

Geometry · Arc Length, Sector Area and Radians · Test

Common Core G-C.B.5 · mathovore.fr

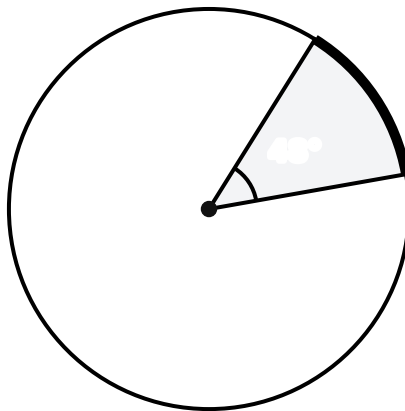
Name: _____ Date: ____/____/____ Score: _____

This 45-minute test has 9 questions worth 20 points. It covers arc length, sector area, radian measure and conversions between degrees and radians. Calculators are allowed. Show the work, give exact answers in terms of π when asked, and include units.

Test information

- **Grade:** Geometry
- **Chapter:** Arc Length, Sector Area and Radians
- **Common Core:** G-C.B.5
- **Time:** 45 minutes
- **Total:** 20 points (Question 1: 2 pts; Question 2: 2 pts; Question 3: 3 pts; Question 4: 2 pts; Question 5: 2 pts; Question 6: 2 pts; Question 7: 3 pts; Question 8: 2 pts; Question 9: 2 pts)

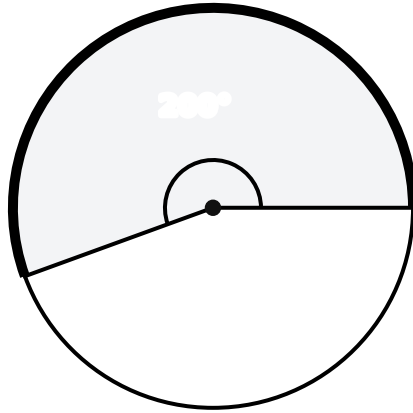
Question 1: Arc length (2 points)



Sector with radius 15 in and central angle 48 degrees.

Find the length of the arc in the sector shown. Give the exact length and a decimal rounded to the nearest hundredth.

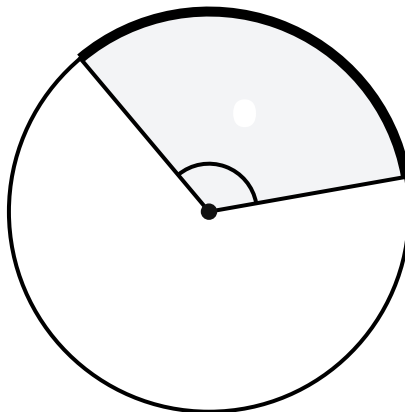
Question 2: Sector area (2 points)



Sector with radius 9 cm and central angle 200 degrees.

Find the area of the sector shown. Give the exact area and a decimal rounded to the nearest hundredth.

Question 3: Angle and area from arc (3 points)



Arc of length 8π in on a circle of radius 12 in.

An arc of length 8π in lies on a circle with radius 12 in.

- a. Find the central angle in degrees. (1 point)
- b. Find the area of the sector with that central angle. Give the exact area and a decimal rounded to the nearest hundredth. (2 points)

Question 4: Radian measure (2 points)

A central angle in a circle of radius 7 cm intercepts an arc 21 cm long. Find the angle in radians, and explain what a measure of 1 radian means.

Question 5: Degrees to radians (2 points)

Convert each angle to radians. Give exact answers in terms of π .

- a. 135°
- b. 300°
- c. 20°

Question 6: Radians to degrees (2 points)

Convert each angle to degrees.

- a. $\frac{11\pi}{6}$ radians
- b. $\frac{3\pi}{2}$ radians
- c. $\frac{2\pi}{5}$ radians

Question 7: Radius from sector area (3 points)

A sector with a central angle of 150° has an area of $60\pi \text{ ft}^2$.

- a. Find the radius of the circle. (2 points)
- b. Find the length of the arc of this sector. Give the exact length. (1 point)

Question 8: Windshield wiper (2 points)

A windshield wiper blade pivots at one end, and the blade is 24 in long. In one sweep it turns through 110° . Find the area of the windshield region that the blade sweeps. Round to the nearest square inch.

Question 9: Arc and area in radians (2 points)

A sector has radius 10 in and central angle $\frac{2\pi}{5}$ radians. Find the arc length and the area of the sector. Give exact answers.