He then purchases additional merchandise amounting to \(\$ 55.75\). What is the total amount of his next month's statement (bill)?
14. issume the following has been paid within 10 days and carries a \(5 \%\) discount. Including sales tax, find the total amount due. (See next page.)
26.96


7-4 Industrial Buying - Liscounts
diany wholesalers and manufacturers offer their goods to the retailer at a price called the list price. List price is the cost of an iten as it is listed in a catalogue. List prices remain the same for long periods of time, other wise, the wholesaler or manufacturer would spend large sums of money continually revising his catalogues.

In order to account for changes in the market, changes in production costs, and various other factors that influence the price of an item, discounts or deductions are allowed from list prices. Discount is the amount that an item is reduced in price by the wholesaler or manufacturer. Discounts are usually given as per cents. Often discounts are so large that the List price gives no idea of the actual cost.

Net price indicates the cost of an item after a discount has been taken off the list price. That is,

Net price \(=\) List price - Discount.
Example l: Find the net price for the following:
Item List Yrice \% Discount Net Price Electric Drill \(\$ 31.00\) 40\% ?

Solution:

List Price \(=\$ 31.00\)

\section*{ifultiply}
\(\%\) of Discount \(=.40\)
Discount \(=\$ 12.40\)

List Price \(=\$ 31.00\)
Discount \(=12,40\)
liet :̈rice \(=\$ 18.60\) Answer

Note: First, find the amount of the discount by mul-
tiplying the list price oy the rate of discount. Jecond, subtract the discount from the list price to find the net price.
7-4 ENERCISES: Complete the following:
List Price \% of Discount Discount Net Price ..... 1. \(\$ 2.90 \quad 40\)
2. \(\$ 362.50\) ..... 33
3. \(\$ 2567.25\) ..... 5
4. \(\$ 59.98\) ..... 17
5. \(\$ 79.50\) ..... \(33 \frac{1}{3}\)
6. \(\$ 1.59\) ..... 43
7. \(\$ 786.92\) ..... 3亲
8. \(\$ 6256.00\) ..... 25
9. \(\$ 3003.03\) ..... 31
10. \(\$ 9.99\) ..... 12
11. \(\$\). 65 ..... 18
12. \(\$ 929.33\) ..... 5
7-5 Successive DiscountsIndustrial list prices often carry more than one discount.There may be a trade discount allowed only to a dealer in thetrade. There may be a quantity discount granted to those thatbuy in large amounts. When there is more than one discount,we call them successive discounts. They may be expressed as"less \(20 \%\), less \(10 \%\), less \(5 \%, "\) " 20 , 10 , and \(5, "\) or simple"20-10-5".
When more than one discount is given, each net price must be found separately. The order in which you do this does not affect the final result.
Let us do the following example to illustrate the method used.

Example 1: Find the net pr ce on a set of tools that lists for \(\$ 43.25\) and carries discounts of 20-10-5. solution:

List price : \(\$ 43.25\)
List Price: \(\$ 43.25\)
\% of IIscount: _ 20
First Discount:
First Discount: \(\qquad\)
First Net Price:
Your first net price should be \(\$ 34.60\).
First Net Price: \(\quad \mathbf{~} 34.60 \quad\) First Net Frice: \(\quad \$ 34.60\)
Second \% Discount: .10

Second Liscount:
Secund Net Price:
Your second net price should be \(\$ 31.14\).
Second Net Price: \$31.14 Second Net 'rice: \$31.14
Third \% Discount: . 05 Third Discount:
Third Discount: Final Net Price:
Your final net price should be \(\$ 29.5 \%\).
At first glance you might be led to say that a discount of \(20-10-5\) is \(20+10+5\) or a \(35 \%\) discount. This is not true?

Let us take the example we have just completed and do it
this way. That is,
Example 2: Find the net price on an item listing at \(\$ 43.25\) carrying a \(35 \%\) discount. jolution:

List Frice: \(\$ 43.25\) List Frice: \(\$ 43.25\)
\% of Discount: . 35 Discount:
Net Price:
Discount:
Your net price should be \(\ddagger 28.11\).

Now compare this answer, \(\$ 28.11\), with the answer to Example 1 of \(\$ 29.58\). Do you see that successive discounts of \(20-10-5-\%\) give a different net price than a single discount of \(35 \%\) ?

So if you see successive discounts in a problem, do not add them. Find each net price individually until you reach the final net price. That is, the first discount is based on the list price; the second on the remainder after deducting the first discount; the third, on the remainder after deducting the first two discounts; and so on.

\section*{7-5 EXERCISES A:}
i. The list price for an adjustable wrench is \(\$ 26.10\) wi.th successive discounts of \(25 \%\) and \(5 \%\). Find the net price of the wrench. (Caution: Do not add the \(25 \%\) and \(5 \%\) !)
2. Lumberjack Stores give a "cash and carry" discount of \(15 \%\) and 4\%. This means that if you pay cash for an item and bring it home yourself you are given these discounts. What is the "cash and carry" price of a rotary lawnmower that lists at \(\$ 69.75\) ?
3. The list price of a box of bolts ( 100 bolts per box) is \(\$ 14.65\). The discount is 33-10-5. Find the net price of a box of bolts.

- ||||||||||||||||||
\begin{tabular}{|c|c|c|}
\hline SUCCESSIVE
LIST
PRICE & \[
\begin{aligned}
& \text { OUNTS 7-5 } \\
& \text { FIRST } \\
& \text { DISCOUNT }
\end{aligned}
\] & EX \(\underset{\text { RCIS }}{\text { FIRST }} \mathrm{B}\)
DISCOUNT \\
\hline 1. \$ 36.85 & 5\% & \\
\hline 2. \$ 115.94 & \(23 \%\) & \\
\hline 3. \$ 83.90 & 3\% & \\
\hline 4. \(\$ 4380.65\) & 7 年 & \\
\hline 5. \$ 245.85 & 10\% & \\
\hline 6. \$ 32.90 & 5\% & \\
\hline 7. \$ 115.36 & 9\% & \\
\hline \%. \$ 250.45 & 7\% & \\
\hline 9. \$1450.29 & 10\% & \\
\hline 10. \$ 340.28 & \(8 \%\) & \\
\hline 11. \$ 76.85 & 35\% & \\
\hline 12. \% 118.46 & 20\% & \\
\hline 13. \$ 46.90 & 17\% & \\
\hline 14. i 228.80 & 15\% & \\
\hline 15. \$ 88. 35 & 18\% & \\
\hline 16. \$ 420.50 & 16\% & \\
\hline 17. \(\$ 1134.80\) & 30\% & \\
\hline 18. \$ 89.20 & 40\% & \\
\hline 19. \$ 660.75 & 25\% & \\
\hline 20. \(\ddagger 345.15\) & 18\% & \\
\hline
\end{tabular}
21. The list price of a pair of cutting shears is \(\$ 8.79\). Find the net price of the item if the discount is 15-25.
22. Find the net price for the following items.

BTEFL IN ALL ITS FORMS
INDUBTRIAL \& CONTRACTORS SUFPLIES


270 LOCUST STRFET, MARTFORD, CONNECTICUT TELEPHONE E2E-91A1

Customer's Order Na. 68412:
Bright Electric Contractor Co.
Tro \(\frac{1}{2}\) " Black \& Decker Electrie Drills (垬575)

\section*{Satoloque:}

List Price is \$91.00 each
Discount is 35-5.
23. Many businesses grant their employees an additional discount on a limited number of items. This discount is often in addition to various discounts available to all custoners. Assume that an employee is granted a \(15 \%\) discount on the following items. Find the cost of each to him.
Item
List Price Regular Discounts \(\begin{gathered}\text { Net to } \\ \text { Employee }\end{gathered}\) Washing Machine \(\$ 229.95 \quad 20 \%\)
Vacuum Cleaner \(\$ 79.50 \quad 25 \%\)
Fan, 20" \(\$ 23.50\) 15\%

Electric Range \(\$ 279.45 \quad 14 \%\)
Portable T.V: \(\$ 119.95 \quad 12 \%\)

7-6 Using Complements
There is a way of discounting in one step. Let us look at an example to illustrate this method.

Example 1: The list price of a drill is \$\$7.50. Find the net price with a discount of \(12 \%\). Solution:

Old Method
List Price \(\$ \$ 7.50\)
\% of discount _. 12
Discount 10.50
List Price \(\$ 87.50\)
Discount \(\quad 10.50\)
Net Price \(\$ 77.00\)

Complement Method
\(100 \%-12 \%=88 \%\).
List Price \(\quad 87.50\)
Complement of \(D_{\text {iscount___ } 88^{M}}\)
Net Price \(\quad \$ 77.00\)
Notice the same result in each
case!

Notice that the net price is the same using either method.
The complement of a discount is found by subtracting the per cent of discount from \(100 \%\).

Complement \(=100 \%_{0}^{\prime}-\) per cent of discount
When more than one discount is being applied we can also make use of complements.

Example 2: List price \(\$ 82.00\)
Discounts 30-20-10. Find the net price. solution:
a) Find the complement of each discount \(100 \%-30 \%=70 \%\)
\(100 \%-20 \%=80 \%\)
\(100 \%-10 \%=90 \%\)
b) Multiply these by the list price. \(82(.70)(.80)(.90)\) \(45.9200 \times \overline{\mathrm{T}}{ }^{80}\)
c) The product is your net price. Namely, \$41.33.
(Remember to use your TR key in finding this product containing a series of factors. See tape.)

To find the net price, multiply the list price by the product of the complements of the discounts expressed as decimals.

1-0 exercises: Use the complement to find the net price in each of the following.
List Price E of Discounts Complements Net Price
1. \(\$ 5.2010\)
2. \(\$ 340.0040\)
3. \(\$ 11.45\)

15-4
( ) ( )
4. \$ 202.02
5. \(\$ 3.29\)
\(33 \frac{1}{3}-3 \frac{1}{2}-2\)

6. \(\$ 2560.70\)
7. \(\$ 89.95\)

40-10-15
12-12-7 ( ) ( ) (
8. \$5367

30-25-2妾 ( ) ( ) (
9. \(\$ 736.79\)

36-17-6-2 ( ) () ) ( )
10. \(\$ 29.95\)

17-3立-2 ()()()

\section*{7-7 Discounts - Applications}

After the net price has been determined, other factors influence the final bill. You have already worked with two of these; sales tax and \(2 \%\) discount for bills paid in 10 days.

7-7 EXERCISES: Find the final net prices for each of the following. In each case the \(3 \frac{1}{2} \%\) sales tax is to be added and a \(2 \%\) discount for paying in 10 days is to be deducted.
List Price \% of Discounts Sub-Total Tax Sub-l'otal \({ }^{2 \%}\)
1. \(\$ 29.95\) 10-5
2. \$ 397.00 30-10-20
3. \$7292.60 15-10-5
4. \(\$\) 9.98 40-10-12

\title{
G. FOX \({ }^{\circ} \mathrm{CO}\).we
}

Shooing Eomnadiout dives 1847
f. Fox \& Co., Inc. is buying the following merchandise from a wholesaler. If \(G\). Fox pays for the merchandise within 10 days it can deduct \(2 \%\) from the bill. This information is usually given as: \(2 / 10 \mathrm{da}\). In this problem, assume that G. Fox has paid within the discount date of 10 days. Find the amount that must be paid.
5. Quantity

Description
Price Total
10 doz. Nylon sweater, long sleeve, \$12.75 pullover, color XB93411

8 doz. Skirts, MCO3417 4.75 ea.
15 Handbags, GS49978 18.75 per doz.
18 doz. Handkerchiefs, Fi:160032 3.24 per doz.
10 doz. Towels, TX06614

7 doz. Sheets, SG61192
24.00 per doz. .85 ea.
\$
6. G. Fox buys \(\$ 879.52\) worth of merchandise from a wholesaler. A normal discount of \(12 \%\) is applied to this amount. The store pays the bill within 10 days of billing and is entitled to a \(3 \%\) discount. What is the final amount to be paid?

You will need the following information, taken from a pricing catalogue, to do the problems on the next page.

\section*{\(90^{\circ}\) elbows}

\section*{Standard Weight \({ }^{\dagger}\)}


\begin{tabular}{|c|c|}
\hline  &  \\
\hline 3/2 & \$ 2.15 \\
\hline 3/4 & 2.15 \\
\hline 1 & 2.15 \\
\hline \(11 / 4\) & 2.90 \\
\hline \(11 / 2\) & 3.65 \\
\hline 2 & 5.01) \\
\hline \(21 / 2\) & 7.30 \\
\hline 3 & 9.50 \\
\hline \(31 / 2\) & 12.50 \\
\hline 4 & 13.00 \\
\hline 5 & 24.00 \\
\hline 6 & 28.00 \\
\hline 8 & 45.00 \\
\hline 10 & 76.00 \\
\hline
\end{tabular}

Nominal plpe sizes are in inches.
7. Using the list prices on the preceding page, determine tho customer's bill if he is entitled to the following discounts: Item:

90 Elbows

\section*{Straight Tees \\ Customer's Order:}

Quantity:
24
72
48
12
10
22
16
4
Net Price

\section*{List Price: Discount: \(\frac{\text { Net }}{\text { Pice }}\)}

Description:

\section*{Discount:}
\(45 \%\)

1", 90 Elbows
\(\stackrel{\rightharpoonup}{p}\)
35\%

24
2", " "

4", " "
6", " "
\(3 \frac{1}{2} \%\) Sales Tax
total
. \% \(\qquad\)
Less \(2 \%\) discount, if paid within ten days . . . . . . . . . . \(\$\) \(\qquad\)
Final bill to customer ..... \(\ddot{\psi}\)
8. Find the total amount due in the following carrying discounts of 10-5-5. Make sure you add the \(3 \frac{10}{2} \%\) sales tax. Notice that prices are quoted per 1.000 brick.
合






truck brick
 － No．
\[
\circ
\]

处这

7-5 Freight iates
Another factor that must be considered in industrial buying are charges for shipuing items, often referred to as freight rates. They may be fiven as \(\$ .0165\) per lb., \(17 \phi\) per 100 lbs., or even 41.59 per 1000 lbs.

Freight rates are not taxable. They must be added after the sales tax has been computed.

Example l: Find the final net frice on a shipment weighing 814 lbs., listing at 21214.44 with a discount of \(35 \%\). The freigit rate is \(\psi .0165\) per 1 lb . and the


Solution:
List Price \(\$ 1214.55\)
Less Discount \(\quad 425.09\)
Net Pric?, Bub-Total 79.46
\(3 \frac{1}{2} \%\) Sale 3 Tax \(\quad 27.63\)
Net l'rice, jui-Total \(\$ 17.09\)
Freight charge: 4.016 per lb. \(x \quad 3141 b\). \(=13.43\)
Final Net irice \(=\$ \$ 30.52\)
Now, try these.
7-8 EXERCISES: Find the following freight charges:
Number of lbs. \(x\) Rate per lb. = Freight Charge
1. 1296
W.OM6
2. 356
1.3中
3. 2652 พ. 0152
4. 762 2.724

Find the final net price in each of the following. In--. clunte the 3kio sales tax in each case.
5. List Jrice \(=\$ 72.56\)

Discounts \(=35 \%-5 \%\)
Waight \(=37 \mathrm{lb} . \quad\) Freight Rate \(=.0167\) per 1 b .
6. List Price \(=\$ 2563.75\)

Discounts = 26-12-6
Weight \(=712\) lbs. Freight Kate \(=1.55 \notin\) per 1 b .
7. List Price \(=\$ 316.55\)

Hiscounts = 40-25-15
Weight \(=3343\) lbs. \(\quad\) Freight Rate \(=\$ .0132\) per \(\mathbf{Z b}\).
\%. List Price \(=\$ 7296.37\)
Discounts \(=33-12-4\)
Weight = 8376 lbs. . Freight Rate \(=\$ .113\) per 100 ibs.
9. You are employed by Capitol Light \& Supply Co., Hartford, Conn. as an order clerk. Capitol Light is buying some stock items from a manufacturer. Your job is to figure the total bill for the purchase of these items. This bill is the cost of the items to Capitol Light.

Here is the problem:
You are directed to purchase the following items from AB C Electric Manufacturers Inc. for Capitol Light \& Supply Co.

Purchase Order Information:
Number of Items to Order: Catalogue Number:
\begin{tabular}{rr}
90 & 100 A \\
40 & 110 C \\
200 & 170 F \\
27 & 185 H \\
200 & 190 I \\
250 & 200 J
\end{tabular}

\section*{Catalogue Information:}

Catalogue Number: Weight per Item: List Price per Item:

100A
110 C
170F
185 H
190I
200J
(1)
(2)
(3)
(4)
(5)
\(\$ 1.10\)
1.50 lb.
. 90
1.20 "
. 75
9.60
2.00"
.60
1.30 "
1.35
1.80 "

Catalogue Number Weight List Price Total List Total lumber Or Items Per Item Per Item Price Weight
(2) \(\times(4)\)
(2) \(\times(3)\)

100A
1:IOC
170F
155H
190I
200J
\[
\$ \square \quad \mathrm{Lb}
\]

The total List Price is .............. \$ \(\qquad\)
Less discount of \(45 \%\).................. \(\$\) \(\qquad\)
Net Price, SubTotal ................... \({ }^{\$}\) \(\qquad\)
In addition, Capitol Light has to pay for the cost of the shipment of the items by railroad or truck. The freight cost is \(\$ .0165\) per pound of Total Weight.

Freight Charge is \(\$\) \(\qquad\) per lb. \(x\) \(\qquad\) lb. \(=\$\) \(\qquad\)
(Answer): Net Cost to Capitol Light \(=\$\) \(\qquad\)

\section*{7-9 Combination Problems}

In this section we will work on problems involving all the ideas we have learned in this chapter to this point.

\section*{7-9 EXERCISES: Practical Problems in Buying}

You are working for an industrial hardware company and you have to find the net price of various orders that costomens send in. Assume that the state sales tax is \(3 \frac{2 \%}{} \%\). Do not forget to add the sales tax in to your final net price. 1. A customer orders 2400 ft . of \(\mathbf{z}^{n}\) rope. Tell the customer how much the rope will cost him (include the sales tax.)

From your price catalogue, you find that \(\frac{1}{2}{ }^{n}\) rope weighs 8 pounds per 100 ft . and the list price is \(70 \notin\) per pound. The discount is \(12 \%\).
2. A customer orders 800 ft . of steel chain. find how much he has to pay. From the price catalogue you find that chain weighs 24 pounds per 100 ft . The list price is \(\$ 2.38\) per pound. The discount is "less 5 and 5" (5-5)
3. You are finding the price of 2000 sheets of sandpaper. From the catalogue you find that the list price is \(\$ \$ .50\) per 100 sheets. The discount is \(12-40\).
4. You are finding the price of \(550,3 / \delta^{\prime \prime} \times l^{\prime \prime}\) machine bolts. From your price catalogue you find that the list price is \(\$ 11.50\) per 100 bolts. The discount is 25-10-5.
5. You are finding the price of a circular sanding belt. The circumference is \$0 inches. From your price catalogue you find that the list price is \(\$ .01 \%\) per inch of circumference. Add a charge of \(\mathbf{\$ . 3 2}\) for making the belts into a circle. (This is a labor charge). Discount is 12-12-5.


STEEL IN ALL ITS FORMS
INDUSTRIAL A CONTRACTORS SUPPLIES
L. L. ENS WORTH a SON, INO.

270 LOCUST STREET, HARTFORT, CONNECTICUT TELEPHONE 525-9141

Customer's Order 1:0, 66-795:
The lark berart.nent of the city of hartford wants vo parchase 1 coil ( 1200 rent) of \(\frac{1}{2}\) manila rope.
catalogue:
List trice is \(0 \phi\) per lb .
: eight is 7.35 l . fer 100 rt.
Discount is \(15 \%\).
x-
vales tax is hz.
7. Plumbing and Heating material:.

\section*{SUCCESSIVE DISCOUNTS:}

Find the net amount of this invoice.
state sales lay is \(3 \frac{1}{2} \%\).
Discounts are as indicated.
quantity Description
\(100 \quad t^{\prime \prime}\) Cast Iron Elbows
175
100
100
150
1 ヶ"

Less discount of ? (-10-10-10-10 (Use complement, method ar sueessive discounts)

\section*{List Price Extension}
\[
\$ .23 \text { each } \$ \text {. }
\]
\[
\text { . } 26
\]
\[
.23 \quad "
\]
\[
\text { . } 32 \text { " }
\]
\[
.39 \quad "
\]

List Price \(\$\)
\begin{tabular}{l} 
Net hencunt \\
Sales inlay: \\
\hline
\end{tabular}

Total sill \(\psi+\)
2. rind the net mount in the foziowine:
bTEEL in all its forms

industrial \& contractors supplies
L. L.ENSWORTH B BON, IN

270 LOCUST STREET, HARTFORD, CONNECTICUT
```

justomer's (ryer 1:0. i, 4343:
ine .j is J Constr:action Lo.

```

```

        250 po:%. \frac{1}{2" lock washers.}
        2SO FCs. 支" Ilat woslers.
    vatalo:ue:
\frac{1}{2}" * 3" !eachine hoits
\" lock washers
\frac{1}{2}" flat washers
uales tax; 3\frac{1}{2}%
nssume bill is miri within l0 days, and discount is 2%.

```
a. ind je: siles tor in compu ine the :ot anount in the fol:owine:


Ousiomer's irdier l.c. \(77432:\)
Ohe F. L. Boberts Labinel riakers Co.


\section*{̇まualojue:}

One unit (or one (onx) \(=500\) sheets
Jase discount i.s l2: (Reg:raless of number of units purchased)
nnoiher discount is subtracted if tie cistomer buys:
\[
\begin{aligned}
& \text { Cno init . . . . } 10 \% \\
& \text { iwn inits . . . } 24: \\
& \text { Ohree Units . . } 35 \% \\
& \text { Four inits . . . } 40
\end{aligned}
\]

\section*{10. Succossiva Discounts:}

Mr. Crane decided to install air conditioning, refrigerators, and stoves in the 3 duplex homes ha was building. He: will be buying 6-6,000 BTV Air Conditioners at \(\$ 295.00\) per unit; 6 Prigidaire refrigerators at \(\$ 470.00\) each; and 6 electrio rangea at \(\$ 185.00\) each. Complete the following bill; finding the totals of each itom and then the grand total. If the discount to Mr. Crene: is \(15 \%-30 \%-5 \%\), payable in 30 days, what amount should Gaiffing T. Vo expect to raceive? Sales tax is 3kyo

STATEMENT


Date
DATE



\title{
STEELINALLITS FORMS \\ INDUSTRIAL\& CONTRACTORS SUPPLIES \\ \\ L. L. ENSWORTH A BON, INC.
} \\ \\ L. L. ENSWORTH A BON, INC.
}

270 LOCUST STREET, HARTFORD, CONNECTICUT

Lustomer irrier io. 342035


;.
\[
\text { .jales iay } 3 \frac{1}{2} ;
\]
\(\qquad\)
jub-iotal
\(\qquad\)
Less 2\% U.ish \(\qquad\)
Final iet : rice


\section*{luminine meri ie: in : mierials}

'iotal net amount. \(\qquad\)
If this bill is paid in 10 days, deduct \(2 ;\) \(\qquad\)

Final lvet ßill \(\qquad\)

7-10 ifineine to- :or veni of iscount
 lite to find wint tris wo:id be is a ber cent of discnuat on the list price.

Io find lion ber cent of discount, divide the discount by the list nrice.

Ber cent of discount \(=\frac{\text { nmount of riscount }}{\text { List irice }}\)
If tine list. arice and net price are friven, the amount of discount is the difference between the two.
anount of discount \(=\) ijsst rice - het irico
 price is , 1.50. find the per cent of discount. : Solution:
a) maculi oi filscount \(=0.00-i .50=.0 .50\)
b) i'er cent of dis count \(=\frac{.50}{2.00}\)
\(=\frac{i}{4}=? 5 \%\) inswer
Carry the following out to the nearest hundreth of a percent.
7-10 Exthlisio: find l:e fer cent discount of the following itens:
1. jet of brater lininf, i.0. 4 , ,is \(7.75 \$ 35.10\)
2. jet of brake lininy, a. 3 24.4i) 14.64
3. rear drum \(\quad 105.74 \quad 95.17\)
4. ieaf 16.2 14.21
5. iin 2.00 1.50
6. \(U\) :3olt \(3.00 \quad 1.50\)
7. bushing \(\quad 2.10 \quad 1.57\)
3. ienter uol: .
G. Ulip holt
. (1) . \(1+5\)
10. Drac lint 2.00 1.30



INVENTORY STOGK GONTROL LIST
description: \(\mathcal{L}\) icing; \(/\) Room \(\begin{aligned} & \text { Regular SALE } \\ & \text { Price PRICE }\end{aligned}\)
f1. Solid Maple Solabed \(\square\) \(\$ 159.00\) T 49.00
1. Colonial Sofas \& Chairs

Tweeds and Prints \(\$ 239.00\) ' \(\$ 137.00\)
13. 3 Pc. Solid Maple Dën Sot \(\$ 199.00\), \(\$ 119.00\)

14 Modern 3 Pc. Sectional Living Room \(|\$ 359.00| \$ 199.00\)

\section*{15 Colonial Sleeper with} Full Mattress ! \(\$ 249.00\) ! \(\$ 169.00\)
It Mediterranean Sofa ard Chair \(\$ 550.00\) — \(\$ 329.00\)
17. \(100 \%\) Nylon Fonm 3 Pc. Suite \(\$ 229.00\) \$129.00 2 Pc. King. size Colnuial Living Ronm
|\$369.00: \$248.00
\(\overline{3} \mathrm{Pc}\). Colonial Sactional
Living Ronm
! \(\$ 550.00\) : \$289.00
jci. Plastic Foam Lounger —— 54.00 - \(\$ 29.00\)
Early American Print Sofa and Chair
|\$329.00 \({ }^{\prime} \$ 199.00\)
22. Odd Modern Upholstered Chairs \(\$ 79.00\) \$ 19.00 Deluxe 2 Pc. Colonial Living Room \(\qquad\) | \(\$ 550.00\) : \(\$ 397.00\) \(\overline{10} \mathrm{Pc}\). Living Room or Sofa Bed Set |\$257.00 \(1 \$ 155.00\) S̄olid Maplo Sofabed \(\qquad\) \(\$ 159.00\) < 99.00 3 Pc. Den Grouping \(\qquad\) \(\$ 239.00=\$ 168.00\) Modern Hidebed -
\begin{tabular}{llll:l} 
17. \(\begin{array}{ll}\text { Mocorator Fabrie } & \\
\text { 28. Sofa Beds, Choice of Finric } & \$ 2.49 .00 \\
& \$ 159.00\end{array} \$ 884.00\) \\
\hline
\end{tabular}


7-11 Renting or Leasing Trucks
Suppose you had a licanse to irjue a car, and you borrowed a friend's car to go on a trip. Your friend has already filled the gas tank himself. At the end of your trip, it would be proper for you lo either pay him for "his" gas, or else, fill the tank yourself. Also, during the trip, the brakes were worn down a little, the tires lost some rubber, grease was used up for lubricating parts, engine parts wore down, etc. Again, it would only be fair for you to pay your friend something for depreciation of his car during your trip.

In a sense, you are renting your friend's car.
Suppose yo: are now a home owner. You have purchased a new home and want: to move your furniture from your old home into the new one. You nay recide to rent a truck to do this. If you did rent a track, you would have to pay for the gas and also pay a "stand-by charge," which is another way of saying "depreciation." In adrition, you would pay about lop for every mile that you drove the truck. Ïrucks can be rented for many reasons.

Suppose you ownad a Iruit and vegetable company. It may not be profitable for you do fiv your orm trucks, so instead you rent them from a Lrucg-iental commany. A truck can be rented for one hour, one day, ont week, a month, or a year.

Trucks mej also be ifesed for periods of time that are greater than a year. .day comparices lease trucks for as long as 7 or \(\&\) years because it is mere profitable for them to lease rather than to buy their own trucks.

Example : in the next page is an invoice for truck No. 103 being leased for a period of more than one year. The number at the top right-hand corner of the invoice is the invoice number (No. 3300).

Write the name and address of the company that is going to use this truck:

The mileage reading when the truck went out of the leasing company's yard was 7,500 miles.

The truck was then driven to deliver produce.
when the truck came back in, the reading was 16,500 miles. The total miles driven were 9,000. How was this determined? Answer:

The rate for this truck is \(\mathrm{F}_{\mathrm{F}}\).lf for each mile that the truck is driven. How is the mileage charge of \(\$ 1,620\) determined? Answer:

The stand-by charge (or depreciation) is a fixed rate for this truck of \(\$ 150.00\). How is the total of \(\$ 1770.00\) determined?

Answer:

The total charges are printed at the bottom of the invoice. This is the oill that is sent to Popular Produce Co. for leasing the truck.

Example 1:


7－11 EXERCIろジ ：
1．Determine the total dior？；：o liming contractors，Inc． for leasing the following trucks．Notice that the charge for 150 gallons of gas must also be added in．

INVOICE


No． 3309

COMMERCIAL TRUCK LEASING INC．
31 WAWARME AVE．HARTFORD，CONN． 06114
r Piping Contractors，Inc．
\[
30 \text { store Rd. }
\]

L East Hartford，Comm．」
Nov．23， 1967


241
2. Complete tr: following:
invoice


No. \(33 / 0\)

COMMERCIAL TRUCK !-EASING INC.
31 WAWARME AVE. HARTFORD. CONN. 06114
\(\Gamma\) Johnson ElecTric Co.
549 Fangluwed Lane
\(L\) Bolton, Comm.

3. Complete the following:


No. 3311

COMMERCIAL TRUCK LEASING INC.
31 WaWARME AVE. - HARTFORD, CONN. 06114
r Mack Brick, Inc.
Mack st.

L Windsor, Come.

4. Complete fife iojiowing:

INVOICE



No. 3312

COMMERCIAL TRUCK LEASING INC.
31 WAWARME AVE. HARTFORD, CONN. 06114
「 Chattier Oak Oil Burner, Inc.
Wilson, Conn. 0609.5

 rates aro cmly used for pertods of jest blan ono yeario

HOUREY: DAILY, MEEKLY REMTAL RATES *
\begin{tabular}{|c|c|c|c|c|c|}
\hline TYPE. Of TRUCK & CARRYING CAPACITY (LBS.) & kourly rate & oally rate & WEEKLY RATE & minimum CHARGE \\
\hline handi-van & 1.000 to 2.000 & 81.65 plus ge per mile & ¢ 9.00 plus 9e per mile & \$ 40.00 plus 9e per mile & \$ 7.00 \\
\hline \(9{ }^{\circ} \mathrm{PICKUP}\) or RaCk & 3,000 & \$1.35 plus 10r per mute & S11000 plus 10e per mile & \& 45.03 plus loe per mile & \$ 8.00 \\
\hline \(10^{\circ}\) PACKACE DELIVERY & 2.000 & 51.85 plus lie per mils & \(31!.00\) plus lis pee mile & \$ 50.00 pius 11 e per mile & 19.00 \\
\hline 12. fackage delivery & 4.000 & 52.00 plus lie per mule & 1!2.00 plus 12s per mule & \$ 54.00 plus 12e per mile & \$10.00 \\
\hline \(12^{\prime}\) RACK or CILOSED VAN & 8.000 & \$2.25 plus lis pee mile & \$13.00 plus 13e per nule & \$ 59.00 plus 13 r per mile & S10.00 \\
\hline 14' RACK or Closed van & 9.800 & S2.50 plus 15 per mile & \$15.00 plus ise per mile & \$68.00 plus 15e per mile & \$1100 \\
\hline 16' RACK or Closeo van & 10.000 & \$2.75 plus lee per mule & \$16.00 plus 16r pet mile & \$ 72.00 plus 16e per mile & \$12.00. \\
\hline \(13^{\prime}\) closed van & 10.000 & 13.85 plus 17e Pet mile & \(\$ 17.00\) plus 17 p per ninle & \$ 1100 plus i7e per mile & 1.3.30 \\
\hline 20 Closed van & 10.000 & \$3.00 plus 17e per rute & \(\$ 13.00\) plus 17 e per mile & \$ 81.00 plus l1\% per mute & S14.00 \\
\hline 12' REFRIGERATED VAN & 8,000 & \$3.00 plue 15 e per mile & s18.00 pius lse per mile & \$81.00 plus 15¢ per mile & \$14.05 \\
\hline
\end{tabular}
heavy equipment
\begin{tabular}{|c|c|c|c|c|c|}
\hline 16' RACK or Closed van & 14,00J & \$3.00 plus 18e per mile & \$18.00 plus 18e per mile & \$ 81.00 plus 18e per mile & \$14.00 \\
\hline 16' AACK or CLOSED YAN & 16.0130 & \$3.25 plus 19r der mile & \$20.00 plis 19e per mule & \$ 90.00 plus 19e per mile & \$15.00 \\
\hline 16' RACK or ClOSED VAN & 20,100 & \$3.50 plus 20e per mile & \$22.00 plus 20e per mile & \$ 95.00 plus 204 per mile & \$16.00 \\
\hline TRACTOR-GiAS & \(67.400 \mathrm{lbs}\). CWW & \$4.00 plus 20e per mile & \$24.00 plus 20e per mile & \$100.00 plus 20 per inile & \$18.00 \\
\hline TAACTOR-DIESEL & \(67.40 \mathrm{Jlos}\). GCW & \$4.50 plus 70 c per mile & \$29.00 plus 18r per mile & \$120.00 plus 18e per mile & \$20.00 \\
\hline TRAILER-PLATFORE & 44,000 & \$2.00 plus 3e per mile & \$12.00 plus 3¢ per nile & \$ 50.00 plus 3 ¢ per mio & \$ 8.00 \\
\hline TRALLER -VAN & 44.000 & \$2.50 plus 3e per mile. & \$15.00 plus 3 e per mile & \$ 60.00 plus 3 c per mile & \$10.00 \\
\hline
\end{tabular}

Power operated tail gate: \(\$ 3 . C 0\) per day plus if per mile, or \(\$ 12.00\) per week, plus id per mile, added to the abovo rates. Appliance hand trucks: \(\$ 2.00\) per day

Furniture pads: 35c aach per day

Example l：Truck Rental Problem
This prohlem refers to the rental invoice（3305）on the following page．An 18 ft ．long closed van（Carrying capacity \(10,000 \mathrm{lbs}\). ）is to be rented for one day．Look at the

Rental Rates table on page 212.
The Daily Rate is \(\$ 17.00\) plus 17 e per mile。
Look at the invoice and see where this information is
written．
The truck was used from 12：00 P。 Mo July 9 to \(11: 45\) July 10 。
Total Time is one day．
Total Miles is 200，found by subtracting \(\qquad\) from \(\qquad\)。

Charges：
200 miles at 17 ç per mile－\(\$ 34000\) 。
One day at \(\$ 17.00\) per day m \(\$ 17.00\) 。
One hand truck was rented at \(\$ 2.00\) per day．This is listed at the bottom of the Rental Table．

Two blankets or furniture pads were ronted at \(35 \&\) per day。 This is also listed at the bottom of the Rental Table． Collision insurance covering the first \(\$ 100\) worth of damage was taken out at a cost of \(\$ 1.50\) 。
Total Charges：\(=\$ 55.20\)

\section*{Credits：}

A deposit of \(\$ 50\) was paid before the truck was used．
Balance Due is therefore，\(\$ 55.20\) less \(\$ 50.00\) ，or \(\$ 5.20\) 。


COMmercial truck leasing. inc.
31 WAWARME AVE.
HARTFORD, CONN. 06114
TEL. 246.8811

NEW BRITAIIN ERANCH 1010 WEST MAIN ST TEi. 229.0309
TEL. 229.0309

INVOICE NO.


PLEASE READ THIS RENTAL AGREEMENT
1/We hereby affirm that I/We have read the terms and conditions set forth on bath Page 1 and Page 2 cf this Truck Rental Agrecment and I/We hercby sccept delivery of the above described vehicle and/ar properiy upon all of eaid ienns and conditions.
LESSOR: COMMERCIAL TRUCK LEASING, INC.
8y: \(\qquad\)
LESSEE: \(\qquad\)


By: \(\qquad\)
Lic. No. \(\qquad\)
Pagk 2


truck rental agreement
COMMERCIAL TRUCK LEASING. INC. INVOICE NO.
31 WAWARME AVE.
HARTFORD, CONN. 06114 TEL. 246.8811

NEW BRITAITN BRANC.H
1010 WEST MAIN ST.
TEL. 229.0309
3.


CHARGES

4.

\begin{tabular}{|c|}
\hline \multirow[t]{3}{*}{} \\
\hline \\
\hline \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline \multicolumn{7}{|l|}{full colision coverage yes NO D} \\
\hline \multicolumn{7}{|l|}{time in .5, C0 P.M. \(10 / 23 / 67\)} \\
\hline \multicolumn{7}{|l|}{uIme out 8;COAM. \(10 / 23 / 6\)} \\
\hline \multicolumn{7}{|l|}{fotal time} \\
\hline mileage in & 2 & 7 & 0 & 0 & - & - \\
\hline mileage out & 2 & 4 & 9 & 8 & - & - \\
\hline POTAL MILES & & & & & & \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|}
\hline MILES @ & & \\
\hline HOURS @ whetero & & \\
\hline / HAND TRK. @ & & \\
\hline Blankets @ & & \\
\hline COLL. INS @ & & \\
\hline FUEt @ & & \\
\hline & & \\
\hline TOTAL CHARGES & & \\
\hline deposit amt & 200 & 00 \\
\hline & & \\
\hline refund due ami. & & \\
\hline & & \\
\hline NET BALANCE DUE & & \\
\hline
\end{tabular}



\section*{31 WAWARME AVE.}
hARTCORD, CONN. C6114
TEL. 2.46.e811
P.UFN GRITAIN BRANC:4
5.


7-1j Tire vards
Business and industry use time cards to record the namuer of hours that a piersen works. is careful record must be kept of the hours worked. A time clock is often used to record the time - in and time - out.
iost time cards also carry a summary of the total hours each day, the total hours each week, and the earnings for the work. 'i'his is usually recorded by a payroll clert. Examine the following time card carefully.
-. Employee number

No. 34

\(\qquad\)

Tine began work in the
morning
-Time stopped for lunch - Time returned to work
.. Time when regular work day ended


219
```

7-13 E: . iois..j: vonraece the following.

```
1. PARKER HARTYORD CORP.

2.


7-14 íime viards - iates of Pay
, iost time cards :nake provisions for distinguishing retular time from overtime. degular time is that amount of lime considered to be a !!art of the ordinary worly week. Övertime is that time worked above and beyond the regular woik hours.

The rates fer hour for regular time and overtime are not the same. Uvertime rates are generally \(1 \frac{1}{2}\) to 2 times greater than regular time. They should be carried out to three decimal. places.

Example 1: Compute the total earnings for the following:
jolution:
\begin{tabular}{lclc} 
& Hours & Rate & Earnines \\
Regular & \(35 \frac{1}{2}\) & 1.70 & 60.35 \\
Overtime & 4 & 2.55 & 10.20 \\
Total Hours & \(39 \frac{1}{2}\) & Total La raings 70.55
\end{tabular}
liote: Earnings = Hours worked \(x\) liate per hour

Example 2: John works 44 hours in a certain week. The regular work week is 40 hrs . he is paid \(\psi 1.55\) per hour and the overtime rate is lik. (Often referred to as "time and a half.") Find his earnings. jolution:
a) \(40 \times 41.55=\) \(\qquad\)
This is his repular pay.
b) \(1.5 \times 1.55=\) \(\qquad\)
Carry this out to 3 recimal places.
This is his overtime rate.
c) \(\$\) \(\qquad\) \(\times 4=\ddot{p}\) \(\qquad\)
This is his overtime nay.
a)
\[
\text { Théuler pay }^{+} \cdot \overline{(C v e r t i m e ~ p a y)}^{=}=\overline{\text { (Total Earnings }}
\]

Total earnings for a given time ! !eriod are often calied gross wages.

7-14 EXr.RCISES: Complete the foilowing table based on a regular work week of 35 hours and an overtime rate of "time and a half."
\begin{tabular}{|c|c|c|c|c|}
\hline Employee & Total & RATE:; & EAIP:INGS & \\
\hline Number & Hours & Kegular Overtime & Hegular Overtine & Gross Nage \\
\hline 1 & 3\% & \$1.60 & & \\
\hline 2 & 42 & 1.60 & & \\
\hline 3 & 40 & 1.75 & & \\
\hline 4 & 48 & 1.70 & & \\
\hline 5 & 44 & 1.55 & & \\
\hline 6 & 43 & 1.95 & & \\
\hline 7 & 50 & 1. \({ }^{2} 2\) & & \\
\hline 8 & 41 & 1.55 & & \\
\hline 9 & 47 & 1.77 & & \\
\hline 10 & 49 & \(1.97 \frac{1}{2}\) & & \\
\hline
\end{tabular}
11. Complete tine following time cart. ilso compute the gross wage at 43 . 30 , mr llour regular time and time and a half for overti:ne.
\[
\text { No. } 684639
\]

Waed, Jay


 ridy and 40 jer week.


7-15 Time Üris - Tioce Work.
In many industries em! \(\begin{aligned} & \text { metes } \\ & \text { are paid by the amount of }\end{aligned}\) work they accompiish during a day. That is, their pa; i, based on tine numer of articles or fieces that they complet. per day. This is called niece work.
sxample l: Find the total earnings for the following. 15 pieces ©. \(25 \$\)

50 jireces \(: 10 \neq\)
jolution:
\(15 \times .25=7.50\)
\(5) \times .10=5.00\)
Total Ëarnings , 12.50 Answer
That is:
Earnings \(=\) lio. of pieces \(x\) Price per piece.
7-15 EXERCIBtis: Complete the following table.

\begin{tabular}{ccccc}
1 & 30 & 10 & 1.55 & 1.05 \\
2 & - & 70 & 1.50 & .02 \\
3 & 42 & - & 1.70 & - \\
4 & 32 & 64 & 1.95 & .26 \\
5 & 20 & 24 & 1.75 & .42 \\
6 & 16 & 25 & 1.92 & 2.02 \\
7 & 20 & 85 & 1.60 & .40 \\
2 & 30 & 135 & 2.05 & .15
\end{tabular}

7-16. Fayroll - Incone ©ax
when a person earns money \(t\) t:ere are certain amounts of money taken out of his total earnirfs eacn week before he gets his net pay. These amounts are called deductions.

