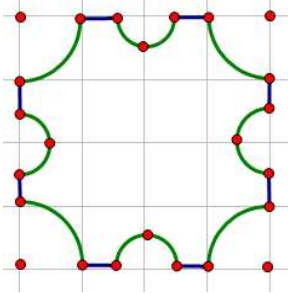
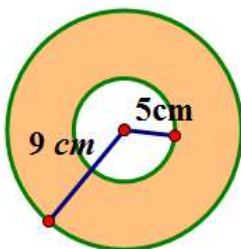


## Circle Word Problems Worksheets

1. A machine shop has a square metal plate with sides that measure  $4\text{ cm}$  each. A machinist must cut four semicircles with a radius of  $\frac{1}{2}\text{ cm}$  and four quarter circles with a radius of  $1\text{ cm}$  from its sides and corners. What is the area of the plate formed? Use  $\frac{22}{7}$  to approximate  $\pi$

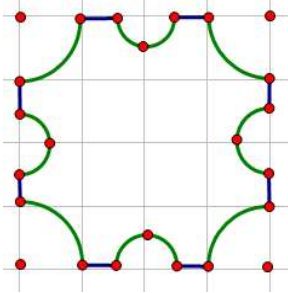


2. A graphic artist is designing a company logo with two concentric circles (two circles that share the same center but have different radii). The artist needs to know the area of the shaded band between the two concentric circles. Explain to the artist how he would go about finding the area of the shaded region.



## Circle Word Problems Worksheets

1. A machine shop has a square metal plate with sides that measure 4 cm each. A machinist must cut four semicircles with a radius of  $\frac{1}{2}$  cm and four quarter circles with a radius of 1 cm from its sides and corners. What is the area of the plate formed? Use  $\frac{22}{7}$  to approximate  $\pi$



The area of the metal plate is determined by subtracting the four quarter circles (corners) and the four half-circles (on each side) from the area of the square. Area of the square:  $A = (4 \text{ cm})^2 = 16 \text{ cm}^2$ .

The area of four quarter circles is the same as the area of a circle with a radius of

$$1 \text{ cm}: A \approx \frac{22}{7} (1 \text{ cm})^2 \approx \frac{22}{7} \text{ cm}^2.$$

The area of the four semicircles with radius  $\frac{1}{2}$  cm is

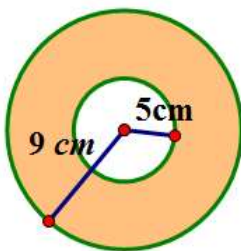
$$A \approx 4 \cdot \frac{1}{2} \cdot \frac{22}{7} \cdot \left(\frac{1}{2} \text{ cm}\right)^2$$

$$A \approx 4 \cdot \frac{1}{2} \cdot \frac{22}{7} \cdot \frac{1}{4} \text{ cm}^2 \approx \frac{11}{7} \text{ cm}^2.$$

The area of the metal plate is

$$A \approx 16 \text{ cm}^2 - \frac{22}{7} \text{ cm}^2 - \frac{11}{7} \text{ cm}^2 \approx \frac{79}{7} \text{ cm}^2$$

2. A graphic artist is designing a company logo with two concentric circles (two circles that share the same center but have different radii). The artist needs to know the area of the shaded band between the two concentric circles. Explain to the artist how he would go about finding the area of the shaded region.



The artist should find the areas of both the larger and smaller circles. Then, the artist should subtract the area of the smaller circle from the area of the larger circle to find the area between the two circles. The area of the larger circle is

$$A = \pi \cdot (9 \text{ cm})^2 \text{ or } 81\pi \text{ cm}^2.$$

The area of the smaller circle is

$$A = \pi(5 \text{ cm})^2 \text{ or } 25\pi \text{ cm}^2.$$

The area of the region between the circles is  $81\pi \text{ cm}^2 - 25\pi \text{ cm}^2 = 56\pi \text{ cm}^2$ . If we approximate  $\pi$  to be 3.14, then  $A \approx 175.84 \text{ cm}^2$ .