

Circles: Circumference and Area Made Clear

Grade 7 math · Worksheet · Standards: 7.G.B.4

Name: _____ Date: _____ Class: _____

These 20 problems build skill with radius, diameter, circumference and area of circles, from single-step formulas to rounded-end fields and rings. Standard 7.G.B.4 is the focus, including the informal derivation of the area formula.

Problems 1 to 7 are direct. Problems 8 to 14 mix formulas and work backward. Problems 15 to 20 are multi-step word problems.

Standards: 7.G.B.4 · **Level:** Grade 7

Problem 1 Radius from diameter (easy)

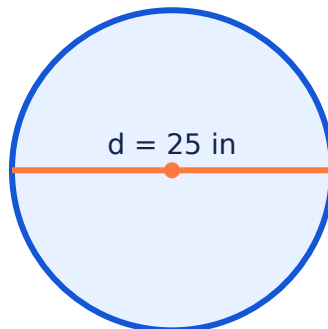
A circle has a diameter of 26 ft. Find its radius.

Problem 2 Diameter from radius (easy)

A circular rug has a radius of 2.5 yd. Find its diameter.

Problem 3 Circumference from diameter (easy)

Compute the distance around a circle whose diameter is 25 in. Take $\pi \approx 3.14$.



A circle with diameter 25 inches.

Problem 4 Circumference in terms of π (easy)

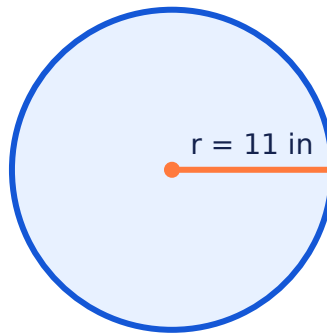
Determine the circumference when the radius is 6 m. Leave π in the answer.

Problem 5 Area from radius (easy)

Compute the area enclosed by a circle of radius 9 cm. Take $\pi \approx 3.14$.

Problem 6 Area in terms of π (easy)

Determine the area of a circle of radius 11 in. Leave π in the answer.



A circle with radius 11 inches.

Problem 7 Area from the diameter (easy)

Determine the area of a circle whose diameter is 30 in in terms of π .

Problem 8 Work backward from circumference (medium)

Wire bent into a circle is 75.36 ft long. Determine the diameter and radius of the circle. Take $\pi \approx 3.14$.

Problem 9 Bicycle wheel (medium)

A bicycle wheel has a diameter of 26 in. How far does the bike travel in one full turn of the wheel? Take $\pi \approx 3.14$.

Problem 10 Garden from the fence (medium)

A circular garden has a fence of length 37.68 ft around it. Find the area of the garden. Take $\pi \approx 3.14$.

Problem 11 Area of a semicircle (medium)

Find the area of a semicircle with a diameter of 16 cm. Take $\pi \approx 3.14$.



A semicircle with diameter 16 cm.

Problem 12 Area of a quarter circle (medium)

A quarter circle has a radius of 12 ft. Find its area in terms of π and then with $\pi \approx 3.14$.

Problem 13 Rearranging a circle (medium)

A circle of radius 5 in is cut into sectors and rearranged into a shape close to a parallelogram. Find the base and the height of that shape, then its area in terms of π .

Problem 14 Effect of doubling (medium)

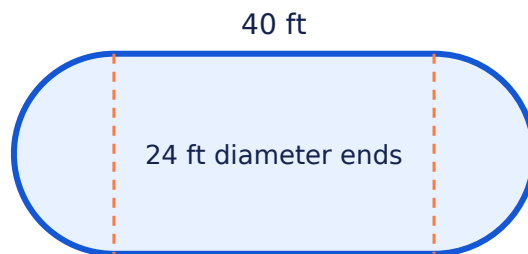
A circle has a radius of 4 cm. A second circle has a radius of 8 cm. Compare the circumferences and the areas of the two circles in terms of π .

Problem 15 Pizza value (hard)

A 12-inch pizza costs \$9 and a 16-inch pizza costs \$14. Which pizza costs less per square inch? Take $\pi \approx 3.14$, and round each cost per square inch to the nearest tenth of a cent.

Problem 16 Field with rounded ends (hard)

A play field is a rectangle 40 ft long and 24 ft wide with a semicircle added to each 24-ft end. Find the perimeter and the area of the whole field. Take $\pi \approx 3.14$.



Rectangle with a semicircle on each short end.

Problem 17 Sprinkler coverage (hard)

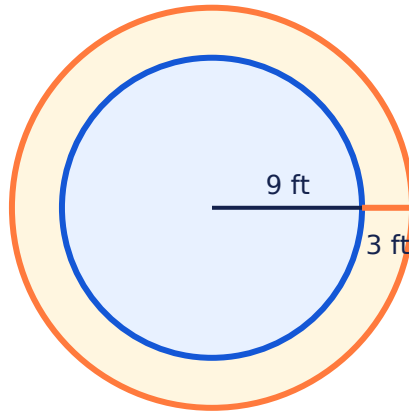
A sprinkler waters a circle with a radius of 15 ft in the middle of a square lawn that is 30 ft on each side. How many square feet of the lawn are not watered? Take $\pi \approx 3.14$.

Problem 18 Arched window (hard)

A window is a rectangle 36 in wide and 48 in tall with a semicircle on top whose diameter is the 36-in width. Find the area of the glass and the length of trim needed around the outside edge (the two sides, the bottom and the arch). Take $\pi \approx 3.14$.

Problem 19 Path around a pond (hard)

A circular pond has a radius of 9 ft. A stone path 3 ft wide surrounds the pond. Find the area of the path in terms of π and then with $\pi \approx 3.14$.



Pond (inner circle) and path (ring).

Problem 20 Odometer wheel (hard)

A trailer wheel has a diameter of 28 in. How many feet does the trailer travel while the wheel makes 500 complete turns? Take $\pi \approx 3.14$ and round to the nearest foot.