One of these deductions is Federal Income Tax. If you make over \(\$ 600.00\) per year you must pay income tax. ihe employer is required to deduct. the estimated income tax from the wases of his smployees. 'i'his money is sent to the vollector of Internal ievenue's offices where it is entered on each employer's account. I'his deduction is often referred to is

\section*{withholding tax.}

Example 1: fay Ellis earns i, 5 a week. His employer is reṇuired to cieduct \(14 \%\) of this for income tay. How much is deducter?
3̈olution:
\[
.14 \times 65 \text { or } .3 .10 \text { inswer }
\]

What is Kay's net pay?
The actual a:nount of incone tix reducted is based on the amount of money earneri by the emnloyee and the nu iver of exemptions he is entitled to. i'he عovernment su;plies withholding tables. to the emnioyor for determining these amounts. the followin! rule can also be used:

> Example 2: bind the witimolring tax on a Eross !ay of wa when the employee is entitled to 2 exemptions. Jolution:
a) \(2 \times 13.50=27.00 \quad 13.50\) times the number of exemptions
h) \(92-27=\ddot{i} 55\) jubtract (a) from the gross pay, u\$2.
c) \(.14 \times 0.55=\$ 7.70 \quad\) iultiply (i) by .14, we get the withinolding tax, 07.70 .

Note carefully the order in which we did this work. jtell 1: iultiply the number oi evemptions by 813.50 . jtep 2: jubtract this result from the gross pay. jtep 2: rullinly this difference by . 14.
 fo.lowing gross wages with the given number of exemptions. Employee Niunber

Fiross wage
lio. of

1 ,i140

2
2
90
1
3
202
5
4
122
9
5
(0)

5
6
182
3
7
115
1
?
252
4
9
66
1
10
79
2
On in! lol'owine page jou will fina a port:on ar a talesurviled by the fovernment. find the withholding tax for thefollowiñ:
Gross wege No. of exemptions (.iarried) iwithnolding Tax
11. \(\therefore 2 / 2.00\) ..... 2
12. ..... 5
13. \(\$ 112.50\) ..... 2
14. \$229.75 ..... 10
15. \(\$ 495.00\) ..... 4
16. \(\psi 76.50\) ..... 1
17. \(\$ 135.00\) ..... 2
1\%. \(\% 94.75\) ..... 3
19. \$ 80.50 ..... 2
20. \(\dot{102.70}\) ..... 4
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multicolumn{2}{|l|}{and the wages are-1} & \multicolumn{11}{|c|}{And the number of withholding oxemptions claimed is-} \\
\hline \[
\begin{aligned}
& \text { At } \\
& \text { lasat }
\end{aligned}
\] & \[
\begin{gathered}
\text { But loss } \\
\text { then }
\end{gathered}
\] & 0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 8 & \[
\begin{aligned}
& 10 \text { or } \\
& \text { mors }
\end{aligned}
\] \\
\hline \multicolumn{13}{|c|}{The smount of lincome tsx to be withheld stall be-} \\
\hline 376 & \$78 & \$10.80 & \$8.80 & \$6.70 & \$4.70 & \$2.70 & 3.80 & S0 & \$0 & 10 & \$0 & \$0 \\
\hline 78 & 80 & 11.10 & 9.10 & 7.00 & 5.00 & 3.00 & 1.10 & 0 & 0 & 0 & 0 & 0 \\
\hline 80 & 82 & 11.40 & 9.40 & 7.30 & 5.30 & 3.30 & 1.40 & 0 & 0 & 0 & 0 & 0 \\
\hline 82 & 84 & 11.70 & 9.70 & 7.60 & 5.60 & 3.60 & 1.70 & 0 & 0 & 0 & 0 & 0 \\
\hline 84 & 86 & 12.00 & 10.00 & 7.96 & 5.90 & 3.90 & 1.90 & 10 & 0 & 0 & 0 & 0 \\
\hline 86 & 88 & 12.30 & 10.30 & 8.20 & 6.20 & 4.20 & 2.20 & 30 & 0 & 0 & 0 & 0 \\
\hline 88 & 90 & 12.70 & 10.60 & 8.50 & 6.50 & 4.50 & 2.50 & . 60 & 0 & 0 & 0 & 0 \\
\hline 90 & 92 & 13.00 & 10.90 & 8.80 & 6.80 & 4.80 & 2.80 & . 90 & 0 & 0 & 0 & 0 \\
\hline 92 & 94 & 13.30 & 11.20 & 9.10 & 7.10 & 5.10 & 3.10 & 1.20 & 0 & 0 & 0 & 0 \\
\hline 94 & 96 & 13.70 & 11.50 & 9.40 & 7.40 & 5.40 & 3.40 & 1.50 & 0 & 0 & 0 & 0 \\
\hline 96 & 98 & 14.00 & 11.80 & 9.70 & 7.70 & 5.70 & 3.70 & 1.70 & 0 & 0 & 0 & 0 \\
\hline 98 & 100 & 14.40 & 12.10 & 10.00 & 8.00 & 6.00 & 4.00 & 2.00 & . 10 & 0 & 0 & 0 \\
\hline 100 & 105 & 15.00 & 12.70 & 10.60 & 8.50 & 6.50 & 4.50 & 2.50 & . 60 & 0 & 0 & 0 \\
\hline 105 & 110 & 15.80 & 13.50 & 11.30 & 9.30 & 7.30 & 5.30 & 3.20 & 1.30 & 0 & 0 & 0 \\
\hline 110 & 115 & 16.70 & 14.40 & 12.10 & 10.00 & 8.00 & 6.00 & 4.00 & 2.00 & . 10 & 0 & 0 \\
\hline 115 & 120 & 17.50 & 15.20 & 12.90 & 10.80 & 8.80 & 6.80 & 4.70 & 2.70 & . 80 & 0 & 0 \\
\hline 120 & 125 & 18.40 & 16.10 & 13.80 & 11.50 & 9.50 & 7.50 & 5.50 & 3.50 & 1.50 & 0 & 0 \\
\hline 125 & 130 & 19.20 & 16.90 & 14.60 & 12.30 & 10.30 & 8.30 & 6.20 & 4.20 & 2.20 & . 40 & 0 \\
\hline 130 & 135 & 20.10 & 17.80 & 15.50 & 13.20 & 11.00 & 9.00 & 7.00 & 5.00 & 3.00 & 1.10 & 0 \\
\hline 135 & 140 & 20.90 & 18.60 & 16.30 & 14.00 & 11.80 & 9.80 & 7.70 & 5.70 & 3.70 & 1.80 & 0 \\
\hline 140 & 145 & 21.80 & 19.50 & 17.20 & 14.90 & 12.60 & 10.50 & 8.50 & 6.50 & 4.50 & 2.50 & . 60 \\
\hline 145 & 150 & 22.60 & 20.30 & 18.00 & 15.70 & 13.50 & 11.30 & 9.20 & 7.20 & 5.20 & 3.20 & 1.30 \\
\hline 150 & 160 & 23.90 & 21.60 & 19.30 & 17.00 & 14.70 & 12.40 & 10.40 & 8.30 & 6.30 & 4.30 & 2.30 \\
\hline 160 & 170 & 25.60 & 23.30 & 21.00 & 18.70 & 16.40 & 14.10 & 11.90 & 9.80 & 7.80 & 5.80 & 3.80 \\
\hline 170 & 180 & 27.50 & 25.00 & 22.70 & 20.40 & 18.10 & 15.80 & 13.60 & 11.30 & 9.30 & 7.30 & 5.30 \\
\hline 180 & 190 & 29.50 & 26.80 & 24.40 & 22.10 & 19.80 & 17.50 & 15.30 & 13.00 & 10.80 & 8.80 & 6.80 \\
\hline 190 & 200 & 31.50 & 28.80 & 26.10 & 23.80 & 21.50 & 19.20 & 17.00 & 14.70 & 12.40 & 10.30 & 8.30 \\
\hline 200 & 210 & 33.50 & 30.80 & 28.10 & 25.50 & 23.20 & 20.90 & 18.70 & 16.40 & 14.10 & 11.80 & 9.80 \\
\hline 210 & 220 & 35.50 & 32.80 & 30.10 & 27.40 & 24.90 & 22.60 & 20.40 & 18.10 & 15.80 & 13.50 & 11.30 \\
\hline 220 & 230 & 37.50 & 34.80 & 32.10 & 29.40 & 26.70 & 24.30 & 22.10 & 19.80 & 17.50 & 15.20 & 12.80 \\
\hline 230 & 240 & 39.50 & 36.80 & 34.10 & 31.40 & 28.70 & 26.00 & 23.80 & 21.50 & 19.20 & 16.90 & 14.60 \\
\hline 240 & 250 & \$1.50 & 38.80 & 36.10 & 33.40 & 30.70 & 28.00 & 25.50 & 23.20 & 20.90 & 18.60 & 16.30 \\
\hline 250 & 260 & 43.50 & 40.80 & 38.10 & 35.40 & 32.70 & 30.00 & 27.30 & 24.90 & 22.60 & 20.30 & 18.00 \\
\hline 260 & 270 & 45.50 & 42.80 & 40.10 & 37.40 & 34.70 & 32.00 & 29.30 & 26.60 & 24.30 & 22.00 & 19.70 \\
\hline 270 & 280 & 47.50 & 44.80 & 42.10 & 39.40 & 36.70 & 34.00 & 31.30 & 28.60 & 26.00 & 23.70 & 21.40 \\
\hline  & \[
\begin{aligned}
& \text { But lesse } \\
& \text { then }
\end{aligned}
\] & 0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 8 & 10 or moro \\
\hline 280 & 290 & 49.50 & 46.80 & 44.10 & 41.40 & 38.70 & 36.00 & 33.30 & 30.60 & 27.90 & 25.40 & 23.10 \\
\hline 290 & 300 & 51.50 & 48.80 & 46.10 & 43.40 & 40.70 & 38.00 & 35.30 & 32.60 & 29.90 & 27.20 & 24.80 \\
\hline 300 & 310 & 53.50 & 50.80 & 48.10 & 45.40 & 42.70 & 40.00 & 37.30 & 34.60 & 31.90 & 29.20 & 26.50 \\
\hline 310 & 320 & 55.50 & 52.80 & 50.10 & 47.40 & 44.70 & 42.00 & 39.30 & 36.60 & 33.90 & 31.20 & 28.50 \\
\hline 320 & 330 & 57.50 & 54.80 & 52.10 & 49.40 & 46.70 & 44.00 & 41.30 & 38.60 & 35.90 & 33.20 & 30.50 \\
\hline 330 & 340 & 59.50 & 56.80 & 54.10 & 51.40 & 48.70 & 46.00 & 43.30 & 40.60 & 37.90 & 35.20 & 32.50 \\
\hline 340 & 350 & 61.70 & 58.80 & 56.10 & 53.40 & 50.70 & 48.00 & 45.30 & 42.60 & 39.90 & 37.20 & 34.50 \\
\hline 350 & 360 & 64.20 & 60.80 & 58.10 & 55.40 & 52.70 & 50.00 & 47.30 & 44.60 & 41.90 & 39.20 & 36.50 \\
\hline 360 & 370 & 66.70 & 63.30 & 60.10 & 57.40 & 54.70 & 52.00 & 49.30 & 46.60 & 43.90 & 41.20 & 38.50 \\
\hline 370 & 380 & 69.20 & 65.80 & 62.50 & 59.40 & 56.70 & 54.00 & 51.30 & 48.60 & 45.90 & 43.20 & 4050 \\
\hline 380 & 390 & 71.70 & 68.30 & 65.00 & 61.60 & 58.70 & 56.00 & 53.30 & 50.60 & 47.90 & 45.20 & 42.50 \\
\hline 390 & 400 & 74.20 & 70.80 & 67.50 & 64.10 & 60.70 & 58.00 & 55.30 & 52.60 & 49.90 & 47.20 & 44.50 \\
\hline 400 & 410 & 76.70 & 73.30 & 70.00 & 66.60 & 63.20 & 60.00 & 57.30 & 54.60 & 51.90 & 49.20 & 46.50 \\
\hline 410 & 420 & 79.20 & 75.80 & 72.50 & 69.10 & 65.70 & 62.40 & 59.30 & 56.60 & 53.90 & 51.20 & 48.50 \\
\hline 420 & 430 & 81.80 & 78.30 & 75.00 & 71.60 & 68.20 & 64.90 & 61.50 & 58.60 & 55.90 & 53.20 & 50.30 \\
\hline 430 & 440 & 84.80 & 80.80 & 77.50 & 74.10 & 70.70 & 67.40 & 64.00 & 60.60 & 57.90 & 55.20 & 52.50 \\
\hline 440 & 450 & 87.80 & 83.80 & 80.00 & 76.60 & 73.20 & 69.90 & 66.50 & 63.10 & 59.90 & 57.20 & 54.50 \\
\hline 450 & 460 & 90.80 & 86.80 & 82.70 & 79.10 & 75.70 & 72.40 & 69.00 & 65.60 & 62.30 & 59.20 & 56.50 \\
\hline 460 & 470 & 93.80 & 89.80 & 85.70 & 81.70 & 78.20 & 74.90 & 71.50 & 68.10 & 64.80 & 61.40 & 58.50 \\
\hline 470 & 480 & 96.80 & 92.80 & 88.70 & 84.70 & 80.70 & 77.40 & 74.00 & 70.60 & 67.30 & 63.90 & 60.50 \\
\hline 480 & 490 & 99.80 & 95.80 & 91.70 & 87.70 & 83.60 & 79.90 & 76.50 & 73.10 & 69.80 & 66.40 & 63.00 \\
\hline 490 & 500 & 102.80 & 98.80 & 94.70 & 90.70 & 86.60 & 82.60 & 79.00 & 75.60 & 72.30 & 68.90 & 65.50 \\
\hline 500 & 510 & 105.80 & 101.80 & 97.70 & 93.70 & 89.60 & 85.60 & 81.60 & 78.10 & 74.80 & 71.40 & 68.00 \\
\hline 510 & 520 & 108.80 & 104.80 & 100.70 & 96.70 & 92.60 & 88.60 & 84.60 & 80.60 & 77.30 & 73.90 & 70.50 \\
\hline 520 & 530 & 111.80 & 107.80 & 103.70 & 99.70 & 95.60 & 91.60 & 87.60 & 83.50 & 79.80 & 76.40 & 73.00 \\
\hline 530 & 540 & 114.80 & 110.80 & 106.70 & 102.70 & 98.60 & 94.60 & 90.60 & 88.50 & 82.50 & 78.90 & 75.50 \\
\hline 540 & 550 & 117.80 & 113.80 & 109.70 & 105.70 & 101.60 & 97.60 & 93.60 & 89.50 & 85.50 & 81.40 & 78.00 \\
\hline 550 & 560 & 120.80 & 116.80 & 112.70 & 108.70 & 104.60 & 100.60 & 96.60 & 52.50 & 88.50 & 84.40 & 80.50 \\
\hline 560 & 570 & 123.80 & 119.80 & 115.70 & 111.70 & 107.60 & 103.00 & 99.60 & . 95.50 & 91.50 & 87.40 & 83.40 \\
\hline \multicolumn{13}{|c|}{30 percent of the excess ovar 8570 , fus -} \\
\hline 570 & and over & 125.30 & 121.30 & 117.20 & 113.20 & 109.10 & 105.10 & 101. 6 & 97.00 & 93.00 & 88.90 & 84.90 \\
\hline
\end{tabular}

Wektly-Merriod-Wages 876 to 570 and over

\section*{7-17 Payroll - 'jocial Security}

Another payroll deduction is Social Security. The Social Security tax is money deducted from the emplojee's earnings to help pay old age , pensions and iedicare payments. bimuloyers pay the same amount, matchine the anounts paid by t!e emplojees.

The social security tax is increased froin time to time to help pay for additional henefits that iongress adds to the program. The present rate is \(4.0:\).

7-17 EnEMCIS: Find the amount of social security tay to be dediacter from each of the following total earnings.
```

Total Earnines
jocial jecurity \#'ax

1. \dot{\psi 3%.25}
2. i\$ 62.40
3. < 4%. }3
4. \& \$2. 25
5. 4 26.22
6. ;137.70
```

\section*{Problens:}
7. Bud Hawley wortod 47 hours during, a certain week. 'The regular work week is 40 hours and the overtime rate is 2 times the regulior rate. If his recular rate is il. g 5 per hour, find his gross wapes, the amount of social securit; to be deducter, and the net !py.
2. jean jwanson worked 42 hours during a week. Her regular work week is 35 ho'drs and her overtime rate is at time and a italf. it a regular rate of \(\psi 1.72\) per hour, find her tross wage, the amount of social security to ve deducted, and her net pay.

\section*{7-19 「ayroll - Summary Sheets}
dary employers, as a service to their employees, deduct arounts from total earnings for various other reasons. These deductions nay be the same for all employees or based on the earnings of the employee.

For example:
Hospitalization:
Family Flan - \(\$ 3.70\) per week
iingle Flan - 22.80 per week
Laundry Costs:
世1. 75 per week

\section*{Insurance:}

Life and Disability-lif of gross nay

\section*{Fersonal Loans:}

Anounts vary according to the size of the original
loan.

\section*{Union Dues:}
\(50 \not \subset\) per week

In order to keep an accurate record of these deductions and also the oticer deductions that we have talked about, pay roll summary sheets are used. 'i'hese sheets give the employer a complete record of waces and deductions for each employee.

\section*{7-18 EXi:RUIふE:}
1. Complete the Payroll Jumary sheets on the next pages. The overtime rate is time and a half. All employees pay the Lyundry Cost and carry the Life and Lisability Insurance at the rates listed above. Other deductions are listed where they apply. The hourly rate is given beside each name. The regulir work week is 40 hours. Your teachin: will tell you whether to use the formula or the table for finding the amerint of tax to he withe hsld.
 PAYROLL SUMMARY

\section*{PAYROLL SUMMARY}


\section*{PAYROLL SUMMARY}

4. The following is a sumary sheet of an individuals earnings for one quarter of a ye:r. Complete where required. Bo not forget totals at bottom of sheet. FOA means the same as FIWi. This employee has four dependents.

5. Complete the following summary. The regular rate is \(\$ 2.85\) per hour and overtime rate is double time over 40 hrs . Insurance is carried by the employee and is based on 18 of the total earnings. This employee has three exemptions for purposes of income tax withheld.
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline Par & nitimen & Overtime & \multirow[t]{2}{*}{\(\substack{\text { Torat } \\ \text { Eanexico }}\)} & \multicolumn{6}{|c|}{OEDUCTIONS} & \multicolumn{3}{|l|}{net ranninar} \\
\hline rentiou & Time Lnare & Hno. lant & & F.0.a. & Hotione & Loon & Ins \({ }^{\text {H }}\) & Hhap. & & & amount &  \\
\hline 47 & 40 & - & III & & 11i & & & 3.0 & & & & \\
\hline 414 & 40 & 2 & & & & & & & & & & \\
\hline 421 & 361 & - & & & & & & & & & & \\
\hline 428 & 46! & 4 & & & \(\because\) & & & & & & & \\
\hline 5-5 & 40 & 2 & & & & & & & & & ! & \\
\hline S-2 & 40 & - & & & & & & & & & & \\
\hline \(5-11\) & 40 & 5 & & & & & & & & & & \\
\hline 5-26 & 401 & 1. & & 1 & & & & & & & 1 & \\
\hline 6-2 & 401 & \(8^{-1}\) & & & & & & & & & & \\
\hline 6-9 & 37 & - & & & \(1!\) & & & & & & & \\
\hline \(6=16\) & 33 & \(\overline{9}+\) & - & & + & & & & & & & \\
\hline 623 & 40 & \(9+\) & & & & & & \(\bigcirc\) & & & & \\
\hline \(6-30\) & 40 & 3 & & & & & & & & & ; & \\
\hline & & & & & & & & & & & & \\
\hline & & & \(\square\) & ! & & & & & & & & \\
\hline \%10.4 & & & +1 & & & & & & & & & \\
\hline
\end{tabular}

7-19 review Exercises
1. Complete the following:
\begin{tabular}{cccc} 
Item & Quantity & Price & Extension \\
A & 112 & \(\$ .75\) & \\
B & 62 & 1.25 & \\
C & 83 & 1.75 & \\
D & 220 & 3.05 & \\
E & 56 & 5.55 & \\
& & Total &
\end{tabular}

Discount 5\% \(\qquad\)
Net Total
32\% Tax
TOTAL
2. Find the net price in each of the following:

List Price Discounts Net Price
a. \$ 9.30
\(30 \leadsto 2\) ?
15-12-10
c. 190.65 20-10-5
d. 65.20 10-10-5
e. \(2.25 \quad 40 \div 10-5\)

4. Complete the followit:

5. Lom, nte thencuing time sami. The overtime rate is "time nua : bat" our lu hrs. per week except for junday whicl: is "rowole ine."



INVENTORY STOEK GONTROL LIST
\begin{tabular}{|c|c|c|c|}
\hline & deschiption: Fingj & Price Regular & \begin{tabular}{l}
SALE \\
PRICE
\end{tabular} \\
\hline 3. & \(9 \times 12\) Braided Rugs & \$ 69.00 & \$ 35.00 \\
\hline b. & 9x12 Axminster Rug & \$ 79.00 & S 29.00 \\
\hline \(c\) & \(9 \times 12\) Nylon Rugs & \$ 59.00 & \$ 29.00 \\
\hline &  & \$ 8.95 & \$ 4.69 \\
\hline 0 & \(9 \times 12\) viscese Rug & \$ 29.00 & § 13.00 \\
\hline 7 & \(9 \times 12\) Axminster Rue & \$ 78.00 & \$ 19.00 \\
\hline 9 & \(9 \times 12\) lapprox. Foam unck Rums & 524.00 & 511.00 \\
\hline \[
h
\] & 9x12 Commercial Grade Nylon Rugs & 8109.03 & \$ 69.00 \\
\hline . & Wonlen or Nylon Carpet yd. & - 5.95 & \$ 3.98 \\
\hline
\end{tabular}

\section*{}
\begin{tabular}{|c|c|c|c|}
\hline &  & Peguldr Price & \begin{tabular}{l}
SALE \\
PRICE
\end{tabular} \\
\hline 1 & 5 Pc. Dinette & 569 & \$ 44.00 \\
\hline \(k\) & 7 Pc. \(36 \times 48 \times 60\) Table. 6 Chairs, as is & \$ 79.00 & 5 27.00 \\
\hline 1. & 7 Pc. Deluxe Dinette & \$149.00 & \$89.00 \\
\hline M & 9 Pc. King-sizo 72" Table.". 8 Chairs \(\qquad\) & \$145.00 & S88.00 \\
\hline
\end{tabular}


Lise this rude in :ind sise wibliol ina lay in the following:
 of exolations)
 one eyomption.
a. Find wie ambunt to be withtield for income tax.
b. rind t.he dernction for öncial Security - Nodicare at the 4.3 F rate.
c. rimi his nec my.

中. Snith is maried wioh 2 demendent chilreen, earns \(\$ 160\) ner week, and claims 4 withinolding exemptions.
a. find the amount to be withheld for taxes.
b. Find ti:e deduction for Social Security-bedicare tix.
 ance. . what does this dedection amount to?
d. rind his net !uj。
9. Completo the following using the table on page 2l2.



OLDE TOWNE MERCURY, INC.
19
MERCURY : COMET - CCAGAS SO CEMTRAL ST. \& 139 BROAD ST WIADCOR. CONN. OcOMS

Name \(\qquad\)
Adidiess \(\qquad\)
Cin \(\qquad\)


Tires - Battcrin:: -- isioricutaon - Washing-- Brake Sorvice - Mufier Service

invoice

Telephone
246-8811


No.

COMMERCIAL TRUCK LEASING INC.
II WAWARME AVE. HARTFORD, CONN. O6IIA

\section*{\(\Gamma\)}

7

L

\(245-c\)

truck rental agreement
COMMERCIAL TRUCK LEASING. INC. INVOICE NO.
31 WAWARME AVE.
HARTFORD, CONN. 06114
TEL. 246.8811
NEW BRITAIN BRANCH 1010 WEST MAIN ST.

TEL. 229.0309


Antrasif
NATIONAL PUCK IFASINC. SYSTEM A AFTIIS.II


\[
\begin{gathered}
245-d \\
282
\end{gathered}
\]


245-e



Chapter VIII

\author{
USiNG FORMULAS
}
```

M\&:"\#% MII
formala;

```
s-1 Definimion




For exampi.
Lcok a:.


 solll: :
:

 valua tan remposent.
c) a la miner



The roplacerme of varisines wit: u:e val:as they represent


 sign, "x", coulc: w anown for he vatable \(x\).
 to use parenthes. in bacu ai the variane. thus, for a = 2,

La becomes 3(2). This avoids the problem of deciding whether "3 2" means " \(3 \times 2\) " or tie number " 32 ".

Example 2: Evaluate \(F=3 a\) for \(E\) when \(a=5.6\). Solution:
a) \(F=3 a\)
Given
b) \(F=3(5.6)\) Substitution. Note use of parentheses.
c) \(F=16.9 \quad\) Answer

Example 3: Evaluate \(B=\frac{2 a}{12 c}\) for \(B\) when \(a=42\) and \(c=7\) solution:
a) \(z=\frac{2 a}{12 c}\)

Given
b) \(3=\frac{2(42)}{12(7)}\)

Substitution
c) \(3=1\)

Answer
8-1 EXERCIÖபS: Evaluate the following if \(a=3.2, \underline{b}=5.6\), and \(\mathrm{c}=\). I .
1. \(R=5 b=5(\quad)=\)
2. \(E=a+c=(1)+(\quad)=\)
3. \(A=a+b+c=(1)+(1)+(\quad)=\)
4. \(s=4 a b=4()()=\)
5. \(\hat{Q}=a b c=()()()=\)
6. \(N=\frac{a}{b}=\frac{+}{f}=\)
7. \(w=b-a=(1)-(1)=\)
8. \(i i=\frac{a c}{b}=\frac{(,)(,)}{(1)}=\)
9. \(Y=\frac{a+b+c}{3}=\)
10. \(V=\frac{1}{3}\) ac \(=\)
11. \(L=\frac{1}{2} a+c=\)
12. \(F=\frac{2}{5} a+32=\)
13. \(D=\frac{1}{3} a c+b=\)
14. \(B=\frac{2 a}{c}+1\)

3-2 Order of Oeretions
when there : more than one operation to be performed in evaluating a formula, the following order is agreed upon:
(1) First, din malti:pication and division in the order in whiri: they occur from left to right.
(2) jecon:! atd and subtract, in the order written. Example 1: :traluate: \(2 \times 3+5-2+6 \div 2\) solution:
a) \(2 \div 3+5-2+6 \div 2\)
Given
b) \(6+5-2+3\)
Muitiply and
divide, only •
c) \(12+2+3\) inत and subtract
\(9+3 \quad\) in the order
12 Answer written.

8-2 EXERCIBiS: inaluate the following expressions:
1. \(5 \times 4+2-3 \div 2+6\)
2. \(10+3-1 \times 5+10 \div 2-5\)
3. \(16 \div 16+3 \div 5-4 \times 3+12-2 \times 4\)
4. \(21-6 \times 2\).. \(29 \div 3\)
5. \(10-2 \times 1 \div 4_{2} \div 4+10 \times 10-10\)
6. \(9+4 \times 2+1-4 \div 2+6\)
7. \(18-8 \div 8+3 \times 0+20 \div 1\)
```

    %. 10-10\times1+9%%20+2\div! - 3 人 1 + ?
    9. 4×7-3x ? 45* ; - 9
    10. 14+14-1%0-10\& 10-0\times20+100\div10
```

```

    h=7.2, and b=? :
    11. P = 2L + 2w
12. V = \frac{1}{3}
13. }\quad\therefore=\frac{2}{2}b
14. T = 2LN+2Gr 2n
```

```

lf. m=L L - wb +!:

```
    8-3 Raising to :owers
    The numbers that are multiplied by each other to ootain
    a pronuct are called f'actors. For example, \(\overline{2} \times 3=6\). The
    2 and 2 are factors of the product, 6 .
    When a prorunt. enntains the same number as a factor two
    or more times, we are said to be raising the number to a nower.

This is denoted in the following manner: \(2^{2}\), read " 2 to the second power" or "2 squared", which means \(2 \times 2\) or 4. \(2^{3}\), read " 2 to the third power" or "2 cubed", which means \(2 \times 2 \times 2\) or 3. \(2^{4}\), read "? to the fourth power", which means \(2 \times 2 \times 2 \times 2\) or 16 .
-
-
\(\cdot\)
-
and so on.
The use of the \(T\) fey is convenient in raising to powers greater than 2 as you learned in Chapter \(V\). Example 1: Find \(3^{4}\). Solution:

Your tape should look live this:
\(3 x<\)
\(3 \times 1\)
\(9 \times 1\)
\(3 \times \overline{7}\)
Answer \(\rightarrow \stackrel{3}{1}^{\mathbf{E}} \bar{T}\)
That is:
\(3^{4}\) means \(3 \times 3 \times 3 \times 3\) or 21 .
When raising decimals to a power be careful of the decimal point and keep all digits in the answer.

Example 2: Find 2.13. \(2.1 \times<\)
Solution: Your tape should read: \(\quad \begin{aligned} 201 \\ 4011 \times \bar{T}\end{aligned}\)
Answer \(\rightarrow \frac{201}{9261} \bar{T}\)

Example 3: rind \(\frac{1}{5}^{3}\)
Solution:
a) \(\frac{1}{5}=.2\)
a) \(\frac{1}{5}=\cdot 2 \frac{1}{5}^{3}\)
i) Thus \(\frac{1}{5}=(.2)^{3}=.2 \times .2 \times .2\)
or . 008 answer
Example 4: If \(a=1.2\), and \(0=3.1\), find the value of \(a^{2}+b\).

Solution:
a) \(a^{2}+b\)

Given
b) \((.12)^{2}+(3.1)\)
.substitution
c) \(1.4+3.1\) Souring
d) 4.54 answer


Evaluate the following letting \(a=2.6, b=3.7\), and \(c=4.8\). 21. \(a^{2}+b\)
22. \(a^{2} b\)
23. \(\mathrm{b}^{3}\)
24. \(a^{2} b^{3}\)
25. \(a^{2}+c^{2}\)
26. \(c^{2}-b^{2}\)
27. \(6 a b^{2}+b c^{2}\)
28. \(a^{4}+b^{3}+c^{2}\)
29. \(4 a b+2 c^{2}-3 b c\)
30. \(\frac{a}{2}+b^{2}\)
v. \(x^{2}\)
32. \(n-\frac{c^{2}}{3}\)
33. \(i 4^{2}-\frac{b}{c}:\)
34. \(a^{2}+b^{2}\)

3-4 larenti:ers
If there aro mrentheses in a formal dat is joinf evol-
 entheses, firs: timn ineform the nectesiar: onerations.

Exam!le ? : : \(W=5\). iolution:


8-4 EXidRCISES A: Evaluate the following:
1. \(A=6(3+2)\)
2. \(P=7(12-5)\)
3. \(R=6 \times 3+5(2 \times 3-2)\)
4. \(V=2 \times 3 \times 6(8+6)\)
5. \(B=(6+3)^{2}\)
6. \(w=\frac{6}{3}+2(5+3)-2 \times 3\)
7. \(T=40-2(4+3)\)
8. \(G=\frac{1}{2}(10-2)+5\)
9. \(I=12-\frac{1}{2}(8+2)\)
10. \(F=\frac{100}{2}-6\left(2^{3}-6\right)\)

Let us now sumarize the steps to be taken in evaluating

\section*{a formula:}
(1) Replace the variaoles with the values they represent Substitution.
(2) Raise to powers, first.
(3) Jecondly, do multiplications and divisions in the order in which they occur from left to right.
(4) Then, add and subtract in the order in which they occur from left to right.
(5) Find any values inside a parentheses, first, using the above order of operations.

It should be noted that when the numerator or denominator of a fraction contairs several variables or operations, they should be treated in the same manner as an expression within parentheses. That is, simrlify numerators and denoninators first.
```

        Example 2: E:valuate }\frac{x+2y}{2}\mathrm{ when }x=5\mathrm{ and }y=7\mathrm{ .
        oolution:
            a) }2+2(7)\mathrm{ jubstitution
            i) }\frac{5+14}{2
            or l%
            c) 9.5 inswer
    ```

```

uate the followinc:

1. 2(x+y)
2. (2x+3y)+:
3. 2x+(3y+2)
4. 5 (x
```
5. \(y^{2}-x^{2}\)
6. \((y-x)^{2}\)
7. \((y+x)(y-x)\)

\[
\text { ห. } z^{2}+y^{2}
\]
\[
\text { 9. }(z+y)^{2}
\]
\[
\text { 10. } z^{2}+2 z y+y^{2}
\]
\[
\text { 11. } 3.14 \mathrm{y}^{2}
\]
\[
\text { 12. } 3.14 x^{2} z
\]
\[
\text { 13. } 6.28 z^{2}+6.23 z y
\]
\[
\text { 14. }(.2 z z(z+y)
\]
\[
\text { 15. } \frac{z}{2}-x
\]
\[
\text { le. } \frac{1}{2} x(y+z)
\]
\[
\text { 17. } x \text { y z }
\]
12. \(\frac{5}{9}(z-32)\) (i/hat is the meaning of your result here?)

\(20.3 .14 z^{3}\)
21. \(\frac{x+2 y}{z}\)
\(22 \cdot \bar{y}^{2}-\frac{2}{2}\)

R-s aritine Fromulas
To axpres: fatitematical and refated, rincirles as formu-
 emotical symuls in the renuired orter on cillo: the reiarionsini!s hetufern ruantities. te often refresment ruantitifis by the first intis! of a ley word.

The net irree ( \(n\) ) is erami to tir. lajt price (1)
nimas the discount (d).
jolui.ion:
 n

1
d

 :sieft." lhe wnrt "is" or the worls "is er!ual to" rint always the repiaced hy the " \(=\) " sy"ind mien writing formulas.

> The pert...i.:r i: of a reciamile is twice tile sum of the lentulit., me the wi:uh (w) jolution:
> (ino perimeter of a rectanile) (is)
> (torice) (the sum oi the iongth and the width)
> or \(\quad 1=2(L+w)\)
> loote \(t . . e\) use of the parenticses here to indicate twice the sum of the length and the width

R-5 EXbritisiof irite each of the following as a formale:
1. The gross wape ( \(G\) ) Equals the rate por hour (r) tians the numiner oi hours :forled (h).
2. The totici :rice (T) is erual to t!e totial purcnames ipi

3. The sale price ( \(D\) ) is the sum of the cost (c) plus the nark. up(n!).
4. The per cent of discount ( \(p\) ) is eque.l to the discrur:t (i) diviond \(\quad\) th: list price (1).
5. ithe distanc! (d) is erual io the averafe rate (r) multiplied b; thet tine (t).
6. The battinf, average (i) is enual to t:e number of hits( n ) dividod \(0 y^{\prime}\) the number of officiell i,imes at bat (b).
 the lengt.! (1) and the with (w).
5. The capital (0) of a business is the difference between the assets (A) and the liabilities ( L ).
9. The pitc: of a roor \((p)\) is equai to the rise \((r)\) divided by the \(\sin (\mathrm{s})\).
10. The disionce (d) a freely falling borty drops is one-half the :roriuct of the acceleration due to cravity (g) and the satuare of the time falling ( \(t\) ).
11. The averare of a set of numbers (i) is equal to the sum of the set of numbers (s) divideri by the number of numbers in the set ( n ).
12. The markine period grade \((G)\) is found by douviling the daily average ( \(D\) ), addine the finai iest mark ( \(T\) ) and dividing this result by 3.
13. The cuttine s!eed (s) of a b:ndis: \(w\) in fert fer minute is eṇual to fi (T) times the dirineter (d) it, fuet times lue number of revolutions ner ininute (i).
14. The tiote one travels ( \(t\) ) is found by rividing the distance (d) hy the rete (r).
15. The product of the heavier woirht (i) and the shorter distance ( \(d\) ) is equal to the product of tre lighter weight (w) and the longer distance ( \(D\) ).
lo. The number of gillons \((E)\) in a container equals the number of cubic inches (c) divided by 231.
17. The simple interest (i) is ecual to the principal (p) times the rate (r).
18. The nunior of volts (E) equals the number of amperes (I) times the number of ohms (R).
19. The number of single rolls or wallyaper (s) is eçual to the number of square feet (f) divider by 3 o.
20. The net \(f(n)\) is equal to the gross pay ( m ) minus the derluctions (i).

5-6 iverages
3-6 i i irithnetic 凶ean
Averages of many tyfes are encountered in everyday life.
You have alreaty worker with one ty:e of averace, namely, the arithmetic mean. The arithmetic mean ( \(m\) ) of a set of numbers is the sum of the numbers in the set (3) divided by the number of numbers in ti:e set ( \(n\) ). In formula form: \(: n=\frac{3}{n}\)

8-6 B Batuing iverage
In baseball we have several averages. Une, the batting averaste ( 0 ) is found by diviring the total hits ( \(h\) ) iy the number of ofricial times at bat \((n)\). In fermula form stated: \(b=\frac{h}{n}\)

These are ordinarily piven to 3 decimal places.
 run average. Thte earned run average (ti) i.. lound by multiplying \(y_{\text {by }}\) the number of arner rans aven up by pitcher (r) and dividing this result by the number f innirys pilched (io). stated as á formula this woilit: ir: :
\(\ddot{u}=\frac{9 r}{n}\)
Fixam:le 1: During one merior in the 1y6i inathely season, Hrauntiky of the Urioles gatr u: : 3 eamert rans
 jol: ition:
\[
\begin{aligned}
& \text { a) } E=\frac{g r}{n} \\
& \text { Give:in } \\
& \begin{array}{l}
\text { a) } E=\frac{n}{2(2)} \\
\text { a) } E=\frac{95}{(75)}
\end{array}
\end{aligned}
\]
\[
\begin{aligned}
& \therefore \quad \therefore=2.70 \quad \therefore \text { iswer }
\end{aligned}
\]

R-G \(D\), iilles ior Gailon

 gallon (A) is the Aistance in miles ( \(n\) ) divithed ir the nureer
 form: \(\quad i=\frac{m}{\xi}\).
\[
\begin{aligned}
& \text {. o ol:: . i ri: }
\end{aligned}
\]
\[
\rightarrow i \quad \text { in }=21,407-3, j(i f=40 \text { aistmrat irivelet }
\]
b) \(\dot{A}=\frac{m}{i!}\)

Given
c) \(A=\frac{23}{5 ?} \quad\) jubstitution
1) \(h=17.1\) miles per \(:\) al. inswer (Hiterest terith)

8-6 : Average Rate
The average rate of spetd ( \(r\) ) is defined as distance ( \(d\) ) divideri by time (t) or:
\(r^{i}=\frac{d}{t}\)
Example 3: Ray took 3 h hrs. ro :over a discance of 140 miles. Find tiis average rate ot sped. Bolution:
\[
\begin{array}{ll}
\text { a) } r=\frac{d}{t} & \text { (iver: } \\
\text { i) } r=\frac{140}{3.5} & \text { Sibsti } 14 . .1 \div r_{1} \\
\text { ci } r=40.0 \mathrm{~m} / \mathrm{ti} & \\
\text { Answer }
\end{array}
\]

フีーń F Sưnmary
You thay have noticert ny now i.at alit if the: above: ner:tioned ayorames follow a basic bir.rn. In zach cisp a


 of clucer



\section*{S-6 bxaiciss}
l. Fin: shemithmetic merin of the oliowirg set of numbers to two d:cinal places.
a) 33
b) 253
\(\therefore \quad 267\)
2.76

203
273
266
2.48 ? 1
\(2!7\)
291 237
209
201 271
301
257
24;)
293
244 211
2 29
270 236
2. lit one poinc in the \(1 \div 67\) haseball seasen, Frank Robinson had 144 hits in 4 aid bines at bat. what was his batting average ar tha: li: ine:
3. A pitcher al iower 55 sarned runs in ins inning:\% dhat was his LRA?
 37,76? aino.je \(A:\) and of tie trip it rugisturer?
 What wa: tix. averian ailes prer pation? five arawer io the nearurs, tentit.


6. Find the arithmetic mean of the following set of numbers to three decimal nlaces.
a) \(1 \frac{1}{2}\)
b) \(2 \frac{5}{8}\)
c) \(3 \frac{5}{6}\)
c) \(3 \frac{3}{4}\)
\(2 \frac{1}{4}\)
\(3 \frac{7}{8}\)
\(4 \frac{1}{2}\)
\(2 \frac{4}{5}\)
\(3 \frac{1}{5}\)
\(1 \frac{1}{6}\)
\(2 \frac{3}{5}\)
\(4 \frac{1}{8}\)
\(4 \frac{2}{3}\)
\(1 \frac{1}{4}\)
\(1 \frac{1}{8}\)
\(3 \frac{3}{8}\)
\(2 \frac{3}{8}\)
\(2 \frac{7}{8}\)
\(4 \frac{1}{4}\)
\(2 \frac{7}{8}\)
7. i rock falls 784 feet in 7 seconds. What is the average rate of speed at which the rock fell to the nearest tenth?
9. A batter had 3.43 hits in 759 tines at bat. What is his batting average?
9. A motorcycle covered a distance of 313 miles and used 7.9 gal. of fuel. What was the average miles per gillon? (Nearest tenth)
li). A jet plane covers a distance of 1243 miles in 2.35 hours. What is its average rate of speed to the nearest tenth?
11. Saul has delivered a total of 469 newspapers in a one week period (7 days). \#inat is the average number of papers he delivered each day?
12. A man earneri a gross wage of .3144 .91 for 43 hours of work. What was his average rate of pay ner hour?

3-7 ivaiuating Forinulas
In this section you are going to evaluate various formulas. Later on jou will learn what some of these formulas are used for. liow, rowever, simply replace the variables with the values they represent and follow the order of operations listed in section 3 . 4 .

Example 1: Given: \(V=\frac{1}{3} \mathrm{Bh}\)
Find: \(\underline{V}\) if \(B=62\) and \(h=7\). jolution:
a) \(V=\frac{1}{3} 3 \mathrm{~h} \quad\) Giver
b) \(V=\frac{1}{3}(62)(7)\).Jubstitution
c) \(\quad \ddot{v}=\frac{43 i_{4}}{3} \quad\) rultialying
d) \(V=l_{4} i_{1} . t 7 \quad\) Dividing, and rounding off to inswer two decimal rlaces.

Find \(\underline{V}\) in each of the scllowine. Let \(\mathbb{T}=3.14\). tound off answers to nearest tenth.
(Example 1 is done for you as an illuscration.)
\begin{tabular}{|c|c|c|c|c|c|}
\hline 1. 75 & r & h
7 & \[
\begin{aligned}
& \text { Formula } \\
& \mathrm{V}=\frac{1}{3} 3 \mathrm{~h} \\
& \mathrm{I}
\end{aligned}
\] & Substitution
\[
=\frac{\dot{i}}{3}(75)(7)
\] & \[
\begin{aligned}
& V= \\
& =175
\end{aligned}
\] \\
\hline 2. 29.1 & - & 2.3 & \(\dot{V}=\frac{1}{3} \mathrm{ib}\) & = & \(=\) \\
\hline 3. - & 3.2 & 2.1 & \(V=\pi r^{2} h\) & \(=\) & \(=\) \\
\hline 4. - & 2.1 & 3.2 & \(V=\pi r^{2}\) & \(=\) & = \\
\hline 5. - & 52 & 25 & \(J=\frac{1}{3} \pi r^{2} h\) & = & = \\
\hline 6. & 25 & 7.7 & \(\ddot{v}=\frac{1}{3} \pi r^{2} h\) & = & \(=\) \\
\hline 7 - & - & \(\frac{1}{3}\) & \(v=h^{3}\) & = & \(=\) \\
\hline 5. & \(1 \frac{1}{3}\) & - & \(\mathrm{V}=\mathrm{r}^{3}\) & \(=\) & = \\
\hline
\end{tabular}


Find \(T\) in each of trie following:
Let \(\mathbb{M}=3.14\)

- - joisntific rormidas

Cominonly :te use the rahreninent scale to measure tomp:erature. On liais scole, water freezes at \(32^{\circ}\) and boils at 212. . In scientific work the centirrade scale is useri. Un this scele, vetor ire:zes at \(0^{c}\) and boils \(\exists \mathrm{t} 100^{c}\).

To alange parpenteit. renints to centigrade use the formula: \(\dot{\sim}=\frac{5}{9}(F-32)\), where \(F\) is the reaciing in \(\mathrm{Fa}-\) hrenteit and \(\underline{C}\) is the readinir in contigrade.

