

COMBINED SHAPES

LEARNING OBJECTIVE: We will solve composite figure problems involving areas with circular regions. (G7M6L22)

ACTIVATING PRIOR KNOWLEDGE

We can find the area of parts of circles

Find the area of the shaded region of a circle that has a radius of 9 inches.

$A = \frac{1}{2} \pi r^2$

$A_{cr} = \pi r^2$

$r^2 = \frac{81}{2} = 40.5 \pi$

127.17 in^2

Find the area of the shaded region of a circle that has a diameter of 12 inches.

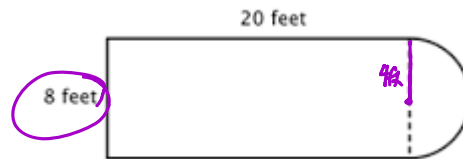
$A = \frac{1}{4} \pi r^2$

$9 \pi \text{ in}^2$

28.27 in^2

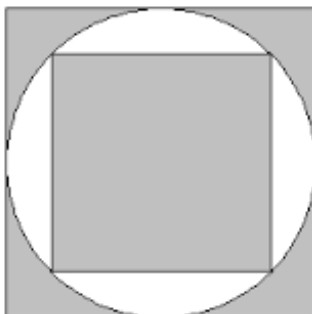
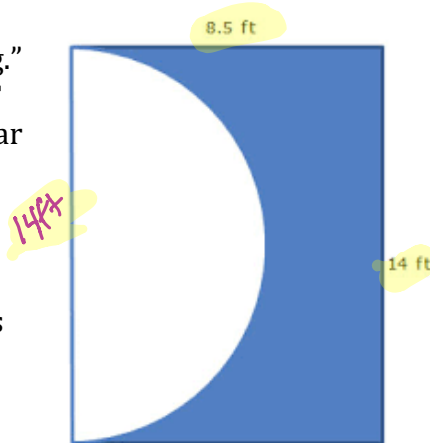
CONCEPT DEVELOPMENT

You can find the area of composite figures with circular regions. When a circular region is added to a rectangle, simply add the area of the circle region to the area of the rectangle.



Sometimes the circular regions might be "missing." When a region is missing, you need to SUBTRACT the area of the circular region from the rectangular region.

$(8.5 \times 14) - \frac{1}{2} \pi (7)^2$



Other times, square regions might be inside circular regions. (see left)

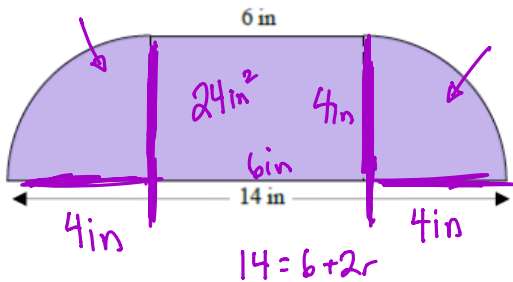
$A_{big \square} - A_{cir} + A_{small \square}$

GUIDED PRACTICE

Steps for Finding the Area of a Shaded Region

1. Study the image carefully, and determine what shapes make up the composite shape.
2. Determine if you are adding or subtracting area to find the shaded region.
3. Use 3.14 for Pi when calculating areas involving circles (or regions of circles).

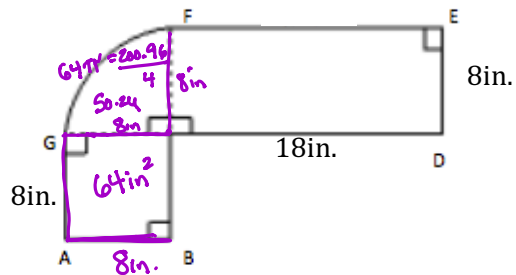
Find the area of the figure below. Use 3.14 to approximate π .



$$\frac{1}{2} \pi r^2 = 8\pi + 24$$

$$25.12 + 24 = \boxed{49.12 \text{ in.}^2}$$

Find the area of the figure below. Use 3.14 to approximate π .



