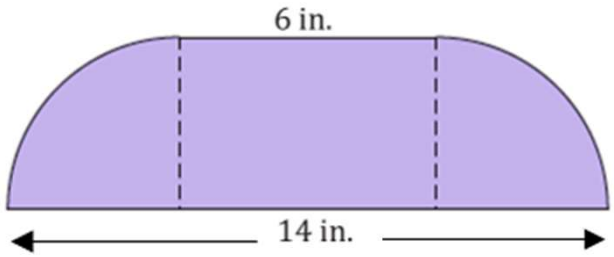
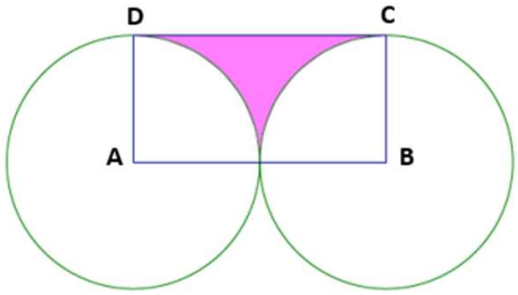
Shaded Area Worksheets

1. Calculate the area of the figure below that consists of a rectangle and two quarter circles, each with the same radius. Leave your answer in terms of pi.



2. The vertices A and B of rectangle $ABCD$ are centers of circles each with a radius of 5 inches. Find the exact area of the shaded region



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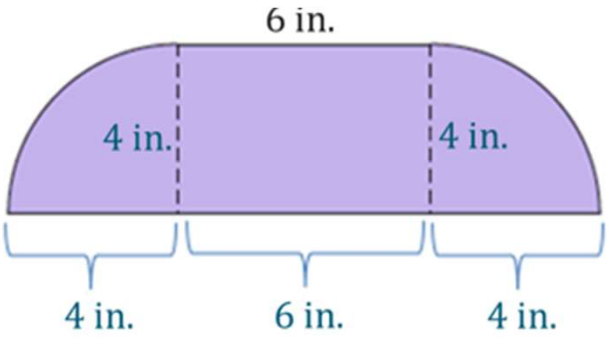

$$A_{rectangle} = l \cdot w$$
$$A = 6\ in. \cdot 4\ in.$$
$$A = 24\ in^2$$

The area of the rectangle is $24\ in^2$

$$A_{half\ circle} = \frac{1}{2}\pi r^2$$
$$A = \frac{1}{2}(\pi)(4\ in.)^2$$
$$A = 8\pi\ in^2$$

The area of the two quarter circles, or one semicircle, is $8\pi\ in^2$.

The area of the entire figure is $A = (24 + 8\pi)\ in^2$

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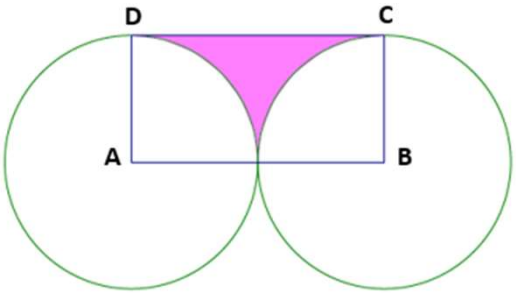

$$A_{\text{rectangle}} = 10\ \text{in.} \cdot 5\ \text{in.} = 50\ \text{in}^2$$
$$A_{\text{semicircle}} = \frac{1}{2}\pi(5\ \text{in.})^2$$
$$A_{\text{semicircle}} = \frac{25\pi}{2}\ \text{in}^2$$
$$A_{\text{shaded area}} = \left(50 - \frac{25\pi}{2}\right)\ \text{in}^2$$