```

jolution:
a)}C=\frac{5}{3}(F-32)\quad\mathrm{ Given
b) C= 5
c) U = 年(3a) \&vaiuating, insic:e
whict: means :Arentieses, first.
त) }=\frac{5\times3!}{0
v=\frac{nr}{5}}\times3
multirly firsc, then
ciivirm, or vice versa.
e) <:.0.: :
.jei utuontic iotil nevar "off"
jni 5.1 or loy boart
Ier.r.asx

```

```

    "enress riturg%
    jui. , on i.! ! boy no:rd
                                    12n00n:
    \ 1 T
    set whionat:c Toori werver "en"
    Je:ross 号 re%.
    metro% 2:
nutnsiazic Tetal Lever "on"
AB. 50000 (inis gives sufficirnt numbur of
Neci:nal ymens in the answer.)
Defress wht :rne iivid!end b:e:
je:. y
Levress 是 !n%
Motiont .5555 is printed
Enn0n t
jet ridotien:, }5555\mathrm{ on ke; board
Ee:ress x]:e%
je: 3?
insincr, 2bune i.s :rincen.
$F=\frac{3}{5} 0+30$.Example 2: Uhange 70" caritigrare to fartrenheit.jolution:
a) $F=\frac{9}{5}(0+32 \quad$ iiven
i) $\dot{r}=\frac{3}{5} 70+3 ? \quad j \quad$ jostitution
c) $\bar{r}=150^{0}$ ..... inswiter

to centiprade: $\quad \therefore=\frac{5}{3}(p-3 a)$
i. $40^{\circ}$
2. $160^{\circ}$
3. $200^{\circ}$
4. $100^{\circ}$
$\therefore \quad 50^{c}$
$\therefore \quad . \rightarrow . r^{0}$
7. $10^{\circ}$
$\therefore 300^{\circ}$
\% $11000^{3}$
10. $2!3$ 

$\mathrm{F}=\frac{1}{5} \mathrm{a}+3$ ?
11. ..... $50^{c}$
12. ..... $25^{\circ}$
13 ..... $320^{\circ}$
14. ..... $7 i^{c}$
15. ..... $5^{\circ}$
17. ..... $32^{\text {c }}$

17． $200^{6}$
13．$\quad 5^{9}$
19． $22^{\circ}$
20． $312^{\circ}$

8－？．．iscellaneous Pormulas
Interest is the amount oi money taid to use monej．If you heve money in a savines account，then the bant yas you interest for the use of that nene？．If you borros money from
 money．

If I remresonts interest，$p$ renresents irincinal，rerre－ sents the rate of internst，and $t$ ropresents ine tine in wears， then：$\quad I=p r t$.
 jclusion：
a）$I=$ ！ri $\quad$ Oiven
b）$I=(50)(.0645)(2.5)$ inhstituion

 followine laile：

| Frinci！al | inate | Tine | Incoresi |
| :---: | :---: | :---: | :---: |
| 1．；\＄50 | $45 ;$ | 2 jr． |  |
| 2． 4.65 | $6 ;$ | $3: r$. |  |
| 3．$\dot{\psi} 45$ | 32\％ | l言 O r 。 |  |
| 4． 22500 | 6\％； | 5 yr |  |
| 5．$\% 125$ | 12； | 1 yr． |  |
| 6． 1725 | $\cdots$ | 1 yr .6 mo ． |  |
| 7． F \＄ 0.50 | 4禹禹 | 2 yr. |  |



## 3-10 Revin Exercises

Evaluate the following if $\underline{a}=2.3, \underline{b}=14.1$, and $\underline{c}=7.7$.

1. $a+2 b+3 c$
2. $5 a b c$
3. $6 a b+5 b c-2 a c$
4. $(b-c)^{2}$
5. $b^{2}-c^{2}$
6. $(a+b)^{2}$
7. $a^{2}+b^{2}$
$\Rightarrow a^{2}+2 a b+b^{2}$
8. $\frac{9}{2}(b+3 c)$
9. $3 a+2 b(3 c+2)^{2}$
10. If $\underline{v}=\frac{1}{3}$ bh, find $\underline{v}$ when $\underline{3}=72.7$ and $\underline{h}=3.1$.
11. Usine the formula $V=\frac{4}{3} \pi r^{3}$, find $I$ when $\pi:=3.14$ and $\underline{r}=7.6$.
12. If $d=r i$, find $d$ when $r=45$ ant $i=2.3$.
13. Civea $F=2(L+w)$, find $\underline{E}$ when $L=37$ and $w=23.5$.
14. Find the averafe of the folowine sel of nunbers: 215.60, 321.75, 1:0.1.5, 215.35. 315.7, 115.4\%, 202.100, and 193.(5.
15. Lising the formul: of sontion 2-t, find art:'s term grade if his daily erades ar: $83,3!, 67,55,6 t, 43$, and 76 and his final cosl ta rị was $\$ 1$.
16. Convert $a$ Fahrenheit ienseracure reading of $13^{\circ}$ to cent-

17. Convert a centieraide re Aine of $110^{\circ}$ to Fahrenheit usine the Ioraula of secian $\underset{\sim}{\text { and }}$.
1.. Using the for:mula $I=$ prt, find the incerest on $\mathbf{i l} 5 \%$
for 3 years at 5is\%.
18. If $\dot{L}=d^{2} n$, find $\underline{L}$ when:
a) $\lambda=25$ ani $n=4$.
b) $d=50$ and $n=4$.
c) $d=25$ anc $n=\pi$.
d) $\lambda=25$ and $n=$ ?

SH: Some interesting arrangemente: Numbor Patterns
T。

II。

| $1 \times 1$ | * | 1 |
| :---: | :---: | :---: |
| $11 \times 11$ | * | 121 |
| $111 \times 111$ | - | 12321 |
| $1111 \times 1111$ | $\pm$ | 1234321 |
| $11111 \times 11111$ | = | 123454321 |


| $1 \times 8+1$ | $=9$ |
| ---: | :--- |
| $12 \times 8+2$ | $=98$ |
| $123 \times 8-3$ | $=987$ |
| $1234 \times 8+1$ | $=9976$ |
| $12345 \times 8+5$ | $=98765$ |

III. Find the pattern:

$$
\begin{aligned}
& 12345679 \times 9 \\
& 12345679 \times 18 \\
& 12345679 \times 27
\end{aligned}
$$

IV. Try thia:

142857 x 2
$142857 \times 3$
$242857 \times 4$, oarry on up to 7 times.
T. Soe: if you can continue these:
(a) $7 \pi 143$
$7 \times 286$
$7 \times 429$
(b) $7 \times 15873$
$7 \times 31746$
$7 \times 47619$
(c)

| 6 | $x$ |
| ---: | ---: |
| 66 | $x$ |
| 666 | $x$ |
| 6666 | $x$ |

7
67
667 6667
(d) $333667 \times 1113$
$33336667 \times 11133$

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# a text-workbook BOOK 4 <br> PART 1 

## 1967

The machine caiculator course, oricinally introniuced for tentr. grade metrenatics sturents in jeptemioer of lició, has underfone an ambitious revision conducted by a mathene incs research and development tom uniter the E.jA, Title I, grant.

 have been developer iy $t_{1}$ f followinc seam nemers: juesten J. licich, cheirman of the teen, departern of mathenatics, iartford Fublic hicich ic!eol; Rovert i. iofensen, denartrant of mathenatics, hartford fublic hief jeiool; warie a. Gioitz, department of
 of mallematics, :indsor fiech jc::00l.

The course is interided to meet ine needs of students who have exinisited a lac!: of irniblen-soling stills. banlojing electric desk calculators to rid sturents of the Irustration of computetional druicery, ョ new learniné setting in which studerts can suicced has released then to read and analyze problens to a grofter extent. These problens arc directily related to the world of work that students mity enter upon grácluation.

The efiorts of the $\hat{i}$ irst curriculn tean in bie sumer of $1 \% 66$ were directed toward the develomant of authenicic, practical, problens obtained froin Jusiness and industry in t!e Ereater harciord area. iith a jear of veluable ex: erience as a guide, tine tea; has reorganimed the course content iron iis orizinally exclusive problen-solving ap, roach vo a lexi-workhook for:nat.

It was felt that students neederi a basic review of arithmetic skills before they attempted to solve proble:ns. In the first four chanters sturients learn how to use the riachine while reviewing the basic operations with whole nurioers, decimal numiers, fractions, and per cents. liext, a transitional cinpter stresses the combinines of tinese orerations, so necessary for the solution of the detailed !roblens that follow.

In chapters 6 and 7 students rirst encounter problems that are within the iranetorlk of their own exnerience ard are then gradually introduced to tine more sinule ousiness oriented ap:lications.

Chapters a, g, and 10 deal with the use of formulas and measurenent of plane surfaces and solid ficures, preprine sựents to extend this knowledge into whe mineratics of ever:day livine and the more difficult practical proulens irom iusiness and industry.

The intent of tinis order of course tatiorials is to allow student:s to move coward indenencient achievment with greater confidence in solving problems that, are new to them, thus creating üte realistic atmosphere of the business world.

The objectives of the course are ic be evaluated by . pre-test and post-test scores on a mathomatics achievment lest desiened by tice team. The results should indicele cine direction of possible future revisions vo insure that educational offerings in mathe:atics are continuaily urdater to meet tho needs of our youth.

Sooking ahead, the oossioiliiy of extendine machine orionted mathenetics courses to students in other grades ceriainly should noc be discounteri. desearcin in this field may reveril a need to ofier tion college sound sturert, as well as the sturant aho will inmedisteiz enter the labor narlet, an obortunily to purise nithe:tatics for a deoper and more meanincrul understandine oí its rrimcinles.

## Srbutce miln

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Chapter 1 I
DAILY iifath

CHAPTER XI Daily idath

## 11-1 Installment Buying

Buying on credit is popular with many American people. When you do not have cash to buy something that you need or want, it is often convenient to charge it. You may already have a CAP charee card which entitles you to charge items that you want to buy at stores enrolled in the Charge Account Elan. Opening a charge account requires that you are able to nay for your purchases and that you will pay for then. You must be earning enough money to pay for the things you buy.

When you buy on credit, you are usually expected to pay your bill within a month of the billing tate. when you don't pay before a given due date, you must pay a service charge of $1 \frac{1}{2} \%$ per month on the amount due. When people buy an expensive, durable item, such as, furniture: a television set, appliances, such as a washer or refrigerator, or a car, or a home, they are usually unable to pay cash for then. By using the installment plan, it is possible to extend payments over a period of six months, a year, or several years. They can arrange to nay monthly payments, whicil they can afford.
:When you buy something on the installment plan, you are usually expected to pay a cash down payment to show that you seriously intend to make the purchase. ifter the cash down payment is made, the balance of the purchase price can be paid in weekly or monthly payments until the item is wholly paid for. is finance charge or service charge is addeo to the unpaid balance to cover the interest on the amount due to the dealer and bookkeeping costs involved.

The unpaid balance plus the finance charge is called the time balance. The time balance is divided by the number of payments to be made to find the amount of each monthly payment. Example: If you want to buy a color television set which costs $\mathbf{i} 398.50$, but you do not have enough to pray cash, you can arrange to buy it on an installment plan. If you. can pay a down payment of $\$ 50$. and pay the balance in 12 monthly payments, what will the monthly payments be? Solution:
$\$ 398.50$ cash price
-50.00 down payment
$34 \% .50$ unpaid cash balance
12\% of $343.50=41.82$ finance charge
$\$ 390.32$ time balance
$(\$ 390.32 \div 12)=\$ 32.52$, monthly
You will receive the TV set when you pay the down payment, and you will be able to enjoy it :while you are making payments. In this examile, the finance charge is l2; of the unpaid balance. Finance charges vary for dinferent dealers. jome dealers use a chart to determine the finance charges. ll-l EXERCISES: Complete tiis chart to determine monthly installments for various balances over a 12 month perioci.

| UNPAID CASH | FINANCE CHARGE | TIAE BALANCE | HONTHLY |
| :--- | :--- | :--- | :--- |
| BALANCE | balance | unpaid cash balance | INSTALLHET |
| bilas finance charge | Time bal. $\div 12$ |  |  |

; 100
$\$ 150$
$\$ 200$
$\$ 250$
\$300
$\ddagger \geqslant 50$

$\qquad$
$\qquad$
$\qquad$

| UNPAID CASH BALANCE | FINANCE CHARGE <br> 12\% of cash balance | TIME JALANCE unpaid cash balance plus finance charge | iKONTHLY INSTALELENT Time bal. $\div 12$ |
| :---: | :---: | :---: | :---: |
| \$ ${ }^{4} 00$ |  |  |  |
| \$450 |  |  |  |
| \$500 |  |  |  |
| \$550 |  |  |  |
| \$600 |  |  |  |
| \$650 | . |  |  |
| \$700 |  |  |  |
| \$750 |  |  |  |
| \$800 |  |  |  |
| \$850 |  |  |  |
| \$900 |  |  |  |
| \$950 | - |  |  |
| \$1000 |  |  |  |
| \$1050 |  |  |  |
| \$1100 |  | ـ |  |
| \$1150 |  |  |  |
| \$1200 |  |  |  |
| $\ddot{\psi} 1250$ |  |  |  |
| \$1300 | - |  |  |
| $\$ 1350$ |  | - |  |
| \$1400 |  |  |  |
| \$1450 | $\underline{\square}$ | - |  |
| \$1500 |  |  |  |

Notice that the service charge varies





$\begin{array}{lll}\text { 1. } & \$ 75 \\ \text { 2. } & \$ 780 \\ \text { 3. } & \dot{\Psi} \% & 52 \\ \text { 4. } & \dot{\psi} 1215 \\ \text { 5. } & \$ 249.50 \\ \text { 6. } & \Psi 1750 . \\ \text { 7. } & \$ 6100 \\ \text { 3. } & \$ 980 \\ \text { 9. } & \$ 179.98 \\ \text { 10. } & \$ 47.50 \\ \text { 11. } & \$ 339 \\ \text { 12. } & \$ 460\end{array}$

Use these charts to determine the time balance and monthly payments for various unpaid balances for 6 months, 12 months, 18 months, 24 months, 30 months and 36 nonths in the exercises
following these charts:

| Unpaid | 6 MO |  | Unpaid | 6 \% 0 NTH | -- - - |
| :---: | :---: | :---: | :---: | :---: | :---: |
| : Cash | Monthly | Time | Cash | Monthly | Time |
| Palance | Payment | Halance: | Balance | Payment | Balance |
| 100 | \$17.91 | \$107.46! | 580 | \$102.46 | \$614.76 |
| 110 | 19.56 | 117.48 | 590 | 104.23 | 625.38 |
| 120 | 21.25 | 127.50 | 600 | 106.00 | 636.00 |
| 130 | 22.96 | 137.76 | 610 | 107.76 | 646.56 |
| 140 | 24.73 | 148.38 | 620 | 109.53 | 657.18 |
| 150 | 26.50 | 159.00 | 630 | 111.30 | 667.80 |
| 160 | 28.26 | 169.56 | 640 | 113.06 | 678.36 |
| 170 | 30.03 | 180.18 | 650 | 114.83 | 688.98 |
| 180 | 31.80 | 190:80 | 660 | 116.60 | 699.60 |
| 190 | 33.56 | 201.36 | 670 | 118.36 | 710.16 |
| 200 | 35.33 | $211.98!$ | 680 | 120.13 | 720.78 |
| 210 | 37.10 | 222.60 | 690 | 121.90 | 731.40 |
| 220 | 38.86 | 233.16 | 700 | 123.66 | 741.96 |
| 230 | 40.63 | 243.78 | 710 | 125.43 | 752.58 |
| 240 | 42.40 | 254.40 | 720 | 127.20 | 763.20 |
| 250 | 44.16 | 264.961 | 730 | 128.96 | 773.76 |
| 260 | 45.93 | 275.58 | 740 | 130.73 | 784.38 |
| 270 | 47.70 | 286.201 | 750 | 132.50 | 795.00 |
| 280 | 49.46 | 296.76 | 760 | 134.26 | 805.56 |
| 290 | 51.23 | 307.38 | 770 | 136.03 | 816.18 |
| 300 | 53.00 | 318.00 | 780 | 137.80 | 826.80 |
| 310 | 54.76 | 328.56 | 790 | 139.56 | 837.36 |
| 320 | 56.53 | $339.18{ }^{\text {a }}$ | 800 | 141.33 | 847.98 |
| 330 | 58.30 | 349.80 | 820 | 144.86 | 869.16 |
| 340 | 60.06 | 360.36 | 840 | 148.40 | 890.40 |
| 350 | 61.83 | 370.98 | 860 | 151.93 | 911.58 |
| 360 370 | 63.60 | 381.60 | 880 | 155.46 | 932.76 |
| 370 | 65.36 | 392.16 | 900 | 159.00 | 954.00 |
| 380 | 67.13 | 402.78 | 920 | 162.53 | 975.18 |
| 390 | 68.90 | 113.40 | 940 | 166.06 | 996.36 |
| 400 | 70.66 | 423.96 | 960 | 169.60 | 1017.60 |
| 410 | 72.43 | 434.58 | 480 | 173.13 | 1038.78 |
| 420 | 74.20 | 445.20 | 1000 | 176.66 | 1059.96 |
| 430 440 | 75.96 | 455.76 | 1020 | 180.20 | 1081.20 |
| 440 | 77.73 | 466.38 | 1040 | 183.73 | 1102.38 |
| 450 | 79.50 | 477.00 | 1060 | 187.26 | 1123.56 |
| 460 | 81.26 | 487.56 | 1080 | 190.80 | 1144.80 |
| 470 480 | 83.03 84.80 | 498.18 | 1100 | 194.33 | 1165.98 |
| 480 490 | 84.80 86.56 | 508.80 | 1120 | 197.86 | 1187.16 |
| 490 | 86.56 | 519.36 | 1140 | 201.40 | 1208.40 |
| 500 510 | 88.33 | 529.981 | 1160 | 204.93 | 1229.58 |
| 510 520 | 90.10 | 540.60 | 1180 | 208.46 | 1250.76 |
| 520 530 | 91.86 | 551.16 | 1200 | 212.00 | 1272.00 |
| 530 | 93.63 | 561.78 | 1300 | 229.66 | 1377.96 |
| 540 | 95.40 | 572.40 | 1400 | 247.33 | 1483.98 |
| 550 | 97.16 | 582.90 | 1500 | 265.00 | 1590.00 |
| - 560 | 98.93 | 593.58 |  |  | 1590.00 |
| - 570 | 100.70 | 604.20 | 345 |  |  |


| Unpaid | 12 MONTHS |  | Unpaid - 12 MonTis |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Cash | Monthly | Time | Cash | Monthly | Time |
| Balance | Payment | Balance | Balance | Payment | Balance |
| 100 | \$9.33 | E?1].76 |  |  |  |
| 110 | 10.26 | 123.12 | 580 | \$54.13 | \$649.56\% |
| 120 | 11.20 | 134.40 | 590 | 55.06 | 660.72 |
| 130 | 12.13 | 145.56 | 600 | 56.00 | 672.00 |
| 140 | 13.06 | 156.72 | 610 | 56.93 | 683.16 |
| 150 | 14.00 | 168.00 | 620 | 57.86 | 694.32 |
| 160 | 14.93 | 179.16 | 630 | 58.80 | 705.60 |
| 170 | 15.86 | 190.32 | 640 | 59.73 | 716.76 |
| 180 | 16.80 | 201.60 | 650 | 60.66 | 727.92 |
| 190 | 17.73 | 212.76 | 660 | 61.60 | 739.20 |
| 200 | 18.66 | 223.92 | 670 | 62.53 | 750.36 |
| 210 | 19.60 | 235.2 C | 680 | 63.46 | 761.52 |
| 220 | 20.53 | 246.36 | 690 | 64.40 | 772.80 |
| 230 | 21.46 | 257.52 | 700 | 65.33 | 783.96 |
| 240 | 22.40 | 268.80 | 710 | 66.26 | 795.12 |
| 250 | 23.33 | 279.96 | 720 | 67.20 | 806.40 |
| 260 | 24.26 | 291.12 | 730 | 68.13 | 817.56 |
| 270 | 25.20 | 302.40 | 740 | 69.06 | 828.72 |
| 280 | 26.13 | 313.56 | 750 | 70.00 | 840.00 |
| 290 | 27.06 | 324.72 | 760 | 70.93 | 851.16 |
| 300 | 28.00 | 336.00 | 770 | 71.86 | 862.32 |
| 310 | 28.93 | 347.16 | 780 | 72.80 | 873.60 |
| 320 | 29.86 | 358.32 | 790 | 73.73 | 884.76 |
| 330 | 30.80 | 369.60 | 800 | 74.66 | 895.92 |
| 340 | 31.73 | 380.76 | 820 | 76.53 | 918.36 |
| 350 | 32.66 | 391.92 | 840 | 78.40 | 940.80 |
| 360 | 33.60 | 403.20 | 860 | 80.26 | 963.12 |
| 370 | ; 34.53 | 414.36 | 880 | 82.13 | 985.56 |
| 380 | 35.46 | 425.52 | 900 | 84.00 | 1008.00 |
| 390 | 36.40 | 436.80 | 920 | 85.86 | 1030.32 |
| 400 | 37.33 | 447.96 | 940 | 87.73 | 1052.76 |
| 410 | - 38.26 | 459.12 | 960 | 89.60 | 1075.20 |
| 420 | 39.20 | 470.40 | 980 | 91.46 | 1097.52 |
| 430 | 40.13 | 481.56 | 1000 | 93.33 | 1119.96 |
| 1440 | 141.06 | 492.72 | 1020 | 95.20 | 1142.40 |
| . 450 | - 42.00 | 504.00 | 1040 | 97.06 | 1164.72 |
| 460 | - 42.93 | 515.16 | 1060 | 98.93 | 1187.16 |
| 1470 | 4.3 .86 | 526.32 | 1080 | :100.80 | 1209.60 |
| : 480 | - 44.80 | 537.60 | 1100 | 102.66 | 1231.92 |
| 1490 | -45.73 | 548.76 | 11.20 | i 104.53 | 1254.36 |
| -500 | 146.66 | 559.92 | 1140 | . 106.40 | 1276.80 |
| 1510 | 147.60 | 571.20 | : 1160 | ;108.26 | 1299.12 |
| !520 | 148.53 | 582.36 | ; 1180 | 110.13 | 1321.56 |
| [530 | 49.46 | 593.52 | 1200 | 1112.00 | 1344.00 |
| 540 | 50.40 | 604.80 | 1300 | \|121.33 | 1455.96 |
| 1550 | 151.33 | 615.96 | 1400 | 113.).66 | 1567.92 |
| j60 | 152.26 | 627.12 | 1500 | 1140.00 | 1680.00 |
| 570 | 53.20 | 638.40 |  |  |  |




| Unpaid | 30 MONTHS |  | Unpaid | 30 MONTHS |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Cash | Monthly | Time | Cash | Monthly | Time |
| Balance | Payment | Balance | Halance | Payment | Balance |
| 100 | \$4.37 | \$131.10 | 580 | \$25.38 | \$761.40 |
| 110 | 4.81 | 144.30 | 590 | 25.82 | 774.60 |
| 120 | 5.25 | 157.50 | 600 | 26.25 | 787.50 |
| 130 | 5.68 | 170.40 | 610 | 26.69 | 800.70 |
| 140 | 6.12 | 183.60 | 620 | 27.13 | 813.90 |
| 150 | 6.56 | 196.80 | 630 | 27.57 | 827.10 |
| 160 | 7.00 | 210.00 | 640 | 28.00 | 840.00 |
| 170 | 7.43 | 222.90 | 650 | 28.44 | 853.20 |
| 180 | 7.88 | 236.40 | 660 | 28.88 | 866.40 |
| 190 | 8.31 | 249.30 | 670 | 29.31 | 879.30 |
| 200 | 8.75 | 262.50 | 680 | 29.75 | 892.50 |
| 210 | 9.19 | 275.70 | 690 | 30.18 | 905.40 |
| 220 | 9.63 | 288.90 | 700 | 30.63 | 918.90 |
| 230 | 10.07 | 302.10 | 710 | 31.08 | 932.40 |
| 240 | 10.50 | 315.00 | 720 | 31.50 | 945.00 |
| 250 | 10.94 | 328.20 | 730 | 31.95 | 958.50 |
| 260 | 21.38 | 341.40 | 740 | 32.38 | 971.40 |
| 270 | 11.82 | 354.60 | 750 | 32.83 | 984.90 |
| 280 | 12.25 | 367.50 | 760 | 33.25 | 997.50 |
| 290 | 12.69 | 380.70 | 770 | 33.70 | 1011.00 |
| 300 | 13.13 | 393.90 | 780 | 34.13 | 1023.90 |
| 310 | 13.57 | 1107.1 .0 | 790 | 34.58 | 1037.40 |
| 320 | 14.00 | 420.00 | 800 | 35.00 | 1050.00 |
| 330 | 14.44 | 433.20 | 820 | 35.88 | 1076.40 |
| 340 | 14.88 | 446.40 | 840 | 36.75 | 1102.50 |
| 350 | 15.32 | 459.60 | 860 | 37.63 | 1128.90 |
| 360 | 15.75 | 472.50 | 880 | 38.50 | 1155.00 |
| 370 | 16.19 | 485.70 | 900 | 39.38 | 1181.40 |
| 380 | 16.63 | 498.90 | 920 | 40.25 | 1207.50 |
| 390 | 17.07 | 512.10 | 940 | 41.13 | 1233.90 |
| 400 | 17.50 | 525.00 | 960 | 42.00 | 1260.00 |
| 410 | 17.94 | 533.20 | 980 | 42.88 | 1286.40 |
| 420 | 18.38 | 551.40 | 1000 | 43.75 | 1312.50 |
| 430 | 18.82 | 564.60 | 1020 | 44.62 | 1338.60 |
| 440 | 19.25 | 577.50 | 1040 | 45.50 | 1365.00 |
| 450 | 19.69 | 590.70 | 1060 | 46.37 | 1391.10 |
| 460 | 20.13 | 603.90 | 1080 | 47.25 | 1417.50 |
| 470 | 20.57 | 517.10 | 1100 | 48.12 | 1443.60 |
| 480 | 21.00 | 630.00 | 1120 | 40.00 | 1470.00 |
| 490 | 21.44 | 643.20 | 1140 | 49.88 | 1496.40 |
| 500 | 21.88 | 656.40 | 1160 | 50.75 | 1522.50 |
| 510 | 22.32 | 669.60 | 1180 | 51.63 | 1548.90 |
| 520 | 22.76 | 682.80 | 1200 | 52.50 | 1575.00 |
| 530 | 23.20 | 696.00 | 1300 | 56.88 | 1706.40 |
| 540 | 23.63 | 708.90 | 1400 | 61.25 | 1837.50 |
| 550 | 24.07 | 722.10 | 1500 | 65.63 | 1968.90 |
| 560 | 24.50 | 735.00 |  |  |  |
| 570 | 24.94 | 748.20 |  |  |  |


ll-1 EXERCISriS B: Use the tables on the ureceding pages to find the time balance and the monthly payments in the following problems. Find monthly payment to nearest cent.

1. The cash price of a refrigerator is $\$ 300$, and the down payment is $\$ 50$. What is the time balance? If the pay:nent period is 18 months, what is the monthly payment?
2. The casin price of an automatic washer is $\dot{\psi} 240$ and the down payment is $13 \$ 0$. If the payment period is 30 months, what is the amount of the monthly payment? What is the time balance?
3. If in problem 2 you paid $\$ \$ 0$ riown payment and then you paid \%8. 26 per month for 24 months, how much did you nay for the washer oy paying on the installment plan? How much more than the cash price did you pay by buying on the installment plan?
4. A piano that is priced at $\mathbf{\psi} 750$ cash can be purchased for $\dot{\$} 25$ down with $\$ 32$ each month for 24 months. Find the difference between the cash price and the installnent price.
5. An electric washer is sold for $\$ 23$ down and $\$ 9.00$ per month for one year. What is the installant price? If g\% discount from the installment price is aliowed for cash, what is the cash price?
6. iirs. Roberts bought a gas stove for $\$ 1 \geqslant 9.50$. She paid $\$ 14$ down and agreed to pay $\$ 1.95$ a week until the stove was paid for. For how many weeks was she paying for the stove?
7. John llay bought a TV set for $\$ 279.95$. His down payment was $\$ 27.95$. At 42 cents per day, how many days will it take him to complete his payments?

か. 'Tne living room sofa that the John's family wants to buy costs $\$ 229$ cash or $\$ 271$, if they pay $\$ 25$ down and the rest in installnents of $\$ 20.50$ per month. How many payments must they make on the installment plan? How much more does the sofa cost on the installment plan than the cash price?
9. A radio is priced at 922 cash or $\$ 1$ down and $\$ 4.00$ per month for 6 months. What is the installment price of the radio? How nuch more is the instellment price than the cash price? 'ihat rate of service charge is paid ior using the installment !lan? (Divide difference in !rice by cash price.)
10. Carol's mother bought the following items:

1) a sewing machine $\dot{\$} 140.00$
2) vacuum cleaner $\$ 65.50$
3) toaster $\$ 15.95$

She paid for these items over a period of 6 months. How much is the monthly installment for the total bill if there was no down payment?
11. You have decicced to refurnish your livine room. You have selected a rug which costs i2l5, a chair which costs ily 19 , and a faoric coveren sof which costs wis. You are able to pay pl50 down !ayment and finance the balance. The cash price inust include a $3 \frac{1}{2} \dot{j}^{\circ}$ sales tax. The finance charges are at the race of per year on the unpaid balance. You plan to pay off the time balance in 2í2 years ( 30 months).

Fill out the following "Retail Instellment vontract."

## RETAIL INSTALMENT CONTRACT

0134863
 moperty deserbed below or in schedule attached herato, delivery and acceptance of which in good order is hereby ackrowedged by buyer, yb.:

12. Use the personal loan application for the Connecticut Bank and Trust Company (page 355)

Norma and Cyril Patterson are a newly wed counle. They have just rented an arartment at 256 Prospect Avenue, fiartford.

French Provincial 4Pc. Bedroom $\underset{459.00}{\text { Orig. }} 0$ 15

They have been shopping for furniture which they plan to buy on the installment plan. They have selected the French Provincial 4 Ic. bedroom set for $\$ 346$, the Contemporary sofa for 4196 . anri the $\$$ piece dining room set for $435 \%$, listed in this advertisement.
(a) What is the total cost of these three items including the $3 \frac{1}{2} \%$ sales tax?
(b) If Cyril and Norma P'atterson can pay a down payment of $\dot{\psi} 100$, what will be the unpaid balance?
(c) ince the finance charce is $12 \%$ of the unpaid balsnce find the time balance and the monthly jayment if they are able to finance it for 36 months.
They !lan to finance this purchase through a loan from the Connecticut Bank arı Trust Company. Jie the following personal information to fill out the loan anpiication. Cyril is employed by Olivetta Underwood Uorporation in liartford. He earns $\mathbf{\psi} 625$ per month. Nor:aa is employed by Áli-State Insurance Vompany, Bishop تorner, west fartford. 3he earns 4425 ner month. $: \because r i l$ has a life insurance policy with face value

> of $\$ 10,000$ with Travelers, a checking account with C.3T anc a savings account :ith jociety for Savings. They own a 1966 Pontiac with monthly paynents of $\$ 33.56$ to Gidic. Complete the itetail
> Installnent Contract for this problem below.

## THE CONNECTICUT BANK AND TRUST COMPANY

 APPLICATION FOR PERSONAL LOANThis loan. if granted, will be protected by life insurance to the extent provided under the Bank's Customer Group Life Insurance Policy. If the Borrower should die hefore the loan is paid. the balance of the loan will be paid out of the proceeds of auch life insurance up to the limits of said. Iife insurance policy and if so paid, the estate of the Borrower will be released from further liability. This protection is furnished for the Borrower indicated below, but does not protect the Co-makers or Endorsers.
PLEASF ANSEFFR ALL QUFSTIONS
Date
I hereby make application for a loan of
5
Purpose of toan
Name .......................................................................................................................................................................... A ge
Home ^ddress ....................................................... City ............................................................................................. Phone No.
Number of
Married or Single ......................................... D'ife's Na me Dependents

Employed by for

Years
Position Occupied
Phone No.
State whether Salary, Wages or Commission
Ame. per Wk.
If any other income, source ..................................................................................................................... Amt. per Wk.
Previous Employment
Position
How Long
Where is your Checking Account?
Savings Account?
Safe Deposit Box?
Amount of Life Insurance
A mount borrowed
Have you any other loons? And ore you making any installment payments to banks, laon companies, installment or finance......................................... companies, credit unians or others? If so, give details below. (IF NONE, PLEASE STATE "NONE')

|  | Original Amount <br> $\$$. $\qquad$ <br> $\$$. $\qquad$ <br> $\$$ $\qquad$ <br> $\$$. $\qquad$ <br> \$. $\qquad$ <br> $\$$ $\qquad$ <br> $\$$ $\qquad$ | Unpaid Balance <br> $\$$ $\qquad$ <br> $\$$. $\qquad$ <br> \$ $\qquad$ <br> \$ $\qquad$ <br> $\$$. $\qquad$ <br> $\$$. $\qquad$ <br> $\$$ $\qquad$ | AMOUNT PAIO WEEKLY OR MONTHLY <br> \$ $\qquad$ <br> S $\qquad$ <br> $\$$. $\qquad$ <br> \$ $\qquad$ <br> \$ $\qquad$ <br> $\$$ $\qquad$ <br> . $\$$ $\qquad$ |
| :---: | :---: | :---: | :---: |
| What is the total of all outstanding debts, including any budget accounts. |  |  | 5 |
| Do you own an automobile? . ............................................. Make ............................................................ Year |  |  |  |
| Location and description of Real F.state Owned |  |  |  |

ll-1 EXERCISES C:

1. The unpaid cash balance on tie purchase of an atutomobile is $\mathbf{p l} 1500$. If the payment period is 30 months, how much must you pay ner month? that is the time balance? riow much is the finance charge?
2. The cash price of a new car is 33200. You have 4250 . down paymeni. In adcition, you have your old car for whicil the dealer will tive you $\$ 650$ trade allowance. If you finance the balance that you owe for a neriod of 30 months, what will your monthly payment be? Finance charee is l2; of unṭaió balánce.
3. How much did you actually pay for the car in froblem 2 ?

Include Down payment
Trede-in allowance
Time balance +
Inste llnent cost
Uash :rice
hatount lost by rot paying casin.

 his monthly payents ie if i: :ojd for the far over a 2 year period? Finance charee is l2: of unnaid balance.
ll-1 D Completing Invoices for Buying a Car on the Installment Plan
a) When you see an automobile in a car dealer's show room, the car has a certain price tag on it. This price is the list price of the car. 'l'his price does not include certain extra items that you may want, such as, power steering, power brakes, automatic transmission, car radio, white wall tires, etc. The cost of these extras must be added to the list price. In addition, the sales tax and registration fee must be added on. The total of all these, list price plus extras, amounts to the actual cost of the car.
b) You usually make a cash down pay:nent (deposit) and you might also have a used car which jou want to trade in. The amount that your used car is worth, together with your deposit, represents the down payment that you are puiting into the new car.
c) If you subtract (b) from (a), this amount of money is the cash difference between what the car will cost you, and the amount jou are putting into the new car.
d) Bince you are buying on the installment plan, use the tables on pages 345 through 350 to find the monthly payments based on the cash difference and the number of months over which you will be naying for the car.

## 11-1 EXERCISES E:

Use the form at the bottom of this rage for the following problem:

1. Nake out an invoice for a Flymouth (Fury II) from J.R. Johnson's; the list price of the car is \$3419. Extras include power sterring at $\$ 120$, undercoating $\$ 23$, radio $\$ \$ 7$. The registration fee is 13 . The cash deposit is $\$ 375$ and the trade-in allowance on the previous car is $\$ 1100$. The Connecticut sales tax is $3 \frac{1}{2} \%$ of the cost. Determine the monthly payments for 3 years, if the finance charge is $15 \%$ of the cash difference.

| 1. Price of Car |  |
| :---: | :---: |
| 2. Extras |  |
| 3. |  |
| 4. |  |
| 5. |  |
| 6. List price plus extras |  |
| 7. Sales tax |  |
| 2. Title fee and Registration |  |
| 9. Total Frice |  |
| SETTLEMENT |  |
| 10. Cash Deposit |  |
| 11. Cash on Delivery |  |
| 12. Used Car |  |
| 13. Total Allowance |  |
| 14. Cash difference |  |
| 15. Finance Charge |  |
| 16. Time Balance |  |
| 17. Time ___ months |  |
| 18. Monthly Payments | 338 |

(Cost of car with extras)
( $3 \frac{1}{2} \%$ of cost of car)
(Total cost inc. sales tax and title fee and registration)
(Cash payment and other allowances)
(Total price - total allowance
$12 \%$ of casin difference cash difierence + rinance cnarue time balance $\div$ no. nonths 358

11-1 EXERCISES E: Use the form at the bottom of this page for the following problem:
2. The list price of a car is $\$ 2600$. Extras include power brakes $\$ 68$, power steering $\psi 130$, car radio $\$ 108$. The sales tax is $3 \%$ of the cost. The title fee and registration is $\$ 13$. The cash deposit is $\$ 500$ and the trade-in allowance on the old car is $\$ 1000$. Use $12 \%$ finance charge to find

| 1. Price of Car |  |
| :---: | :---: |
| 2. Extras |  |
| 3. |  |
| 4. |  |
| 5. |  |
| 6. List price plus extras | (Cost of car with extras) |
| 7. Зales tax | ( $3 \frac{1}{2} \%$ of cost of car) |
| ?. I'itle fee and Registration |  |
| 9. Total. Price | Total cost inc. sales tax and |
| SETTLEMENT | citle fee and registration |
| 10. Cash Deposit |  |
| 11. Cash on Delivery |  |
| 12. Used Car |  |
| 13. Total fillowance | (Cash payment and other allowances) |
| 14. Cash difference | (Total price - total allowances) |
| 15. Finance Charge |  |
| 16. Time Balance | Cash difference + finance charge) |
| 17. Time months |  |
| 18. Honthly Fayments | (line balance $\div$ no. months) |

11-1 EXERCISES E: Use the form at the bottom of this page for the following problem:
3. A car lists for $\$ 2000$. Extras include undercoating $\$ 23$, radio $\$ 70$, and polish \& wax $\$ 15$. Registration fee is $\$ 13$. The trade-in value of the old car is $\$ 540$ and the cash down payment is $\$ 200$. I'he sales tax is $3 \frac{1}{2} \%$ of the cost. Find the monthly payments for a two year period.

| 1. Price of Car |  |
| :---: | :---: |
| 2. Extras |  |
| 3. |  |
| 4. |  |
| 5. |  |
| 6. List Price plus extras | (Cost of car with extras) |
| 7. Sales tax | $\left(3 \frac{2}{2} \%\right.$ of cost of car) |
| 3. T'itle fee and Registration |  |
| 9. Total Frice | Total cost in. sales tax |
| SETTLEMENT | gistration) |
| 10. Cash Deposit |  |
| 11. Cash on Delivery | - |
| 12. Used Var |  |
| 13. Total Allowance | Cash payment and other allowances) |
| 14. Cash difference | Total price - total |
| 15. Finance Charge | 12\% of eash difference |
| 16. Time Balance | cassin difference + finonce witar.. |
| 17. Time __ monchs |  |
| 18. Vonthly Payments | tine balance $\div$ no. months |

11-1 EXERCISES E: Use the form at the bottom of this page for the following pronlein:
4. The list price of a car is $\$ 3400$. Extras include power brakes $\psi 70$, power steering 4130 , Ait-Fin ranio $\mathbf{\psi 7} 7$. hegistration fee is $\dot{\psi} \mathbf{i} 3$. Jales tax is $3 \frac{1}{2}{ }^{c}{ }^{\prime \prime}$. Cash deposit is $\$ 340$, and the trade-in allowance is p 00 . Find the monthly payments for 30 months. How much more than the cash price is the installment price?


