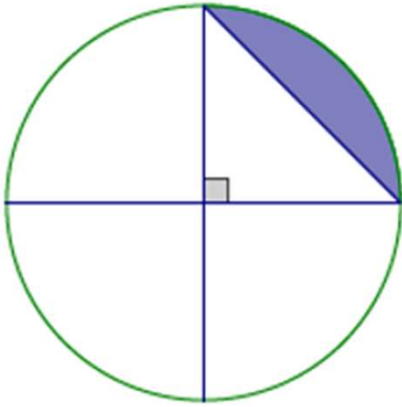


Shaded Area Worksheets

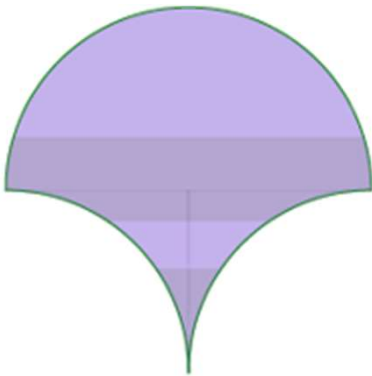
1. The diameter of the circle is 12 in. Write and explain a numerical expression that represents the area of the shaded region.



2. A circle with a 10 cm radius is cut into a half circle and two quarter circles. The three circular arcs bound the region below.

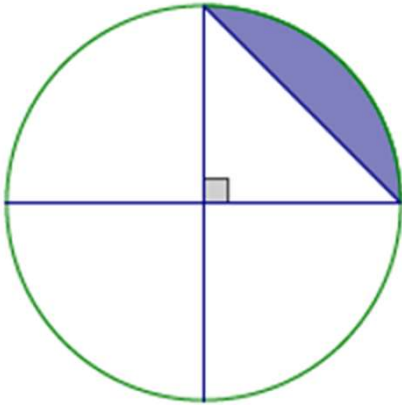
a) Write and explain a numerical expression that represents the area.

b) Then, find the area of the figure.



Shaded Area Worksheets

1. The diameter of the circle is 12 in. Write and explain a numerical expression that represents the area of the shaded region.



$$A_{\text{shaded}} = A_{\text{quarter circle}} - A_{\text{triangle}}$$

$$A_{\text{shaded}} = \frac{\pi}{4} (6 \text{ in.})^2 - \frac{1}{2} (6 \text{ in.} \cdot 6 \text{ in.})$$

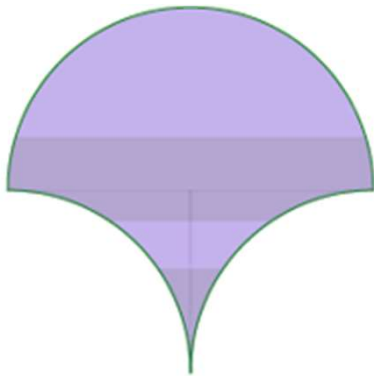
$$A_{\text{shaded}} = (9\pi - 18) \text{ in}^2$$

The expression represents the area of one quarter of the entire circle less the area of the right triangle, whose legs are formed by radii of the circle.

2. A circle with a 10 cm radius is cut into a half circle and two quarter circles. The three circular arcs bound the region below.

a) Write and explain a numerical expression that represents the area.

b) Then, find the area of the figure.



a) *Numeric expression 1 for the area:*

$$10 \text{ cm} \cdot 20 \text{ cm}$$

The expression for the area represents the region when it is cut into three pieces and rearranged to make a complete rectangle as shown.

Numeric expression 2 for the area: $(50\pi) \text{ cm}^2 + (200 - 50\pi) \text{ cm}^2$

The expression for the area is calculated as is; in other words, by finding the area of the semicircle in the top portion of the figure and then the area of the carved-out regions in the bottom portion of the figure.

b) *The area of the figure is 200 cm^2 .*

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