Scores (x)	Frequency (f)	f x
1	6	6
2	10	20
3	11	33
4	9	36
5	3	15
6	1	6
	Σ f =40	Σ fx = 116

$$\frac{\sum fx}{\sum f},$$

"True, we have encouraged you to use your imagination, but not in Math."

"Add the numbers, divide by how many numbers you've added and there you have it-the average amount of minutes you sleep in class each day."
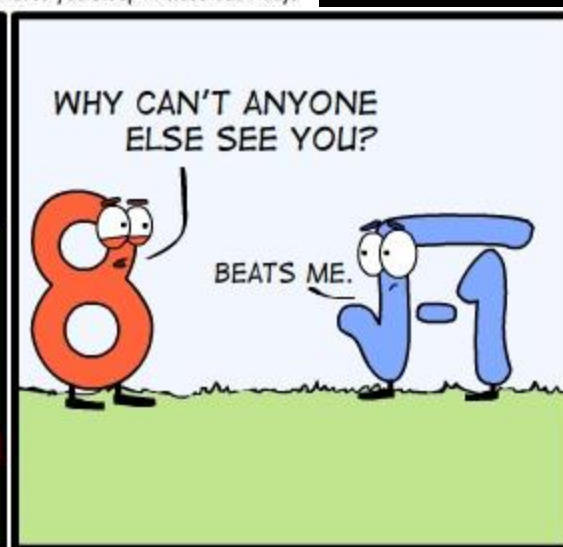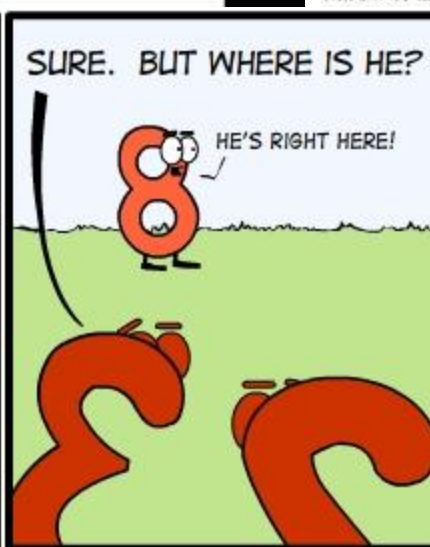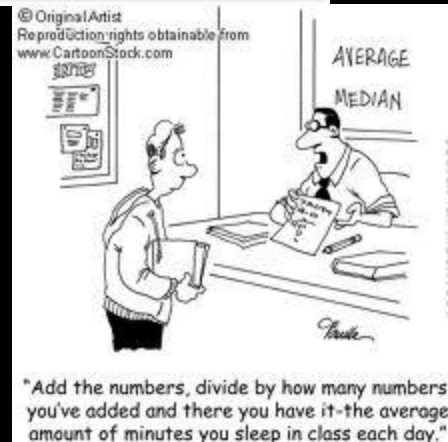
6.2 – Averages and Frequency Distribution

What will we learn? (Objectives)

① Make and Interpret Frequency Distribution

② Find the Mean of Grouped Data.

For a class of 25 students the instructor records the following grades:

76	91	71	83	97	87	77	88
93	77	93	81	63	79	74	77
76	97	87	89	68	90	84	88
91							

It is difficult to make sense of all these numbers as they appear here. But the instructor can arrange the scores into several smaller groups, called **class intervals**. The word *class* means a special category.

6.2 – Averages and Frequency Distribution

The scores can be grouped into class intervals of 5, such as 60-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, and 95-99. Each class interval has an odd number of scores. The *middle score* of each interval is a **class midpoint**.
The instructor can now *tally* the number of scores that fall into each class interval to get a **class frequency**, the number of scores in each class interval.

6.2 – Averages and Frequency Distribution

A compilation of class intervals, midpoints, tallies, and class frequencies is called a **grouped frequency distribution**.

6.2 – Averages and Frequency Distribution

Frequency Distribution of 25 Scores			
Class Interval	Midpoint	Tally	Class Frequency
60-64	62	/	1
65-69	67	/	1
70-74	72	//	2
75-79	77	ḦḦ /	6
80-84	82	///	3
85-89	87	ḦḦ	5
90-94	92	ḦḦ	5
95-99	97	//	2

6.2 – Averages and Frequency Distribution

Frequency Distribution of 25 Scores			
Class Interval	Midpoint	Tally	Class Frequency
60-64	62	/	1
65-69	67	/	1
70-74	72	//	2
75-79	77	卌 /	6
80-84	82	///	3
85-89	87	卌	5
90-94	92	卌	5
95-99	97	//	2

Frequency Distribution of 25 Scores			
Class Interval	Midpoint	Tally	Class Frequency
60-64	62	/	1
65-69	67	/	1
70-74	72	//	2
75-79	77	~~HH~~ /	6
80-84	82	///	3
85-89	87	~~HH~~	5
90-94	92	~~HH~~	5
95-99	97	//	2

How many students scored 70 or above?

