Ⓒ Ⓘ Ⓡ Ⓒ Ⓤ Ⓜ Ⓕ Ⓔ Ⓡ Ⓔ Ⓝ Ⓒ Ⓔ

CIRCUMFERENCE: THE _____**DISTANCE**_____ AROUND THE EDGE OF A _____**CIRCLE**_____ .

THE _____**PERIMETER**_____ OF A _____**CIRCLE**_____ .

★

Twinkle, twinkle little star,
Circumference equals $2\pi r$.

★

★

C I R C U M F E R E N C E

DIAMETER   12 in

RADIUS 6 in
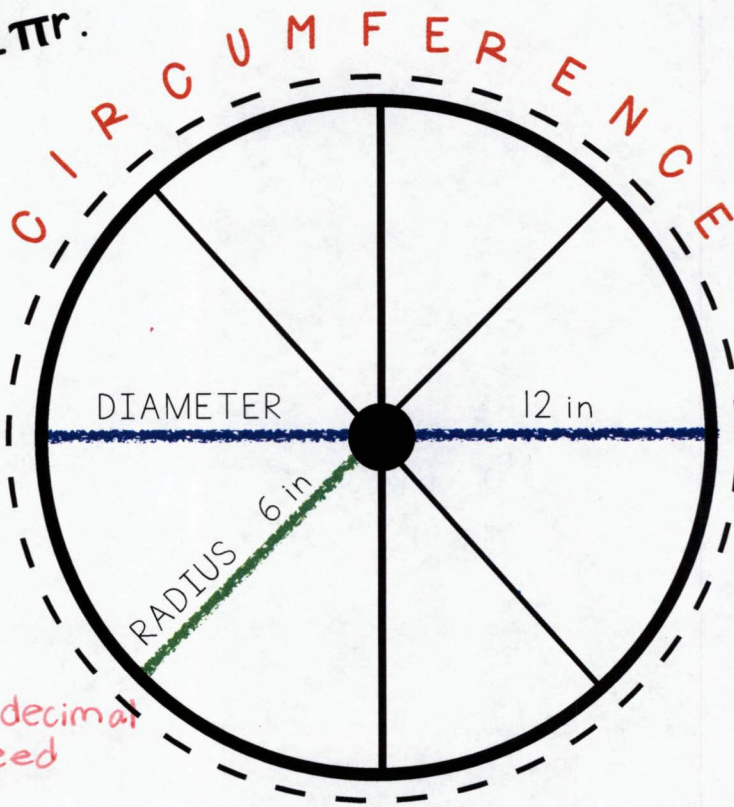
FORMULAS

$$C = 2\pi r$$

OR

$$C = \pi d$$

*use 3.14 for π ▸ for a decimal
* or $\frac{22}{7}$ when you need a fraction

PRACTICE USING THE DIMENSIONS OF THE WHEEL ABOVE:

$$C = 2\pi r$$

$$C = 2(3.14)(6)$$

$$C = 37.68 \text{ in}$$

$$C = \pi d$$

$$C = 3.14(12)$$

$$C = 37.68 \text{ in}$$

Circumference of a Circle

Name: Answer Key

Guided Practice

Find the missing measurements.

1. d = 4 in
   r = __2 in__
   C = __4π in__

2. d = __12 cm__
   r = 6 cm
   C = __12π cm__

3. d = 8 ft
   r = __4 ft__
   C = __8π ft__

4. d = __18 mm__
   r = 9 mm
   C = __18π mm__

- -

Independent Practice

Find the missing measurements.

5. d = 10 in
   r = __5 in__
   C = __10π in__

6. d = 70 in
   r = __35 in__
   C = __70π in__

7. d = __42 cm__
   r = 21 cm
   C = __42π cm__

8. d = 16 in
   r = __8 in__
   C = __16π in__

9. d = __28 cm__
   r = 14 cm
   C = __28π cm__

10. d = 122 in
    r = __61 in__
    C = __122π in__

11. d = __40 cm__
    r = 20 cm
    C = __40π cm__

12. d = __198 cm__
    r = 99 cm
    C = __198π cm__

13. Ana and her friends went to the carnival. While looking at the ferris wheel, they estimated the distance from one side of the ferris wheel to the other side to be about 40 feet. If their estimation is correct, what would the distance around the ferris wheel be?_____**40π ft**_____

