

Chapter Review



Frequently Asked Questions

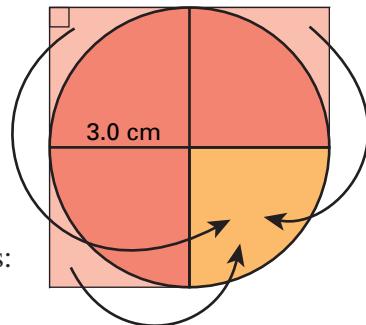
Q: How can you determine the area of a circle?

A1: You can estimate the area using squares. The sides of the squares are the same length as the radius. The area of each square is r^2 . About three of these squares cover the same area that the circle covers. For example, the area of a circle with a radius of 3.0 cm is about $3 \times (3 \text{ cm})^2$, or 27 cm^2 .

A2: You can calculate the area using a formula. For example, you can calculate the area of a circle with a radius of 3.0 cm as follows:

$$\begin{aligned} A &= \pi r^2 \\ &\doteq 3.14 \times (3.0 \text{ cm})^2 \\ &\doteq 28.3 \text{ cm}^2 \end{aligned}$$

Round to the nearest tenth because this is how the radius was measured.



Q: How can you draw a circle if you know its circumference or area?

A1: Use the formula for the circumference of a circle to determine the radius. For example, determine the radius of a circle with a circumference of 18.8 cm as follows:

$$\begin{aligned} C &= 2\pi r \\ 18.8 \text{ cm} \div 2\pi &= r \quad \text{Divide both sides by } 2\pi. \\ 3.0 \text{ cm} &\doteq r \quad \text{The radius is about 3.0 cm.} \end{aligned}$$

Adjust a compass so that the distance between the compass point and the pencil tip is equal to the radius. Put the compass point where you want the centre of the circle to be, and draw the circle.

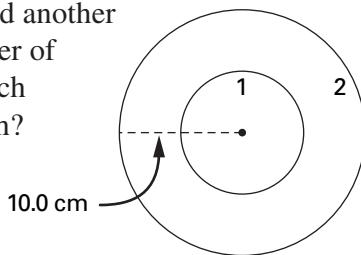
A2: Use the formula for the area of a circle to determine the radius. For example, determine the radius of a circle with an area of 28.0 cm^2 as follows:

$$\begin{aligned} A &= \pi r^2 \\ 28.0 \text{ cm}^2 \div \pi &= r^2 \quad \text{Divide both sides by } \pi. \\ 9.0 \text{ cm}^2 &\doteq r^2 \quad \text{Determine the square root of both sides.} \\ 3.0 \text{ cm} &\doteq r \quad \text{The radius is about 3.0 cm.} \end{aligned}$$

Use a compass to draw the circle, as described above.

Practice Questions

- (5.1) 1. Steve drew two circles, one with a radius of 10.0 cm and another with a diameter of 10.0 cm. Which circle is which?



- (5.2) 2. Describe the relationship between the circumference and diameter of a circle.
- (5.3) 3. Calculate the circumference of each circle.

- a) radius 2.6 cm



- b) diameter 30 cm



- c) diameter 1.2 km



- d) diameter 8.3 cm



4. A straight boardwalk is being built over a circular wetlands area, so that it divides the area in half. A hiking path goes around the outside. The boardwalk is 50 m long. How long is the hiking path that goes around the wetlands? (5.3)

5. Suppose that you had to tile a circular wading pool. How would you estimate the area of the pool? (5.4)

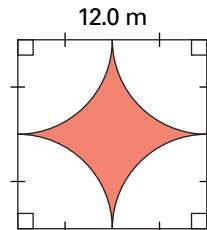
6. Calculate the area of a circle with each measurement. (5.5)

- a) diameter 50 km
b) radius 2 mm
c) radius 6.5 cm
d) diameter 11.0 m

7. Sarah's family has a circular swimming pool. The circumference of the pool is 25.12 m. What is its area? (5.5)

8. Each time a solid bicycle wheel turns, the bicycle travels 197 cm. What is the area of the wheel? (5.5)

9. a) What is the area of this square? (5.5)
b) What is the area of one white section?
(Hint: It is one quarter of a circle.)
c) What is the area of the four white sections?
d) What is the area of the red section?



10. Draw a circle with each measurement. (5.6)

- a) radius 5.7 cm
b) area 452 cm^2
c) circumference 34.5 cm