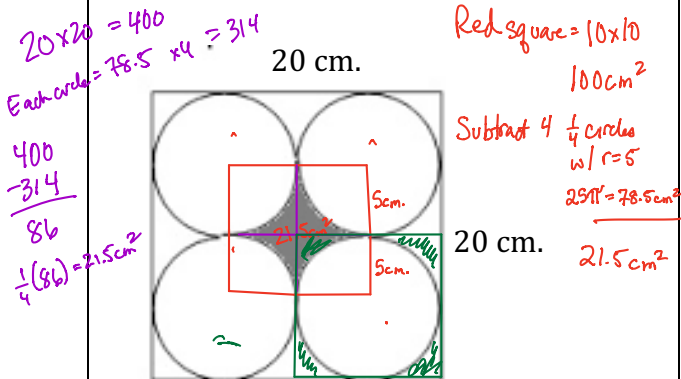
$$A_{sq.} = 8 \times 8 = 64 \text{ in.}^2$$

$$A_{\frac{1}{4} \text{ cir}} = \frac{1}{4} \pi (8)^2 = 16\pi = 50.24 \text{ in.}^2$$

$$A_{\text{rect}} = 8 \times 18 = 144 \text{ in.}^2$$

$$\boxed{258.24 \text{ in.}^2}$$

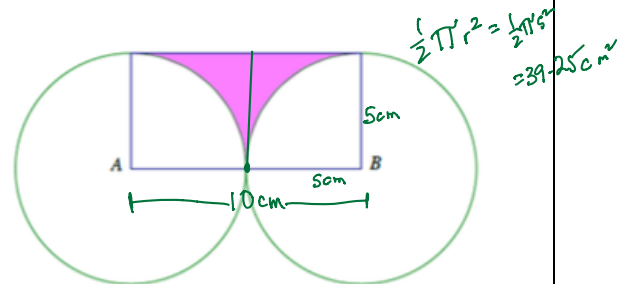
Find the area of the shaded region. Use 3.14 to approximate π .



$20 \times 20 = 400$
 Each circle = $78.5 \times 4 = 314$
 $400 - 314 = 86$
 $\frac{1}{4}(86) = 21.5 \text{ cm}^2$

Red square = $10 \times 10 = 100 \text{ cm}^2$
 Subtract 4 $\frac{1}{4}$ circles w/ $r=5$
 $25\pi = 78.5 \text{ cm}^2$
 $100 - 78.5 = 21.5 \text{ cm}^2$

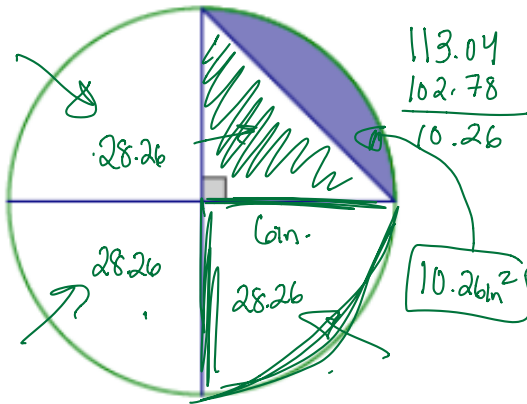
Find the area of the shaded region. Use 3.14 to approximate π . The rectangle is 10 cm long.



$$\frac{1}{2} \pi r^2 = \frac{1}{2} \pi (5)^2 = 39.25 \text{ cm}^2$$

$$50 - 39.25 = \boxed{10.75 \text{ cm}^2}$$

The diameter of the circle below is 12 inches. Find the area of the shaded region, using 3.14 to approximate π .

