8.1 Circles and Circumference Teacher Notes

POD

1) $2(3 + 7)^2 - 3 \cdot 4$ Answer: 188

2) $3(1 + 8)^2$ Answer: 243

Objective: Students will find the circumference of a circle and understand the concept of pi

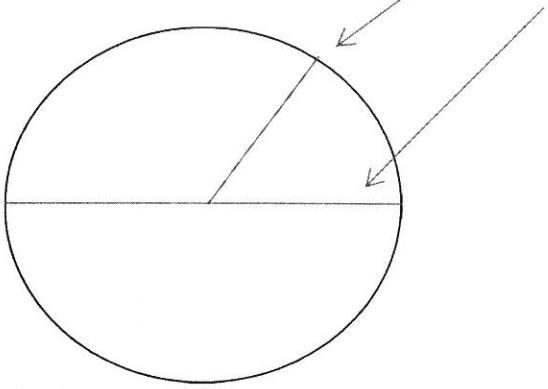
Essential Question: How can you find the circumference of a circle?

Vocabulary:

Circle is the set of all points in a plane that are the same distance from a point called the center.

Radius is the distance from the center to any point on the circle

Diameter is the distance across the circle through the center



Algebra

Diameter: d = 2r **Radius: r = $\frac{d}{2}$**

1) Find diameter of a circle is 20 feet. Find the radius. r = 20/2 therefore, radius = 10 feet	2) The radius of a circle is 7 meters. Find the Diameter. D = 2(7) therefore, diameter = 14 meters

Circumference is the distance around the circle (the perimeter)

Algebra

Circumference = πd OR Circumference = $2r\pi$

Use 3.14 for π

3) Find the circumference of a circle whose radius is 6 inches $2 \cdot 6 \cdot 3.14 = 37.68$ inches	4) Find the circumference of a circle whose diameter is 28 mm. $28 \cdot 3.14 = 87.92$ mm

5) If the circumference of the roll of tape is 31.4 inches and you use 3.14 for pi, what is the diameter?

21.98 = 3.14 d

D = 7 inches

MAIN CONCEPT: circumference is about 3 times as large as the diameter (pi)

Semicircle is one-half of a circle.

Steps to Solve:

1.) Solve for circumference($c = d\pi$ or $c = 2r\pi$)

2.) Divide your answer in half

6) The diameter of a **semicircle** is 8 cm. What is the circumference of the semicircle?

$8 \cdot 3.14 = 25.12$

$25.12 \div 2 = 12.56$ cm

7) The radius of a **semicircle** is 15 inches. What is the circumference of the semicircle?

$2 \cdot 15 \cdot 3.14 = 94.2$

$94.2 \div 2 = 47.1$ in.

8.2 Perimeters of Composite Figures Teacher Notes

POD

1) If the diameter of a semicircle is 9 feet, what is the circumference?
   (9 x 3.14) ÷ 2 = 14.13 feet
2) If the radius of a semicircle is 3 feet, what is the circumference?
   2 x 3 x 3.14 ÷ 2 = 9.42

Objective: Students will find the perimeter of composite figures

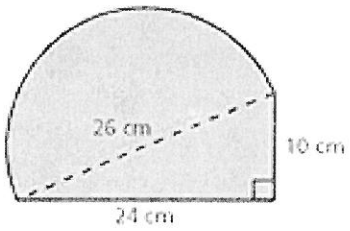
Essential Question: How can you find the perimeter of a composite figure?

Vocabulary:

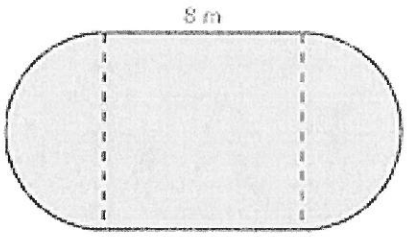
Composite Figure: is made up of other figures such as triangles, squares, rectangles, semicircles, and other two-dimensional figures.