2 + 6 + 3 + 5 + 5 + 2 + 2 = ?

23 Students scored 70 or above

Frequency Distribution of 25 Scores			
Class Interval	Midpoint	Tally	Class Frequency
60-64	62	/	1
65-69	67	/	1
70-74	72	//	2
75-79	77	⊬⊬ /	6
80-84	82	///	3
85-89	87	⊬⊬	5
90-94	92	⊬⊬	5
95-99	97	//	2

How many students made A's (90 or higher)?

5 + 2 = ?

7 students made A's (90 or higher)?

Frequency Distribution of 25 Scores			
Class Interval	Midpoint	Tally	Class Frequency
60-64	62	I	1
65-69	67	I	1
70-74	72	II	2
75-79	77	̶H̶H̶ I	6
80-84	82	III	3
85-89	87	̶H̶H̶	5
90-94	92	̶H̶H̶	5
95-99	97	II	2

What percent of the total grades were A's?

7 A's ÷ 25 Total = ?

28% were A's.

Frequency Distribution of 25 Scores			
Class Interval	Midpoint	Tally	Class Frequency
60-64	62	/	1
65-69	67	/	1
70-74	72	//	2
75-79	77	̶H̶H̶ /	6
80-84	82	///	3
85-89	87	̶H̶H̶	5
90-94	92	̶H̶H̶	5
95-99	97	//	2

Were the students prepared for the test?

In general, yes, the students were prepared for the test.

Frequency Distribution of 25 Scores			
Class Interval	Midpoint	Tally	Class Frequency
60-64	62	/	1
65-69	67	/	1
70-74	72	//	2
75-79	77	̶H̶H̶ /	6
80-84	82	///	3
85-89	87	̶H̶H̶	5
90-94	92	̶H̶H̶	5
95-99	97	//	2

What was the ratio of A's(90) to F's (60)?

7 A's to 2 F's

The ratio is $\dfrac{7}{2}$.

Students in a history class reported their credit-hour loads as shows. Make a grouped frequency distribution of their credit hours. Credit hours carried: 3, 12, 15, 3, 6, 6, 12, 9, 12, 9, 6, 3, 12, 18, 6, 9.

6.2 – Averages and Frequency Distribution

To establish a class interval with an easy-to-find midpoint, use an odd number of points in the interval. Here, an interval of 5 is used; that is 0-4 contains five possibilities: 0, 1, 2, 3, and 4. The middle number is the midpoint, 2. Make a tally mark for each time the credit hours of a students falls in the interval. Then count the tally marks to get the class frequency.

6.2 – Averages and Frequency Distribution

Frequency Distribution of Credit-Hour Loads			
Class Interval	Midpoint	Tally	Class Frequency
0-4	2		
5-9	7		
10-14	12		
15-19	17		

6.2 – Averages and Frequency Distribution

When data are grouped, it may be desirable to find the mean of the grouped data. To do this we extend our frequency distribution.

6.2 – Averages and Frequency Distribution

<u>To find the mean of grouped data:</u>
1. Make a frequency distribution.
2. Find the products of the midpoint of the interval and the frequency for each interval for all intervals.
3. Find the sum of the frequencies.
4. Find the sum of products.
5. Divide the sum of the products by the sum of the frequencies.

Find the grouped mean to the nearest whole of the data in the frequency distribution table on the next slide.

Frequency Distribution of Credit-Hour Loads			
Class Interval	Midpoint	Tally	Class Frequency
0-4	2	///	3
5-9	7	//// //	7
10-14	12	////	4
15-19	17	////	2

6.2 – Averages and Frequency Distribution

Frequency Distribution of Credit-Hour Loads			
Class Interval	Midpoint	Class Frequency	Product
0-4	2	3	
5-9	7	7	
10-14	12	4	
15-19	17	2	

6.2 – Averages and Frequency Distribution

Sum of Frequencies = 16
Sum of Products = 137

Divide the SOP by the SOF
137 ÷ 16
8.5625

Round to nearest whole number
9

6.2 – Averages and Frequency Distribution

Assignment

Pages 273-274
#'s 41 – 62 & 67-69 All