## ll-1F Installment Buying - Mortgages

Houses are usually purchased on an installment plan. The buyer pays a down payment, then signs a mortgage for the unpaid balance. The mortgage is a statement that the buyer promises to pay the unpaid balance. In most cases chis arrancement is handled by a bank. The bank pays the seller the ainount of the unpaid balance and the buyer makes his monthly paynents to the barik which holds the mortgage.

11-1 EXERCISES F:

1. The Dean family bought a house for 12,000 . They paid $\$ 3000$ down ;ayment and signed a mortgage to pay the balance in 20 years at $\$ 66.56$ per month. Find the total payments for 20 years. How nuch more than the cash price was the installment price?
2. iir. Becker bought a house for $\$ 1 \%, 250$ and madie a down payment of $20 \%$ of the cost. What was the amount of the mortgage?
3. Tom's fatier earns 4450 a month. He wishes to buy a new house. If he should not snend more than $2 \frac{1}{2}$ times his annual salary, what is the top price he can affori to pay for his house?
4. If Nr. Jmith paid 3350 down payment on a house costing \$15,490, how much does he need to borrow on a mortgage?
5. vir. Johnson vought a house for 413,500 . he paid $25 \%$ down $\overline{\text { and }}$. Eeceiver a mortgage for the balance. If he pays $5 \frac{1}{2} \%$ interest on the mortgace, how much interest will he pay per year? How much interest will he pay for 20 years on the unpaid balance?

## ll-2 Paying Bills

There are many ways in which bills can be paid. There are advantages and disadvantages in the different methods you choose.

1) Fraying cash is a simple way to pay bills. However, you have to spend the time and transportation costs of going to the company to whom you owe the money. You may also run the risk of losing the money.
2) You could mail the bill and put the cash in tine envelope.
3) You could co to the post office and make out a money order for tie amount of the bill. 'There is a small charge that you must pay for the money order. Tine actual amount of chare depends upon the amount of tine bill. .
4) You could pay the bill by a personal check. You may start a checking account in :most banks, simply by depositing some money in the bank. Then you are given a book of checks. when you write a check for payment of a bill, your check is as good as the money that you have deposited in the bant: 'l'nere is usually a service charge for each check that you write to cover the cost of the . bookkeeping involved.

11-2A Paying Bills by Check
You have a checking account in the Conn. Bank \& Trust Co. and you are paying your gas bill. Let's see where your check goes, and how your money is used to nay your gas bill. Cush


Our country is divider into sections, each section haveing its own clearing house. ali checks in a section eventally are sent here.

After the Gas Loo. marks your account laid, your check is sent to the clearing house. The Gas :oo. then receives the cash in the amount of your check. Iblis cash came from the Conn. Bank. \& Trust ${ }^{\circ} \mathrm{o}$. where you deposited it. when the bank receives your check, then send the cash for this ci:eck to the clearing house. The bank then subtracts tie amount of your check from your account. If then sends you your cancelled check for your own record. 'tine cancelled check is a receipt of !ardent - you should kerr il for :roof of :spent.

Jon and thin i of all the role who have handled your check and cash.

11-2B writing Checks
READ this before writing the check:
You are starting a checking account by depositing ,ilo) in the Conn. Bank a "'rust, vo. write fino in the space armed TOTAL on the stun. 'i'his is your first check so write the numbbor 1 on moth the stub and the chert. Put in today's date. Let's say you are paying, your g is jill amounting to ,izl.17. On the check!, write "hartford Gas vic", then the amount r2l.17. Now write .isl. 17 in words on the line marked DGLikis. It
 Now sign the chock. The check is not $\mathcal{E}$. nature.



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\section*{THE CONNECTICUT EANK}
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HARTFORC，CONNECTICUT i



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\(\qquad\) DCLIAFS:
THE CONNECTICUT EANK AND TRUET COMDANY HARTFORD, CONNECTICUT 1


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No. \(\qquad\)
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THE CONNECTICUT GANK AND TRUGT COMDANY HARTFORC, CONNECTICUT 1


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Pay \(\qquad\) \(\$\) \(\qquad\)
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THE CONNECTICUT BANK AND TRUET COMPANY
HARTFORD, CONNECTICUT 1


Use forms on this page and the next to complete the stubs for
the following:
Balance ..... 212.61
12-Chec! \#51 iorigage payment ..... \(\$ 10 \% .73\)
13-Check 75? Hartford Electric Light ..... \(\because 14.09\)
14-Check if53 home jervice Fuel \({ }^{\text {Co. }}\) ..... \(\because 34.17\)
15-Deposit
16-Check i'54 CifiAC p agment\$ 95.77
17-Check If 5 is i.l. Ieverson Farms ..... \$ 5.76
18-Check 156 Fernedy's Clot,ining ..... ; 20.78
19-Deposit20-Chect: \(\mathrm{H}_{5}\) Gapitol Cit: Lumber Co.\% 19.38
2/-Chect if5s intiki Ins. Co. ..... 435.94
22-Check : 59 javitt Jeweler ..... \(\therefore \quad 9.94\)
23-Check tf0 i.j. "irensury bopet. ..... a; lı.
14-Deposit
92.43
25-Check :"il Consumer iales ..... 39.95
26-Chect. It(2 Uash ..... \% 20.00



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BANK STATEMENT FOR A CHECGIDG ACGOUNE:




\section*{BANK STATEMENT FOR CHECKING ACCOUNT:}

Determine the balance for this statement:


Print your name and address:
Account No. PAGE 493072-4 Hartford


Determine the balance for this statement:
FORM 720
THE CONNECTICUTT BANK -AND TRUST COMPANY


a.) Deternine the balance for this statenent.


b.) Find balance ior this bant statement.
\begin{tabular}{|c|c|c|c|c|c|}
\hline Cibich.j & COD: & CHECl.j & OOD: & DEFOSITS & 3ALinve \\
\hline  & & 1 & & 1 & 203:44 \\
\hline 126,52 & & 67139 & & 1 & - \\
\hline & & \(13: 41\) & & 96140 & , \\
\hline 29,07 & & 13,41 & & 90.40 & ' \\
\hline 5,00 & & 10100 & & 1 & 1 \\
\hline & & & & 1 & 1 \\
\hline 122 & 1 & 1,40 & & 1 & , \\
\hline 7,03 & & 5:50 & & 45100 & \(!\) \\
\hline
\end{tabular}

CODE 1 - .jervice Charge


\section*{11-3 Consumer Borrowing}

Inste, d of tiaying on the instaliment plan, whereby your interest rate may be \(12 \%\) or more, it would be cheaper to borrow money from a bank at a lo:er rawe of interest and pay cash for your purchases.
then you borrow money from a bank you usually sien a promissory note promising to repay the arount of the loan (face of the note) at a given dace (date of maturity). The interest that you nay for the use ot the noney borrowed is called bank discount, because the b:nt tares the interest in advance, and gives you the balance as the loan. The anount the borrower recives is the poceeds.

Io find the bank discount, we we the formula for finting interest.
\(i=\) reit "i" representis inturest
" \(p\) " represents princi !al
"r" represents rate of interest
"t" roprejents lime in joaris
The time nay bo eiven in risys, months or fears, but it must be used as years or a fracuion oil a jear in rh:e formula. Since tiaere are le monisis in a year, the number of months given divider by le thons fik frt of year. In banking, 360 days is considered an interest senr: so the nuinber of days in the !roblen rivined b; 3(i) shows the time a:s a fraction of a year.

Example 1:
\[
\begin{array}{ll}
1 \text { rao }=1 / 12 \text { year } & 10 \text { da } y s=60 / 360 \text { or } 1 / 6 \text { year } \\
\text { a tio }=4 / 12 \text { or } 2 / 3 \text { year } & 75 \text { dajs }=75 / 360 \text { or } 5 / 24 \text { year }
\end{array}
\]

1. 2 mo. = year 11. 20 days =__year
2. 72 days \(=\) yeer 12. 150 days \(=\) year
3. 90 days \(=\) year L._ 7 no. \(=\) year
4. \(3 \mathrm{mo}=\ldots\) year \(\quad\) 14. 120 days \(=\ldots\) year
5. 36 days \(=\) year \(1 \%\). 75 dajs = year
6. 45 days \(=\ldots\) year 16.27 diys \(=\ldots\) year
7. 240 days \(=\) 17. year anc =__year
t. \(\quad 5\) mo. \(=\) year \(\quad l^{2} . I_{0}\) days = year
9. 100 days \(=\) year 19.300 Hays \(=\) year
10. 66 days \(=\) year 20. \(\quad\) days \(=\) year

To find the date of meturit; we nust the the exact number of days in each inonth.

January 31

derch 31
npril 30
ixay 31
June 30
je:ramber 30
October 31
loverber 30
!ecenbor 31

Example: If the date of maturity is:0 days after June lo, we find the number of days Leji: in June during winch the noney is used: that is, \(30-16\) or 14 days; in: jusy there are 31 days, in sugust 31. jo far we have 76 dafis. we needi y - ? 6 or 14 nore days to have 90. jo the rate ni maturity is jevtember 14.

11-j EX:HCIES: B: Find the date of maturity for the following: 1. 60 days after itarch 12 4. 36 days after jept. 10
2. 45 days after liay 27 5. 72 days after Nov. 18
3. yo days after July 5 _ 66 days after reb. 2

Example: Find the bant discount ara rocorais on a loan
 the money was borrowed on Januaty 3 .
jolution:
a) \(\mathrm{i}=\) ! rt
a) face of note - bant:
 date of mburicy: January 23 deya (3i-3)
February z' dios Marci \(\quad \frac{4 \text { days }}{0}\)
 interest to tive nearest cant.


11-3D Javings ficcount
If you deposit money in a savings account, the bank pays you interest on your money. (then you deposit money in a checking account, you get no incerest on your money.) the bank pajs you incerest because, in a sense, the ban! is rentine your money. The bank uses your noney so mate their om investames in stocks and vonds. iherefore, the bank pays you interest on your money for the :rivilege of usinez it for lhcir om lurposes. This is a deposit slip showine !ow much noney you re going to de:nsit it your accounc. Your account; nuber is; 470;-372. Fut in torloy's date. irim. your full name and your adiress. Lou are depositile \(u 50.75\) in casi: (ill.s). fou are also derositine a chect for qiO5. 2 . The number of che cinecis is \(\frac{51-57}{111}\).
hake out the de;osit slin and siow what tife total debosil will be.

\section*{DEPOSITED IN Sochety for Saving:}
.... \(\overline{\text { ACCOUNT NUMGER }}\)


\section*{11-3E Javinés hecount}

This is a withdrawal slip showine now much money you are going to take out of your account. Use the same account number that you used on the preceding page. ،idke the withdrawal payable to Cish, since you are drawing out the inoney. Complete the withirawal slip. Use tor:y's date, and enter \(\$ 75.47\) as the amount to be withdrawn.

\section*{WITHDRAWAL AMOUNT \(s\) FIGURES}
\(\qquad\)
To: Socipty for Savinges \(\qquad\) 19 \(\square\)
Please charge my account BANKBOOK NUMEER
and send me your check made out as follows:
PAYAELE TO THE ORDER OFP

THIS FORM IS YOUR RECEIPT. I ACCEPT YOUR CHECK IN ACTUAL PAY. MENT AND DISCHARGE OF YOUR INDEBTED. NESS TO ME, TO THE AMOUNT OF THE CHECK.

MY SIGNATURE (AS ON THE BANKBOOKI MY ADORESS

\section*{11-3 EXERCIJES F}

You are making a deposit or three ciecks on jeptember 7, 19_.
 inake out the deposil sifr.

On sentember 15, 1.9_, jou withdrew 335.00 . :inke out the withdrawal slip.


SAVINGS WITHDRAWAL
The Connecticut Bank and trust company
\(\qquad\)

DATE \(\qquad\) 19 _ ACCOUNT NO. \(\qquad\)

PAY TO MYSELF OR BEARER:
\$ \(\qquad\) DOLLARS

SIGNATURE \(\qquad\)
\(\qquad\)

ADDRESS \(\qquad\)

PASSBOOK MUST EE PRESENTED WITH THIS ORDER Whymb: PLEASE DO NOT WRITE EELOW THIS LINE :

1l-3G Finding Interest, and amount.
To find the interest, you muilifly the nrincinal (he amount of money in your savings account) lines the rate, times the time (in years). IThis is expressed in the formula:
\(i=\) prt which means \(i=p \times r x\). As the money earns interest in your savings account, the interest is periodically added to the principal. The sum of the principal and the interest is the amount. \(\mathrm{A}=\mathrm{p}+\mathrm{i}\)

Find the interest. find the amount. jolution:
a) \(i=p \times r \times t\) \(i=4560 \times .045 \times 3=.2116 .10\)
b) \(A=p+i\)
\[
\dot{A}=360+4116.10=\$ 076.10
\]

11-3 EXERCI. 3 G \(G\)

1. \(31000 \quad 3 \frac{1}{2} \% \quad 130\) days \(\qquad\)
2. \(\ddot{\phi} \$ 00 \quad 4 \frac{1}{2} \% \quad 15 \mathrm{mo}\). \(\qquad\)
\(\qquad\)
3. \(51500 \quad 45\) days \(\qquad\)
4. p 1200 4 \(4 \%\) l8 mo. \(\qquad\)
\(\qquad\)
5. \(\dot{\psi} 150 \quad 6 \% \quad 33 \mathrm{mo}\). \(\qquad\)
\(\square\)
6. \(\$ 360 \quad 4 \% \quad 40 \mathrm{mo}\) 。 \(\qquad\)
\(\qquad\)
7. \(\$ 275\)
\(5 \% \quad 120\) days \(\qquad\)
\(\qquad\)
8. \(\$ 1500\)
\(5 \frac{3}{2} \% \quad 56 \mathrm{mo}\) 。 \(\qquad\)
9. \$ 420 \(6 \% \quad 270\) days \(\qquad\)
\(\qquad\)
10. \(\% 75 \quad 7 \% \quad 3 \mathrm{mo}\). \(\qquad\)

11-3H Finding Interest Using the \(6 ; 0\) - © Day Hethor To find the interest on \(\$ 100\) at \(6 \%\) for 60 days \(u\) ise the formula \(i=p r t\)
\(i=190 \times \frac{6}{100} \times \frac{60}{360}=\$ 1.90\)
Notice that you can find the interest for 60 fays at \(6 \%\) by moving the decimal point two places to the left in the princiral. since 60 days \(=1 / 6\) year and \(1 / 6\) of \(6 \%=1 \%\), the interest is \(1 \%\) or \(1 / 100\) of the principal for 60 di:ys. When you muitiply a number by . Ol, \(\because\) Ou move the decimal point two places to the left in the number.
 following principals.
1. 300 6. \(\div \$ 5\).
2. \(\$ 450\).
7. 293. \(\qquad\)
3. \$510. \(\qquad\) 3. 374 .
9. \(\$ 10.50\) \(\qquad\)
5. 175.
10. \$ 15.00 \(\qquad\)

11-3I
Example l: Find the interest on \(\mathrm{P}^{2} \mathrm{O}\) at \(0 \%\) for 30 days.
Since 30 days is \(\frac{1}{2}\) of 60 diays, the interest for 30 diays is \(\frac{1}{2}\) as mich as the interest for ( 6 diys. The interest on 10 at \(6 ; \%\) for
 or \(\$ .90\)

Example 2: Find the interest on 410 at \(6 ; \%\) for 90 deys.
Uince 90 days is \(9 / 6\) or \(3 / 2\) of 60 days, the interest for 90 days is \(3 / 2\) as much as tile interest for 60 days, or \(3 / 2 \times 41.30\) or \(\$ 2.70\)

\section*{11-3 EXERCISES:I}

Find the interest at \(6 \%\) for the following:
Interest at \(6 \%\) Interest at \(6 \%\) for 60 days for time
1. \(\$ 700\) for 30 days
2. \(\$ 350\) for 90 days
\(\qquad\)
\(\qquad\)
\(\qquad\)
3. \$210 for 40 days
4. \(\$ 720\) for 50 days
\(\qquad\)
\(\qquad\)
\(\qquad\)
\(\qquad\)
Find the interest at \(6 \%\) for the following. Round off the interest to the nearest cent.
\(\begin{array}{cc}\text { Interest at own } & \text { Interest at } 6 \% \\ \text { for } 60 \text { days } & \text { for time }\end{array}\)
5. \$132 for 45 days \(\qquad\)
\(\qquad\)
6. 3560 for 75 days
7. 4 for \(\$ 0\) days
3. 4840 for 120 days
9. \(\$ 910\) for 100 days
10. \(\$ 525\) for \(1 \geqslant 0\) days 11-3J

Example 3: Find the interest on 170 at \(5 \%\) for 0 days. Since \(5 \%\) is \(5 / 6\) of \(6 \%\), the interest at \(5 \%\) is \(5 / 6\) of the interest for \(6 \%\), or \(5 / 6 \times 4.0\) or 1.50 11-3 EyEfucta., \(J\) : Find the interest for til days on each lear. Round off the interest to the nearest cent.
\[
\begin{array}{lc}
\text { Interest at } \% \% & \text { Interest for } 60 \text { days } \\
\text { for } 60 \text { di fy } & \text { at given rate }
\end{array}
\]
1. \& 750 at \(5 \%\)
2. \(\psi 690\) at \(3 \%\)
3. \$ 150 at 4\%
4. \(\dot{\psi} 24\) at \(2 \%\)
5. \(\$ 1200\) at \(8 \%\)


6 \$ 960 at \(\%\)
\(\qquad\)
\(\qquad\)
6. \(\$ 960\) at \(9 \%\)

\title{
Interest at \(6 ;\) Interest for 60 days for On \(^{n}\) days at given rate
}
7. \(\$ 3000\) at \(4 \%\)
8. \(\%\) R45 at \(5 \%\)
\(\qquad\)
\(\qquad\)
10. \(\$ 210\) at \(3 \%\)

11-3K
Example 4: Find the interest on wi 30 al \(4 \frac{1}{2}\) : for 72 days using the \(6 ; 0-60\) day method. jolucion:
\[
4 \frac{1}{2} c_{0}^{\prime}=3 / 4 \text { of } 6 i
\]

72 days \(=72 / 60\) or \(6 / 5\) of 60 days

Interest on \(\psi=10\) at \(4 \frac{1}{2}\) for 72 days \(=\)
\[
\text { il. } 0 \text { ) } \times 3 / 4 \times 6 / 5=31.62
\]

\section*{11-3 EXERCI.3E: K}

Principal Rate Tine Interest at 6 Interest for Given for 60) boy's date \& Time


\section*{11-3L Compound Interest}

Javings bant: hay pay interest on savings annualiy levery 12 months), semi-annually (every 6 months), or guarterl: (every three donths). If you leave the interest in your account, it will be adतed to your principal as a deposit. at the erd of an interest period, you will receive interest on the interest as woll as on the princi!al. 'ihis is cel.ed compound interest.
¿xample: if you deposit ,ilooo in the jociaty for javings, and the interest is compouncer annually, find the anount in the banis al the snd or three yers. sobution:
a) Find tive interest for 1 your.
\(i=j r i \quad i=1100 \times .04 \times 1\) or 640 for 1 year
b) idd the interest co tile principal. \(A=p+i \quad A=41000+540=1040\) this amount becomes the principai for the neyt year.
c) find ti:e irterersis for 1 year on the !rincipal for the secone ye: \(r\). \(i=0\) prt \(i=. i 04 i 0 \times .04 \times 1\) or 941.60 , interest for secend yesr.
d) fidd the incsrest lor the seconci year to the prinoipal for the seconi year. \(4=p+i \quad 4=1040+41.60\) or 1021.60 anourt for second year is arincipal for third year.
e) Find the inturest for 1 year on the principal for the third year. \(\quad i=p r t\) \(i=310 \times 1.60 \times .04 \times 1\) or \(: 343.26\), interesy for third ye:r.
f) Add the interest for we third year to the principal for the third yoar.
 in account after thre yasirs.


If you had founci the simple interest (no interest on interest), you would have received \(41000 \times . \mathrm{O}_{4} \times 3=190\) for three years instear of \(\$ 124.2\).

Example 2: Find the interest on 101 at \(4 \%\) for 3 years compounded semi-anrually. Find the anount atler 3 years.

Find the interest arter 3 ye:rs.
Golution: When interest is compounded somi-anmally (evory 6 months), you use ialf the wiven rate, and add the interest to the principal :l the close of each f months ataing two interest poriods eacil yeir . The semi-annual interest in this :rojlem is \(2 \%\) and interest is arided to successive principals 6 times ruring 3 years.
 it the end of the first six montrs, you would have fillooo +j 20 or 51020 in your account. The interest on 41020 for the next ofonth period would be \(\% 1020 \times .02\) or 820.40 . lit the end of the first year you would have \(.1020+\$ 20.40\) or 1040.40. To simplify your work, you can put ihis information in table form live this:

First ix inonths: \(\% 1000 \times .02=30.00+1000=\$ 1020.00\) jecond six months: \(\$ 1020 \times .02=\$ 20.40+31020=41040.40\)
 (xiost banks disregérd cents in compounci interest. Such banks would compute interest on \(\$ 1040\) inslead of \(\$ 1040.40\) )

Fourth six nonths: \(1061.00 \times .02=, 21.22+41061.20=\) \(\$ 10 \geqslant 2.44\)
 3ixth six months: \(21104 \times .02=\$ 22.08+61104.08=\) ill2 .16 amount after \(3 \mathrm{je}=\mathrm{rs}\) \(\dot{\psi} 1126.16-\dot{4} 1000.00=\dot{\psi} 126.16\)
interest earned

Example 3: i'ind the interest on \(\dot{\psi} 1000\) at \(4 \%\) for 3 yers, compounded quarterly.

Solution: when interesti is conpounded guarterly (every 3 months) you use one-fourth of the rate, because 3 months is \(1 / 4\) of a year. Tren add the interest to the principal at the close of every three months ina king four periods each yerr. The jociety for iavines, mechanics javinç ! ban!, Dime Javings bank and Federal javints dank give interest comouncied nuarearly.
'ihe quarteriy interest rate in this problem is lyo. Interest is :dried to successive princimals l.' tines during 3 years.

First quarter: \(\quad \dot{1000} \times .01=, .10 .00+\$ 1000.00=.1010 .00\)
jecond 乌uarter: \(\quad \% 1010 \times .01=\$ 10.10+.1010 .00=.21020 .10\)
i'hird quarter: \(\quad \$ 1020 x .01=.10 .20+.41020 .10=.41030 .30\)
Fourth quarter: \(\quad \$ 1030 \times .01=\$ 10.30+.1030 .30=\$ 1040.60\)
Fifth quarter: \(\quad \$ 1040 \mathrm{x} .01=\$ 10.40+; 1040.60=. \$ 1051.00\)
Sixth quarter: \(\quad 41051 \times .01=\$ 10.51+\$ 1051.00=\$ 1061.51\)
Seventh quarter: \(\% 1061 \times .01=\$ 10.61+; 1001.51=\$ 1072.12\)
Eighth quarter: \(: \$ 1072 \times .01=; ; 10.72+\$ 1072.12=\$ 1092.84\)
Ninth quarter: \(\quad \ddot{\psi} 10 \$ 2 \times .01=\$ 10.82+310 \$ 2.94=\$ 1093.66\)
Tenth quarter: \(\quad\) \$10 \(33 \times .01=\$ 10.93+\$ 1093.06=; i 1104.59\)
Eleventh quarter: \(\dot{\text { El }} 1104 \times .01=\$ 11.04+\dot{\$ 1} 104.59=\$ 115.63\)
Twelfth quarter: \(\$ 1115 \times .01=\dot{4} 11.15+\$ 115.63=\dot{4} 1126.78\)
\[
\dot{\psi} 1126.78-\dot{\$} 1000=\dot{\psi} 126.7 \text {, interest earned }
\]

Let us compare the amounts and the interest:
\begin{tabular}{|c|c|c|c|c|}
\hline & Simple interest & Compounded annually & Compounded semi-annually & Compounded quaruerly \\
\hline Amount & \$1120.00 & ¢1124. 7 \%. & ¢1126.16 & . 1126.78 \\
\hline Interest & \(\ddot{\psi} 120.00\) & \$124.76 & \(\because 126.16\) & \$ 126. 78 \\
\hline
\end{tabular}

\section*{11-3 EXERCİE゙ :}
1. If you have i 120 in your savings account, how much will you have in your account after two jears ( \(\%\) quarters) if the interest rate is \(4 ;\) and liie interest is compounded cuarterly?
2. That amount would you have in your savings account after two years, if you now have \(\$ 200\) and the interest is compounded se"i-annually at an interest rate oí 4 : :er year?
3. Find the atount of \(\$ 5000\) at ber year for 3 yers if the interest is compounded annually. now much interest would you receive?
4. what is the amount of \(\$ 5000\) at \(\% ;\) ner year for 3 years if the interest is compounded semi-annually? find the comyound interest at \(3 \%\) for 6 periods.
5. Find the amount of \(\$ 2000\) at \(6, \%\) per year, if the rate of in-
 periods.)
 incerest.
o) Find the interest on , 700 at 4 , for 2 years conyounderi annually.
c) Find the interest on foo at 4 for 2 yers comounded semi-annually. (at ? ? : for 4 :erioris)
d) Find the interesu on , 4 at \(4 \%\) for 2 years comounded. guarterly. (at lis for \(\downarrow\) : eriods)
 (c), intíii).

нt:ount \(\qquad\)
\(\qquad\)
Interosit \(\qquad\)
\(\qquad\)
\(\qquad\)
.
er:si, - Gajut On, les
rinding compourd interest ioj the nethod jou intive user in

 int....es..

Annual Compound Interest Table (Principal, \$1)
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline Year & 1\% & 11\% & 2\% & 21\% & 3\% & 4\% & 5\% & 6\% \\
\hline 1 & 1.0100 & 1.0150 & 1.0200 & 1.0250 & 1.0300 & 1.0400 & 1.0500 & \\
\hline 2 & 1.12201 & 1.0302 & 1.0.40.4 & 1.0506 & 1.0809 & 1.0816 & 1.1025 & 1.060
1.1230 \\
\hline 3 & 1.0303 & 1.0 .457 & 1.0112 & 1.0769 & 1.0027 & 1.1249 & 1.1576 & 1.1230
1.1910 \\
\hline 4 & 1.0 .106 & 1.0614 & 1.0824 & 1.1038 & 1.1255 & 1.1699 & 1.2155 & 1.19625 \\
\hline 5 & 1.0510 & 1.0773 & 1.10.11 & 1.1314 & 1.1503 & 1.2167 & 1.2763 & 1.2625
1.3382 \\
\hline 6 & 1.0615 & 1.0934 & 1.1262 & 1.1597 & 1.1941 & 1.2653 & 1.3401 & 1.4185 \\
\hline 8 & 1.0721
1.0829 & 1.1098
1.1265 & 1.1487
1.1717 & 1.1887 & 1.2299 & 1.3159 & 1.4071 & 1.5036 \\
\hline 9 & 1.0037 & 1.1265
1.1434 & 1.1717
1.1951 & 1.218t. & 1.2668 & 1.3686 & 1.4775 & 1.5938 \\
\hline 10 & 1.10.45 & 1.1605 & 1.1951
1.2190 & 1.28 .189
1.2801 & 1.30 .18
1.3 .389 & 1.4233
1.4802 & 1.5513 & 1.6805 \\
\hline 11 & 1.1157 & 1.1739 & \(1.2+3.4\) & 1.3121 & & & & \\
\hline 12 & 1.12188 & 1.1956 & 1.2688 & - 1.33449 & 1.4258 & 1.5395
1.5010 & \[
\begin{aligned}
& 1.7103 \\
& 1.7004
\end{aligned}
\] & \[
\begin{aligned}
& 1.8!83 \\
& 2.0122
\end{aligned}
\] \\
\hline
\end{tabular}

Ëxample l: Find amount on 4375 at \(5 ;\) for 6 years compounded anrually.

Solution:
Under the \(5 \%\) column across the row for the 6th year you will find the number 1.3401. This is the amount \(\dot{\psi} 1.00\) becomes compounded anmalily at \(5 \%\) for 6 years. diuitifly this ficcor bj the principal to get the amount. \(\$ 875 \times 1.3401=9172.5 \$ 75\), when rounded off to the nearest cent is 81172.59 . 'To find the interest, subtract the :rincipal from the amount. \(\quad\).1172.59-\%75.30 \(=.227 .59\), compound interest at \(5 \%\) for 6 years on \(\$ \$ 75\).

Exariple 2: Find the amount on \(\because 75 y\) at \(4 \dot{7}\) for 5 years comyounded je:ii-annually.

The interest is computed twice \(A\) yerr at half the rate. In five years there will be 10 periods of interest (two times the number of years) at \(2 c^{\prime} ;\).

Ir the \(2 \%\) column across the 10 year row, find 1.2190, which is the amount of \(\%\) at \(2 \%\) for 10 years. riuitiply \(.9759 \times 1.2190\) to find the amount \(; 24.00\) Su'tract the princi:al from the amount to fim: the irterest.
\(\dot{\psi} \dot{\varphi} 24.00-\dot{\gamma} 759.00=\dot{\beta} 165.00\), interest at \(2 \%\) for 10 years, compounded annually or interest at \(4 \%\) for 5 years compounded seni-annually.

Example 3: Find the anount on 31750 at \(6 \%\) for 3 years compounded quarterly.

Since the interest compoundec quarterly is computed four times a year, you use \(\frac{1}{4}\) of \(6 \frac{c}{;}\) or \(1 \frac{1}{2} \epsilon^{\circ} ;\) rate and Eour tines tree number of years or 12 years. Under the \(1 \frac{1}{2} \%\) column across the 12 year row, the amount for investing \(\$ 1.00\) is l.ly56.
 Subtract.the principal from the aiount to find the interest. \(2092.30-1750.00=.342 .30\), interest on 6750 at \(6, \%\) for 3 years compounded quarterly.

11-3 Exificiss \(0:\) lise the table above to finc lle amount and the interest.
\begin{tabular}{|c|c|c|c|c|c|}
\hline Frincipal & Rate & Time & Period & Amount & Interest \\
\hline 1. 500 & \(3 \%\) & 4 years & annually & & \\
\hline 2. 420 & \(4 \%\) & 5 years & annually & & \\
\hline 3. 12340 & \(6 \%\) & 9 years & annually & & \\
\hline 4. \(\ddagger 050\) & 6\% & 5 years & se!ni-annually & & \\
\hline 5. 4432 & 5\% & 3 years & semi-annually & & \\
\hline 6. 1275 & 4\% & 5 years & semi-annually & & \\
\hline 7. \(\because 740\) & \(80^{\circ}\) & 3 years & quarterly & & \\
\hline 3. \({ }^{\text {¢ }} 125\) & 4\% & 12 years & quarterly & & \\
\hline 9. \(\%\) ¢ 805 & 10\% & 3 years & quarterly & & \\
\hline 10. 50 & \(2 \frac{1}{2} \%\) & l. year & annually & & \\
\hline
\end{tabular}

\section*{11-4 united jtates Javings Bonds}

\section*{11-4A Beries 2 Javines Jonds}

Investine your money in United jtates javings Bonds is another way in which your savings can earn monej for you. if you buy covernment bonds, you are iending money to U.i.i. \(n\) bond represents our fovernment's promise to pay back a loan at a siecified rate of interest, anproximately \(4.15 \%\) per year compounded seni-annuelly. Lou can purciase jeries at javines mond's in denominations of wis.,
 prices regresent the face value, the anount you receive if you kest, then to maturity, seven years fron the date of purchase. The corresponring purchise rice of each jerie.; bond is \(3 / 4\) of its atured value. If you redean a bond before its date of maturity, its value is less than its natured vilue. here is a table of redemption values of a : 100 jerięs E : iond. redemption valuts
\$100 K. Bonds' Issued December 1. 1965 and After From Issue Date to Maturity
\begin{tabular}{|cccccc|}
\hline Period Held & \begin{tabular}{c} 
Redemption \\
Value
\end{tabular} & Pertod Heid & \begin{tabular}{c} 
Redemption \\
Value
\end{tabular} \\
\hline First \(1 / 2\) year. & \(\$ 75.00\) & \(31 / 2\) to 4 & years & \(\$ 85.68\) \\
\(1 / 2\) to 1 year.. & 75.84 & 4 to \(41 / 2\) years & 87.56 \\
1 to \(11 / 2\) years & 77.28 & \(41 / 2\) to 5 years & 89.48 \\
\(11 / 2\) to 2 years & 78.80 & 5 to \(51 / 2\) years & 91.44 \\
\(21021 / 2\) years & 80.40 & \(51 / 2\) to 6 years & 93.44 \\
\(21 / 2\) to 3 years & 82.08 & \(61061 / 2\) years & 95.52 \\
3 to \(31 / 2\) years & 83.84 & \(61 / 2\) to 7 years & 97.68 \\
MATURITY VALUE \((7\) yecrs)...... \(\$ 100.00\) \\
\hline
\end{tabular}
- For \(\$ 25\) bond multiply by \(1 / 4\) : \(\$ 50\) by \(1 / 2: \$ 75\) by \(3 / 4\); ofe

11-4B jeries it javinges 3onds
Jeries ti javings :3onds are issued by Federal Reserve 3anks and branches in denominfitions of :500., \$1000., 35000 ., and \(\% 10,000\). and mature aiter 10 years. The owner receives interest checks every six montins at the rate of approximately \(4.15 \%\) per year conrounded semi-annually.

SEMIANNUAL INTEREST CHECKS ON H BONDS
\begin{tabular}{|c|c|c|c|c|}
\hline \multirow[t]{2}{*}{Bonds Bearing Issue Date of December 1, 1965 and Alter} & \multicolumn{4}{|c|}{Denominations} \\
\hline & \$500 & \$1,000 & \$5.000 & \$10,000 \\
\hline First check (alter 6 months) & \$ 5.50 & \$11.00 & \$ 55.00 & \$110.00 \\
\hline Next check (1 year) & 9.70 & 19.40 & 97.00 & 194.00 \\
\hline Next 18 checks & 10.75 & 21.50 & 107.50 & 215.00 \\
\hline
\end{tabular}

\section*{11-4C Freedom Bi.ares}

Freedom Shares are United Jtates Javings notes. Unly indivirluals who purchase .jeries E Savines Bonds under a Payroll Savings Plan or a Bonci-a-month flan are eligible to purchase savings notes. The notes must be !urchased simultaneously with jeries E Bonds. Payroll savers must purchase the Bond-note combination through the em: Loying company which operates the Payroll Javings i'len; Bond-a-ionth participants must purchase the Bond-note combination througn the financial institution which operates the : lan for the benefit of its customers. lotes may not de purchased in any other manner: unlike Javings Bonds they canrot be bought over-the-counter for cash. An indiviciual may buy more jeries E Bonds tinan notes, but he may not buy :nore notes than jeries : Bonds.

United jtates javings notes are issued in four denomina-
 issue costs are as follows:
\begin{tabular}{lllll} 
Denomination & \(\$ 25\) & \(\$ 50\) & \(\$ 75\) & \(\$ 100\) \\
Issue Price & \(\$ 20.25\) & \(\$ 40.50\) & \(\$ 60.75\) & \(\$ 1.00\)
\end{tabular}

Interest is added to savings notes through increases in the redemption value as in jeries B Bonds. Increases are eifective after one year from the date of issue and at the beginning of eacn half year perior until maturity 4 years 6 months after the date of issue.

Interest is compounded semi-annually at approximately \(4.74 \%\) per year. If United jutes javings notes are redeemed before maturity, the yield is less (4.01\% after 1 year: 4.2Gio after 2 years, \(4.50 \%\) after 3 years, \(4.67 \%\) after 4 years and \(4.74 \%\) after \(4 \frac{1}{2}\) years)

The following chart shows the redemption values of Freedon

\section*{Shares.}

11 RI:D HIPTIN VMII:




\section*{11-4 EXERCISE. D}
1. The purchase price of a jeries E Savings Bond is \(3 / 4\) of its matured value. Find the purchase price of each of the following Jeries E Bavings Bonds.

Face Value Purchase Frice
a) \(\mathbf{4} 25\)
b) \(\mathbf{9} 50\)
c) \(\$ 75\)
d), 100
e) \$2u0
\(\qquad\)
\(\qquad\)
f) \(\$ 500\)
g) \$1000
h) \(\$ 10,000\)
2. If a bond :urchased at 75 increases il: value to 100 in 7 years, what was the :er cent of increase in seven years? . \(\therefore:!\cdot \operatorname{s}\) the avarage increase ner jear? (Find to whe - serost humredin of a :or ceni.
3. If you bourst a 325 bond each nonil: for 10 yeers, (a) how many bonds would you have? (o) How much would these bonds have cost you? (c) what is the matured value of these bonds?
4. If you :wanted to redeen Lwent; io? U..j. Savings Jonds after 5 jears, how nuch cisin wouls you receive? (lise table) how much :ould these bonds be worth, if you lept them ? years?

How much more would you receive, if you bept them until maturity?
5. how many weets woulr it tate you to save enoursin to buy a ri25 jeries 4 bond if you saved .il.? 25 ier weet?
6. If you were enroiler in the layroll bavings lyn ahere you work, and you had rl.00 a weet withheld to purchase Freedom jhares, how many weeks would it tale to purchase one .j25 innileri .jatres javines nom?
7. If you purchased one if 25 jeries \(\ddot{Z}\) bond and one \(\$ 25\) Freedom Share per month, on the payroll savings :lan, how aucn would you have taken froin your pay chects during one year?


Examble: How mucn will 12 shares \(0:\) Consititutional Nationai bant. stcek cost at 34 4 ?
ت̈olution: \(12 \times .34 .25=.421 .00\)
 orders.
1. 10 shares of Comn. Bank and 'irust \(\mathbf{0}\). Stock at 7\% \(\qquad\)
2. 25 shares of hartiford vationel bani: siouk at 35
3. 50 shares oí Bank. of liew York Pfd at \(5 \frac{1}{2}\)
4. 15 shares of first inational viiy bank at \(605 / 9\)
5. 12 sherrs of deme ifife inmurance stock at \(523 / 4\) \(\qquad\)
6. 30 shares of jouthern liew arcilen Tolemone at \(467 / 3\)
7. it sheres of Arrow itirt and lieneman at \(64 \frac{1}{2}\)
?. 50 shares of Kamen at, \(33 \frac{1}{2}\)
Q. 19 shares of jtematari jopen at \(26 \frac{1}{4}\)
10. 100 shares of cuevell smmfacturiner (.). at 114

\section*{11-53 irokerages Charres}

You usuably buy stock fron a hooker, tho cherres : com-
nission (brokerage fee) accoring to the amount oi aconey boing invested ant the ratbor of star:s of steck irvolver.
 of cominssion.
\[
\begin{aligned}
& \text { F400 to } 23399.90 \text {.... 1: + } \because 7.00
\end{aligned}
\]

Example: Find tine comission on 10 shares of suandard Jorew stock at \(26 \frac{1}{4}\). Solution:
\[
\begin{aligned}
& 10 \times 26.25=, 2(2.50 ; \text { Tile commisision is } 2 \%+43.00 \\
& \text { Therefore, } 2 \% \text { of } 2(2.50=0.25 ; 45.25+3.00=65.25
\end{aligned}
\]

11-5 EXLRCISB B: Find the comaission on the foilowing:
Frice ©onmission
1. 5 shares of hartifort fire Ins. Co. e \(323 / 4\)
2. 15 shares of Conn. sank \& Trusi Co. © 79
3. 100 snares of Iravelers Ins. Co. © \(34 \frac{1}{2}\)
4. 20 shares of SNET \(4463 / 4\)
5. 12 shares of ieter Paul Candies e \(54 \frac{1}{2}\)
- ll-5 EX:ROISEj C
1. If J. Donovan owns 35 siares of hartfori liationai bank \& Trust Company stock, find how much he receives per year at wil. 40 per share. Hot muchi will he receive each aurter (every 3 months)?
2. Kaman aircraft Lerporation issues a 3 stock diviciend. If you had 340 shares of strick, how many slares would you receive as a dividend? If the market, valuo of one sifare oi stock is \(33 \frac{1}{2}\), how much cash would you receive ior the fracuional part of a share isssued as dividend?
3. The anrualdividend issiue on hortheasc juilities stock is \(\dot{\psi} 1.10\) per share. If the aster price is :17.00, what is the per cent of dividend? find to nosreci , wherodth wre..
4. A dividerid of \(5 \frac{1}{2}\) is teclered for the year. bow much dividend will be raid on 100 shares of suct listed at 42 3/4?
5. how many shares of Caldor stoct at \(161 / 2\) can be purchased for .il200.? (ilound off to number of whole sh:ares.)
6. If the capital stock of a cortoration increased from 4750,000 io one million iollirts, what was the per cent of increase?
7. A corioration with capitia stock of 1175, 000 issues 25,000 shares of stock. what jas the :ar value of wach share of stock?
8. How nany shares nf Certer . jeientific stocer at \(423 / 4\) can be purchased for atak. 25?