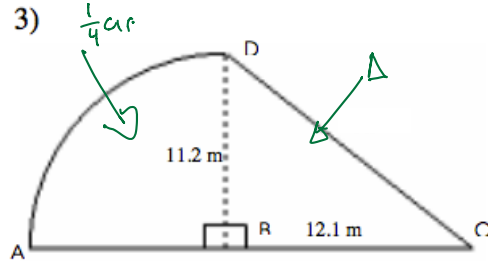


$$A_{\text{cir}} = \pi r^2 = 36\pi = 113.04 \text{ in}^2$$

$$A_{\frac{3}{4}\text{cir}} = 84.78$$

$$A_{\text{tri}} = \frac{1}{2} \cdot 6 \cdot 6 = \frac{18}{102.78}$$

Find the area of the shape below. Approximate 3.14 for π .



$$A_{\text{tri}} = \frac{12.1 \times 11.2}{2} = 67.76$$

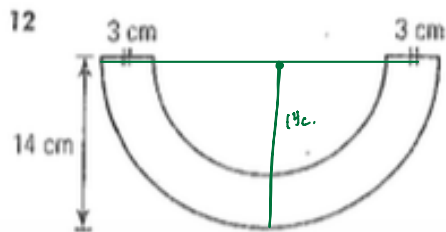
$$A_{\frac{1}{4}\text{circle}} = \frac{1}{4} \pi (11.2)^2 = 31.36\pi = 98.47$$

$$166.23 \text{ m}^2$$

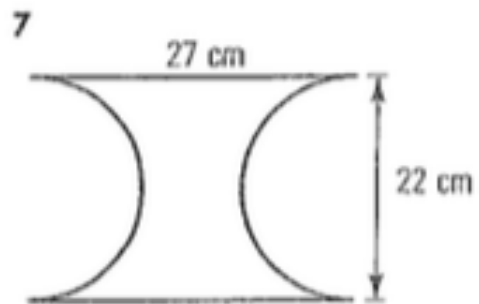
INDEPENDENT PRACTICE

Find the area of the shapes below. Use 3.14 to approximate Pi.

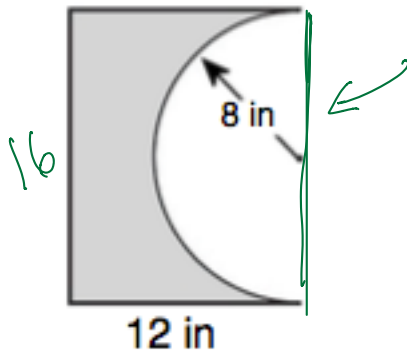
Find the area of the shape below.



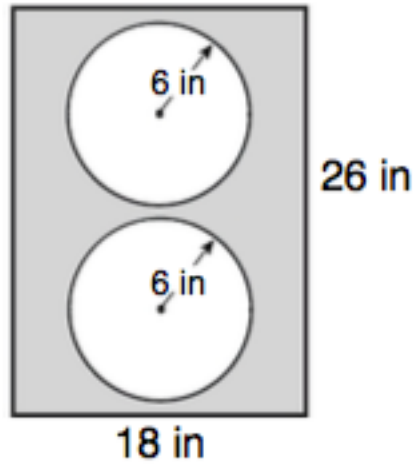
Find the area of the shape below.



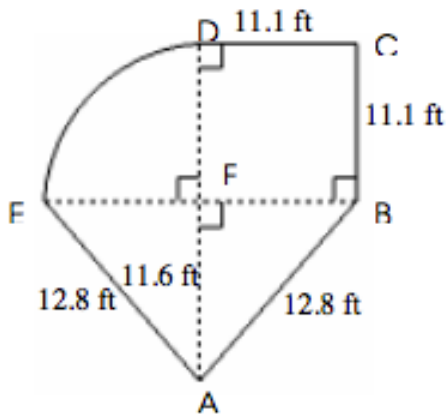
Find the area of the shaded region.



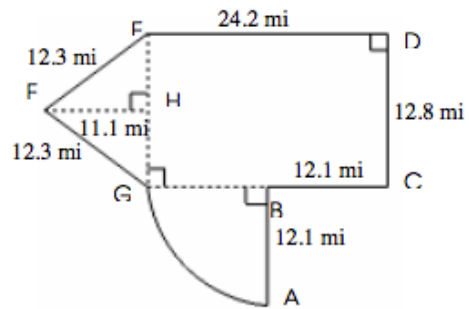
Find the area of the shaded region.



Find the area of the shape below.



Find the area of the shape below.



Name: _____

Math 7.1

Mr. Rogove

Date: _____

CLOSURE

NOTES

Need to change the numbers on independent practice probs.