

Geometry - Arc Length and Sector Area - Worksheet

Common Core G-C.B.5 · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

These 20 problems practice arc length, sector area and radian measure (Common Core G-C.B.5). The first problems are quick one-step checks of the definitions and formulas from the lesson. The middle problems ask for diagrams, equations and careful reasoning in the style of a high school Geometry class. The last six problems are applications with pizzas, sprinklers, clocks, tracks and wipers.

Geometry · Common Core State Standards: **G-C.B.5**

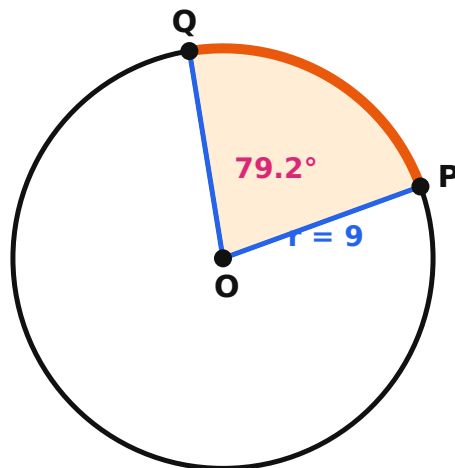
Exercise 1 - Arc length 40 degrees

Find the length of an arc with central angle 40° in a circle of radius 9. Give an exact answer and a decimal rounded to hundredths.

Exercise 2 - Arc length 210 degrees

Find the length of an arc with central angle 210° in a circle of radius 9. Give the exact value and a decimal.

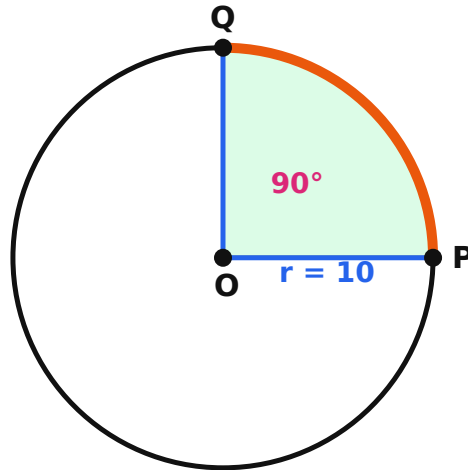
Exercise 3 - Pie chart slice



A slice for 22% of the chart.

A pie chart has radius 9 cm. The slice labeled Rent is 22% of the whole chart. Find its central angle and its area.

Exercise 4 - Sector area 90 degrees



$$\text{Sector area} = (90/360) \text{ of the circle's area} = 25\pi.$$

Find the area of a sector with central angle 90° and radius 10.

Exercise 5 - Find the central angle

An arc of length 7π lies on a circle with radius 14. Find the central angle in degrees.

Exercise 6 - Find the radius

A sector with central angle 90° has area 25π . Find the radius of the circle.

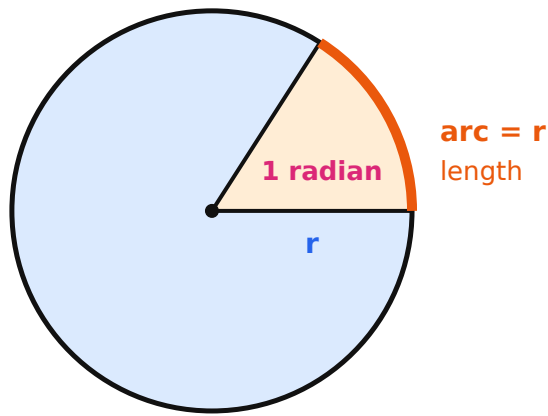
Exercise 7 - Degrees to radians

Convert to radians: 60° and 135° .

Exercise 8 - Radians to degrees (decimal)

A turntable rotates through 2.5 radians. Express this turn in degrees to the nearest tenth.

Exercise 9 - Arc length in radians



One radian: the arc has the same length as the radius.

Use $s = r\theta$ to find the arc length for $r = 8$ and $\theta = \frac{\pi}{4}$. Then find the arc length for $r = 10$ and $\theta = 1.5$ radians.

Exercise 10 - Sector area in radians

Find the area of a sector with $r = 5$ and $\theta = \frac{3\pi}{4}$ radians.

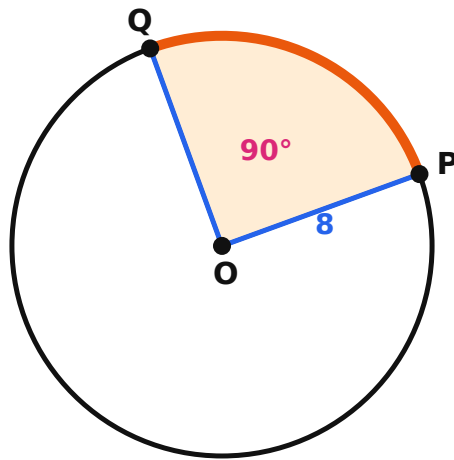
Exercise 11 - Radian measure

An arc 12 inches long is on a circle of radius 8 inches. Find the central angle in radians.

Exercise 12 - Perimeter of a sector

A sector has radius 10 and central angle 72° . Find its perimeter (two radii plus the arc).

Exercise 13 - Area of a segment



Sector with a right angle at the center.

A circular segment is bounded by a chord and its arc. Find the area of the segment cut off by a chord that subtends 90° in a circle of radius 8. (Subtract the area of the right triangle from the sector.)

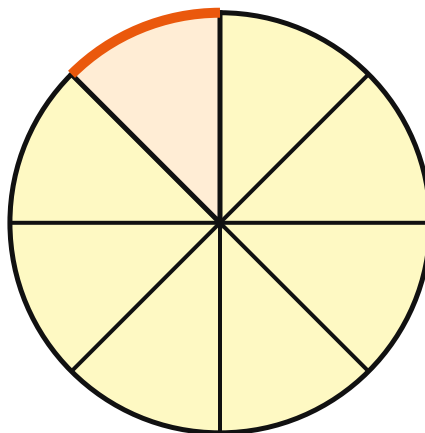
Exercise 14 - Full circle from a sector

A sector of 60° has area 24π . Find the area of the whole circle and its radius.

Exercise 15 - Same arc length, different circles

Circle A has radius 10 and an arc of 54° . Circle B has radius 15. What central angle in circle B gives an arc of the same length?

Exercise 16 - Pizza



A pizza cut into 8 equal slices: each slice is a sector of 45° .

A 16-inch pizza (diameter 16) is cut into 8 equal slices by Sofia. Find the length of the crust on one slice and the area of one slice.

Exercise 17 - Garden sprinkler

A garden sprinkler waters a sector of 75° with a reach of 40 feet. Find the area watered, to the nearest square foot.

Exercise 18 - Minute hand

A minute hand is 7 inches long. How far does its tip travel in 20 minutes? Round to the nearest hundredth.

Exercise 19 - Track curve

The inside lane of a running track has a semicircular curve of radius 36.5 meters at each end. Find the length of one curve to the nearest tenth.

Exercise 20 - Windshield wiper

A windshield wiper sweeps through 100° . Its blade covers the region from 6 inches to 24 inches from the pivot. Find the area cleaned to the nearest square inch.