\section*{11-6 Life Insurance}

You have been sturtyine about saving morney in a savings account at a bank, by purchaine United jtetes savinga Bonds, or by investing in stocks.

Sone people buy a life insurarice policy as a fora of savings. If you were able to buj a 60,00 life insurance policy at \(l(\) years of age, the anmal premium would be about \(\$ 79.00\) for a straight life policy. when you buy a suraight life policy, you pay the same ammal premiu:n as long as you live. Suppose you live to be a hundred years old.

You would pay (100-16; \(\$ 4 \times 579=\$ 6636\) in preniums. when you die at any age, while your rolicy is in force, your beneficiary would receive \(\$ 10,000\). How is it !ossible for the insurance conpany to pay your beneficiary more than you have invested?

The following paces describe several kinds of life insurance policies issued and annual premiuin costs.

Notice that the cost of che anmal promium varios with the age of the person insured, the kint of insurarice, the nu:nber of annual :remiums and the face of the police.

\section*{Kinds of life insurance policies}

When a person buys life insurance. he receives a policy specifying a particular kind of life insurance. There are four basic kinds of life insurance: term insurance, straight life, limited-payment life, and endowment. By looking at how families use each, we can better understand how each works.

Mike Dudley is 35 and has three children. Mike just bought a new house for \(\$ 22,000\). He has an \(\$ 18,000\) mortgage on it, with the bank, which he will pay over a period of 20 years. But Mike doesn't want to risk leaving such a big debt to his wife if he should die before the mortgage is paid off. So Mike bought a term insurance policy. The policy he bought runs for 20 years, the same length of time as the mort'gage, and declines in amount as payments made on the nortgage reduce the amount due. That is, if Mike should die, enough money to pay the mortgage would go to his wife and she would own the house free and clear. If he lives, as he probably will, the protection will stop after 20 years when his need for it is over.

Mike's brother, Joc, is a young martied man 26 years old. He and his wife recently had a baby boy and so Joe took out a straight life insurance policy which provided "lifetime" protection in the amount of \(\$ 5,000\), as long as he pays his premium every year. If Joe should die, \(\$ 5,000\) will ge to his wife, Ann, who is called the beneficiary. This money will help Ann and the baby until some other arrangement can be worked out.

The Dudleys' father is now retired. When he was a younger man, he bought a limited-payment life policy. This is like straight life insurance in that it provides lifetime protection. But, premiums are paid only during a specified period of time, say, for 20 years. Mr. Dudley wanted to pay his prewiums during his working years. With this arrangement, Mr. Dudley's retiremerit years are much more carefree. Since fewer premiums are called for on a limited-payment policy than on the average straight life policy, cacl! premium is larger.

Mike's neighbor, Tom White, is a new father and he already looks forward to the day his baby girl goes to college. In order to have the necessary funds onl hand for college, Tom took out an 18-year endowment policy on his own life. This combines a savings plan with life insurance protection. If Tom should die before his daughter reaches age 18 , the money will be available immediately. If he lives, the money will be available to help pay her college expenses or will be a start for some other carcer or marriage.
1. straight life insurance protects against the risk of death during the entire lifetime of the policyholder.
2. term insurance gives protection for unly a limited period or term of years.
3. limited-payment hite insurance offers lifetime protection, but is paid for in a specified number of years.
4. endowment insurance gives protection for a certain number of years, after which the insurance ceaves and the owner receives the face amount of the policy.

\section*{YEARLY PREMIUAT COST'S}
\begin{tabular}{|c|c|c|c|c|}
\hline Age & 5 Yrs . & 10 Yrs . & 15 Yrs. & \(20 \mathrm{Yr:s}\) 。 \\
\hline 20 & 3.66 & 3.77 & 3.9\% & 4.01 \\
\hline 25 & 3.74 & 4.00 & 4.26 & 4.52 \\
\hline 30 & 4.02 & 4.50 & 5.09 & 5.06 \\
\hline 35 & 4.63 & 5.6 .3 & 6.0 .3 & 7.63 \\
\hline 40 & 6.15 & 7.70 & 9.30 & 1000 \\
\hline
\end{tabular}

For \(\$ 1,000\) of itraight Life Insurance
Age
20
こemi-ñnual
innual
25
30
7.07
14.13
8.13
16.25
35
9.46
12. 92
11.17
22.34
4)
13.39
26.77
ior \(\$ 1,000\) of Linited-rayant -ife Insurance
\begin{tabular}{rcll} 
ige & 10 rayment & 20 iament & Up ife pait \\
20 & 43.49 & 25.14 & 15.23 \\
25 & 47.77 & 27.66 & 17.61 \\
30 & 52.65 & 30.62 & 21.22 \\
35 & 52.26 & 34.14 & 26.39 \\
40 & 64.72 & 39.40 & 33.45
\end{tabular}

For \(i l, 000\) of Enrownent ijife Insurance
\begin{tabular}{llll} 
ige & Twenty Ye:s & it inge 6.5 & nt al \\
20 & 45.78 & 17.63 & \(1 \% .35\) \\
25 & 46.10 & 20.76 & 23.72 \\
30 & 46.67 & 24.29 & \(2 \% .52\) \\
35 & 47.67 & 31.06 & 37.53 \\
40 & 49.37 & \(39.5 \%\) & 49.37
\end{tabular}
 taoles siowing the 足eriy aremium costs of different binds os life insurance. the costs mown are for eaci ricujo worth of insurance.
1. Jupose you mere 20 yoars old and you recirne: to bite out
 your jearly :reniuain be?
intswor \(:\)
2. Juppose you wanted :2,000 worth ol insuratuc: instead of pl, OW0. wheit is jour premilun now? fiow mary thousantis are tiére in . 2 , (o)O?
inswor 3
3. juppose you wanter a rio, iolo ;olic: what is your premium? (iow many ihousands are there in il, 000?)
 neriod of 15 years for a wouan who is 35 years old.
5. Anat is the semi-annual :reminn or a rla, vin itraimht life inisurance :olicy for a 25 yerr old person?
6. w!al, is the rerium for a a \(\quad\), 500 ondoment forlicy payable at, afe f.5? Tine folicy is when out b: a that wen be is 30 years \(02 . \div\)
ans:uer \(\qquad\)
11- (
1. Join's jather is 35 jears old and just bougtu a iouse. tie ins a lo-year rorugege on it for .if, 500. ibe warts lo buy term insurance to enver the nortge the !renium se?
2. Bob Grime's is 30 and has three small children. Bithough he has a straight life policy, he wanes more protection wile the children are rowing up. he buys ,il0,000 of 15-year term insurance. How much is the annual :ron in?
3. mary's father, who is 35 , inst steamed a new stationery score. In orion ic to so, he tad to borrow money. He needler some extra life insurance to cover the logy, and so he took out a s-year tern :olicj. If he : a jos a : 3.00 !reata anmaxilla , low much insurance will to have?

4. When Ped intens; of ni s first jon at \(2 j\), he look out , i5,000 of strajett life instirance. ie :aid the jreailurn semiannually, so how foch was it?
5. after the first year, Ied decided to lay the premium annually. bow much din he have to save each month in order to have the money on hand when the treatutil wen: due?
6. Jury just finisher junior college and doesn't know thotieer to buy : 2,000 work of straight life insurance now or :ait 5 years until she is 25. .hat would tue di france in the annual areniunis ide if she wailer?
7. Joe and his brother, ,ike, each hove a ;ilo,000 straight life insurance policy. Jos :יxchased his mien he wis 20. mike took ins out when he was 30. mat is ice's annual premium? What is mike's?
5. When betty's father was 20 , he bought 1,500 of straight Life. At 25 , he tack out another, 33,000 policy. Then, when he was 35 , he added a \(, 7,500\) policy. How mucin are his total premiums each gear? \(\qquad\)
\(11-6\) ER GRIS D
Q. Alice's father bought a 63,900 life paid us at 65 , policy when he vas 25 . how much is his premium each year?
 bougrit wien she was 20 years old. her premium is 100.50 , year.- how much insurance roes she have?
11. Bill's father wants te buy, 7,500 of \(1 \mathrm{imitef}-\mathrm{payment}\) life insurance. He is now 35. How much with lis irenium be if he selects tie life sair-up at 65 plan? now mach if he chooses the 0 -parent plan?
12. George font, 25 , can alford, 3260 a year for life insurance. ils agent suggests a life peri un at 65 policy. low much protection will George be able to buy with that?

\section*{11-6 EMARCIS: E}
13. Martina 3 ron, age 25 , always wanted to tale a trip? a round tie world\%. her prods lem was how to save enoufir money for such a big vacation., She finally decided to buy a 20 -year encowilent policy for 55,000 . Dion much is her annual premium?
14. When Jen karcin's son was oorr, Ber, who wás 25 , bougit a 20-year endownent nolicy 60 , lye \(1 i\) s. 50 n \(\$ 2,000\) to nelp pay collece sosts or nely lim on his career, rom aucii is ¿t:e prenium?
15. Ben also bougnt 9 , 85,000 encoment policy for finaself, payable at aee 65. Nhen he sonctt the rolicy, he was 25 . How nuch is nis armuel arenium?
 followine:
1. . 12,000 , 01 icy at .55 c. 30 per, 1000 .
2., \(\quad 7,500\), at, 45.73 rer 41000 .

4. . 13,250 , at 150.90 1er 91000.
5., \(011,000 \quad\) at, 51.33 per 1000 .
o. \(\quad, 25,000 \quad\) at \(p 43.32\), er 1000 .
7. \(\mathrm{a} 10,000, \quad \mathrm{at} \mathrm{t} 15.23, \mathrm{er}, 1000\).
R., 115,000 , \(0 t, 25.14\) ner, 1000.
T., p20, 000, at .17 .63 rer 1000 .
10. \(140,000 \quad\) at \(1 \%, 15\) 1er, 1000 .

the SOllowing:


1. The annual di vidends on my tiew Yorl Life Insura nee Compery policy are \(\$ 4.16\) per \(\mathbf{~} 1000\). that would the di vidends be on a \(\quad 5000\) policy? hat would the dividends be on a policy for 012,500 ?
2. If you tale out a 20 poyment life insurance iolicy at oge 25 , thet age will the insurance ge, aid yi? how much will yoi pay in premiums during 20 years on piono?
3. Find the oremiums for the foclowing at age 20 .
\begin{tabular}{|c|c|c|c|c|}
\hline & on 21000 & on P 50000 & on 110,000 & on 120,000 \\
\hline 10 year cerm & & & & \\
\hline 15 yeartorr & - & & & \\
\hline Straight life, & & & & \\
\hline 20 payment life & & & & \\
\hline Life paid-up at 65 & & ¢. & & \\
\hline Twenty year endownent & & & \(\cdots\) & \\
\hline Endownent at 65 & & & & \\
\hline
\end{tabular}

\section*{11-7 Automobile Insurance}

When you take the driver's education course, you will learn that the car you drive must be covered by automobile insurance.

The rates for different kinds of automobile insurance vary with the horsepower of the car, the morel of the car, the size of the city in which you live, the number of past accidents in the locality, the distance travelef, the number of accidents of the insured owner and driver, the age of the driver, and the number of cars insured under the same policr.

There are severol tinds of automobile insurance:
1. Liability insurance rirotects the automovile owner, if he is sued for da aesing some other cer or iroperty, or for killing or injurine scmeone with tis cer. The prenium is besed upon the anount for which a person may be sued for do lage to property or life.
2. Comprehensive insurance protects lhe owner against loss from fire, wind, or hail. The prenium is based on the value of the car.
3. Collision insurance protects the owner against danage to his own car in a collision. The insurence is auoter on the basis of deductible collision, whereog, the owner pays the first 150 or 0100 of costs and tie insurance pays the balance of the cost of damages. The premium is oased on the value of the car. Insurance rates are quoted annually, but may be paid semi-annually or quarterly.

The following cherts show the premiuns lor given conditions. If you live in Hartford, your rates are shown in chart TERR. 11. Rates will be somewhat lower for residents of vindsor and surroundirie towns.

On chart TERIR. 11
class la family car not regularly used to go to \& fron work for all drivers excent male drivers under 25
class lib car used for work for distances less than 10 miles class lú car used for work distance more than 10 miles each
class 2 f family car driven by nale driver under 25
class 2 family car driven oy narried male driver uncter 25
class 20 car ownel and driven bj nale driver under 25
class 3 business use - essentiol to pperator's occuration
sub-class 0-premium with no accirients
1- premium with one accirent
2 - premium wiun two rccidents
3- brenium with three accidents
4 - Mrenium with four accirents
Bodily injury: \(10 / 20\), \(\quad 310,000\) for injury to one person; \(\$ 20,000\) to two or tiore

50/100 \(\quad 350,000\) for injury to one ferson;
; 100,000 to two or nore
Property danage: \(, 5,000\) or 10,000 damage
On charl TEith. 01
a) jym refers to tiie size of the car: 1 is a small cor, 2 lareer car, 3 nediun car such as Forr,, lymouth, Ghe vrolet stannord models, to 7 , large car, such as Canillac or Lincoln.
O. Age rroup refers to age of cfr - 1 ne ns 1 year \(C 1 d\), 2 neans 2 years old, 3 means 3 years cld and 4 me ns 4 yeers old.
c. Comprehensive full coverege neans that, the insurance compary will pay for all danages due to thefl, fire, wint, and hail. \(\$ 50\) deductible aneans that the insured ajs for the first \(\$ 50\). danaye and the insurance compeny \(r\) is for cosus more uhan \(\$ 50\). The numiers \(1,2 \times, 24,23,20\), and 3 meen the same as listed Treviously.

Insurance preninins for comprenensive insurence and collision are baser on the velue of the car तpperline ton the size and age of ute car.
\& Refcrs lo combact ear.
If two or ore cars are insured uncier viee sune olicy, e \(20 \%\) disccunt on 1 iosilit; min nericat, apments, arid 19 . on collision is alloweri on e 11 citss 1 gars.

Ii you lave had driver traininc, a 10 , discome, is alamed on liabilit, and collision rettes.

CONNECTICUT TERRITORIES
seach merar anom Indicitee torritory for Lichility Insuranc


TERR 11


MEDICAL PAYMENTS - See Table, Page 16. PHYSICAL DAMAGE - Use Terr. 01, Page 18. TNO OR MORE AUTOS-See Table, Page 17. Property Damage, \(\$ 25,000:\) Multiply \(\$ 5,000\) Premím by 1.08 .

TERR O1 PHYSICALOAMAGE
\begin{tabular}{|c|c|c|c|c|c|}
\hline \multirow[t]{2}{*}{sfint} & \multirow[t]{2}{*}{AOE OMP} & \multicolumn{2}{|l|}{COMPIEH} & \multicolumn{2}{|l|}{} \\
\hline & & fult & \[
\begin{aligned}
& \text { sso } \\
& \text { ofo }
\end{aligned}
\] & \[
\begin{array}{|l|}
\hline 1 \text { S50 DEDUCTINE } \\
\text { I }
\end{array}
\] & \[
\begin{aligned}
& \text { S100 oEDUCTBLE } \\
& 1 \%, 3
\end{aligned}
\] \\
\hline (A-ri) & 24 & \[
\begin{array}{r}
10 \\
9 \\
\because 6
\end{array}
\] & 4 &  & \[
\left(\begin{array}{llll}
52 & 19 & 54 & 19
\end{array}\right.
\] \\
\hline \[
(1 H-1)
\] & \[
\begin{array}{r}
14 \\
64 \\
\hline
\end{array}
\] & \[
\begin{array}{r}
12 \\
10 \\
7
\end{array}
\] & \[
\begin{aligned}
& 5 \\
& 4 \\
& 3
\end{aligned}
\] &  & \begin{tabular}{ccc}
45 & 41 & 74 \\
40 & 30 & 68 \\
30 & 90 & 50 \\
\(3 i\) & 58 & 93
\end{tabular} \\
\hline \[
\begin{gathered}
3 \\
(N+E)
\end{gathered}
\] & 4 & \[
\begin{array}{r}
15 \\
12 \\
9
\end{array}
\] & \[
\begin{aligned}
& 6 \\
& 5 \\
& 4
\end{aligned}
\] & \begin{tabular}{cc}
81 & 3 \\
1 & 138 \\
182 & 121 \\
160 & 121 \\
01 & 55 \\
104 & \(13^{9}\) \\
\hline
\end{tabular} & \begin{tabular}{|ccccc}
56 & 50 & 95 & 126 & 00 \\
49 & 44 & 3 & 110 & 61 \\
41 & 38 & 71 & 98 & 51
\end{tabular} \\
\hline \[
(16-4)
\] & \[
\begin{array}{r}
16 \\
8,3 \\
4,
\end{array}
\] & \[
\begin{aligned}
& 18 \\
& 15 \\
& 11
\end{aligned}
\] & \[
\begin{aligned}
& 8 \\
& 6 \\
& 5
\end{aligned}
\] &  & \begin{tabular}{lllll}
56 & 59 & 112 & 149 & 83 \\
51 & 52 & 99 & 151 & 3 \\
50 & 45 & 85 & 13 & 01
\end{tabular} \\
\hline \[
\begin{gathered}
5 \\
(\mathrm{~N}-0 \mathrm{o})
\end{gathered}
\] & \[
\begin{array}{|r|}
\hline 1 \\
263 \\
4 \\
\hline
\end{array}
\] & \[
\begin{array}{r}
23 \\
20 \\
14 \\
\hline
\end{array}
\] & \[
\begin{gathered}
10 \\
6 \\
\hline
\end{gathered}
\] & \begin{tabular}{ccc}
107 & 90 & 182 \\
93 & 211 & 1144 \\
80 & 209 & 110 \\
77 & 136 & 180 \\
\hline 100
\end{tabular} & \begin{tabular}{rrr}
77.69131173 & 90 \\
6 & 60.114151 & 84 \\
58 & 52 & 99 \\
& 131 & 21
\end{tabular} \\
\hline \[
\begin{aligned}
& 6 \\
& (P-S)
\end{aligned}
\] & \begin{tabular}{|l}
16 \\
24 \\
4
\end{tabular} & \[
\begin{aligned}
& 29 \\
& 25 \\
& 18 \\
& \hline
\end{aligned}
\] & \[
\begin{array}{r}
12 \\
10 \\
\hline
\end{array}
\] &  & ne \(140.194 \quad 104\)
6 on 129.171695
os \(59: 111.146\) \\
\hline \[
(1-2)
\] & \[
\begin{array}{r}
1 \\
24 \\
4 \\
4
\end{array}
\] & 37
32
22 & 15
13
9 & \(110115 \cdot 221.293\) 103
113102192254141
97187105218121 & \begin{tabular}{llllll}
95 & 86 & 162 & 714 & 119 \\
83 & 75 & 141 & 18 & 104 \\
31 & 64 & 121 & \(100^{2}\) &
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|}
\hline \multirow[b]{2}{*}{stme.} & \multirow[b]{2}{*}{\[
\begin{aligned}
& \text { Aos: } \\
& \text { cone: }
\end{aligned}
\]} & \multicolumn{2}{|l|}{COMPREH.} & \multirow[t]{2}{*}{} & S 1\% \({ }^{\text {O }}\) \\
\hline & & \[
\begin{array}{|l|}
\text { FUI! } \\
\text { COV. }
\end{array}
\] & \[
\begin{aligned}
& 850 \\
& 050
\end{aligned}
\] & & \[
\begin{array}{r}
\text { s100. OEOUCTIERE } \\
1
\end{array}
\] \\
\hline \[
\begin{gathered}
1-r) \\
(A-r)
\end{gathered}
\] & 2143 & 10
0
0 & 4 & \begin{tabular}{lll}
49 & 14 & 84111 \\
43 & 39 & 74 \\
37 & 93 & 04 \\
34 & 4
\end{tabular} & \[
\begin{array}{|cccc}
27 & 24 & 46 & 615 \\
24 & 22 & 41 & 54 \\
20 & 18 & 35 & 40 \\
\hline 20
\end{array}
\] \\
\hline (1-e & \(\begin{array}{r}1 \\ \hline 43\end{array}\) & \[
\begin{aligned}
& 12 \\
& 10 \\
& \hdashline 1
\end{aligned}
\] & \[
\begin{aligned}
& 5 \\
& 4 \\
& \hline
\end{aligned}
\] &  & \[
\begin{array}{cccc}
38 & 34 & 65 & 86 \\
34 & 31 & 58 & 77 \\
79 & 26 & 49 & 65
\end{array}
\] \\
\hline \[
\begin{aligned}
& 3 \\
& 11-x)
\end{aligned}
\] & \begin{tabular}{|c}
1 \\
-6 \\
4
\end{tabular} & \[
\begin{array}{r}
115 \\
12 \\
2 \\
\hline
\end{array}
\] & \[
\begin{aligned}
& 6 \\
& 5 \\
& 1
\end{aligned}
\] &  & \[
\begin{aligned}
& 48 \quad 43 \quad 81 \quad 107 \quad 60 \\
& 42 \quad 38 \quad 1 \quad 94 \quad 52 \\
& 16 \\
&
\end{aligned}
\] \\
\hline \[
(1-y)
\] & 11
24
4 & \[
\begin{aligned}
& 18 \\
& 15 \\
& 11
\end{aligned}
\] & \[
\begin{aligned}
& 8 \\
& 6 \\
& 5
\end{aligned}
\] & \begin{tabular}{lll}
79 & 71.134 & 178 \\
\(69 \quad 62\) & 117 & 155 \\
60.54 & 101 & 134 \\
60
\end{tabular} &  \\
\hline \[
\begin{array}{|c|}
\hline S \\
(K-0)
\end{array}
\] & \(\square\)
\(\therefore 3\) & \[
\begin{aligned}
& 23 \\
& 20 \\
& 14
\end{aligned}
\] & \[
\begin{aligned}
& 10 \\
& 8 \\
& \hline
\end{aligned}
\] & \begin{tabular}{ccccc}
91 & 82 & 155 & 205 & 114 \\
79 & 71 & 134 & 178 & 99 \\
68 & 61 & 116 & 153 & 85
\end{tabular} & \[
\begin{array}{cccc}
65 & 59 & 111 & 147 \\
57 & 51 & 97 & 128 \\
& 71 \\
4 & 11 & 62
\end{array}
\] \\
\hline \[
(\Gamma \cdot 5)
\] & \(\therefore 1\)
\(\therefore 63\) & \[
\begin{aligned}
& 29 \\
& 25 \\
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\end{aligned}
\] & \[
\begin{aligned}
& 12 \\
& 10 \\
& 7
\end{aligned}
\] &  & \begin{tabular}{llll}
73 & 66 & 124 & 165 \\
65 & 92 \\
69 & 110 & 145 & 12 \\
55 & 00 & 24 & 124 \\
\hline
\end{tabular} \\
\hline \[
(7-2)
\] & 263 & \[
\begin{aligned}
& 37 \\
& 32 \\
& 22
\end{aligned}
\] & \[
\begin{gathered}
15 \\
13 \\
9
\end{gathered}
\] & \begin{tabular}{rrrrrrr}
111 & 100 & 188 & 249 & 139 \\
96 & 16 & 163 & 216 & 120 \\
02 & 74 & 140 & 185 & 103
\end{tabular} & \begin{tabular}{|ccccc}
81 & 73 & 138 & 182 & 101 \\
71 & 64 & 120 & 159 & 88 \\
80 & 51 & 103 & 156 & 76
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|}
\hline \multirow[b]{2}{*}{symas.} & \multirow[b]{2}{*}{\[
\begin{aligned}
& 108 \\
& \text { one }
\end{aligned}
\]} & \multicolumn{2}{|l|}{COMPPLH.} & \multirow[t]{2}{*}{} & O:N \\
\hline & & fun & \[
\begin{aligned}
& 580 \\
& \text { D80 }
\end{aligned}
\] & & 3100. DEDUCTIALE
102 \\
\hline \multirow[t]{3}{*}{\[
\begin{gathered}
1 \\
(A-C)
\end{gathered}
\]} & 1 & 10 & 4 & 61 SS 10413877 & 34.3157 .7642 \\
\hline & 263 & 9 & 3 & \(54.49 \quad 91121 \quad 67\) & 29.26 50 66 37 \\
\hline & 4 & 6 & 3 & \(46 \sim 41\) 79:104 58 & \(25 \quad 23 \quad 43 \quad 57 \quad 32\) \\
\hline \multirow[t]{3}{*}{\[
\begin{aligned}
& 2 \\
& (11-1)
\end{aligned}
\]} & \(\square\) & 12 & 5 & 72.65 123 163.90 & 47. 42 \% 51.106 50 \\
\hline & 263 & 10 & 4 & 6458,10914480 & 423871.95 \\
\hline & 4 & 7 & 3 & \(\begin{array}{lllllll}55 & 50 & 92 & 123 & 68\end{array}\) & \(36.32 \quad 61.81 \quad 45\) \\
\hline \multirow[t]{3}{*}{\[
\begin{gathered}
3 \\
(J-K)
\end{gathered}
\]} & 1 & is & 5 & \(15 \times 145191106\) & 59 l 53 100 \(132 \sim 74\) \\
\hline & 243 & 12 & 5 & \(75 \quad 68 \cdot 127168 \cdot 93\) & 51.46 .87116 .64 \\
\hline & 4 & 9 & 4 & \(64: 58109144.80\) &  \\
\hline \multirow[t]{3}{*}{\[
(1-4)
\]} & & & 8 &  & 69.62 186.156 87 \\
\hline & \(26^{3}\) & 15 & 6 & 55-77 145191106 & 61.5510413878 \\
\hline & 4 & 11 & S & 74. \(67125 \quad 166 \quad 92\) &  \\
\hline \multirow[t]{3}{*}{\[
\begin{aligned}
& 5 \\
& (N-C)
\end{aligned}
\]} & \(1 \%\) & 23 & 10 & 112.101.191.253 141 & 81.73138182101 \\
\hline & 243 & 20 & 8 & 28 \(88.166219: 122\) & \(70.63120 \quad 159: 88\) \\
\hline & 14: & 14 & 6 & \(\begin{array}{llllllll}84 & 76 & 143 & 189 & 105\end{array}\) & 61.5510413877 \\
\hline \multirow[t]{3}{*}{\[
(\mathrm{P}-5)
\]} & 1 & 29 & 12 & 125131225156 & 90.15153 204. 13 \\
\hline & 243 & 25. & 10 & 109.98186246137 & n0 72 135 180100 \\
\hline & 4 & 18 & 7 & 93:84 \(159210 \cdot 117\) & \(68: 61 \quad 117.153: 85\) \\
\hline \multirow[t]{3}{*}{\[
(7-2)
\]} & 1 & 37 & 15 & 137.123 232 308 175 & 100.90 . \(170.225 \cdot 125\) \\
\hline & 243 & 32 & 18 & \(\begin{array}{llll}119 & 107 & 202 & 267 \\ 102\end{array}\) & 87 78 148196109 \\
\hline & 4 & 22 & 9 & \(102 \div 92.173229127\). & 75. \(68.127 \quad 168.93\) \\
\hline
\end{tabular}

PHYSICAL DAMAGETERR OI
\begin{tabular}{|c|c|c|c|c|c|}
\hline \multirow{3}{*}{syans} & \multirow[t]{3}{*}{AG GR} & \multicolumn{2}{|l|}{COMPREH} & \multicolumn{2}{|l|}{\(\because 0.1010\)} \\
\hline & & FULI & 330 & \multirow[t]{2}{*}{sso DeDUCIIELE} & \multirow[t]{2}{*}{s100. OEOUCTMES} \\
\hline & & COV & Dio & & \\
\hline & 1 & 10 & 4 & A\% 4149192110 & AP 45 81 \(100^{\prime} 60\) \\
\hline (A.C) & 4 & 9 & , & 4 0913113906 & \(42.38-2.9558\) \\
\hline & \(\because\) & 6 & 3 & be 59113149 1.1 & 30 - 32.62 Al 45 \\
\hline & 1 & 12 & 5 & 704 94 176233129 & 0n 61 116 152 4 \\
\hline & \(\because: 3\) & 10 & 3 & 93 43 156, 208114 & On S4 102 135 , 75 \\
\hline & 4 & 7 & 3 & \(9 \times 151186\) & \(51.46 \bigcirc 87110.65\) \\
\hline & \(\therefore 1\) & 15 & - & 1? 110 10 2? 152 & 04.76143189105 \\
\hline & : 6 & \(1:\) & 5 & 107 90-132240194 & \(74 \quad 6712516592\) \\
\hline & b & 8 & & 92 83 150.200 114 & \(63 \div 5710 \% 14300\) \\
\hline & 1 & Th & T & 140.136 234 314 194 & \(99 \quad 89\) 168 224185 \\
\hline \((1.4)\) & \(\because 4\) & 15 & & 1210 207:273 15? & A) 98149107110 \\
\hline & , & 11 & \% & \(1094517923 \% 132\) & \(75 \quad 0812819085\) \\
\hline & & & & \(165115 \quad 873\) 362 201- & 110 104 1979 860.114 \\
\hline (1) & \(\because 3\) & 20 & . 6 & 110.110 .33 .314174 & 101691 171 28.126 \\
\hline & - 1 & 14 & \(\bigcirc\) & 120.10n:204 220 150 & 67 78 149:197:110 \\
\hline , & 1 & 29 & 17 & 199 161 303402794 & 159 176.19 2916 62 \\
\hline (1-5) & 243 & 25 & 10 & 156150200 351 195 & \(114103: 194257143\) \\
\hline & 24 & 18 & 7 & 154121 2:7,300 10: & 98-88 167.219122 \\
\hline \% & 1 & 37 & 15 & 195 170.332.440 . 45 & 143.189 .243 .321 .17 \\
\hline \((7,2)\) & 263 & 32 & 13 & 170 153 288381212 & 125113212281 188 \\
\hline & 4 & 22 & \(\therefore 9\) & \(140 \cdot 131.248 .327 .182\) & 119741821014 \\
\hline
\end{tabular}

\(11-7\) EXERCISES, 1 , use tables 11 and 01 for annuel premiums. 1. Hr. Lewis who lives in hartford oons a 196 Chevrolet. ir. Lewis, his wife and l7 year'old son drive tife fanily car. Ar. Lewis does not use the car to drive to and from work. what are the premiums for liability, insurance, for bodily injuryat \(50 / 100\) (., 50,000 for injury or death to one person, \(, 100,000\) for injury or death to two or more persons), and ,10,000 pronerly ramage? (class 2h)
Liaoility cianual, \(\quad\) lunnoer of recidents none one two trree four

\section*{3odily}
injury
Pronerty danage

\section*{Total}
liability
2., Jim Grant, who is 21, owns his own 1965 Buick Convertible (class 2C) , mhet, are the premiuns for lia jility insurance at \(25 / 50\) for horlily injury and , 10 , , 000 profert'f hamage?
Liabilit' (manual
Number of iccidents four
Bocily
injury
Property
damage
Total liability
3. Hr, Hason and his wife and his 19 year old daughter Jusan drive the family car, a 1965 tontiac. , hat are the premiums on liability insurance at \(20 / 40\) ror oodily injury and , 10,000 property damage?

Liability to nual
none, one, tuiluer of ticcictents, firee four
3odily
injury
Pronerty
damaze
cot:1
4. .r. Lilson uses his Ưみiflacto rive to and from work, a distance of failes each wy. he corries, liaulity insurance for borlily injury at \(100 / 300\). Einc for property da nage of \$10, 000 . What are his prenituns if he hes never had an accident?
5. Crancis sinith, over 25 (class l) has olu0 deductible collision insurance and comprehensi ve full coverace or her 195 Plyouth. niat are the premiuns for full coverace comprehensive insurance and 100 deductible collision insurance. (Use chart 01 manual)
6. 3 ill moore, age 24 narried, ( \(2 B\) ), owns a 1966 Rambler (sym 2). What are the fremiums for fuil coveraes comprehensi ve and 50 deductible collision insurance? vomplete this chart:

Thysical
Damase henual none one

Comoreh.
Puli Cov.
Collision
\(\$ 50\) Eerluctible
.100 Deructible \(\qquad\)
7. Lir. I'homas, owns a 1967 ford nustang, (sym 3), his son Albert, gee 22, Arives it, lclass, Ah. Find the !remiums for full coverage comprehensive and \(\$ 50\) ceductible collision insurance. Uomiete this, chart:

Physical Damase.
rianual none one two of three four Compreh. Full Cov.

Collision 450 Deductiole

\section*{Total}
8. The owner of a 1366 lymouth Pury II (class 3) valued at \$2700, livine in hartford used the car to travel to and from work a distance less than 10 miles. It was insured for personal liability \(50 \% 100\), nroperty danase 510,000 , full comprenensi ve coverage and 550 deductible collision. Inere were two drivers, an anulu over 25 and a fellow uncer 25. Mhat was the annual remiun with no accidents? (üse charts 11 and 01 ) rind the scmi-annual premium.
9. John Jonne, age 24 who lives in fartford, owns and drives alyé Volkswaren. He has had no accidents. Jnow the annual pre:iiuns that he must fay for the following insurance coverace.

Liabilit, - bodily injury \(25 / 50\)
Liauility - troperty damade \(\$ 10,000\)
Full coverags comprehensi ve 450 deducuible collis:on

Totel premiun
10. What is the cost of comrrehens, to insurance on a car valued at 81500 at 4.79 ler \(\$ 100\) ?
11. tur. Sinall paid 494 for 550 deductiole collision insurance. The cost of repairine his car after an accident was 4239.75 . How much did he recei ve from his collision insurance?
12. Ar. Barron's car was stolen and not recovered. lie carried Q2100 comrreliensive full coverage insurance on his car. The insurance covered only \(90 \%\) of the cost of a new car of thie sane mare as the one stolen. How nuch did he have to adit to the insurance money lo iby a new car?
13. Find the total nremium of insurance on ar. Davis' car valued at \(\$ 1750\) against the rollowing risks: public lianility +il63. 90 , collision ip 7 , and comireinensive at , 91.58 per yloc value of car.
14. Gincerr. Thomson had no car accident during tile year, the insur nce compony reducen the premium the neyt year. this new treniun wos \(97 \frac{1}{2} \%\) of the grevious year which wes pil27. inst is his lreaent grenium? liow mach more did he lay last year than this year?
15. Howard نooper oought a new Uhevrolet Uorvair for p2 15. Iie insured it for 90 , of ils value against fire and theft at 64 \& per siU0; property damage cost him 135.72 , personal liability cost -343.28 and \(\$ 50\) derucci.lle collision insurance cost \(\mathbf{2} 234\). rind the t tal annual premium.
16. Gil bought a used 1963 Chevrolet for , 1200 and insured it for full value. The yersonal liajility insurance cost hin \(\$ 315.10\), groperty damage \(\$ 113.40\), comprehensive \(\$ 15\), \(\$ 50\) deducti ule co 1 ision \(\$ 252\). What did the insurance cosi ner year? iis ins involved in an accirient which dameged his car to the extent of 326,50 and the other car to the extent of \(447 \%\). He had to pay for the damage to soth cars.
A) How much money did his insurance comp ny have to fay. b) Did he save, heving insurence? If so, how fuch?

\section*{11-3 home irotection Insurance}

Thome protection insurance policy protects the ho:ne ouner from loss or lay ge to his hone caused hy fire, water damage, and oreakage nade by firemen frile fiehtince a fire. A policy hay cover the centents of the fiome such is, furniture, clothine and otner veiutions. Jonr onlicies Irovide additional livine evpenses to pay for a place to live while the house is beine reconditioner, tiome protection insurence covers danage by wint, ha 1 , explosion cue to accumulated eases or unconsumed fuel, snoke damage nlue to fault; operation of heating or crokine units, damage cruser by the crash of a car or aircrait into the house, and denage causer sy riots, venfialism, or theft of personal pronerty.

Fremiums vary according to the coverage, such as, location of the house, distance from fire hydrant, distance from the fire engine houss, construction of tile ouildinc, frame or brich, type of roof, single or nultiple riveling (several fanilies, ) store, garage, or other industrial constructions.

The following charts are issued to determine the premium of your home protection policy. Fotice on the basic premium cliart, rage 419 liart ford county, which includes the city of fiart ford nict towns surrounding it, are in zone II. Hartford and vest liartfordare in cless h because all residences are within 500 or 1000 feet from the fire hydrant, and less than 3 miles from a fire station. On page 11 , clart 11 shows premiums for a brict house (masonry) anc chart 12 shows premiuns for a frame house.

Form 1 is limiter to only snecifically stated in the declaration.

Form 2 provides nore eytensive coverage.
Form 3 with 4 covers the most extensive losses, a 11 losses coversd by form 1 ant form 2 as well as sucn itens as payment of experises involven if soncone is injured on four property.

Notice that the premium is paid in advance for a three year perion.

\section*{11-8 ENGREISES A}
1. If the house in which you live is a frame nouse valued for \(\$ 3500\)., what is the rerinum for 3 years if covered for loss by fire? (Form 1)
2. HI, Srown's home har shingles torn from the roof during a windstorin. It cost liin. 450 to reilace the shingles on the roof. His prict nouse was valued at . 117,500 ard was covered unior form 2, no. 1. thet was his premium for three years? How nuch did he save by having home protection insurance?
3. Tir. 3lafe had his y 35 raincoat stolen at work. hie had a home protection rolicj rorm 3 no. 1, so his loss was coveren, what was his tiree year jrenium, if his yolicy covered his frame house valuer at \(.32,500\).
4. Shile ur. ond urs. Grahain were shopping, their nome was Broken into. i radio, camera, bunk books, stocks and bonds, some clotline and jewelry were stolen. Tne bank books, stocls and sonds were recovered. The other items valued at 9640 were covered by insurance. They carried form 2 no. 1 and no. 2 on their frame home, which was valued at 425,000 . Hnat yas their Irenium for 3 years? How nuch did they save by carryine home protection insurance?

\section*{CONNECTICUY}

1ERR!TOMLAL \&AGES
PART II-SASIC PREMIUM CHARES


Note: Eursteuston - Defintion c Teins
 enstruction
Fome- \(A\) dwelling with walls of trarat or retal- shoathed oo ruceced fome constrictien oreth wails of metal or metal lath "rig elaste, or zombustibo suppor:s
Miond-A daelling shatitecelassec os tramg corstruction when the woll ores of fome construction (ineluding gablos) crceeds I 3 or the totnl woll orea.

CONNETYICUT - ZONE II

5. .rr. Predericks fell on the ice on the sidewalk and oroke 4 ribs in front of ir. Beker's iome. Fortunately, rir. Beker's pronerty was insured under forn 3 with 4 . The policy for his \(\$ 27,500\) brick house inclurien coverage for acciogents on his property. ur. Fredericks was hospitalized for several lays and wh unable to work for siy veeks. Hir. Baker's home protection policy covereri the \(\dot{P}, 000\) for menical expenses and loss or pay. How much was dr. Bakers yremiuns for 3 years? How much did he save by havine the home grotection policy?

Sometines greniums for fire insurance are quoted as a certain amount for each 100 worth of insurance. Example : mint is the annual preaium on a house valued at . 13,500 at 9.74 per 9100 . Solution:
\[
13,500 \quad 100=135 \text { nundreds }
\]
\[
135 \times 4.74=699.90 \text { premiun for one yeer }
\]

\section*{11-8 EXERCI.35 13:}
1. If the a annual rate of fire insurance on your home is 1.92 per 100., what is the amul premium, if the house is valuer at י12,300?
2. Hr. hce owns a house viluen \(20.15,400\). If it is insured for 30fe of its value at tie rate of 41.17 ner \(\$ 100\)., what is the insuren value of the house, and what \(t 5\) the annual premium? If the annual preniun is \(35 \%\) of the tiree year preaium, wiat is the 3 yea r premiun?
3. What is the anourt of the rreainitor faree jecrs ona house valued at \(\$ 17,500\) insured for one-half of ita value at \(\$ 2\). 13 , ser \(\$ 100\). for 3 years?
4. Find the total annual renium of the insurance for the following buildines: © orick house insured for, 16, 500 at \(\$ .74\) rer 100 ., end a frame house insured for . 14,250 at \(\$ .97\) per \(\$ 100\) ?
5. A merchant toot out insurance on a store buildine valued at 975,000 and his stock or roods valuerl at 329,250 . That is the Drenium at, 11.15 per 100 on the ouilding and 01.42 per \(\$ 100\) on the contents? If the store was danager by fire to the extent of 96700 and Lhe stock worth 45400 , how nuch sett lenent will ie mare to the merchent?
6. A earage was covered by tornado insurance at the rate of \$1.95 per 100 . Hat was the a mount of the preniun on a nolics for 442,500 ?
7. A one fanily frame house with shingle roof valuer at - 10,600 located in Hartford is coveren by insurame at a acoium of 3138 for three yenrs. What is the prenium for 1 year? ( \(35 \%\) of prenium for 3 years) ihat is the rate per 3100 ?
5. Hir. Bridges owner a store in. a brick builning at 342,500 . He suffered fire da nage amourting to \(\$ 20.000\) on the building and contents. ne did not have any insurance. If he had had insurance (form 1 no. 1 ) how much would he have saved?