14. Jon is getting new tires for his bicycle. Jon wandered what the distance around one tire was. He measured the radius, and found it to be 7 inces. What is the circumference of his tire?_____**14π in**_____

15. Phillip found the stump of a perfectly round tree. If the diameter of that stump was 25 cm, what is the circumference of the stump?_____**25π cm**_____

MODULE 9 Circumference, Area, and Volume

LESSON 9-1

Practice and Problem Solving: A/B

1. 18.84 in.
2. 56.52 cm
3. 4.71 ft
4. 25.12 m
5. 37.68 ft
6. 12.56 yd
7. 43.96 in.
8. 26.26 cm
9. 7.85 m
10. 66 ft
11. 132 mm
12. 88 cm

Practice and Problem Solving: C

1. 3.93 in.
2. 11.30 yd
3. 13.19 mm
4. 2.36 cm
5. 4.19 ft
6. 3.14 in.
7. 3.5 in.
8. 18 yd
9. 9.55 in.
10. 16

Practice and Problem Solving: D

1. 50.2 m
2. 62.8 in.
3. 9.4 ft
4. 22.0 mm
5. 18.8 cm

6. 12.6 yd
7. 110 yd
8. 28.3 in.
9. 125.7 cm

Reteach

1. 9; 28.26; 28.3
2. 13; 26; 81.64; 81.6
3. 40.8 cm
4. 31.4 ft
5. 9.4 in.

Reading Strategies

1. $C = 2\pi r$
2. $C = \pi d$
3. It is twice as long.
4. Sample answer: 3.14 or $\dfrac{22}{7}$
5. The circumference of a circle is the distance around a circle. It is given in units. The perimeter of a polygon is the distance around a polygon. It is given in units.

Success for English Learners

1. the length of the diameter.
2. 18 cm
3. Take half of the diameter, 17 ft, and substitute that value into the formula for r.
4. $d = 10$ so $r = 5$

$C = 2\pi r$ $C = \pi d$
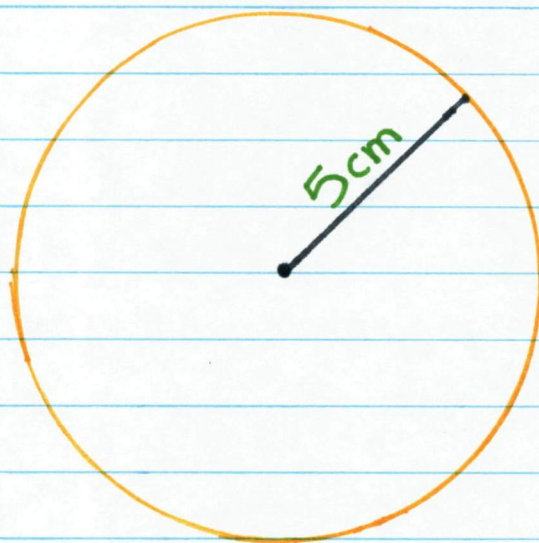 $= 2 \bullet 3.14 \bullet 5$ $= 3.14 \bullet 10$
   $= 31.4$ $= 31.4$

To find the **Area of a Circle**
use the following formula:

$$Area = \pi \cdot radius^2$$

$$A = \pi r^2$$

Example: Find the area of the circle
using 3.14 for π

[Don't forget
order of
operations!]

5cm

$$A = \pi r^2$$
$$A = 3.14 \cdot 5^2$$
$$A = 3.14 \cdot 25$$

$$A = 78.5 \; cm^2 \; \leftarrow \; answer \; is \; in$$
units squared

LESSON 9-2

Practice and Problem Solving: A/B

1. A
2. B
3. 50.2 in.^{2}
4. 153.9 m^2
5. 254.3 yd^2
6. π cm^2
7. 54.76π cm^2
8. 25π in.^{2}
9. 121π mm^2
10. 6.25π ft^2
11. 9π m^2

Practice and Problem Solving: C

1. 1.2544π cm^2; 3.9 cm^2
2. 0.0625π in.^{2}; 0.2 in^2
3. 0.16π in.^{2}; 0.5 in^2
4. 54.76π cm^2; 171.9 cm^2
5. 36,864π yd^2; 115,753 yd^2
6. 0.49π m^2; 1.5 m^2
7. $A = \pi$
8. $A = 6.25\pi$
9. $A = 16\pi$
10. The area of the 10-inch chocolate cake is 28.26 in^2 larger than the area of the vanilla cake.
11. The square's area is 1.935 m^2 larger than the circle's area.