On Your Own

3. The figure is made up of a semicircle and a triangle. Find the perimeter.



4. The figure is made up of a square and two semicircles. Find the perimeter.

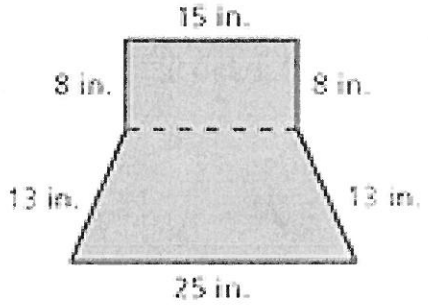


3.) 26 x 3.14 ÷ 2 = 40.82 cm for Semicircle

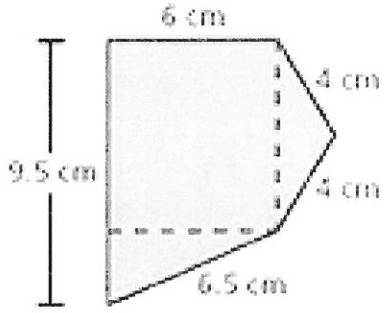
24 +10 = 34 cm for the exposed Portion of the triangle
Total: 40.82 + 34 = 74.82 cm

4) The two semicircles make up a circle so solve for the circumference of a circle.
8 x 3.14 = 25.12 m
then solve for the exposed part of the square:
8+8=16
Total: 25.12 + 16 = 41.12 m

10.



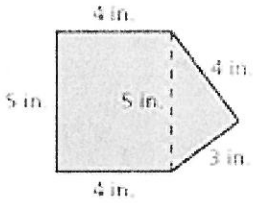
11.



10) find the perimeter of rectangle
15+8+8 = 31 in.
Find the perimeter of the trapezoid
13+13+25 = 51 in.
Total: 31+ 51 = 82 in.

11) find the permeter of the exposed square
6+6 = 12
find the perimeter of one of triangles
4 + 4 = 8
find the perimeter of the 2nd triangle
3.5 + 6.5 = 10
Total: 12 + 8 + 10 = 30 cm

12. ERROR ANALYSIS Describe and correct the error in finding the perimeter of the figure.



✗ Perimeter = 4 + 3 + 4 + 5 + 4 + 5
= 25 in.

12.) The length of rectangle was counted twice. Perimeter = 4+3+4+5+4 = 20 in.

Section 8.3: Area of Circles
Teacher Notes

POD:

1.) The perimeter of a rectangle is 60 ft. If the width is 11 ft, what is the area?

$= 209\ ft^2$

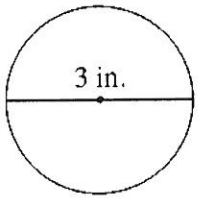
Objective: Students will be able to find the areas of circles and semicircles.

Formulas:

- Area of a Circle: $A = \pi r^2$

Examples:

Find the area of the circle. Round your answer to the nearest tenth.

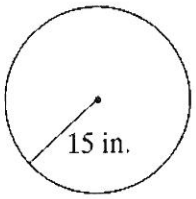
1.) 

$r = 3/2 = 1.5$

$A = \pi r^2$

$= \pi(1.5)^2$

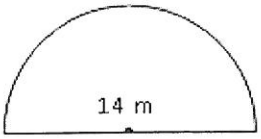
$\boxed{A = 7.1\ in^2}$

2.) 

$A = \pi r^2$

$= \pi(15)^2$

$\boxed{A = 706.5\ in^2}$

3.) 

$A = \pi r^2$

$= \pi(7)^2$

$A = \frac{153.86\ in^2}{2}$

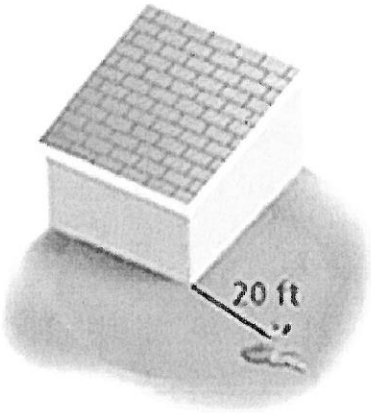
$\boxed{76.93\ in^2}$

4.) A dog is leashed to the corner of a house. How much running area does the dog have? Show your work and explain your answer.