\section*{11-9 Property Tax}

If you own ronerty, a house, or land, or 9 car, you must pay proferty tay to the city or town where you live. The anount of tax is based on the valuation of the prorert; and the expenditures for operatine expenses of the town. Ihe tax rate or nill rate is deter ined by dividing the operating cost by the value of the pronerby in the town. The value placed on the property is an assessed veluation. Jome towns use the aissessed valuation as the rrice you could receive if you sold your hone. Others use a per cent of this value, such as \(60 \%, 75 \%, 80 \%\), etc. . The mill rate depents upon the amount of oney needed in the town or city to pay for oueratinc ex,enses, such 2s, schools, roads, street ligatine, fire fiehting, oolice rotection, s on removal, welfare, care of ,arks anc ocher recrentional oreas.

The tay rate is written several different wist
1) as mills ner collar of valuation.
2) as a certain amount per 140 .
3) as a certain anount rer riano.

To change from one form to the other:
1) Since there ore 14 ailss ar cent, ve can say 10 nil1s - .01 \(25 \mathrm{mil} 1 \mathrm{~s}=.025 ; 36.4 \mathrm{mi} 11 \mathrm{~s}=.03 \mathrm{C} 4 ; 493 / 4 \mathrm{ni} 11 \mathrm{~s}=49.75 \mathrm{ni11s}=.04975\), move the riecinal point in fills three thaces to the lert to change to cents ier 01.00 tax.
2) Jince the nill rate represents the number of cents tax Fer 1.00 , the tax on 100 will be 100 times the mill rate per 11.00; to multif ly by 100 , nove the decimal point two fleces to the right in the mill rete ferm.
 in the mill rate per dollar, three lieces to the right.
4) To change to ser cent, use the number of dollars ter plon, and replace the dollar sign with the rer cent sign. \(493 / 4111 \mathrm{~s}=.04975\) !er \(1.00=34.975\) er \(100=\) \(\$ 49.75\) eer \(810000=4.975 \%\)

The fo- Iowine chart shows the het Grand list, which is the total velue of the irouerty in each of tie towns listed in 190́4 anr 1965. It also shows the assessment ratio (the Cof the value of roperty taved) and the mill rate or taxation for 1085 nal 1966 .

Net Grand List
\begin{tabular}{|c|c|c|c|c|c|}
\hline & 1964 & 1965 & & 1965 & 1966 \\
\hline Avon & \$ 32,337,570 & ¢ \(34,922,280\) & \(60^{\circ}\) & 39.5 & 40.5 \\
\hline 3100mfield & 90,505,350 & 94,579,932 & 609 & 37.25 & 33.75 \\
\hline East Hartford & 299,156,174 & 319,705,065 & \(67 \%\) & 30.8 & 30.4 \\
\hline Farnington & 51,657,640 & 73,537,050 & 65\% & 49.0 & 39.0 \\
\hline Clastenbury & 73,557,913 & 02,134,020 & 70\% & 43.0 & 37.5 \\
\hline Hartford & 779,702,933 & 797,269,424 & \(65 \%\) & 47.5 & 49.9 \\
\hline Henchester & 171,945,04? & 10,406,940 & 72\% & 42.6 & 42.6 \\
\hline New Britain & 247,050,100 & 251,282,6,50 & 60\% & 49.4 & 53.5 \\
\hline Newington & 112,803,810 & 121,721,260 & (5: & 34.5 & 35.5 \\
\hline Simsbury & \(63,27,1260\) & \((4,701,730\) & \(65 \%\) & 37.75 & 37.75 \\
\hline South Windsor & 77,454,575 & \$3, 895,175 & \(50 \%\) & 33.5 & 39.5 \\
\hline Hest liartford & 333,041,039 & \(341,125,532\) & 55\% & 44.5 & 46.5 \\
\hline wotnersfield & 104,275,000 & 137,0\%, 200 & \(60 \%\) & 41.5 & 35.8 \\
\hline Aindsor & 90,934,940 & 97,309,430 & 659 & 35.8 & 38.0 \\
\hline Windisor Locks & 66,813,730 & 69, 220,039 & 605 & 31.0 & 33.125 \\
\hline
\end{tabular}

\section*{11-9 EXERCISE}

Using the above table, find the increase in the loe Grani list for each of the towns and thr ner cent of increase based on the 1964 valuntion: rind vo nearest tenth of a per cenc.

Cxample : \(\quad \$ 797,269,424\) in 1965
\(\quad\) Hartford \(\quad \$ 779,709,933\) in 1964
\(\frac{17,560,491.000}{779,703,933 .}=.0225=24 \%\)

11-9 EABRCISAS A: Complete the following table by filling in the correct forms of the rate.
Hills per pl.00 Cents per .1 .00 per. 100 per p 1000 fercent
1. 35 mills
2. 47.5 mills


Finding groperty tax:
Example: Find the tax on property valued at \(\$ 10,500\) assessof at \(00 \%\) its market value, at the tax rate of 49.9 mills.
\(.60 \times, 10,500=86300\)
49.8 mills \(=.0498\) per 41.00
\(\mathrm{Tax}=.0499 \times 30000=\$ 313.77\)
11-9 enficisića: Find the tax to the nearest cent.
1. Cur property in fartford is assossed for pst, 500 , at 1667 nill rete of 52.4 mills; find the prorerty tax.
2. Find the rronert'; tar on a house and lot assessed at il6, 240 in wethersfield at 35.8 mills.
3. Ar. Thompson owns o house in couth. findsor valued at 2\$, 500 and a cer valued at 42450 . His property is assessed at \(80 \%\) of its market value. Find the tax on both his car and house at the rate of 35.5 mills .
4. ur. Horrow owns a three fanily nouse in lov Britain valuer at 432,000 and two cars, one valued at 91760 , the other at 6620. lis Ironerty is assessed at 60 ; or its velue. Find the tax on his house and cars at the rate of 53.5 mills.
5. A house valued at \(\$ 14,500\) is assessed at \(1,5 \%\) of its market value in Hartforr where the tax rate is 52.4 nills. A similar house in South yinisor valued at \(\$ 14,500\) is a ssessed at \(80 \%\) of its market value, where the tax rate 1338.5 mills. Find the tax on the house in Hartford. Find the tax on the house in South Winisor.
6. Find the tax on a garage assessed at 975,000 at a tax rate of \(5.3 \%\)
7. Find the total tax on the following: Item Assessed Valuation, Tax Rate, Annual Tax
House and lot \(\quad \$ 21,430, \quad 3.8 \%\)

\section*{47 acre farm}
\(\$ 11,750\)
\(2.3 \%\)
Grocery store
436,200
32,850
\(4.1 \%\)
Truck
\(5.9 \%\)
\(\qquad\)
\(\qquad\)
\(\qquad\)
\(\qquad\)
8. In Honroeville the tax rate is 937.25 per \(\$ 1000\). Find the tax on nronerty volued at \(\psi 22,500\).
9. wir. hoffman has a sumner cottage at Otis, Hassachusetts valued at \(\$ 2,850\). The tax rate is 34.25 per 100. Find the tax.
10. If the property tax increases from \(\$ 1.90\) to \(\$ 2.50\) ver \(\$ 100\), how nuch will the taves be increased on prorerty assessed for \(\$ 16,500\) ?

Example 1: The "blue book" value of a 1963 Chevrolet P1500. Complete the followine tax bill for Charles T. Cooper. The tax rate in Hartforf in 196.5 was 49.2 mills.


\section*{11-9 EXERCISES C}
1. Raymont viller bought a 1966 Chevrolet for ;2109.53. The Slue 300 k value is \(91 \$ 00\). Compute his tax Irom the information provided on the Tax 3ill form:

2. Hiss Nancy Jaffy owns a 1965 Thunderbird whose Blue Book value is \(\$ 3700\). Her Registration is rinaJ"; the Identification number is 45122905, and her account number is 70823. She lives at 1856 Farinington hvenue, riest Hartford, Conn. West Hartforc's aill Rate is 40.5. Complete the following tax bill from the given information. Note, if the amount due is Ereater than \(\$ 50.00\), indicate four ( 4 ) equal pelyments at the bottom of the bill.

3. Real property is defined as lands and buildings thereon (garaces, etc.). The mill rate and the anount of tax i. determined by the individual towns. In the past, some towns have levied high mill retes on low as gessment values or low mill rates on high assesiment values. For expmple, Hartforn's mill rate is 52.4 mi 11 s in 1967 . Suphose a person's real property is velued at \(\$ 20,500\). To obta in Line tax, this indivicual would par tax on 65, of 020,500 , or 513,325 at 92.4. mil1s. The tar rue io pése.23 \((413,325\) tines .0524\()\).
i'he following is wr. Alee's real robert, cerdat the

\section*{REAL ESTATE}

Mir. Abee
150 Adans Street, Hartford

L 6456
\begin{tabular}{|c|c|c|c|c|c|}
\hline \[
\begin{gathered}
\mathrm{F}^{2} \\
\mathrm{C} \\
\mathrm{BL} \\
\hline \hline
\end{gathered}
\] & \multicolumn{5}{|l|}{\begin{tabular}{l}
2. Owellings \\
3. Lots \\
5. Mille or Factories \\
2. Other oulldings \\
A. Bueinose ouildinos \\
6. Acres
\end{tabular}} \\
\hline 1 EEM & LOCATIOM & Buluings & 3.0016014 & LAMD & F\% 7 T0TAL \\
\hline 1 & 156-158 Adams Street & 15,43 & \(1=330\) & 1,550 & 18,510 \\
\hline & & & &  &  \\
\hline & if \(10 d\) & & &  &  \\
\hline & \(8 / 176084022.750\) & & & &  \\
\hline & & & & &  \\
\hline
\end{tabular}

 bill rovided belou: \(-5,50\) at \(\square\) \(\stackrel{1}{4}\) \(\square\)

CITY OF HARTFORD TAXBILL
 Tocatiorge orscaption.

T.4456

Malerspertaining 10. ossessment should be, token un wift the Assessor

FAILIJE TO PAY ANY QUARIERIY FAYMENT GYTIN ONE MONTH OF DUE DAIE. MAKES ENTIRE BALANCEDELINQUENT TITEREST MUS1 BEC CHARGED WITHEACHSUGS: QUENT RAYMENT ATTHERATEOTV/ROF'

ANY TAX UNDEE \(\$ 50.00\) MUSTBE PAID IN: EULI: DURING APRII
4. Cooley Ge Sniter ieators Ine, own two (Z) o Ramily owelliugs

 The apartuent located at, \(22-64\) gooriwin , thent 1, , hlued at 32,509. Hoth loes (erounds) are valued at, , 2.50 . ELmputet the tax lue on this real trgierty nic complue the fola wing


\section*{CITY OF HARTFORD TAX BILL}



Moners pernoining O ossessment shoulo be token up Nith phe Assessor.
sual PROPERTY

TOTALIAS DUE

PRAYMIDUETANI, \(19 \%\)
\begin{tabular}{|c|}
\hline \multirow{5}{*}{ENTIRE BALANCE DELINQUENT, INTEREST MUST BE CHARCEO WITH EACH SUBSE: QUENT PA MENT AT THE RATE OF TI OF} \\
\hline \\
\hline \\
\hline \\
\hline \\
\hline
\end{tabular}
\(\qquad\)
世

ANYTAX UNDER \(\$ 50.00\) MUST BE PAID IN FULL DURIING APRIL

\section*{TAX TABLES FOR INCOMES UNDER \(\$ 5,000\)}

If your tetal Income (Itom 7 of your return) is \(\$ 5,000\) or more, use Tax Compurtation Schedule on pe, 4 If you cheeked os your, lem 4a. Single, use filing status on page l, Item 4b. Married Filing Joint Return, use \(\longrightarrow\) Tax Table A Fom 1040 A \(\qquad\) Tax Table C deduction. Table C shows the lax based an considering both the 10 pere To And your tax read dow 1066 TAX TABLE A-FOR SINGLE PERSONS
to the appropriate column headed by the number correaponding to the number of exe total inoome ahown an itam 7, Then read aorona

\begin{tabular}{|c|c|c|c|c|}
\hline ai mast & But liad Quna & \[
1
\] & \[
2
\] &  \\
\hline & & & Your Cax la, & करgre \\
\hline 8 80 & \$900 & \%\% 80 & \%\% 80 & 0 \\
\hline 980 & 925 & & & \\
\hline 920 & 950 & 0 & & 0 \\
\hline , 950 & 975, & & & 0 \\
\hline \(\underline{9}\) & 1,000 & 12 & & 0 \\
\hline 1;000 & 1,025: & & \% 0 & 0 \\
\hline 1;025 & 1,050 & 19 & & ¢ 0 \\
\hline 1,050 & 1,075. & 28. & + 0 & 0 \\
\hline 1,076: & 1,100. & 26. & \% 0 & ¢ 0 \\
\hline 1.100 & 1,125: & & 0 & 0 \\
\hline 1,125. & 1,150\% & & 0 & 0 \\
\hline 1, 150 & 1, 175: & & 0 & 0 \\
\hline 1,176 & 1; 200 & 40 & 0 & 0 \\
\hline 1, 200 & 1,225: & 44 & 0 & 0 \\
\hline 1,225 & 1,250. & & 0 & 0 \\
\hline 1,250 & 1,275: & & 0 & \\
\hline 1.278. & 1, 300 : & 54 & 0 & 0 \\
\hline 1, 300 & 1,325: & 58 & & \\
\hline 1,325 & 1,350 & 61. & & 0 \\
\hline 1,350. & 1,375 & & 0 & \\
\hline 2, 378 & 1, 400 & 68 & 0 & 0 \\
\hline 1,400 & 1, 425 : & & 0 & \\
\hline 1,425 & 1,450 & & 0 & 0 \\
\hline 1,460 & 1,475 & 78 & & \\
\hline 2,476 & 1,500 & - \(\quad 88\) & 0 & 0 \\
\hline 1,8906. & 1, 525 & & 0 & \\
\hline 1,8215
1,880 & 1,550 & & 0 & \\
\hline \begin{tabular}{l}
1860 \\
\(3: 875\) \\
\hline 1850
\end{tabular} & 1,575
1,600 & 04 & 0 & 0 \\
\hline 1,606 & 1,625: & & & \\
\hline 4, 625 : & 1, G6n: & 100 & & \\
\hline 1, 659. & 1. 675 & 109 & & \\
\hline \(1_{i} 685\) & 1700 & 113 & 12 & \\
\hline 1,700 & 1,926 & 117 & 16 & \\
\hline 1,726 & 1,7E0 & 121 & 19. & 0 \\
\hline 1,750 & 1,785 & 124. & 23 & \\
\hline 1, 775 : & 1. 909 & 128. & 26 & 0 \\
\hline 1,800 & 1.826 & 132 & 30 & \\
\hline 1,325 & 1,950 & 136 & & 0 \\
\hline 1, 850 & 1.376 & 138 & & \\
\hline 1,876 & 1;900 & 143 & 40 & 0 \\
\hline 1,900 & 1,925 & 147 & & 0 \\
\hline 1,925
1
1 & 1,950 & +151 & 47. & 0 \\
\hline 1,950 & 1,976 & -155 & 51. & 0 \\
\hline 1,975 & 2000 & 168 & 54. & 0 \\
\hline 2000 & 2. 325 & 163 & 68 & \(-0\) \\
\hline 2,028 & 2,060 & 167 & 61 & 0 \\
\hline 2,050
20085 & 2, 975 & 171 & 65 & \\
\hline 2,025 & 2,100 & 175 & 88. & 0 \\
\hline 2. 100 & 2,125 & 170 & 72 & \\
\hline 2, 126 & 2. 150 & 183 & 76 & 0 \\
\hline 2.160 & 2,175 & 187 & 79 & 0 \\
\hline \({ }_{3} 1275\) & 2,200 & 191 & 83 & \\
\hline 2,200 & 2,225 & 195 & 87 & \\
\hline 2, 2225
2,250 & 3,250 & 199 & 91 & 0 \\
\hline 2, 250
2, 275 & 2,275 & 203 & 94 & \\
\hline 2,275 & 2, 200 & 207 & 98 & \\
\hline 2,300
2 & \begin{tabular}{l}
2,325 \\
2,350 \\
\hline
\end{tabular} & 211 & 102 & 2 \\
\hline 2,325
2,380 & 2, 350 & 215 & 108 & 5 \\
\hline 2,376 & 2, 4100 & 219 & 109 & \\
\hline & & & 113 & \\
\hline 2, \({ }_{2} 420\) & 2,420
2450 & 227
231 & \[
117
\] & \[
\begin{aligned}
& 16 \\
& 19
\end{aligned}
\] \\
\hline
\end{tabular}


Personal, property, is faxed in, the same hamer astreal Property and motor, vehicles, ereronal propertima, oéclessified as those possessions not beloniting co the tornét Lio
 horeovir, in comercial and privete buslnesses, iersonhl property ib, defined as those thrithe \(i t e n s\) contelner in che building for sale (merchancise) or ior the orontiction of other 800is (machinery), Other items, minh maytaso of listed as Personat ironerty ate ooats, , lanes, etc, below are, bome Droblems in jeroonal rorert.
\(11-0, \mathrm{CRCI}, \mathrm{D}\)

 Windsor is 38 rills.




If jolnt raturn, 80 TH HUSBAND AND WIFE MUST SIGN oven il only one had income.

\title{
WAGE AND TAX STATEMENT 1966
}



\section*{Copy A-For District Director}

2. ar. and irs. haufman are the proprietors of several small leather goods stores. The shop located in (a), hartiord has stock valued at \(\mathbf{i 2 2}, 500\), and the shop located in (b) iest Hartiord has its contents valuen at 419,750 . Compute the total tar they will, pey, rill out the form and adrress the forins to the propertuows involven. Use tax rates on D 4 , ,




WAGE AND TAX STATEMENT 1966


\section*{11-10 Social Security}
when you eet your first job, your em:loyer will ask you to cet a social securicy card, You can obtain your social security card from the social security office at the Federal Building at 450 , hain Street in llartford. Shis card wi uh your social security number belongs to you end only you during all of your working yeers and thereafter., You will keep this card with your number when you change jous, move from one city to another, or from one state to another, anywhere in the Urited States. If you lose jour social security card, you can obtaín a replecement with lie same number fron the social security office.

While you are yortins, you will conlirinute a part of your nay to the social security fund. Durine \(1966-1967\) your einplojer will beer \(4.4 \%\) of your earnings, 13.9 , Ior old ase, suryivors and disability benefits, and \(0.5 \%\) for hospita 1 insurance benefits, and he will contrioulo, an equil amount which he sends to the socinl security office of the U.O. Dept. of Health, Education and velfare. hiore is ule contrioution rate Lable ror enyloyees and emplojers:

> CONTRIBUTION RATE SCHEDULE FOR EMPLOYEES AND EMPLOYERS IEACHI


CONTRIBUTION RATE SCHEDULE FOR SELF-EMPLOYED PEOPLE


Tie following charts show the tax withheld from your earnings.




\title{
Wage and tax statement 1966
}

Type or print EMPLOYERS uentifaifun number ndir. and dedes bune
INROLE TAX THTORBAYIDN


Copy A-For District Director
SOCIAL SECURITY INFORMATION
 p.id in 1966
- landes cip ieported hy employce. This amount - befuct purde dedinting or "sek par enilusions This block fotar use in renoring solary or other Cumpenation which was not subject to withliolding secirictire 5
One twelfth of tiis anuunt was withhell to finance the cone of rogpitil In utunce lsencfits. The remainder sharoldace survivors, and disability insutane.

FOR USE OF INTERNAL REVENUE SERVICE
limplojec's copy und employer's copy compided

 for hospital insurance lenefits)




If Joint return, BOTH HUSBAND AND.WIFE MUST SIGN even If only one had Income.

TYpe or piint EMPIOYER'S iuentification number, name, and additess alivie
Copy A-For District Director



Inclues nips reported by cinployec. This anount
 2 This bluck is for use in reporting salary or other compensation which was nom subject to withholding Seg Circularte
One-twelfth of this amount was withheld to finance the coss of Hospital Invurance Benefis. The remainder is fur alal-ape sirvivurs and disability insuranuc

FOR USE OF INTERNAL: REVENUE SERVICE



\(r^{\prime}\)


If joint return, BOTH HUSBAND AND WIFE MUST SIGN even if only one had income.

\title{
Wage and tax statement 1960
}

Type or print EMPLOYER-S idenitication number, name, and aldiess sheive
Copy A-For District Director



\title{





}

EXAMPLES OF MONTHLY CASH BENEFIT PAYMENTS'




\[
10 \text { بر }
\]

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 \(11-16, \square \ldots, 4\),
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L, f

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If folnt rotuin, BOIH HUSBAND AND WIFE MUST SIGN even if only one had income.

\section*{1}

\title{
Wage and tax statement 1966
}


\section*{Copy A - For District Director}

INCOME TAX INFORMATION
\begin{tabular}{|c|c|c|}
\hline Federal inione tal willi. held & Wuger null uhari he with hithing in 1906 & \\
\hline & & \\
\hline
\end{tabular}

r

\section*{SOCIAL SECURITY INF ORMATION}

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Thushark vtorarenabor
compunvinnwhis nor nor 1
Ye(chat.6 \(1^{\circ}\)

Au ©
TOR USE OIGNTERNAL REVENUE SERVICE

2. If your father earned 05,920 last year, how much did his employer withhold for 3. 6 . tax? What was the total amount contributen toward his credit for 3.5 . Nuring last year?
3. Using the Social Security Lmployee Iax Table, find the amount of tax withhelr for the following weelly ea rnings: Weekly Earnings, lax withheld rer veek, Tax withheld for the
a) Pí́O.00
b) +72.00
c) \(\$ 51.40\)
d) 436.75
e) \(\$ 93,15\)
f) \(\$ 90.70\)
4. Mr. Cox earned \(\psi 600\), er nonth. , how nuch social security did he have for one year? (ilaximum earnine creditable for \(3.4 . \operatorname{in} 1966\) is , 36600 per year.)
5. Mr. Burns owns his own bakery, so he contributes 3.3 . on the basis of self-employed persons. fiow fuch 3.s. will he contribute, if he earns 0234 during 1960 ?
6. Ir 3111 Carlson's average eirnings since 1950 vere pit 00 , how nuch will he receive each month during his retirenent beginnine at age 65?


11 jolnt roturn; BOTH HUSBAND AND WIFE MUST SIGN oven tf only one had Income
Date
racner

1
WAGE AND TAX STATEMENT 1966

7. Nir. Crane plans to retire at 62. His average yearly earnings since 1950 have been 5400 . How much will he receive per month during his retirement. How much will he receive each year?
8. Ir. Boyd died at age 4 and left a wife and two children uncier 18 years of age. How much will irs. Boyd receive each month is ifr. Boyd's average earnings since 1950 were \(\$ 4200\). How nuch will she receive per year?
9. rır, Jackson, age 6 á and Lrs. Jackson, age 62 are reti red. Mr. Jackson earned an average of \(\$ 6600\) per year since 1950. How much will they receive per year from social security?
10. Lirs. reid is a widow with 5 chiliren. ener husband's average yearly earnings since 1950 was 77500 . How much social security benefit will she receive per month? itht is lier frinual income?

NO'E: If, our income is 55000 or nore per jear, you will need to ranplete the car computecion curedule at the nottom OI DeEe 453 .
1. Lnter total, income fron lient 1 .
 but not less than til finimum stariars, iediuction, witcit ls en emount egmat lo g 200 pius 100 fcr each exemption clather in inte 15 .


 The nerluctton is liniter bo blwo on forl 240 i.
3. Juotrect line 2 fion line 1 .

5. Jubtract line 4 from 1 ine 3 .
6. Use tay rote scherile to relamine amount of tax on Ine 6 .

Cn tex ratraneterte, pilt 4
scherule I, is usef for single persons.
Bchedule II for marrier tax plyars filing joint returns ar, cortain vidows.
Sclerinle III for unimarried lat persons who qualify as hean cf the foussholr.

\section*{\(11-11\) Incnme Iaxes}

Jhon you have a joe, your empo; er will issue jcu a vace
and tax stateqent eacl, unnuar' showine zour neme, addressand
Soci-l security hunder, yt ges you have been ain suijeect to


Paj chech तiming die jeer.


TCulbra iobato tars
est herefort, yonn.

\title{
Wage and tax statement 1966
}

Copy A-For District Director
\begin{tabular}{|c|c|c|c|}
\hline \multicolumn{3}{|c|}{-} & \\
\hline & & & \\
\hline \multicolumn{3}{|l|}{\multirow[t]{3}{*}{\begin{tabular}{l}
「 \\
Rober. ohtrion \\
 \\
iterters, ecm. 5165 \\
\(L\) \\
Type or print EMPLOYEE S name anil addess dbove.
\end{tabular}}} & \begin{tabular}{l}
' lielides tip, ipented by emplojee. This amount \\
\(s\) hifore pojrull leductiomsurs sith par enclusions \\
:This blewt is fir use in reporting salary or nther conijensition which wis not subject co withholding: \\
Sot Ciriular E. \\
\({ }^{1}\) One twelfih of this, anciunt was withheld to finance 1 ie cont of Hospital In urance Benefits. The remainder of for whedene survibors, and disibbility insuranie.
\end{tabular} \\
\hline & & & for, USE.OF:ANTERMAL: ReVEnUe \\
\hline & & & Limploices, copy and employer's copy, \({ }^{\text {compured }}\), , , , \% \\
\hline
\end{tabular}

EMPL.OYER: Sée instructions un back of copy D



\section*{PACE 4}


I



TAX COMPUTATION SCHEDULE (Use only if total income, item 7 of Form 1040A, is \(\$ 5,000\) or more)
1. Enter total income from item 7 of Form 1040A............................... \(s\)
2. Enter the standard deduction which is explained on page 2 of the instructions (married person filing a separate return cannot claim more than \(\$ 500\) )
3. Subtract line 2 from line 1
4. Multiply 8600 by total number of exemptions claimed in item 15 of Form 1040 A
5. Subtract line 4 from line 3 .
6. Tax on amount on line 5 . Use appropriate tax rate achedule below. Enter here and in item 8 of Form 1040A (Do not attach this schedule to Form 1040A)
\begin{tabular}{|c|c|}
\hline If you are o aingle taxpayer or a married taxpayer filing a separate refurni wie thil tox rate schedule & If you are marrled taxp oyers \\
\hline &  \\
\hline
\end{tabular}

Over amount on But over, 1 , Enter on line 6:
\(\$ 0\) But not ovar.. \(\$ 500 \%\) of the amount on line 5
\(\$ 500\). \(\$ 1,000\)-...... \(\$ 70\), plus \(15 \%\) of excess over \(\$ 500\)
\(\$ 1,000\) स \(\$ 1,500 \ldots \ldots\)........ \(\$ 145\), plus \(16 \%\) of excese aver \(\$ 1,000\)
\(\$ 1,500\) \$2,000........ \$225, plus \(17 \%\) of excase over \(\$ 1,500\)
\(\$ 2,000\) - \(\$ 44000 \ldots . . \quad \$ 310\) plus \(19 \%\) of excess over \(\$ 2,000\)
\(\$ 4,000 \quad\) \$6,000.a.-. 8690 , plus 22\% of excess over 84,000
\(86,000 \quad 88,000 \ldots\)......... 81,130, plus \(25 \%\) of excesa over 86,000
\(\$ 8,000\). \(\$ 9,999.99\) _.... \(\$ 1,630\), plun \(28 \%\) of exccin over \(\$ 8,000\)


\begin{tabular}{|c|c|c|c|c|c|c|}
\hline \multicolumn{6}{|l|}{} & \\
\hline \multicolumn{6}{|l|}{3. Firt nomes of} & \\
\hline \multicolumn{6}{|l|}{\multirow[t]{2}{*}{}} & \\
\hline & & & & & & \multirow[t]{2}{*}{} \\
\hline \multicolumn{6}{|l|}{} & \\
\hline Enter tigure 1 in the lastcol umn to right for acet name uated (if more space is neoded, ettech schedulo) & (b) Relationship & (c) Montts lived born or died dup. ing year also \({ }^{\text {writa }}\) & (d) Did depend: of \(\$ 609\) or moro? & \[
\begin{aligned}
& \text { (0) Amount YOU } \\
& \text { Mirnishop for de. } \\
& \text { "andent' } \\
& \text { suppont if roos. }
\end{aligned}
\] & (f) Amount fur. nished by otHERS includilng depend. ent: Soo Inatruc. &  \\
\hline & & & & & & \\
\hline & & & & & & \\
\hline & & & & & & \\
\hline \multicolumn{7}{|l|}{15. TOTAL EXCMPTIONS FROM ITEMS 12, 13, ANO 14 ABOVE, ., \%.....} \\
\hline \multicolumn{7}{|l|}{} \\
\hline \multicolumn{3}{|l|}{City and state where omployed /LESTH.HARTECRD, CONN} & \multicolumn{4}{|l|}{} \\
\hline \multicolumn{7}{|l|}{} \\
\hline \multicolumn{7}{|l|}{Slin hiore Under pgag'tles of perjury jdeclorghit to the best of my knowledge and beliof this is a trie, corroct, ond complote raturn.
\[
a p r i l, v, y .
\]} \\
\hline
\end{tabular}

1
wage and tax statement 1966
TYpe or print EMPLOYERS identificition number, name, and adidress dowe
Copy A-For District Director
\begin{tabular}{|c|c|}
\hline & \\
\hline \begin{tabular}{l}
Federal income tax with. held \\
Wages paid subict to with. holding in 1966
\end{tabular} & \\
\hline \multirow[t]{3}{*}{} & \begin{tabular}{l}
Includes tips reported by employee. This amount is befure piy rull ikdutiting or side paye exclüsions: \\
'This block is for use in reporting salary or other cumpensation which was not subject to withholding. See Circular E: \\
One-iwelf th of this anount was withheld 10 finance lie cost of Hospital Insurance Benefits The remainder is fur oldage, süpvivirs, and disability nosurance:
\end{tabular} \\
\hline & \\
\hline & \\
\hline
\end{tabular}

Type or print EMPLOYEES name and address above.


\section*{TAX RATE SCHEDULES}

If you do not use one of the fan lables, dien figure your tax on the amount on line lid, page 1 of your return by using the appropriate tax rate schedule on this page.

Schedule 1. SIN GLE TAXPAYERS not qualiyying Ior rates in Schedules II and III, and MARRIED PERSONS FILING SEPARATE RETURNS.

If the amount on:


\section*{Schedule II. MARRIED TAXPAYERS FILING JOINT RETURNS and CERTAIN WIDOWS AND WIDOWERS (See page 4).}

If the amosint on
Line lid, page 1, is. - \(\quad\) Emer on lime 12, piage 1:
Not over \(\$ 1,000 \ldots .+1 . .14 \%\) of the wnount on line 1 Id
\begin{tabular}{|c|c|c|c|}
\hline & & & \\
\hline \$1,000 & - \$2,000 & \$140, plus \(15 \%\) & - \$1,010 \\
\hline \$2,000 & -\$3,000 & \$290, plus 16\% & - \$ \$2,000 \\
\hline \$3,000 & \$4,000 & \$450, plus \(17 \%\) & \$3.000 \\
\hline \$4,000 & \$8,000 & \$ \(\mathbf{\$ 2 0}\); plus 19\% & - \$1,000 \\
\hline \$8,000 & \$12,000. & \$1380, plus \(32 \%\) & -\$8,000 \\
\hline \$12,000 & -\$16,000. & \$2.260, plus \(25 \%\) & - \$12,000 \\
\hline \$16,000 & \$20,000. & \$3,260, plus 28\% & -\$16,000 \\
\hline \$20,000 & \$24,000. & \$4.380, plus \(32 \%\) & - \$ \$20,000 \\
\hline \$24,000 & \$28,000 & \$5.660, plas \(36 \%\) & - \$ \$2,000 \\
\hline \$28,000 & \$32,000 & \$7,100, plisis 39\% & - \$28,0000 \\
\hline \$32,000 & \$36,000 & \$8,660, plus 12\% & - \$32,000 \\
\hline \$36,000 & - \$40,000 & \$10,340, plus t5\% & - \$36,000 \\
\hline
\end{tabular}

If the amount on
lime lla, page t, is.
Ont- - But no orer-.

\(\$ 40,000-\$ H, 000 ., \$ 12,140\), plus \(48 \%\), of excess orer- \(\$ 40,000\)
\(\$ 14,000-\$ 52,000 ., \$ 14,060\), plus \(50 \%-\$ 44,000\)
\(\$ 52,000-\$ 61,000 \ldots \quad \$ 18,060\), plus \(53 \%-\$ 52,000\)
\(\$ 64,000-\$ 76.000 \ldots \$ 24,420\), plus \(55 \%-\$ 64,000\)
\(\$ 76,000-\$ 88,000\), , \(\$ 31,020\), plus \(58 \%-\$ 76,000\)
\(\$ 88,000-\$ 100,000 ., \$ 37,980\), plus \(60 \%-\$ 88,000\)
\(\$ 100,000-\$ 120,000 \ldots \$ 45,180\), plus \(62 \%-\$ 100,000\)
\(\$ 120,000-\$ 140,000\). \(\$ 57,580\), plus \(64 \%-\$ 120,000\)
\(\$ 110,000-\$ 160,000\). \(\$ 70,380\), plus \(66 \%\) - \(\$ 140,000\)
\(\$ 160,000-\$ 180,000 \ldots \$ 83,580\), plus \(68 \%-\$ 160,000\)
\(\$ 180,010-\$ 200,000\). \(\$ 97,180\), plus \(69 \%-\$ 180,000\).
\(\$ 200,000\) - \(-\infty \quad \$ 110,980\), plus \(70 \%-\$ 200,000\)

Schedule II. Unmarried (or legally separated) taxpayers who qualify as HEAD OF HOUSEH OLD (See page 4).


If the amotull on:
\begin{tabular}{|c|c|}
\hline & cer on line 12, page 1: \\
\hline & \\
\hline \$38,000 - \(\$ 40\), & \$13,360, plus \(52 \%\) - \$38,000 \\
\hline \$40,000-\$41,000 & \$14,400, plus \(53 \%\) - \$40,000 \\
\hline \$ \(44,0000-\$ 50,000\) & \$16,520, plus \(55 \%\) - \$44,000 \\
\hline \$50,000--\$52,000 & \$19,820, plus \(56 \%-\$ 50,000\) \\
\hline \$52.000- \(\$ 64,000\) & \$20,940, plus \(58 \%\) - \$52,000 \\
\hline \$64,000 - \$70,000 & \$27,900, plus \(59 \%-\$ 64,000\) \\
\hline \$70,000-\$76,000 & \$31,440, plus 61\% - \$70,000 \\
\hline \$76,000- \(\$ 80,000\) & \$35,100, plus \(62 \%-\$ 76,000\) \\
\hline \$80,000 - \$88,000 & \$37,580, plus \(63 \%-\$ 80,000\) \\
\hline \$88,000 - \$100,000 & \$42,620, plus 64\% - \$88,000 \\
\hline \$100,000-\$120,000. & \(\$ 50,300\) plus \(66 \%-\$ 100,000\) \\
\hline \$120,000-\$140,000 & \$63,500, plus \(67 \%-\$ 120,000\) \\
\hline \$140,000-\$160,000 & \$76,900, plus \(68 \% \rightarrow \$ 140,000\) \\
\hline \$160;000--\$180,0 & \$90,500, plus \(69 \%-\$ 160,000\) \\
\hline \$180,000 & \$104,300, plus 70\% - \$180,000 \\
\hline
\end{tabular}

Every citizen or resident of the United states under 65 Who had j600 or more income during the year must file a tax return.

If your income was less then , 10,000 and not more than \$200 total of dividends, interest, and other wages and tips, you may use the card form.

Lou can rile your return after january l, hut not, leter than april 15 of omy yeer.

Let's complele the 1040 A incone tax return using the ififormation given on foril \(1-2\) on the vithinolding tax statement.
(1. Be sure to enter tie cirst nere and nidrle initial and last name; iome adrress, city, state, and zip cone in the block rovided.
(2) Linter the sociel securitg nuinuer. Checl: so tiat the S. S. number agrain with the number on the social securits chrd sim Borm \(8-2\).
(3). Show wife's social security number if narried,
4. Chect wether sinfle, merried (joint return), or harried (filed sefiaratciy)
5. .nter tots 1 uages fron a 11 formis \(N-2\) if you are working at more than orie jois. (nobert Johison's total wases were \(p 1046.30\).)
(G.) List inturest, and di vinend. (If there is no interest or dividents, leave suace blank.)
(2.) Total income., (Add total wages and interest and dividends.)

Compute income tax fort the following examples:

\section*{ixample le a single taxnayer earned \(\$ 5250\) in 1967 .} Solution:
1. Total income from item 7
\(\$ 5240\)
2. Standard deruction ( \(10 \%\) of income) 524
3. (subtract 2 from 1.), \(\quad, \quad 4716\)
4. \(\mathrm{s} 600 \times 1\) cyemption,\(\quad \underline{60}\)
5.
\(\$ 4116\)
On hax, ©cheriule, 1 eqe 454 , teble 1, 4416 is betwen ith000 and 96000 so the uax is pho plus 226 of excess over 2000. \(\quad 34116-54000=0116\)
\[
\begin{array}{r}
22 \times 116 \times 425.52 \\
\square 690+525.52=\$ 715.52
\end{array}
\]

Example \(2:\) A married couple without children both working earning p \(\$ 015\) total wges. solution:
1. Total incone from itein \(7, \quad \$ 8615.00\)
2. Fuand ro deruction ( \(10 ;\); of incone) _ 861.50
3. (Subtract 2 1rom 1.) \(\quad \$ 7753.50\)
4. \(\$ 600 \times 2\) exemptions
1200.00
\(\$ 6553.50\)
On tex scherule, page 454, scheतule II, tile tax is \(\$ 620\) rius \(19 \%\) of excess over \(\$ 1000\).
\[
\begin{aligned}
& 36553.50-.34000 .00=\$ 2553.50 \\
& .10 \times 82553.50=+485.07 \\
& \$ 620.00+5475.07=\$ 1105.07
\end{aligned}
\]
(5). If your incone wes less than 55000 , use the tex table, on vage. If your income was more than 55000 but less than 31 , 000 use the tux schedule on lage (Since Robert Jofinsor earned ; 1046.30 , this :3 nore than 81925 but less than 1050 , so his tax is, 19.00 on Fax lable, lase ..)
Q. Encome tax vichifictes shom on form i-2, (hobert Uohison's ithe. 55
(10 (13. ince incomenvitineld \(\rightarrow\) arefer lon tar de from tix Eable, \(114.55-18.00=127.55)\), Noher: Johnson will entor 127.55 or line 11.
 Wht overferment in : . . Savinge bonds or a check tor the retind.
13. Uhect sioce sion reruier \(\boxtimes\) ior sincle terson ind entre numer "the for oremefions ciocter.
 suiport fron you.
(15). Iotal exemptions.

Pill in he sece itheterer 1 ef corner of Lotion
 Mosert Johisor's Emploser is Lulinro lobecco fifmes, est lierifor', Usin.) The income ter retarn tilust alhays have the sighature of the person subritine it. Jite Robert Johnson is not, vallable to sign it, jou lave ny ermission to sigh ifis ne ne on lis form, with your initials below his nams. It is feally not log 1 lo sign nother ferson's, neme, hinis is consinerel forgery.

Example 3: 4 widow with 4 children receives an income of \(\$ 4.6\). Solution:
1. Total income from item ? \(\$ 4416\)
2. Standerd decuction \(\$ 500\)
3. \(\| य \square 3916\)
4. \(\$ 600 \times 5\) exemptions \(\quad 3000\)

In scherlule II, the tax is 14 , of line 5 .
\(.14 \times 0.16=\$ 123.24\)
Since the income in this examile is less than \(\$ 5000\), you could have used the tax table on pace 444 and found the tax to be 1105.00
It is advisable to use the nethor that is most economical for you.
11-11 EVERCISES B. Find the tex for the followine taxable incomes using the tax rate sciedule.
vaces status Tax hate Tax
1. \(\mathbf{i 3 9 4 5} \quad\) single
2. \(\mathrm{p10}, 841\) arried (3 dependents)
3. 45,260 married ( 2 denendents)
4. \(\$ 12,500\)
inarried (3 children)
( 5 derendentis)
5. \(\$ 6,090 \quad\) unmarried 12 Śelendents (head of household)
6. \(\$ 150,000\) unmarried (3 dependents)
(heed of household)
7. , , \(8,125, \quad\) married ( 2 children \()\)
(4 dependents)
8. \(\$ 9,65 \%\) narried ( 6 dependents)
9. \(\$ 18,150\) married ( 3 derendents)
10. \(\$ 7450\) married (2 dependents)

Since the following probletis are practice exercises, you may sign the name of the person used, with your initials below the signature. Be sure to date your return.

11-11 EXLRCIBES A: Úomplete the withholding tax statements for trie following wages: Use 14\% of the incone to determine Federal income tax withheld and \(4.4 \%\) of wages less than \(\$ 6600\) for Social Security (FICí employees tax). Use your name and social security number. Round off taxes to the nearest cent. Then complete 1040 A sinort forn incoine tax return using the information on the form \(H-2\) and tax tables, page 444 .
Wages
Exemptions
1. \(\$ 1150.00\)
2. \(\$ 1 \$ 26.00\)

1
3. \(\$ 2391.00, \square \square 1\)
4. \(\$ 3513.00\)

2
5. \(\$ 4140.00\)

3
\(6 . \quad \$ 4735.00\)
4

TAX COMPUTRTEN SCHEDULE (Use only if total income, item 7 of Form 1040A, 15 , \(\$ 5,000\) or nore)
1. Enter total income from icem 7 of Forn \(1040 A\)
2. Enter the standard deduction which 1 s explained on page 2 of the instructions (married person, filing a separate return cannot cleim more chan \(\$ 500\) )
3. Subtract line 2 from line 1
4. viultiply \(\$ 600\) by total number of exemntions claimed in item 15 of Forn 1040 A
5. Subtract line 4 from line 3
6. Tax on amount on line 5. Use appropriate tax rate schedule. Enter here and in line 3 of Form 1040A.