Practice and Problem Solving: D

1. 19.6 cm^2
2. 379.9 in.^{2}
3. 28.3 mm^2
4. 78.5 in^2
5. 132.7 cm^2
6. 162.8 yd^2

7. 36π cm^2
8. 90.25π in^2
9. 12.25π yd^2
10. 121π yd^2
11. 9π m^2
12. 36π ft^2

Reteach

1. 64π in^2
2. 3600π m^2
3. 56.7 in.^{2}
4. 314 yd^2
5. 452.2 m^2
6. 66.4 cm^2

Reading Strategies

1. 49π cm^2; 153.86 cm^2
2. 6.25π yd^2; 19.625 yd^2

Success for English Learners

1. 10.24π mm^2; 32.2 mm^2
2. 90.25π yd^2; 283.4 yd^2

LESSON 9-3

Practice and Problem Solving: A/B

Answers may vary for Exercises 1 and 2.

1. 21 ft^2
2. 24 ft^2
3. 90 ft^2
4. 208 m^2
5. 140 ft^2
6. 23.13 m^2
7. 100 ft^2
8. 33.28 m^2
9. 57.12 m^2

○ Circumference / Area

1) Circumference = π x 6 = 18.8cm (to 1d.p)

   Area = π x 3² = 28.3cm² (to 1d.p)

2) Circumference = π x 9 = 28.3cm (to 1d.p)

   Area = π x 4.5² = 63.6cm² (to 1d.p)

3) Circumference = π x 8 = 25.1cm (to 1d.p)

   Area = π x 4² = 50.3cm² (to 1d.p)

4) Circumference = π x 10 = 31.4cm (to 1d.p)

   Area = π x 5² = 78.5cm² (to 1d.p)

5) d = 25.1 ÷ π = 8 (nearest whole number)

6) d = 37.7 ÷ π, ∴ r = (37.7 ÷ π) ÷ 2 = 6cm (nearest whole number)

7) r² = 153.9 ÷ π, ∴ r = √(153.9 ÷ π) = 7cm (nearest whole number)

8) r² = 113.1 ÷ π, ∴ r = √(113.1 ÷ π) and d = 2 x √(113.1 ÷ π) = 12cm (nearest whole number)

9) Perimeter = ½ (π x 10) + 10 = 25.7cm (to 1d.p)

   Area = ½(π x 5²) = 39.3cm² (to 1d.p)

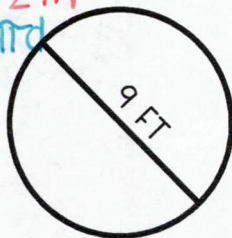## Circles Exit Slip #1
Find Circumference

Name: _____
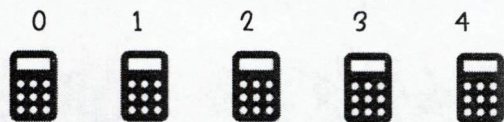
$C = 2\pi r$
$C = \pi d$

9 FT

9π
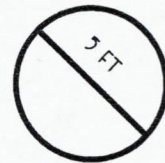IN TERMS OF PI

28.26
IN DECIMAL FORM

Show me your Calculator:

0   1   2   3   4

Circles Bell Work Slip #3
Find Circumference

Name: _____

$C = 2\pi r$
$C = \pi d$

3 FT   5 FT

6π 5π
IN TERMS OF PI   IN TERMS OF PI

18.84 15.7
IN DECIMAL FORM   IN DECIMAL FORM

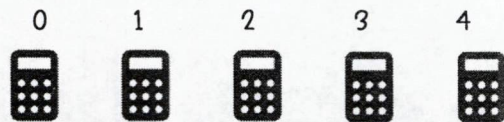## Circles Exit Slip #2
Find Area

Name: _____

$A = \pi r^2$

8 FT
4 FT
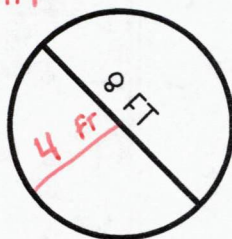
16π FT
IN TERMS OF PI

50.24 FT
IN DECIMAL FORM

Show me your Calculator:

0   1   2   3   4

Squaring Integers
Bell Work Slip #2

Name: _____
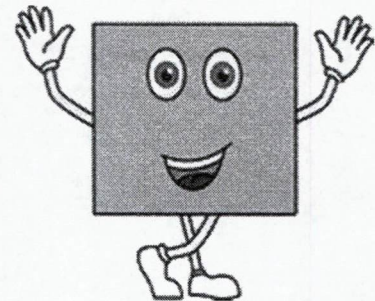
Find the square of each of the following integers:

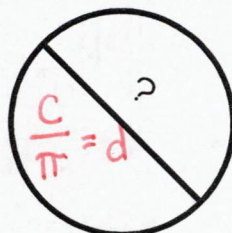$2^2 = \underline{4}$

$4^2 = \underline{16}$

$6^2 = \underline{36}$

$7^2 = \underline{49}$

Circles Exit Slip #3
Find Diameter

Name: _____
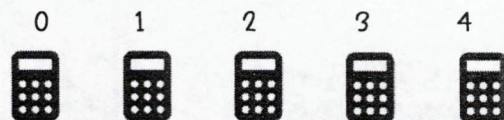
$\dfrac{C}{\pi} = d$?

FIND THE DIAMETER
OF A CIRCLE WITH
A CIRCUMFERENCE
OF **15.7**

5

Show me your Calculator:

0   1   2   3   4

Circles Bell Work Slip #1
What do you know about pi?

Name: _____

3.14

$\dfrac{circumference}{diameter} = 3.14$

$\pi = \dfrac{C}{d}$

$\dfrac{22}{7}$

WHICH SIZE IS BEST?

Pizzas come in a variety of different sizes. We buy a slice or two for lunch or take home a whole pie for dinner. How much are you really paying for your pizza? What is the best value?

To find the area of a circular object, we use the formula

$A = \pi r^2$

Here we have three sizes and the average price for each. Find the area of each pie and see how much each one costs per square inch!
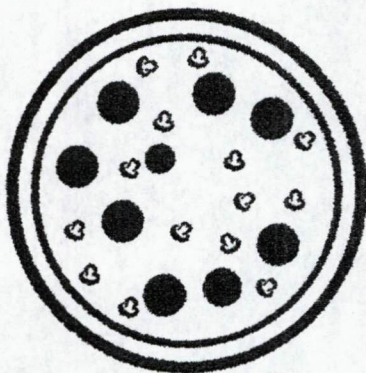
16 inch...............$14

radius = __8"__

area = __200.96 sq"__

price per square inch
$__7¢__
(0.069)
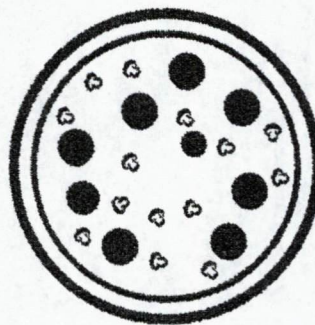
14 inch...............$12

radius = __7"__

area = __153.86 sq"__

price per square inch
$__8¢__
(0.078)
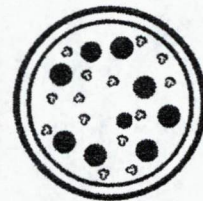
8 inch...............$7

radius = __4"__

area = __50.24 sq"__

price per square inch
$__14¢__
(0.139)

A single slice has an area of 25 square inches and costs $2.50. How many single slices can you get for the price of a 16 inch pie?

$14 \div 2.50 = 5.6$ (5 slices)

Which size pie is the best deal per square inch?

the 16"

America's favorite size pie is 14 inches and it is cut into six slices. Is a slice from a 14 inch pie the same size as a slice from a 16 inch pie, which has 8 slices? similar

$153.86 \div 6 = 25.64$ $200.96 \div 8 = 25.12$

The world's largest pizza is 131 feet in diameter. What is the area of this gigantic pie?

$131 \div 2 = 65.5$ $3.14(65.5)^2 = 13,471$ feet²

FUN FACT!

Did you know that if you stand in front of the mirror with the number for π, 3.14, it spells out PIE!

3.14   PIE

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