$= \frac{3}{4}(\pi)(20^2)$

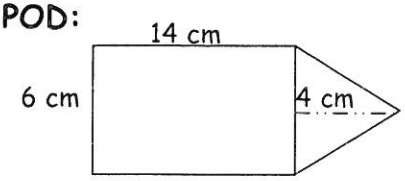
$\frac{3}{4}(\pi)(400)$

942 ft²



Section 8.4: Area of Composite Figures
Teacher Notes

POD:



Rectangle = 84 **Triangle = 12** **Combined = 96cm^2**

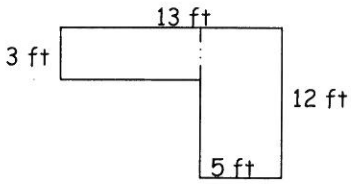
Objective: Students will be able to find areas of composite figures by separating them into familiar figures and solve real-life problems.

Steps for Finding the Area of an Irregular Figure:

1.) Break the irregular figure into figures that you know.
2.) Find the area of each smaller figure.
3.) Find the total area.

Examples:

1.)



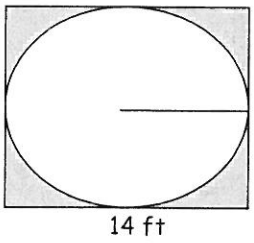
(Draw line to make two rectangles)

Rectangle: $3 \cdot 8 = 24$

Rectangle: $12 \cdot 5 = 60$

Total area: (ADD!)
$24 + 60 =$ **84ft^2**

2.)

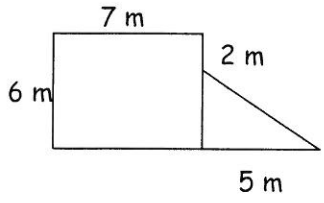


Square: $14 \cdot 14 = 196$

Circle: $3.14 \cdot 7^2 = 153.86$

Shaded area: (Subtract!)
$196 - 153.86 =$ **42.14ft^2**

3.)

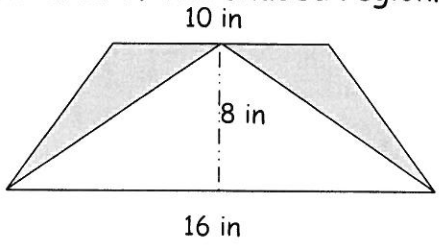


Rectangle: $7 \cdot 6 = 42$

Triangle: $\frac{1}{2} \cdot 5 \cdot 4 = 10$

Shaded area: (Add!)
$42 + 10 =$ **52m^2**

4.) Find area of the shaded region.

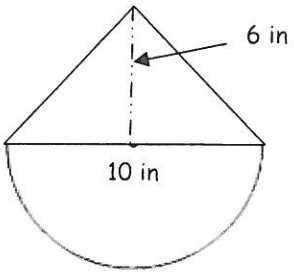


Trapezoid: $\frac{1}{2} \cdot 8 \cdot (16 + 10) = 104$

Triangle: $\frac{1}{2} \cdot 8 \cdot 16 = 64$

Shaded area: (Subtract!)
$104 - 64 =$ **40in^2**

5.)



Triangle:

$\frac{1}{2} \cdot 6 \cdot 10$

30

Semi-Circle:

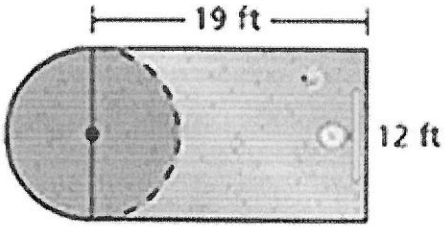
$3.14 \cdot 5^2 = 78.5$

(Cut in half!) = 39.25

Total area: (ADD!)

30 + 39.25 = **69.25in^2**

6.) **Find the area of the basketball court, shown below.**



Rectangle:

$19 \cdot 12 = 228$

Semi-Circle:

$\frac{1}{2} \cdot 3.14 \cdot 6^2 = 56.52$

Total area: (ADD!)

228 + 56.52 = **284.52ft^2**