TAÄ COMFURATION SUCHi)UEE (Use only if total income, item 7 of Form 1040 , is \(\$ 5,000\) or more)
1. Enter total income from item 7 of Form 1040 A
2. Enter the standard deduction which is explained on page 2 of the instructions (married person filing a separate return cannot claim more than \(\$ 500\) )
3. Suberact line 2 from line 1
4. Liultiply \(\phi \in 00\) by total number of exemptions claimed in item 15 of Forn 1040 A
5. Subtract line 4 from line 3 .
6. Tax on amount on line 5. Use appropriate tax rate scherule. Enter here and in line \(\&\) of Form 1040 A

\section*{11-12 Review}
1. A washer priced at \(\$ 129.50\) cash can be purchaser for 225 down and installments of 15.65 yer month for 12 months. Find the difference oetween the cash price and the instellment price.
2. The cash price of a kitchen table and four cheirs is 140 . Use ahles on rage, to find the monthly, rayments, if the payment perion is 19 months. What was the time balance? कhat is the difference between the instaliment price and the cash price? hist is the fonthly payment?
3. .hke out an invoice for the purchase of a 1967 Volkswagon listed at \(\$ 1050\). Lxtras incinde undercoating \(81 y\), radio 43.75 and exterior mirror \(\$ 12.50\). The registration fee is 813 . The cash तeposit is 200. Add \(3 \frac{1}{2} \%\) sales tax price of tie car. Letermine the nonthly fayments for two years, if the iinance chirer is \(1 \%\) of the chsh difference.
4. Ar. Jloan, tretased a house on finte hoch Urive for \(\$ 25,000\). He paid po, 500 Sownand signecta mort gage to pay the balance ith 20 , ears at tie rate \(O f, 76.52\) per month. how much intereet did he lay on the mortgage during 20 years?
5. Complete these bank stubs:

Start with a bank balance of \$129. 58 . Deposit \(\$ 180\).
Check no. \(100, \quad 14.30\)
Check no. 101 , 36.97
Che ck no. \(102, \quad \$ 127.42\)
Check no. \(103 \quad \& 10.05\)
Check' no. \(104 \quad \square \quad 9.43\)
Check no. 105 , 20.93
6. Deternine the balance for this bank sta tement:


7. If you borrowed 475 on firi 13 at \(5 \%\) for 45 days, what was the bank discount and the net nroceeds? that is the date of maturity?
3. Use the 60 day \(6 \%\) method for the following:
a) Find tne interest on \(\$ 45\) for 60 da ys at \(6 \%\)
b) Find the interest on \(\$ 142\) for 75 days at \(6 \%\)
c) Find the interest on \(\$ 50\) for 60 days at \(4 \%\)
d) Find the interest on \(\$ 240\) for 90 days at \(5 \%\)
9. Find the interest on \(\$ 300\) at \(5 \%\) comiounded semi-anrually for 2 years. Compute interest added each 6 month period based on the new principal to find the amounts, at end of each interest neriod. Show the amount at the end of 2 years and the difference between the original principal and amount in your savings account after 2 years (interest).
10. Use the annual comnound interest uable on nage 30 to compute the interest, on \(\% 1200\) at \(0 \%\) compounded quarterly for 3 yerrs.
11. If you cashed in three fi25 veries E U. S. Savings Bonds afcer 5 years, how much cashiwould you receive? How much interest would these 3 bonds nave accumulated in 5 years?
12. If you had a \(\$ 50\) Freedom Share, how much interest would it have earned in 3 years?
13. Mr. Fontaine wants to huy 50 shares of United Illuminating Company stock at \(32 \frac{1}{2}\) per share (asked price). How much will this order cost? What will the commission be at rates charged at N.Y. S'tock Exchange? If the annual dividends are \(\$ 1.76\) per share, how much will he receive per year in dividends? How nuch will he receive as quarterly dividend? Hhat is the annual \(\hat{0}\) of earnings to nearest tencil,, , tet

Use the yenrly premium chart for life insurance on p. 401 for the following problems.
14. George fomer who is 30 years old bought a house for \(\$ 13,500\). He has a \(\dot{\psi 1} 11,000\) mortgage on it., what is the annual premium for a 20 year term insurance policy? How much would he pay for the insurance for 20 years?
15. If you tîle out a straight life policy for \(\$ 5000\) at age 20, what is the armual preni un? How much would you pay in premiums, if you pay until you are 65 years of age?
16. If you take out a twenty payment life policy for 10,000 at age 25 , what is your annual premium? What is the cost of 20 premiums? liow much more than you have paid in premiums, would your policy be worth?
17. If you take out a 52000 endowment life policy at age 20 to receive benefits at age 60 , whet will the anmual premiums be?
18. If you vanter to be able to retire at age 60 , what would the a nuual preniums be on an endowment policy for 220,000 be if you took out the rolicy at age 30 ?

Use rates for automobile insurance from table 10 , n 411
19. Mir. Campbell who lives at 9176 , Madison street in hartford owns and drives a 1,67 Pontiac. His we fe, 23 year old son, ind 19 year old daughter a 1 so drive the family car.
Find the premiums for:
liability insurance: \(50 / 100\) for bodily injury
\(\$ 10,000\) property damage
full coverage comprehensive 350 deductible collision

Complete the following chart:

Liability
Bodily injury

Property damage

Comprehensive
Collision
Total 1 alumaal premium

20. Mr. Roberts has a biome protection inshraricelolicy. It is covered for cire, heft, and rindstorile It is a one family frame house. What is the premiuin for a three Vert policy if lire home is valued at 013,500 , the contents at \(20 \%\) of the value of the house, and anditionit in ing expenses at 10, of the face of the policy? form 1 no. 1
21. A house on Park load, indsor is valued at \(\mathbf{4} 15,800\). It is assessed at \(65 \%\) of its value. what is the property tax if the rete is 39.0 mills in Nindsor?
22. Lake out o tax bill for 1965 Thunderbird valued at 93200 . The car is ovned bj willian. 3 . Hughes, 1008 Conard Drive, iest hart ford. The tax rate, in, west hart forf is 46.5 mills.
23. Bill Thayer who does naintenance work for the city of Hartford -मिद3. 20 per lour. how nuch social security tax is Withineld grom his weelly wace? That is the FICA employee tax shown on his form \(1-2\) ? , hat is the lotel a aount contributed durinf the yor towarr his 3.0 . account? he rorks 40 hirs sormeek.
21. Lake out the 1040 income tax statenent for fillian \(R\). Tha yer. re has a wife, a son, iill, and a daufiter, florfa. ne is entitled to four exemitions at S 60 each and 10 , of nis incene for stenderd denuetion, Find his incone ta\%.
25. The gasoline tax in connecticut is Lq Feder \(=1\) tax and 74 stéte tax per fellon of gasoline. If your car uses 14 miles fer gallon and you líve ariven 17,000 niles durine 1907 , how nany gallons of gasoline did you use? 110 w nuch stete gasoline tax dir you pay? what was the totel gesoline tax?

11-12 Review no. 4

```

1-L%,%%10%%%

```


NO

\(\qquad\)
TO
FOR \(\quad, \quad-\quad\)



NO \(\qquad\)
\(\qquad\)
FOR

\(\qquad\)

No. \(\qquad\)
\(\qquad\)
\[
1
\]
FOR

No \(\qquad\)
/9 \(\qquad\)

70

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11-12 R0.120 NO. 22

```

CITY OF HARTFORD TAX BILL
Make Chechs Payoble lo JOHN O CUPTIN, TAX cOLIfCTOR Mail Io 550 Main St, Hantord, Conn 06103


196 ня
REAL PROPERT

DUE

ANY TAX UNDER \(\$ 50.00\) MUST BE PAID IN FULL DURING APRIL

FAILURE TO PAY ANY QUARTERLY PAYMENT WITHIN ONE MONTH OF DUE DATE - MAKES ENTIRE BALANCE DELINQUENT, INTEREST MUST BECHARGED WITHEACH SUBSE QUENT PAYMENI AT THE RATE OFT// OF 1\%. PER MONTH:




\section*{GENERAL}

\section*{a text-workbook BOOK 4 \\ PART 2}

\author{
1967 \\ revised
}

\section*{FOREMARD}

The machine calculator course, originally intronuced for tenth. grede nathematics students in septenber of 1,06 , has underifone an ambitious revision conducted by a nathematics research and development tem under the ESLA, Title I, grant. Under the direction of \(G\). Iilliam savton, Director of secondery Educetion, fiartford board of ullucation, che course materials have been developed by tite followinc team nembers: Stepnen J. Ucich, chairman of the teem, derartemt of mathematics, Hartford Fublic Hien school; tobert U. Fogensen, departrime of mathematics, hartford Public hien Scitool; Derie.f. fubitz, department of mathematics, veaver iich Jchool; villiam a. Johnson, department of mathemitics, tindsor high school.

The course is intender to meet che needs of students who have extibited a lacl of proilen-soliving sfills. Eifployine electric desk calculators to rid students of the frustration of computational drudcery, a new learnine setting in which sturlents can succeed has released then to rean and analyze problems te a greater extent. These problems are directly related to the world of work that students may enter upon grarluation.

The efforts of the first curriculum tea in in the sumner of 1966 were directed town the develomment of authentic, practical, problens obtained iroin uusiness and industry in tie greater hartiord area. With a jear of viluable evererience as a guide, the teaid has reorganized the course content froa its orizinally exclusive problem-solving ap roach to a text-workbook format.

It was felt that students needed a basic review of arithmetic skills before they atternuted to solve proble:ns. In the first four chapters stunents learn how to use the riachine while reviewing the basic operations with whole numbers, decimal numuers, fractions, and per cents. Nexv, a transitional ciapter stresses the comoining of tiese operations, so necessary for the solution of the detailed problems that follow.

In chapters 6 and 7 students first encounter problems that are within the Iramework of their own experience and are then gradually introduced to the more simple business oriented apilications.

Chapters 9,9 , and 10 deal with the use of formulas and ineasurement of plane surfaces and solid figures, preparing students to extend triis tnowiedge Into tine nat thematics of everyतay living and the more difficult practical problens from uusiness and industry.

The intent of tinis order of course naticrials is to allow students to nove toward indepencient ochievment with greater confidence in solving problems that are new to them, thus creatinc the realistic atmosphere of the business world.

The objectives of the course ire to be evaluated by pre-test, and post-test scores on a mathomatics achievnent test designed by the team. The results should indicate tine direction of possible future rerisions to insure that educational oiferings in mathematics nro continuiily upde teci to meet the needs of our youth.

Looking ahead, the possibility of extending machine oriented mathenatics courses to students in other grades certainly should not be discounter. Research in this field may reveal a need to offer the college bound studert, as well as the sturlent who will immer iatell enter the lavor nartet, an opportunity to pursue nathematics for a deeper and more meaningful understanding of its princigles.

Orbutch hilh
Dr. Rovert. U. Miles Assistant Juperintendant in Uharge of Instruction

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\section*{Chapter 12}


CHAFTERXII

\section*{Practical Problems From 3usiness}

\section*{12-1 Introduction}

In this chapter you-will find cost problems taken directiy from business. You will find that the solving of these proulems depends on how well you understond the terminology of pricinc. The ways that prices are stated give a clue as to what you must. first find in the problems. Pay close attention to such statements as 9.36 per piece, 64 per 1 ineal ft., \(8.25 \%\) per hilh, 16.84 per gal. These phrases tell you hov to do the pricing.

12-2 Different inds of Lumber
Lumber is wood. Other names for lunuer are boards and glanks.
There are chree finds oí luaber. Gne kindis called frane Lumber, another is co lled siding, and the tnird finish lumber.

Frane Lumber is usen abbuilding tomes, earares porches, sheis, etc. tf yu have, cen a new fone os ng built, you have probany not ced that it looks like a steleton au first. Mis is the frame of the house. Our bones, or skeleton, conld ve thoueht of as being the reme lor our house (our bory).

3iding is nailed to the frame of the hone. Hidine covers tile sides, roof, and floors. aost often siding is made of olywood and comes. in sheets, \(L\) It. wide and iff. Long.

Finish lumoer is used when the home is in the finished stages of construction. Finish lumber is used for closecs, oaseboards, loors, liccnen cabinets and trin work on che outside of the home.

12-3 Findine the úost of bumber (Price per itece)
Prame lumber and finish lumber are sometimes priced at "so much per pece." The Ley words nere, are "per piece"Lhey tell you how to raice the lumber. Look at the following price lists Ior frame and Inish Lumber, ( 2 " \(x 3^{\prime \prime}\) is read "two by ti.roe")

FRAIUE LUMBER PRICE LIST

Description of Lumber: \(2 \prime\). \(\times 4\) "



Description of Lumber: 2,8


Description of Lumber: \(2 \times 10\)



\section*{FIHISH LUHER HRICQ DSST}

Number of Nind ofPieces，Aumber \(3 i z e\)（feet），liece，uost
8． 43 Frane \(2 \times 0\) ..... 16
Q． 11 Finish \(1 \times 1216\)
10． 115 Frame \(2 \times 3\) ..... 14
11． 39 Finish ..... \(1 \times 610\)
12．8\％Finish \(1 \times 10\) ..... 12
13． 165 Prane 2 \(\times 1\) ..... 18
14． 225 ．Frame \(2 \times 10\) ..... 22
15． 315 Frame \(2 \times 4\) ..... 13
12－3 EXERCIOU 3 ，If sules tax is 3 粸，find the cost of the rol－
lowing lumber orders．Use the price lists on the rrecerine paets．Cound off answers to neq reit cent．
16．， 5 pcs．， \(2 \times 4 \times 22\), Prene Iunner \(\Theta\) ． ..... per foo． 8
12，ics．， \(2 \times 6\) 4 13 ，Frame ..... 世

\(\qquad\)
 pertic．\(\$\)
12，ps．， \(2 \times 8 \times 16\) ，irme \(\%\) 世

\(\qquad\)
 ner，inc． P24 cs．， \(2 \times 10 \times 16\), Prac \(\quad\),4
\(\qquad\) per ric． r \(\qquad\)
Jub－ToLa \(1 \%\)\(\mathrm{Tax}, \quad\) 官
\(\qquad\)
Totel ..... क
17． 3 nes．， 1 \＆ \(6 \times 14\) ，Finisn 8 bics．， \(1 \times 6 \times 1 \%\) ，\(\quad\) iniss Apes．， \(1 \times 3 \times 14\) ，Einish 8pos．， \(1 \times 12 \times 16\), Tinish
\(3 u b-T o t e 1 \varphi\)
Tax \({ }^{3}\)
3 \(\qquad\)
Total
p \(\qquad\)
18. 35 pcs., \(2 \times 10 \times 20\), Frame ..... \$80 pes., \(2 \times 8 \times 20\), Frame120 pcs., \(2 \times 4 \times 18\), Frame-...........
20pcs., \(1 \times 4 \times 10\), Finish-...............
24 pcs., \(1 \times 8 \times 14\), Finish
18 pcs., \(1 \times 6 \times 14\), Finish
Sub-Tota \(1 \quad \$\) \(\qquad\)
Tax \(\qquad\)
Total
\(\phi\)
19. The followine lumber order is sub ject to a \(15 \%\) discount
and a \(3 \frac{1}{2} \%\) sales tax.
14 pcs., \(2 \times 3 \times 6\), Frame ..... \(\phi\)
82 pes., \(2 \times 4 \times 12\), ..... "
\(68 \mathrm{pcs} ., 2 \times 6 \times 14, \quad\),
44 pcs., \(2 \times 3 \times 12\),
12 pes., \(1 \times 3 \times 10\), rinish
4 pes., 1 x 0 x 10 , Finish4 Jcs., \(1 \times 4 \times 10\), FinishBub-Lotal ?Discount \(\$\)
\(\qquad\)
Dis. Frice
Tax ..... \(\stackrel{\$}{\phi}\)
\(\qquad\)
Told ..... \(\$\)
20. The Eollowine order is sunject to successive discounts of 15-5 and a sales vay of \(3 \frac{2 \%}{2}\).

14 pcs., \(1 \times 12\) x 1 , pinish ...........
35 ncs., \(1 \times 12 \times 16\),
Rpco., \(1 \times 10 \times 14\), 1
12 pes., \(2 \times 6 \times 19\), Frene
Sub-2ctel ,
Birst siscount \(\qquad\)
Jirsh, l.et, \(\quad\) ?
second Discount. \(\qquad\)
Secome inet
\(\mathrm{Ta} \%\)
\(\qquad\)
\(\dot{\nabla}\)

12-4 rindine tie Uost of Lumber (Priee rer Lneai root)
In ure precentue sention jou have secn that frame aud rinish lumber is priced at "so nuch per piece."

In ulis section you init rinctert frameand Cinioh lumber is sonetimes gricen as "so much. дer lineal foou."
"Liner l" nears in a straight, line." ootic examples are: licee of ro,s, 30 fu. lon, contirins 30 lineal It.
A Ctann, 100 ft. 1 ne, consins loolineal fo.
Apipe, 22 ft. lone, contains 22 lineal ft.
A coil of coner tubing mey conte in 50 lineal ft.
\(A\) coil of wire, \(5,000 \mathrm{ft}\), lone, contgins 5000 lineal ft.
A boers, 20 ft, long, continns 20 linea 1 ft.

It does not make any difference how thick the rope, chain, pipe, or board is. Tilickness has nothing to do with length when the pricing is per lineal root.

If the ririce of \(2 \times 1\) lumber is 8 f per lineal ft., then three boards each \(2 \times 1 \times 61\) will cost \(3 \times 6 \times 4.03=11.44\).

The followinf is a price list for frame and finish Lunner. The mices are given as "so nuch Der lineal ft."
\begin{tabular}{|c|c|c|c|}
\hline \(\cdots\) & FR/UL LUH3EK & \multicolumn{2}{|r|}{FINISH LUMiBE?} \\
\hline Size & Priceler Lineal Ft . & Size & Price Per Lineal Ft . \\
\hline \(2 \times 3\) & \(6 ¢\) & \(1 \times 3\) & \(2 \frac{1}{2} 4\) \\
\hline \(2 \times 4\) & 84 & \(1 \times 4\) & \(4 \frac{1}{2} 4\) \\
\hline \(2 \times 6\) & 124 & \(1 \times 6\) & \(6 \frac{1}{2}\) \\
\hline \(2 \times 3\) & 16\% & \(1 \times 5\) & 94 \\
\hline \(2 \times 10\) & \(20 \%\) & \(1 \times 10\) & 11.12 \\
\hline & & \(1 \times 12\) & 164 \\
\hline
\end{tabular}

12-4 EYCROIS4S:
Using the price lists from section 12-4, lietermine the cost of the followinc. Round off answers to the nearest cent.

Number of hind of \(\quad\) Price ler
Hieces Lumber, Size Lineal Ft., Uost
1. 1 Frane \(2 \times 3 \times 10\) \& \(206 \quad \$\)
2. \(2 *\) Frame \(2 \times 4 \times 12\)
3. 8 , 1 rame \(2 \times 10 \approx 22\)
4. 4 rinish \(1 \times\) ² 12
5. 10, Tinish \(1 \times 3 \times 14\)
6. 25 Finish \(1 \times 6 \times 12\)
7. 12 rrane, \(2 \times 0 \times 18\)
3. 2 है, Finish \(1 \times 4 \times 14\)
Q. 32 rinish \(1 \times 12 \times 20\)
10. 45 Grarie \(\quad 1 \times 10 \times 12\)
* This means there are 2 boards, each \(2 \times 4 \times 6\) l long.

If sales tax is \(3 \frac{10}{2}\), finc whe \(\cos\) of the followine lumber orders. Round off to nearest ctat.
11. \(4-2 \times 3 \times 12\), Fraine Lumber © \(\qquad\) \& per lineal Ct. . \(\$\) \(12-2 \times 6 \times 14,41 \quad 1 \quad\) \(\qquad\) \(\phi\) per " \(12-2 \times 10 \times 20, \times 1 \quad\) " \(\qquad\) \(\notin\) per \(6-1 \times 4 \times 12\), rinish \(\quad 4\) \(\qquad\) \(\phi\) ber
\(\square\)
" \(\quad 1\) "
Uub-I'otal
\(\ddot{\psi}\)
\(\mathrm{Tax}, 4\)
Tote \(1, \psi\)
12. liply a 10 : discount to this orier.
\(15-2 \times 4 \times 18\), Fra ne lunber \(\$\)

\section*{\(40-2 \times 6 \times 13\), \\ " \(\quad\) "}
\(506-2 \times 5 \times 18, \quad 4 \square\)
\(12-2 \times 10 \times 15, \quad 4 \square, 4\)
Sub-Total p
Discount, \(p\) \(\qquad\)
Dis. Rrice \(\$\)
Tax
3
Total
\$
13. Apply a "builders discount" of lsir and a "nick-un" djscount of \(5 \%\) to this order.
\(15-1 \times 12 \times 10\), Finist lumber
B
\(12-1 \times 10 \times 18, \quad 1 \quad, \quad 1\)
\(18-1 \times 6 \times 12, \quad 4 \quad+\quad\)
\(14-1 \times 4 \times 12, \quad 1 \quad \%\)


12-5 Finding the Cost of Lumber (Price per Thousand Board Fest)
There is one no re way that frame and finish lumber is priced. It is the pricing method that is most often used by lumber dealers. The method is called "so much per 1000 board feet."

First, what does "board feet" mean?
A board fol is a piece of lumber that is 1 ind thick, 12 inches whee, ann 1 foot lone.


The formula for finding tin number of boerd feet in any
 Thickness ot, tie bore, in inches, \(/\) is the, tin, in inches, and - is the -engulf of tee bot rd in fec.
 piece of Creme lunger: oclucion: Board feet \(=\frac{1, x}{12} \frac{x}{1}\)
\[
" \quad \prime \quad=\frac{2 \times 4, ~}{1 ?} 0=4
\]
inshore: Tlereare 4 board feet.

Uxample 2: How neny board feet are there in a \(1 \times 10 \times 18\), finish lumber?

Solution: Board fott \(=\frac{T \times 1 \times 2}{12}\)
\(" \quad \|=\frac{1 \times 10 \times 18}{12}=15\)
Answer: There are 15 board feec.
Sxample 3: fion many board pect are there in 50 pieces of \(2 \times 4 \times 12\), frane lunber? solution: Boari fert \(=\frac{2 x \vee 12}{12}=8\) (in one piece) Boarrl feet in 50 , ieces is \(50 \times 2\), 400 , Hns .

The, resent cosic of frgme lumuer 15 , 120 per 1000 board foet. vite t woulr be the cost of the lunner in example 3 ? Solution:
a) T:e cost w11 be ra20 for ever, 1000 Doerd feet.
i) 100 many 1000 , are thero 5 : 40 ?
\[
\frac{400}{1000}-.4 \text { thousands }
\]
c) Thererore, , \(1 e \operatorname{cosc}\) of 400 , noord feel of lumber 114 ie, \(120 \times \cdot 4=140\), Ans. Example L: Nitu villorate cost of 37 pioces of \(2 \times 6 \times 14\) at a price of , Lu her 1000 for rd inet?

Solution:
क, Board fectin one nicece \(15 \frac{2 \pi 6 \times 14}{12}=14\).
(1) Dofrifeet in 37 niecns \(1337 \times 14=518\)
c) loowminy loots are trere in 513 ?
\(\frac{515}{1,50}=.51 \%(00\) not round oif.)
i) Tite cost or the lumber will oo:
\(120 \times .518=, 62.16\),. nswer

A Sluicker w ay lo do this same proulen on your machine is to cominnéall oí, ine factors involved:

Board Feet in Jumber or jrice ler
One Piece pleces 1000 ud. fo.

Nexi, nultiplyallofteeractors an tne numerator together.
mhen, multipay all of cha fectors in the derominator u\&ether. Cost \(=\frac{745,920}{12,000}=562.14\), ninsuer

Ile Sollowine 13 a rrice list for rmae and filish iumber:
preme lunber any size ur il20 ier 0000 bourd feot.
 cost oI Lhe followinc lumer oriers. Lise a sales tex of \(3 \frac{1}{2}\). Round off answers to neerest cenc.
1. \(40-2 \times 4 \times 12\), Frame lunber
\(60-2 \times 618, \quad 1 \quad 1\)
\(20-2 \times 10 \times 10,11 \quad\)
\(3 u b-10 t a l\) \(\mathrm{Tax}, \mathrm{S}, \square+\square\)
"oval"
2. \(12-1 \times 12 \times 20\), rlaisn 1 mber........... 3
\(20-1 \times \times 10,11\)
\(35-1 \times 3 \times 1 ?, \quad 4\)
3uo-Total
Tax
Totai3. \(13-2 \times 3 \times 14\), Frame lumber\$
\(27-2 \times 8 \times 10\), " \({ }^{\prime \prime}\)
\(13-1 \times 6 \times 14\), rinish lumber
\(19-1 \times 4 \times 12\), ..... 4
"
Sub-Total 3

Tax
Total
8
4. Apuly successive discounts of \(25-10\) to the followine order. \(50-2\) ィ C \(\times 20\), Frane Lumoer ............. \(\$\) \(45-2 \times 8 \times 10, \quad\) " \(35-2 \times 10 \times 20, \quad "\) \(125-2 \times 4 \times 1\), Sub-Total \(\$\)
First Discount \(\%\) \(\qquad\)
Firsi iet
\(\ddot{\psi}\)
Second Discount \(\qquad\)
Second let
rax \(\qquad\) \(-\longrightarrow\)
Iotal
5. Apply successive discounts of \(40-25\) and a \(2 \%\) discount if the bill is paid within 10 days of receipt. \(24-1 \times 10 \times 12\), Pinish lumuer ......... \(\$\) \(24-1 \times 3 \times 12, \quad, \quad 1\) \(40-1 \times 4 \times 14, \quad, \quad, \quad 1\) \(130-1 \times 3 \times 10, \quad \square \quad\),

3ub-Total 3
First Discourt \& \(\qquad\)
first liet \(\quad \psi\)
Second Discount \(p\) \(\qquad\)
Second let \(\quad\) p
Tax \(\$\) \(\qquad\)
Sub-Ťotal is
\(2 \%\) Discount \(\qquad\)
Final Bill
\(\stackrel{\rightharpoonup}{\phi}\)
6. Apply successive discounts of \(35-10-5\) and a \(2 \%\) discount if the bill is paid within 10 days of receipt. \(150-2 \times 3 \times 14\), Frame lumber 9 \(200-2 \times 4 \times 13, \quad 1 \quad\) \(250-2 \times 6 \times 20, \quad 11\)

Sub-Total
First Discount \(\qquad\)
First ivet Jecond Discount \(\qquad\)
Second liet Third Discouric


Third Net Tax


Sub-Tocal 2官Discount
\(\phi\)
Total
7. Apply a discount of \(12 \%\) and a freight rate of 3.2835 per 1000 lb. of lumber. The entire order of lumber weighs 350,800 1 b.
\(125-2 \times 4 \times 14\), Frame lumber ...........
\(125-2 \times 4 \times 16, \quad 1 \quad 4\)
\(125-2 \times 4 \times 1 \mathrm{n}, \quad{ }^{\prime}\)
\(100-2 \times 8 \times 10\), ",
\(100-2 \times 8 \times 12,11\)
\(100-2 \times 5 \times 14, \quad, \quad "\)
Sub-Total
Discount \(\qquad\)
Net
Tax \(\qquad\)
Jub-Total \(\quad\) ?
Freight Charge \(\qquad\)
'Total 3 ill

\section*{12-6 Finding the Cost of Plywood (Price nero SG. Ft.)}

Sheets of plywood siring are all 4 ft . wide and 8 ft . lone, out the thickness could be \(\frac{3}{8}^{\prime \prime}, \frac{1}{2}^{\prime \prime}, 5^{\prime \prime}\), or \(\frac{3^{\prime \prime}}{4}\).

Thickness varies \(\frac{3}{8}, \frac{1}{2} "^{\prime} \frac{5}{8}{ }^{\prime}, \frac{3}{4}\)

Plywood is priced at "so much per sq. ft." The price of a sq. ft. of plywood increases as the thickness increases.

The following price list for plywood shows this.


Example 1: What is the cost of two sheets of \(3 / 8\) " plywood? Solution:
a) Since the brice is per sq. ft., you must first find how many sq. ir. there are in one sheet. The Area of one sheet \(=4^{\prime} \times \$^{\prime}=22\) sq. ft. b) The cost of \(3 / 81 \mathrm{plywood}\) is \(\$ .095\) per sc. ft. The cost of two sheets \(=2(.095)(32)=\$ 6.08\), Answer

Notice that when buying whole sheets of plywood there is always a constant multiplier of 32 .

\section*{12-6 EXERCISES:}

Determine the cost of the following amounts of plywood. Round off answers to nearest cent.

2. \(2 \quad 3 / 4\)
3. 5 5/8
4. \(17 \quad 3 / 8\)
5. \(5 \quad 1 / 2\)
6. \(24 \quad 3 / 4\)
7. \(15,5 / 8\)
8. \(35 \quad 1 / 2\)
9. 29 3/8
10. \(45 \quad 3 / 4\)

Determine the cost of tile fo lowing lumber orders using a sales tax of \(3 \frac{1}{2} \%\).
11. 5 sheets, \(3 / 8\) thick Plywood............. \(\$\)

12. Apply successive discounts of \(5-15\) to this order and an additional \(2 \%\) discount if the bill is pald within 10 days of receipt.

45 sheets, \(3 / 4^{1} 11\) ywood \(\ldots \ldots . . . . .\).
\(65, \quad ", 5 / 8 "\), "
120 ", \(1 / 2\) "
Jub-Total
First Biscount


First liet Second Discount


Second ijet Tax
\[
\$
\]

Sub-Total 2\% Discount
\$ \(\qquad\)
Pinal Bill
\%
13. A lumber company has ordered the following lumber from a wholesaler. Apply a discount of \(40 \%\) and a freight rate of \(\$ .3058\) per 1000 lh. of lumber. The encire order weighs 875,500 los.

400 sheets, \(3 / 8^{11}\) llywood ....................
\(325, \quad ", 1 / 2 " \quad\)
\(380, \quad, \quad 5 / 8141\)
\(450 \quad\) ", \(3 / 4\) " "
Gub-Total 40\% Discount


Net
Tax


Sub-Total
Freight Úarge \(\qquad\)
Total Bill
\(\stackrel{\rightharpoonup}{\phi}\)

\section*{12-7 Other Products Sold by Lumber Companies}

Lumber companies sell many other home products besides lumoer, The following is a price list of some of these products.
\begin{tabular}{|c|c|c|c|}
\hline Number of Items & Description of Item & Price & Unit \\
\hline 1 & roll of Tar Taper & 9 2.15 & per roll \\
\hline 1 & Keg of Hoofing Nails & \(\% 6.60\) & per keg \\
\hline 1 & Key of \$16 Common Nails & 410.12 & !er keg \\
\hline 1 & Keg of +8 " & \% 9.95 & per keg \\
\hline 1 & 10. of \(\# 6\) Finish Nails & \(\$ \quad .05\) & per 1 b . \\
\hline 1 & Bundle Roof Shincles & \(\bigcirc 2.25\) & per bundle \\
\hline 1 & Bundle vedar 3ningles & 42.15 & per oundle \\
\hline 1 & Vedicine Cabinet & , 16.38 & each \\
\hline 1 & Window Lock & 4.12 & each \\
\hline 1 & Cabinet Door Hinge & 8.14 & each \\
\hline 1 & Interior Door hinge & \(\bigcirc \quad .39\) & each \\
\hline 1 & 5 gallon pail mixed cement & ¢ 5.27 & nerrail \\
\hline 1 & Interior fahogany loor & 8 4.56 & each \\
\hline 1 & Exterior Pine Door & \& 13.50 & each \\
\hline 1 & Louvered Closet Door & \(\div 4.42\) & each \\
\hline 1 & tholl of Insulation & \$3.26 & per roll \\
\hline 1 & rindow & \(\% 8.46\) & each \\
\hline 1 & Ficture Jindow & \% 53.18 & each \\
\hline 1 & Garage Door & \$125.95 & each \\
\hline
\end{tabular}
\(12-7\) ETLRCISE, \(A\), Using the preceding price list, deterninethe cost of the following orders. Sales tax is 3 i\%.1. 7 Rolls or Tar Paperके
4 Rolls of Insulation2 negs of hooring liails
12 Bundles of Rocf Shingles
7 Bundles Vetar shincles
3 Kego fis Sommon Hails
10 los. 16 Finish Hails

Sub-Total 1
Tax
Tote 1
2. A Interior wahogany noors
;
6 Louvered Closet Wosrs
2 Exerior Ine Doors
O los. fo Finisi liails
2 Pails Hixed Cemert
\[
\text { Sun-Tote } 1 \$
\]
Tax ..... \(\$\)
Total \(\$\)
3. 10 uabinet Door lingesB
12 window Lecks
1 bledicine Cabinet
Buu-Total 3
Tax ..... \$
\(\qquad\)
Total

12-7 EXERCISES B: The problems in this exercise conta in the pricing of frame lumber, finish lunber, plywood siding, and other building proructs for homes. Sales lax is \(3 \frac{1}{2}\). . ilound off answers to nearest cent.
4. The following order is for a recreetion room of a home. \(58-2 \times 3 \times 8!\) Frame lumber e 64 per lineal ft..... \(\$\) 32-1×3x \(12^{\prime}\) Finish luniber e \(2 \frac{1}{2} \phi\) per lineal ft. 24 sheets \(3 / 9^{\prime \prime}\) plywood 世 \(\mathbf{\$ . 0 9 5}\) rer \(3 \mathrm{~g}_{1}\). fft.
\(\frac{1}{2} \mathrm{Keg}, \mathrm{f}\) conmon nails
\(816 .\), fif finish nails
2 Interior hahogany Doors
4 Interior Door Hinges
Sub-Iotal Tax \(\qquad\)
Sub-Total \(2{ }^{2} /{ }^{2}\) Discount \(\qquad\)
Final Bill \$
5. The following is the framing orier for a ranch home that is 45 fc. long and 20 ft . wide.
\(16-2 \times 10 \times 22\) Frame lumber © \(\$ 120\) per 1000 Bd. ft. \(\%\)


Sub-Total \({ }^{\$}\)
Tax
Final Bill\$

\author{
380 \(2 \times 4 \times 3\).
}
6. The following is an order for other building products for the home in problem 5.
9 Windows\(\$\)
1 Ficture Window
2 Exterior Pine Doors
11 Interior iahogany Doors
4 Louvered Closet Doors
30 Sheets \(\mathbf{z}^{11}\) Plywood © \(\$ 135\) per sq. ft. \(\therefore\)
\(6-1 \times 10 \times 14\) Finish Iunber © 81.61 each.
\(12-1 \times \times 12\) Finish lumber \(49 \notin\) per lineal ..... ft.
12 1b, , ff Finish ilails
1 Keg ffo Comuon Hails
1 Garage Door
20 Rolls of Insulation
Sub-Total ..... \$
Tax ..... \$
\(\qquad\)
Sub-Total ..... \(\$\)
2\% Discount
\(\qquad\)
Final Bill ..... \(\$\)
12-8 Installation of Glass and Related Aluminum Products
In this section you will be introduced to problems in-volving the installation of glass and aluminum products by aglass company.

The State Glass Co. installs window Class in all types of buildings - schools, private homes, factories, grocery stores, department stores, churches, etc. Besides windows the company also installs aluminum doors that have glass. The prices that the company charges for installing glass products will be found in the following table. Note that there are different kinds of glass - regular winnow glass in various thicknesses, polished wire glass for doors that need extra strength, and mirrors with or without stainless steel edges. Glass comes in many different sizes.

The aluminum window casing and angle frames listed in the table are used to hold the glassfin place. An aluminum threshold is what is fastened to the floor underneath aluminum doors. It provides a weatherproof seal against rain, snow, or wind.

You will notice that glass products are priced in different ways - glass is priced at "so much , ser sq. ft." (but glass dimensions are given in inches). Aluminum casing and angle frame are priced "per lineal ft." All of the prices include the the cost of labor.






 or 1 -ss ool leve.


 HiATmeb; L-


\[
\operatorname{cose}=1.26 .667 \times,-10=, .00
\]

You cen also do me iroblea or contre bll of the factors



 dinensions are ermasme in fnctes exent, mere nower.

\(16 \mathrm{ncs},. 20^{\prime \prime} \times 1,1,16^{\prime \prime} \quad 4\)

22 rt. 10.1 n. Lningenmelotrent
22 Cr. hincma, inton rasine
\(34-\operatorname{Tcta}\)
Fer a 8 \(\qquad\) rotal

\section*{FILMED FROM BEST AVAILABLE COPY}
```

2. i urocory soore otmer has nexined to chenge his socre
front. Detmanise bic cost of removing the ole srone and
insiallime he no% on:% Labor For removine the old store
front is m350. jaies tax is 3%%
```

```

110 il. lmanma nemo: wnine
1% ru. i.c. ? ,nole Orme

```


```

    2-30x 4. . | | |
    2-30\times1% :
    1-36\times32 % , '
    2-42\because年, % %
    2-i+i xa 
    ```



    \(14-2 \times\) ャ
    \(14-26 \times 39\)
    \(14-22 \times 4 \%\)
    \(3-46 \times 48\)
    12-20× \(\times 4\)
    \(12-20 \% 14\)
(i3 ecntime: on nox arime mo-potai
 ..... :
\(3-7 \times 36\) ..... 3
\(2-10 \times 22\) ..... \(\dot{B}\)
\(5-12 \times 42\)
\(\qquad\)

Mesortitonor rimsa: !.ss"
le-\(j\)
\(\therefore-10 \% 10\):
1-9 04 ..... j
\(2-\therefore \times i_{2}\)\(5-20 \% 9\)
Ran an-
En! m, motl
wrme " :
औ,
-ina Nos.
4. Melerma: 

\(\because-36 \times 12\) "
\(\because-\therefore \times 7\)  a'mins3 ster 1
150 ire :incowoind
75 rr. i.c. : :

\(4-36 \times 18,359\)
S(i)-Total ; ..... ;
"tax ; ..... ;\(\underline{-}\)
\(\qquad\)
Totel
5. G. Fox \& Co. wants to install anditionel display cases in its jewelry department. There will be three cases, each hevine a eless top that neasures \(\neq \mathrm{ft}\). lone and 3 ft . wide. The front of esch case wili also be glass for its entire Nnct:. The cases are \(42^{\prime \prime}\) nieri. The glass is to be yoIisited piate, extro strone, at a price oi 2.75 yer sq. ft. Deternine the cost of installing the glass. Inclucie a saies tax of 3 an.
C. I'wo display minows of a denartnent sione were brolen.
 he polished bate elass. The laoor ctarge for re: oving the iرroken vinoos is 20.50 . Decermime the cost of replacinceuneminows. نtate sales tax is 3 l :
7. a speciai agheriun is to be instatied in a museum. It will be a rectangular solid wivi on onen cor. Its dimensions are 12 it. lone, \({ }^{2}\) f. wire, and 4 ft. nizh. The glass sines and botion are thermopane, costine i3. 85 per sc. ft. jpecial waterproof casine will ive installed along all enges except the top. The price of this casing is si4. 75 per lineal it. Decermine the urice of the aquarium. Jales \(\operatorname{tax}\) is \(32 \%\) 。
 Besides bank ahle to mase ou, invoices, clunk musu be able to uncustand and use rracions in their wore.

The foriomine is a typical proulen inat a cierk must solve when worting Sor an intustrial wholesaler.
 cirno supplies ligroing equipment, wre, and light Fivunes to
 Sysems for homs, snhois, factorins, adremen bousen, etc.

 to the joo sibe at on :ing. He wnts only fractional remof the order to be deliverer. These suatlins wit se loared onto a track on a werky schering. It is tito clerb:s io: to load the
 to bent conallen tro inveicine ano buling.
fine rollonine in whenst of sualios bat tion rontractor
 shous a cond number whici idntifies ne ch buen wiat hes bern ondered. fie lisi also cives a descrimion of eech iten anct jub list arice.
\begin{tabular}{|c|c|c|c|}
\hline \multicolumn{4}{|c|}{Supply List for Job} \\
\hline Amount Ordered for Job & Description of Items & Code No. of Item & Unit Price (each) \\
\hline 350 & Type A Flourescent Lights & 100 & \$ 37.25 \\
\hline 22 & Exterior Upot Lights & 101 & 12.95 \\
\hline 75 & Light Switches, SPST & 102 & 1.79 \\
\hline 225 & Wall Outlets, Duplex & 103 & 2.16 \\
\hline 64 & Office Fixtures & 104 & 8.37 \\
\hline 16 & 8" Exhaust Fans & 105 & 15.00 \\
\hline 30 & Basement Fixtures & 106 & 3.79 \\
\hline 4 & Reels \#18 Electric Cable & 107 & 250.00 \\
\hline 6 & Rolls \(\frac{1}{2}\) " Bx. Cable & 108 & 6.19 \\
\hline 20 & \#8 Pull Boxes & 109 & 3.78 \\
\hline 16 & \#4 Puil Boxes & 110 & 2.90 \\
\hline 8 & \#16 Fuse Boxes & 111 & 43.25 \\
\hline 24 & \#20 Fuse Boxes & 112 & 63.75 \\
\hline 800 pcs. & 3/4" Conduit & 113 & 2.58 \\
\hline 500 pes. & 1" Conduit & 114 & 3.37 \\
\hline 240 pcs. & 2" Conduit & 115 & 4.93 \\
\hline 24 boxes & 3/4" Clips & 116 & 2.09 \\
\hline 12 boxes & 1" Clips & 117 & 2.95 \\
\hline 200 & 4" Roughing Boxes & 118 & 1.67 \\
\hline
\end{tabular}



12-9 :- noi.j;
meek lumser: 1
Mate Bhi: ect ref 1367
vade Pracifonsi
lo. Jint of order
\(113: 1 / 20\)
\(1 / 20 \times 200=4\)
\(1 / 60\)
115 1, 2\%
\(11: 1 / 10\)
\[
\begin{aligned}
& \therefore \text {. } \\
& \therefore \text { iscount } \\
& \text { M)-iña ; } \\
& \text {;inj jax ; } \\
& \text { L: bibsounc ; } \\
& \text { Nec a,10'unt ; }
\end{aligned}
\]

\section*{CAPITOL LICHT \& SUPPLY CO.}


\section*{CAPITOL LIGHT \& SUPPLY CO.}
\begin{tabular}{|c|c|c|}
\hline Week & Number: 3 & Sold To: H. P. Wilson Co. \\
\hline Date & Shipped: 062767 & Job: Windsor Elem. Sch. \\
\hline Code No. & Fractional Amount Loaded
Part of \(\quad\) on Truck
Order & Unit Price Extension (each) \\
\hline 109 & 1/2 & \$ \\
\hline 110 & 1/2 & \\
\hline 111 & \(1 / 4\) & \\
\hline 112 & 1/3 & \\
\hline & & Sub-Total \$ \\
\hline & & Discount \(\quad \$\) \\
\hline & & Sub-Total \$ \\
\hline & & Sales Tax \$ \\
\hline & & 1旁\% Discount \$ \\
\hline & & Net Amount \$ \\
\hline
\end{tabular}

\section*{CAPITOL LICHT \& SUPPLY CO.}
Week Number: 4 Sold To: H. P. Wilson Co.
Date Shipped: 070467Job: Windsor Elem. Sch.
Code Fractional Amount Loaded Unit Price Extensionon TruckNo. Part ofOrder(each)\(113 \quad 7 / 10\)\$
114 ..... \(3 / 4\)
115 ..... 7/8
118 ..... \(7 / 10\)
Sub-Total ..... \$
Discount ..... \$
Sub-Total ..... \$
Sales Tax ..... \(\$\)
l \(\frac{1}{2} \%\) Discount
Net Amount ..... \(\$\)


\section*{CAPITOL LIGHT AND SUPDEY CO.}


\section*{}


\section*{12-10 Computing The Cost of Steel. Chain}

The following table shows list prices of chains manufactured by Whitney Chain \(C_{0}\). Using the information shown, comrlete the invoices that follow the taive. Jales tax is \(3 \frac{1}{2} \%\). Discounts are indicated in each invoice.
\begin{tabular}{|c|c|c|c|}
\hline Code ivo. & Sold & only in gths of & Price Lineal \\
\hline 18073 & 10 & feet & \$9.58 \\
\hline 14083 & 10 & " & 6.80 \\
\hline 1 1093 & 10 & : & 5.41 \\
\hline 18103 & 10 & " & 4.73 \\
\hline 00746 & 5 & " & 1.46 \\
\hline 00749 & 20 & " & I. 60 \\
\hline 00752 & 35 & " & 1.72 \\
\hline
\end{tabular}
80329 " 25 . 952
\(30297 \quad 50\) " \(\quad .305\)
\(\$ 0130 \quad 100 \quad\) " \(\quad \therefore \quad .705\)
\(2 \% 410 \quad 75 \quad 20.01\)
2?510 50 " \(1 \% .3 \frac{1}{3}\)
\(25610 \quad 25 \quad 15.92\)
12－10 E Encisĩ ：
Invoice iso． ..... 1
Code ivo．fumber of Chains Total Feet rrice Per Amount Purchased
30297 ..... 5
\(5(50)=250\) \(\because \quad .905\) ..... \(\$ 226.25\)
2．5083 ..... 7
28510 ..... 20
Sub－Total ..... \(\overleftrightarrow{3}\)
ラリ意度 Discount ..... \(๕\)
Sub－Total ..... \(\psi\)
Tax ..... \(\$\)
Final Bill ..... \(\stackrel{\psi}{4}\)
Invoice lio． ..... 2
Code No．Number of Chains Tctal Feet Price Per Amount Furchasent Lineal FT．
30130 ..... iv ..... \＄
80297 ..... 5
18073 ..... 100
28410 ..... 6
Jui－Tctal ..... 需
\(40.6 \%\) Discount \(\hat{\phi}\)
Sub－Totai ..... 4
Tax ..... \(\$\)
Finai Bill ..... 审
Invoice ivo． ..... 3
Code ivo．Hmber of Ghains Purchased
Total Feet Price Fer Amount ineal Ft．
00746 ..... 20
29610 ..... 17
\(1 \geqslant 0.93\) ..... 12
00749 ..... 5
90329 ..... 13
．juo－ToteI ..... ز
\(45.3 ;\) inscount．；
＂u－Totai ..... ，
Tax ..... \(\ddot{\square}\)
Final 3ilj 3
Ir：vaice i．o． 4
Öne io．Runver of hains Tolai reec Iricefor A！！ourt Turchased Lineal Ft ．
10 30752 ..... 10
3
2029： ..... 20
1゚ロづ3 ..... 20
\＄032： ..... IE
\(\therefore 749\) ..... 50
23410 ..... 4
3uv－Total ..... ．
32ぞ；：iscounc ..... \(\dot{\psi}\)
juh－i＇otel ..... \％
Tax ..... 3
Final 3iil ..... 3

\title{
STATE OF CONNECTICUT \\ TAX DEPARTMENT
}

92 farmington Avendi: Hartford, Connectictt ogils

The Connecticat jute Tax Dep: collects very larye suns of money. Bou day have sean newsatyer ar icies that list the amounts of monej collected yj ine tax dearubent. Tne tax department collecus Lisis money from brenuy one difierent sources.

Jac following is a "simpe" adtivion problen tiat shows the various sources of tax end tie amont of tax co-lecued fron each source. The sur of biese bayes is the anount col-


Fine the total arount or taxes collecter for we Fiscal year, \(19 \dot{5}\) - 1906.
Source dinount of Tax
Amusement ..... \$: \(\quad 93,32 \mathrm{u} .25\)
Beverage - Ailcoholic ..... 16,863,308.60
Car Companies ..... 25,447.35
Cigarette Tax ..... 31,927,405.32
Conn. Estate Tax ..... 410,293.96
Corporation 3usiness Tax ..... 67,95\%,55\%.50
Electric \& Fower Uos. ..... 2,624,359. dg
Express Uompanies ..... 7,500.00
Gas Companies ..... \(1,619,551.60\)
Gas ano blecuric Cos. ..... 7,689,747.17
Inheritence Tax ..... 39,533,984.95
Insurance Lomnanies ..... li),523,00́0.78
Aotor Carrier Zoad Tax ..... 1,107,967.30
dolor ruel Tax ..... \(60,773,937.77\)
えailroads ..... 25,397.52
Otean Öomnanies ..... 97,329.43
I'cierraph \& Can-eCos. ..... \(66,545.96\)
Folemione Uos. ..... \(11,759, .970 .15\)
[rincorporated Business Tax ..... 3,525,741.81
Water and iater Power Vos. ..... 966,746́.83
itete jales Tョx 49, \(667,919.39\)Total Taxes\(\dot{4}\)for one year

\section*{12-12 Conjuring rionchly Biz ie Tax Collections}

The Cont. State Tax Dept. often compares now much tax was collected for che same month of tiv different years. This comparison shows whether it collected more taxes or less taxes. It reports the difference as an increase or \(\exists\) decrease. If more tax was collected it inciice es this by a plus ( + ) sign. If less tax was collected, the decrease is indicated by a minus(-) sign.

Consider the following example:

a) Did amusement Tax increase or riecreese and by how much? Ans:ser: From \(3,300.00\) to \(37,900.00\) is a decrease of : \(\$ 400.00\)

Therefore, write \(\$ 400.00-\)
b) Did Uar Company Tax increase or decrease and by how much?

Answer: From \(\$ 140.00\) to 450.00 is a decrease of \(\$ 90.00\). Therefore, write \(;\)
c) Find the increase or decrease for Gasoline Tax and write the difference with its proper sign.
d) That was the total increase or decrease for the
three tax sources?
is 400.00 -
90.00- Gasoline tax increase or decrease.
\(\left.\begin{array}{c}\text { Total } \\ \text { Increase } \\ \text { or } \\ \text { Decrease }\end{array}\right\}\) (19,510.00 + You should get this answer.
 be zure to write tie + sig. Your answer is not correc without the + sicn.

12-12 E:ERCIOH a: Determint ite lotal increase or decrease of the followine montinly cax comparisons. Ever; anewer should be foilowed by a + or - sign uniess ine difference is zeru. 1.

Source : A!ril, 1964 april, lobs increase (t)
Conn. Estate Tax \(320,000.00 \quad 33,000.00\) Decrease ( -1

Electric \& Power ios. 220,000.00 231,000.00 \(\because\)
Tailroads \(2,300.00 \quad 1,700.00\) \$
"'otal Increase or liecrease
2.

Source liov. lyO Iov. iDE Increase (+)
Corp. Jnsiness Tax 1,250,000.00 1,506,0000.00
Gas Companies 145,000.00 130,000.00 \(\$\)
Unincorp. Bus. Tax 341,000.00 100,000.00
Toicel Increase or lizoreases
3.

Dource Jan. 19t Jan. 1,65 Increas \((+1\)


Iniratithe Pax 1,437,00.:16 1,437,000.00 \%

'totel Incretste or Decreases*
4.
. ourc: Uct. 1960 Oct. 1961 Increast (母)
notor Üarier hoad Tax
\(79,47.32\) 108,045.54
Teleprione Cos.
Insurance Cos.
\(90,162.29\) 93,943.22
792, 143.21 78,244.32 \(\qquad\)
Toral Encrease or Decrease :
 you to find the incres or or ducrease from one number so another. This mecial feature is colaed uredit adivion.
up wo this roint wherever sou have satrecteri one numer from another you have alway: entered the arrer number irsi and the smaller number second in your nechine. This is not nocossary in credit addicion. unnsider the following example:

Example 1: Find the increase or tecrease in iexes collecter in June oi lig6t and June or 1967.
dune lote June 1967 Increase ( + ) \(55,000 \quad 3,000 \quad 3\)

Solation:
a) Enter the 1967 arount of 33,000 irst and press the Ada key.
b) Intor the 1966 amount 0 is 5,000 and press the juberection king.
c) Irass the Totel rey.
d) The risher is \(2,000 \mathrm{ch}\). The later "c" indicates 2 minus ( - ) si;n. You should write your answer as 2000 -.

SUGMiV:
alwas enter the tax for the arosent rear lirse, ar inc tax for the past year socomi. If the arosior ses hat letur on:
 ir: it ments an incrase \((-1\).
 of wie foliowine monisty bux comperistaje

Conn. istate iax ;ī2y wo.

jueara Comanies \(\quad 9,430.00 \quad 10,30.000\)
Total Incuetat or Ferrease a

Beversece-ilconol: \(11,266,273.47\), 1, 26, 24.31
Var Lompanies
\(1,097.24 \quad 209.75\)
:ypress :03.
2r,11.7.08 2,614.78
atallouds
\(2,22.58\)
\(1,780.22\)
vituer oner jos.
791.20
88.35

Cats umnaries
\(1+5,97.29 \quad 154070.92\)
Totei Tnorosse or locrese \(\%\)
3.
jowree
(inju ime
\(\therefore\) uig \(\quad 45\)

Tricreaze of Iecroos:

Bervele \(\because x \quad 2,672,00.9 ? \quad 7,75,11.1=\)

Trel 「acree or or becrease

\section*{12-13 innincorporated Jusires.s Tax}

In this secticn you will rim now in jexly tay is determinet for unincorvore oer ousinessies.
 for tax muroses:
1) Retaliaro, moiosaders, ne inanufacurers.
2) actor transportatior, ani amusement.
A) Actailars, wolesalers, ari manfaciurers sell goods.
 ticir foors is taxed a: a cortait rote. ano rave of téx on tioeir males i.s:

```

3.60 for evury thousure over por,jom.

```

Exanele 1: Deterine the tox fre a rotailer mose sules ase 72,30 solucion:
a) Tle tarst a, ono is bever at a rete of 1.30 no thousme \(\cdot 1 . \pi(0,0)=7800\)

 \(7 \therefore, 9-2,0,10\)
 \(\therefore 2.6(16.4)=33.24\)

3) Jnincorgosate actor toanspreation ard anaseat businouses dexive uade ineone iron seles and sericos. iut neto of tax on buin inoothe is:
\[
\begin{aligned}
& \text { f. } 35 \text { ner trousanti up to ani inclutine , , on and }
\end{aligned}
\]


;olurion:
 \%er ino:isarri. \(\because 55(6)=22.00\)
nj tuer aron of hacon now ro, is bexer at

\(243,500-0,000=273,000\)
\(\frac{72,00}{200}=733.2\) (in not rounc orf.
(.65i.33. \(5=+50 \% 54\)
c) The zex wex is: ; EL.0G
\(\frac{43.54}{50.5 i}\)
 themen mena.



12-13 EXEGOTEE: Deterninte the yearly lax for the foliowing unincorporated businesses.
I. a whoiesaler's sales were \(-74,000\). Compube the tax.
2. i'he hand ömpeny manufecuros stace suits. J̈ales were \% \(2,4 \%, 0 \%\) for the year. Compute the tax.
 the tax.
4. The Berlin itungire theater had income of \(: 53,400\). vompute the tax.
5. i reteiler's sales vere 90 ,700. Wompute the ta\%.
6. The ت̈recisicn irorlucts Co. monufactures pump. Ii Bales were \(\mathbf{i l}, 70\), a, 00, compute the tax.

 tax for 1967.

9. Jales fur igéf for a woiesaler wre \(\$ 60\),000. In 1960, sales were \(115 ; 0^{\circ}\) the 1065 sales. نompute for tax for 1966.
10. a recailer nad the foslowint montily sales. Corapute his tax for the year.
Jan. 6,750 July al,743

Feo. 8,495 B
are \(5,0 \% 7\) Bert. \(-5,065\)
inr. \(1 \because, 40\) Uct. 17,300

June 13,709 Dece 22,040



 car has been driven, tre met-hom meve atis a the amount of electricicy thet ass been uje \(0 \%\) alectricti equimenc. blectric meters are rear uach fonti at nient 30 day intervelia. If an roaina is toben en iune 9 , for instance, then the next raedina mouln ve tien on juj \(\%\) The orevious mants reanifit is suthreter from se pressut month's rasine. The differcuce is the arouris of tectrision user. The unios of electricit: are kilo with hours (fit).
 rate table which indicnses now to mice the soctricity.
 wat-hour ater.



 Au hour an sina

\[
\begin{aligned}
& \text { Bo: ray motrs he in me rut tand }
\end{aligned}
\]
\[
\begin{aligned}
& \text { i. hes 10wn } 2 \text { bours. }
\end{aligned}
\]

The following is a picture or one dial on a \&att hour never:


How nary lilo fat hours has the hand mover from zero? answer: it
hrs mover 2 ll lo mate hours. It
:H 10 a mere 3 , ye.
An electric watt hour meter has Bour dim is on Lt. each
rial is read separately, , imine aton tho 15 ft died.
Janie 1: med tools electric wetc-hour meter.


Notice tret tie numprb on wo rials go clock-wise one on the other wo the numbers 60 sounter-clocivise.

The meter rearing is t, 223 hit inilo watt hours).

 For 20 , te hat 1 b vetmen 2 and 3 , 30 you med 2. For 3 , the hand is between 3 ard 4 , 30 , bu read 3. ionicethat in rem ant mach into choose the number that the hand hem passed completely. -xalle 2: dear this thte-nour meter.


The navar racine iss \(\qquad\) h. H.

12-14 EAERCINE: Read these meters and volute jour answers
where indicated.




0,
2
0


\section*{Answers}
\(\qquad\)
\(\qquad\)
\(\qquad\)
\(\qquad\)
\(\qquad\)
\(\qquad\)

12-15 Find the bieferencebetheer wo noter tearings
Read the follnifne merars ant detrmine liow aleny kilo watu nours of electrici:y bay onan asea from the berinning of the month to the ond oi the nonuh.

1)

Jan 31


2)
 \(1-\)

0000000000
\(\qquad\)


Noul
3)


Nov 30
\[
1
\]
\(\qquad\)
\(\qquad\)
\[
3
\]

12-16 Findine we Cost of Lectioity
To find che cost cf electimeity we nust, use a rate taole Which shows us how bo brice the number of K.H used for a month. The following \(\mathbf{1}\), the rate sumenie uned for residential customers (private hones):

\section*{THE BARTFORD ELECTRIC LIGHT COMPANY}

Effective January 1, 1962
Rate 1
Revised July 1, 1964

\section*{RESIDENTIAL SERVICE ELECTRIC}

APPLIES in all towns served by the Company, AVAILABLE to residential customers for standard single-phase service for residential uses (including. incldental farm uses on the same meter) in a single dwelling unit where distribution facilities are suitable for the service requested.
SCHEDULE OF MONTHLY CHARGES:
\begin{tabular}{|c|c|}
\hline First \(\quad 20\) K & Per Kwh \\
\hline Next \(\quad 80 \mathrm{~K} \mathbf{K}\) & \\
\hline Next \(\quad 100 \mathrm{Kwh}\) & 3.5 \\
\hline All Over 200 Kwh & 2.2 \\
\hline
\end{tabular}

Examile 1: Totermine the cost of nsinc 20 huH of olectricim.

Solution: \(\varnothing\) must price 20 Kni in steps:
a) The rirso 20 hiH costs 3.254 per ham:
\(20(9.0875)=11.05\)
b) The nex, 3 K.h costs 3.5 ¢ yer h. H:
\(80(., 035)=02.00\)
c) The next 10 C K.H costo 2.74 ner KilH:
\(100(1,02 \%)=2.70\)
d) So far me lave 2 ricer \(20+30+100=200 \mathrm{kHH}\).

のhave \(-6-200=60\) h,in more to price.

\(60(5.032)-12.32\)
f) The total cost of using 260 KWH is:

Example 2: Deterfiline tine cost of using 175 KiH of electricity.

Solution: Before we begin, will we use every one of the four steps in the rate table? Answer: No using all four steps means that we would have more than 200 Kilh to price. 30 we will only use the first three steps.

Jtep 1: The first 20 KVH \(\operatorname{costs} 20(\$ .0825)=\$ 1.65\)
Step 2: The nexc 80 K4h costs \(80(4.035)=42.80\)
3tep 3: we have priced \(20+80=100\) KwH so far. We have to price 175 kilh allogether, so we have \(175-100=75 K \mathrm{KH}\) more to price.

This 75 KilH costs \(75(\) p.027) \(=42.025=\underline{2} .03\)
The tolal cost or usine 175 KwH is:
\(\$ 1.05\)
2.30
\(\frac{2.03}{46.43}\) Answer

12-16 Extaisns: tecermine rite montily gectric unlt for the followine residential custones.
1. K.iH used is <40. 2 . h. H usec is 180 .
3. K.H unncis 100 . \(\quad\), hef sen is 67.



9. The neler readine on junt 7 wos 7041 and on July 7 wes 7307. Deternine the customer's oill.

11. Two suecessive neter reathets for a rostretial customer were 047 -14 8212 . connute 11 s bil.
12. Two successive neter roar incs were \(630 \%, 1106392 \cdot\) bompute
the bill.
13. \(\quad\) custoniermant on vacouinn. iifs heter gentincs were 4172 and 4165 . Gonipue his bil.
 alectric bill.

12-17 Computine Electric 3ills 3y Using Formulas
To make the emplojes's work easien and shorier, biliing fornulas are used to detera.hethe customer's monthly bill.

The followine are the billine formulas used:

formula - the custo er is charged a flai rate of 11.75.
Example l: Usint oue orrect silline formula, compule the electric inil for usine \(1 \because 3 \mathrm{l}\). Sclution: 133 LH is heteecn 101 and 200 Kith. Therefore, Ste Ior:inir, \(\quad .027(\mathrm{KH})+21.15\) willo used. \(3 i 12=2.027(\mathrm{KH}) \quad T \quad 1.7\)
\(=.027(123)+1.75\) \(3 i 11=4.94+1.75=\$ 6.69\) fnewer.

12-17 تrenctuns: Using vie bi-ine formulas, conpule tie Uills for the followine castoners.
I. Kinn is 37
2. KWL is 16
3. KiH is 116 4. Win is 24
5. K14 is 200E. hali is 100
7. K.itt is 10
d. KAK is 291
\(\%\) H.H is 210
10. A. is 150
11. K.H is 199 ..... 12. KIt is ?g
13. huli 1 s 0 ..... 14. H/ 15350

12-18 Anal;sis of Rate Rerlucifon
The hartrori ilecteic Light \(\cup 0\). recently reduced their rates beceuse of creater efficiercy in proriucingelectricivj. This , was macie iosisible by installing nore modern equipment. The savines ire fassed on to lue chstomors in the form of lower retes- whicn means lower elecuric oills.

In the following rate analysis, deleraine the amount of decerease and vie per cent decrease bated on the old rate. Per conts should be irtton to the nearest tenth.
\[
12-18 \quad 3 \mathrm{ACO} \mathrm{C}:
\]
\begin{tabular}{|c|c|c|c|c|}
\hline \begin{tabular}{l}
Ki/H lised \\
Fer icnth
\end{tabular} & Old Rate & Hen late & anount of Decrease & Fer cent Decrease \\
\hline 200 & +7.15 & 97.11 & , 0.04 & . \(6 \%\) \\
\hline 250 & 8.35 & 9.25 & & \\
\hline 300 & 9.55 & 0.35 & & , \\
\hline 350 & 10.75 & 10.45 & & \\
\hline 400 & 11.95 & 11.55 & & \\
\hline 450 & 13.15 & 12.65 & & \\
\hline 500 & 14.35 & 13.75 & & \\
\hline 600 & 16.55 & 15.95 & & \\
\hline 700 & \(1 \leq .75\) & \(1 \% .15\) & & \\
\hline 800 & 20.95 & 20.35 & & \\
\hline 900 & 23.15 & 22.55 & & \\
\hline 1000 & 25.35 & 24.75 & & \\
\hline
\end{tabular}

12-18 ERARCIS: B: The hartiord Electric Light Co. is considering lowering their rates aiter tre installation of a new atomic-powered generatine station. The following table shows the, present rates and the per cent decrease. Determine the amounc of decrease and the new rates.
\begin{tabular}{|c|c|c|c|c|}
\hline KiH Used Fer Month & Old Rate & Ior Uent necree se & \begin{tabular}{l}
Amount of \\
Decrease \\
(iear. cent)
\end{tabular} & Hevt Rate \\
\hline 200 & 17.11 & -3\% & \% & \(\psi\) \\
\hline 250 , & 88.25 & .6 & & \\
\hline 300 & 9.35 & 1.0 & & \\
\hline 350 & 10.45 & 1.4 & & \\
\hline 400 & 11.55 & 1.9 & & \\
\hline 450 & 12.65 & 2.4 & & \\
\hline 500 & 13.75 & 3.0 & \(\square \times\) & \\
\hline 600 & 15.25 & 3.6 & & \\
\hline 700 & 18.15 & \(4 . \mathrm{C}\) & & \\
\hline 300 & 20.35 & 4.3 & & \\
\hline 990 & 22.55 & 4.6 & & \\
\hline 1000 & 24.75 & 4.8 & & \\
\hline
\end{tabular}

12-19 Comnu cine ala Bills
/ Eas meter is a device for measuring the number of cuoic
feet of gas usen in a given perion of time.
The dials of the meter are read in the same manner as electric vatt-hour meter dials. liowever, after the numbers on the dials have been read, Lioo zeros must be adied after the last digit.


The readite of tie above res meter is 10100 . You will have to remember that when reading es meters, two zeros must De written alter U he test, digit of the dial reading.

The units ot es s meter readings ere cubic ret (cf). The above never resile wont we 30, , of o

The following rete scrienule is used to determine pas bills.

\section*{Tb, AE, GhoUL}

First 200 ci or less .........1.7s


fill over 3 otto of ............ © 0 ill per of
(what is another way of writing:)
\[
\begin{aligned}
& \text { 4,0024 } \\
& 4.00205 \\
& 0.0019-\cdots
\end{aligned}
\]

12-19 EXERCISEB: Compute the following gas hills. 1.

2. On July 1 the dials of a Eas meter read 6039 . On August 1 the dials read 6057. Compute the gas hill.
3. Two successive dial rearines of a cas nover whre 2607 and 2015. Compute the a, as ill.
4. Durine one nontl, 100 cf of ges was user. niac is the gas bill?
5. During a month 2900 cf of gas mos user. Dompute the gas bill.
6. A bakery uses gats for its ovens. Two successive dit1 readings for a month were 7427 and 7472 . Compute tne gas oill.
7. The dials on a gas neter read 26 ;h on Oct. 1. During October, 3700 of of EAS was usen. Whet would the dials read on Oct. 31 ? Dompute the bill.
8. Durine a nonun, 2300 cf of eas was usen. what would the dials read at lie ent of une month if tie dials read 4792 at the verinning of the montn? Donpute the bill.
9. The dial radine on a eas necer was \(\$ 250\) ac the end of Septealler. Hat tid the dials rod on but, 1 if \(1 \% 00\) of of cas was usenf coritute the oill.
10. At the erif ne July the dials of a gas never read 7005 . During iuly, 4100 cf of gas wes used. What was the dial reading ac the beginnine of duly? tompute the bill.
11. The following are the meter reedines taken each nonth from a yes meter for a privete home. Detertilne each ronthly gas bill and the total cost of \(\varepsilon\) s for the heatints season. the Sept. 1 diai reading was 5132 .
Dial Rearing Gas úsed oost

Oct. \(1 \quad 5154 \quad 2200\) cf 66.23
Nov. \(1 \quad 5170\)
Dec. \(1 \quad 520^{\circ}\)
Jan. \(1 \quad=244\)
Feb. 1 52\$4
dar. 1532
AMr. \(1 \quad 534 \%\)
Total

12-20 vonnutine Juel oil 3ills
ruel dil is used for hea ung any buildine that is occupied by people. It is also used to hes ovens in industrial plants overs for the dr;ine of iumber, selting of actals or the boilof chemicals.

Thersare diererenc gredes of ruei oil. Fuel oil used Sor lieatimemes is callen loo. 2 oil an is very lieht somethire life lerosere. To. 4 oil is a litule leavier and is user vo heat scnools. lo. (oil_ very thick - almest as thick es melter tar - anci is used in industrial iurraces. (In fact, becallse fo. 6 oil is so thick, it hes to be thinmed by heating iv. It as o be thitnerl so thab it can be puareri into tine \(0 i 1\) burner of a rurnace ard bhere ienitwed into flame.)

The following is a price list for fuel oil.
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|r|}{FUSL OLL PAS LITS} \\
\hline Grade & Useत In & Price Per Gallon \\
\hline Ko. 2 & tomes & 16.24 \\
\hline No. 4 & Schocls & 7.74 \\
\hline 10.6 & Industry & 3.94 \\
\hline
\end{tabular}
 the rost of ruet oil in the follooinc rroblens. tound ofr lo. nearosc cent.
1., ULuel oil trick hes rumped 24,3 cailons of oil inco a Domeowner's Moment tank. Determine the fuel bill.
2. Srine one heatinc season fifon ien. yo une) vechersfield ric: jchool usen \(-15,10\) galions ef cil. Jeternine the nobu of huel for the neturet soes son.
3. Rurilu he lee rine season, legz gallens oi Tucl were lsed to heac a sone. ant is whe wost or heating to loone?
4. in intustrie 1 firm user 2,483 cellens of oil to heat its ovens. alat was bueir ruel bill?
5. The following amounts of fuel oil were delivered to a home for a heating sea son. Compute each monthly oill and the season's bill.
\begin{tabular}{|c|c|c|}
\hline Hontr & Gallons & Oost \\
\hline Sept. & 149 & 3 \\
\hline Oct. & 187 & \$ \\
\hline Nov. & 244 & \% \\
\hline Dec. & 322 & 5 \\
\hline Jan. & 355 & 3 \\
\hline Feb. & 337 & \% \\
\hline riar. & 240 & \$ \\
\hline Hpr. & 193 & \$ \\
\hline & & \$ Ootal 3ill \\
\hline
\end{tabular}
6. The three hich schecis in hartford used the following amounts or ruel oil durine the past heating season. Detormine the heating uill for each school and the sea son's bili for all three schouls.

Scriocl Gallons Cost
liartford iuulic H
\(223,540 \quad 3\)
"eavor HS 138,078 洎
Bulkeley Ho
132,409 \(\qquad\)
\(3 \quad\) Total 3ill
7. Irati \& thitney iircraft used \(2,340,000\) Eilons of lio. 6 oil and \(72,40^{0}\) gallons of Ho. 4 oil during one year. Determine the cost of each grade of fuel oil and the total cost.
d. The averace single fonily home unos about leon gals. of Iuel oil per year. Recently the !rice of oil went up. 5 r per sallon. How much more will a nome owner's fuel bill be per year?
9. The price of 110.6 fuel oil nas recently been decreased by \(.2 \not \subset\). If an industrial firiuses 20,450 gallons of oil per year, how mach Less will the jearls fuel bill be?

12-21 Review Exercises
Using the nrice lists for fra a and finish lumber, determine how much the following rould cost. Round off to nearest cent.

1. 17 Frame \(2 \times 3 \quad 12\)
2. 10 Frame \(2 \times 4 \quad 5\)
3. 10 Frane \(2 \times 6 \quad 20\)
4. 11 Finish \(1 \times 12 \quad 20\)
5. 15 Finisn \(1 \times 3 \quad 14\)
Q. Prane \(2 \times 10 \quad 16\)
7. 22 Firisr \(1 \times 3\) 12
3. 17 rinisn \(1 \times 6\)
Y. 35 Frame \(2 \times 6\) Is
10. 14 Finish \(1 \times 12\) 1e
11. ising the price 1 ist on pece 475 , finl the cost of this luaber order. Jales tex is \(3 \frac{1}{2} 0\). \(5-2 \times 10 \times 221\) Frame lumber 15-1× \(5 \times 121\) Finish " \(30-1 \times 4 \times 14!\) Finish \(1 \pi-2 \times 6 \times 1\) Frane "

Juo-iotal \$
Tax \(\qquad\) Oost
\(\$\)
12. Apply a \(15 \%\) discourt to this lumber order. sales tax is \(3 \frac{2}{2}\). Use price \(1 i\) se on pe. 475 . \(30-2 \times 4 \times 1\) 1 Frame 1 unber \(\ldots \ldots \ldots \ldots \ldots\)..... \(\$\) \(35-2 \times 6 \times 181\) Frame " \(42-1 \times 10 \times 131\) Finish

Sun-Total
Viscount. \(\qquad\)
Gus-Total?
Tax, \(\qquad\)
Cost 3
13. Find the cost of this lumor ordon. Bules tax is \(3 \frac{1}{2} \%\). iise the price iist on nage 479. \(54-2 \times 4 \times 17\) Frane lumber \(\qquad\) \(39-2 \times 6 \times 20\) Frame " 25-1× \(5 \times 10\) Finish : 32-1×4×12 pirish "
\(\operatorname{Sax}_{\operatorname{Tax}} \mathrm{T}\) \(\qquad\)
Dose
14. Ah mocessive cissumnis of is-2 bo Lie following lunber order. Jales tax is 34, bse price Iist on :14. 479 .
\[
75-2 \times 4 \times 12 \text { Frme luner }
\]
\(100-2 \times 6 \times 20 \mathrm{n} \quad \because\)
\(30-2 \times 10 \times 16 \quad " \quad 1\)
\(100-1 \times 4 \times 14 \quad n \quad "\)
\(50-1 \times 6 \times 10 \quad 11\)

3ub-iotal
First Discount Suh-Total Jecond Discount Sub-Total
Tax
Cost

15. Using the price list on page 483, find the cost of this order for plywood siding. sales tax is \(3 \frac{1}{2} \%\). 20 sheets, \(3 / 8\) " thick plywood \$
\(30 \quad\) ", \(5 / 8^{\prime \prime}{ }^{\prime \prime}\)
15 ", \(3 / 4^{n}{ }^{n}\)
\(25 \quad\) ", \(1 / 2 "^{\prime \prime}\)

16. Apply successive discounts of \(5-5\), a sales tax of \(3 \frac{1}{20}\), and a freight rate of 0.3027 per 100010 . of siding. The entire order weighs \(650,400 \mathrm{lbs}\). Use the price list on page 483.
350 sheets, \(3 / 4^{n}\) Fiywood ................... \({ }^{3}\)
\(420 \quad\), \(5 / 80^{\prime \prime}\)
250 ", \(3 / 8 "\) "
\(2 \% 0,1 / 2 "\)

Suob-iotal First Discount;
\(\stackrel{\$}{\$}\)


3uis-Total Second Discount. \(\qquad\)
Tab -Total
Sub-inotal Freight Charge \(\qquad\) Cost
\$
17. Using the price list on page 486 , find the cost of this order. Sales tax is \(3 \frac{1}{2} \%\).
5 Rolls of Tar Faper ....................... \(\$\)
2 Keg of Roofing Nails
17 Bundles Roof Shingles
4 Bundles Cedar Shingles
\(2-5\) Gallon Pails Hixed Cement
8 Rolls Insulation
Sub-Iotal
Tax
\(\$\)
Cost \(\$\)
18. Find the cost of this order. Use the price 1 ist on page 486 . Sales tax is \(3 \frac{1}{2} \%\) and a discount of \(5 \%\) can be applied. 10 Interior hitogany Loors \(\$\)
\& Louvered Closet ioors
\$ lhs. \(\# 6\) Finish Hails
19 Cabinet Door linges
14 Window Locks
2 ciedicine Cabinets
14 innows
Sub-Cotal s
Discount \(\$\) \(\qquad\)
unb-lotal \$
Tax

Cost 3
19. Find the cost of this order. sales tax is \(3 \frac{2}{2 \%}\) and a \(5 \%\) discount can be applied. Use vaile on page486. \(40-2 \times 4 \times 8\) Frame lumber e 8 \& per lineal ft. \(\$\)
\(20-2 \times 6 \times 12{ }^{1}\)
\("\) " \(<124\) "
" \(18-2 \times 3 \times 18\)
© \(164{ }^{\circ}\)
\(\because\)
1
\(12-1 \times 12 \times 16\).
11
© 164 " "
\(18-1 \times 6 \times 10\) "
世 \(6 \frac{1}{2} 4 n^{\prime \prime}\)
\(20-1 \times 3 \times 14\) "
\(\because\)
世214" "

\section*{2 Exterior Fine Doors}

\section*{10 Windows}

1 Picture indow

20. Deternine the cost of this erass installation. sales tax is \(3 \frac{2}{2} \%\). Use price lisc on page 491.
a - \(32 \times 32,1 / 8\) " vindow class ........... \(\%\)
\(14-14 \times 14,1 /\) s \(^{\prime \prime \prime}\)
\(12-18 \times 12,1 / 81 \quad\) "
\(6-20 \times 29,7 / 321111\)
\(12-30 \times 36,7 / 32 " \quad 1 \quad "\)
3-43x © (0, Folished Plete olass
\(2-48 \times 60\) dirrors with Stainless 3 tee
foyres
\(75 \mathrm{Ft} . \operatorname{lo} .2\) ungle Frame
79 Ft, Nindow Casine
Tuu-Total \(\qquad\)
Cost
21. Determine the cost of instaling the folowine: Sales tax is \(3 \frac{1}{2 \%}\). Labor for renoval of old glass is \(\$ 275\). \(2-3 \times 7\) Aluminum Doors with hardware.. \(\$\) 220 ft. Vindow Casing
i6 ft. Vo. 3 Angle Frame
33/4 rt. Threshold
\(2-51 \times 68\) Folisher Plate flass
\(4-30 \times 30\) rolished dire Class
\(३\)
Use che rollowine supply list to to problems 22 and 23. Jupply List for Joo
dinounl Ordered
for Job
120
120
29
140
165
60
35
140

90

70

Description of Itens \(\dot{2}^{\prime \prime}\) Copper Elbows Code io. of Ilen 2ஷ1 201
i" Conper Couplings \(\quad 2 C 1\) .45

\(1 \mathrm{D}_{4}\)
 .72
\(\frac{1}{2} \times 3 / \varepsilon\) Copper Zloows
\(3 F 5\) ..... \(\$ 0\)
\(\frac{1}{2} \times 3 / 0\) Coprer Tees
6 Fl ..... 71
\(\frac{1}{2} \times \frac{1}{4}\) Copper Iees
105 ..... 58

09
\(4 "\) Copper Elbows ..... 3 Hi 2
Unit Frice(eacn)\(\$ .64\)边 Copper Tees 22137
4 " Coper Tees ..... 2 H 311
" Copper Counlings \(1 \mathrm{~J} / 4\) ..... \(.0 t\)
22.

\[
3 F 5 \quad 1 / 15
\]
\(211 \quad 1 / 10\)
\(201 \quad 2 / 7\)
\(2 \mathrm{H} 3 \quad 2 / 3\)
\(1 G 5 \quad 1 / 7\)
2B1 5/12
\(1 \mathrm{~J}_{4} \quad 2 / 7\)
Jub-Totel 8
\(3 \frac{14}{2 \%}\) Tax 3 \(\qquad\)
vist ث
23.

\(6 \mathrm{Fl} \quad 1 / 12\)
\(\$\)
\(3 \mathrm{H} 2 \quad 2 / 7\)
\(1 D 4 \quad 3 / 7\)
\(2 \mathrm{il} \quad 3 / 10\)
\(231 \quad 7 / 12\)
\(1 \mathrm{~J} 4 \quad 4 / 7\)
\(201 \quad 3 / 7\)
(3u)-Icta? \(\$\)
5: Riscount \(\qquad\)
Suu-Totel
3妾原 Tay
\(\psi\)
Vose \(\$\)
24. Using the list prices on page 505, decernine the cost of this order for chain. A \(37 \frac{1}{2} \%\) discount should be applied and a sales tax of \(3 \frac{1}{2} \%\).

Coddle loo. Limber of Chains Total Feet Fri ce Per Amount Purchased

Lineal FL.
\(13103 \quad 30\)
\(\stackrel{\rightharpoonup}{\phi}\)
\(80130 \quad 14\)
\(18083 \quad 11\)
28410 8
Sui) -Total Discount \(\$\) \(\qquad\)
Sub-Iotal
Tax


Cost \(\$\)
25. Using the price list on page 505, confute the cost of this order for chain. Bales tax is \(3 \frac{1}{2}\), and a discount or 42 ki can be ambled.

Code No. lumber of Jinns total Feet Price Per Amount Purchaser

25610
15
25510 12

80329 8

00752 15

00746 20

50297 25
\(\ddot{\psi} \quad \dot{\psi}\)

Jub-iotal Tissccunc


Suh-Tovel Tax
 Cost
\$

In problems 26 and 27, decermine tie incred se or decrease for each tax source, and the total increase or decrease. 26. Bource Nov. 1964 Nov. 1965 . Increase or notor Uarrier Road Tax \(\$ \quad 26,742.19 \quad 16,488.98\) Decrease

Sigaretue Tax
\$93,462.22 983,077.90
Sorp. Business Tax
1,200,307.21 1,020,774.08
\(\stackrel{\$}{p}\)

Totel Increase or Lecrease \(?\)
27.

Source
Apr. 1963
Apr. 1964
Incre? se or Decrease
Innerivance Tax
\[
\$ 1,207,473.12 \quad \$ 1,292,400.05
\]

Unincorp. Bus. Tar \(252,007.70 \quad 250,789.98\)
nailroads
1,943.11
\(1,709.72\)
Conn. Listate Tax
98,40̈3.29
101,067.50
Inisurance Cos.
621,927.21
62,0ङ2.72
Total Increase or Decrease 3

Do proislems 29 and \(z 5\) using tie rates on page 514 , and 515. 23. The Grejhound Bus ©o. had a yearly income of 939,400 . Compute hreir unincorporater mininess tax.
29. The Vielteaulv rechine Co. nenuroctures Industrial machinery. Dompute their unincorporyted business tax if sales were \(.720,300\) for a year.
Using the electric rate schedule on rage 522 , ievermine what a customer's bill is if the nonuhly Kif is: 30. 185 KB H 33. 15535. 295
Using the billing Pormulas on pege 526, determine the cost of usine the following amounts of electricity:
36. 22 KIJH
39. 53 KIH
37. 322 Ki K
40. 195 KiH
38. 122 KiH
41. \(210 \mathrm{k} / \mathrm{Hi}\)
42. Complete the folloving tavle of rate reductions. Express per cents to noarest tenth. The per cent decrease is based on the old rate.
\(K!1 H\) Used
Per vionth Old Rate lew Rate
\begin{tabular}{llr}
200 & 7.13 & 7.09 \\
250 & 3.33 & 8.20 \\
300 & 9.53 & 9.28 \\
350 & 10.73 & 10.38 \\
400 & 11.93 & 11.47 \\
450 & 13.13 & 12.50 \\
500 & 14.33 & 13.86 \\
600 & 16.53 & 16.06 \\
700 & 18.73 & 15.28 \\
300 & 20.93 & 20.53
\end{tabular}

Amount of Decrease

Fer Uent Decrease

Using the gas rates on page 530 , compute the following gas bills.
43. Dial readings are 7030 and 7051.
44. Dial readings are 1908 and 2033.
45. Dial readings are 2079 and 2087.
40. Dial readings are 0372 and 0399.
47. The dial readings on a gas deter were 2025 at the beginning of a month. If 1900 of of gas is used during the month, what are the dial readings at the end of the month?
48. At the end of June, a gas meter's dials read 3104. What did the dials read on June 1 if 4200 cf of gas was used during the month?

Use the price list on page 534 , for problems 49 and 50.
49. in anartinert house required 3450 gallons of vo. 2 fuel oil for heating. Compute tie oil bill.
50. A school used \(9 f, 479\) gallons of fuel oil during a year. what was the cost of oil?```

