

Arc Length, Sector Area and Radian Measure

Grade 10 – Geometry math · Test · Standards: G-C.B.5

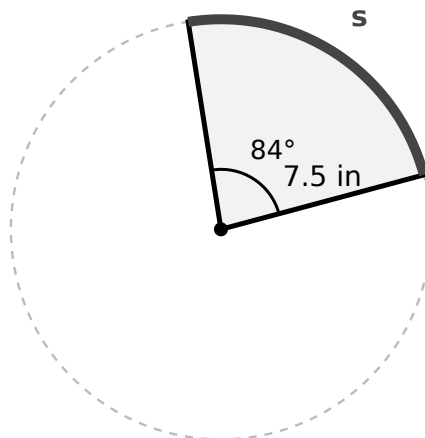
Name: _____ Date: _____ Class: _____

This test has 8 questions worth 20 points and is designed for 45 minutes. A calculator is allowed. Give exact answers in terms of π when asked and show the fraction of the circle you use.

Standards: G-C.B.5 · **Level:** Grade 10 Geometry

Time: 45 minutes · 8 questions · Total: 20 points · Calculator: as allowed by your teacher

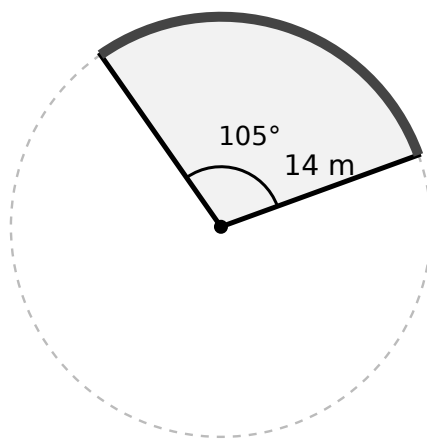
Question 1 Arc Length (2 points)



Not drawn to scale.

A curved garden border follows the arc s of the sector in the figure. Calculate its length exactly, then round to hundredths of an inch.

Question 2 Sector Area (2 points)



Not drawn to scale.

Find the area of the sector to the nearest tenth.

Question 3 Convert the Angles (2 points)

(a) Write 165° in radians, in terms of π . (1 point) (b) Write $5\pi/9$ radians in degrees. (1 point)

Question 4 Radians from an Arc (3 points)

An arc of length 9.6 centimeters lies on a circle of radius 4 centimeters. (a) Find the central angle in radians. (1 point) (b) Find it in degrees to the nearest tenth. (1 point) (c) Find the area of the sector. (1 point)

Question 5 Radius from Area (3 points)

A sector with central angle 135° has area 96π square feet. Find the radius of the circle.

Question 6 Perimeter of a Sector (3 points)

A sector has radius 12 centimeters and central angle 1.5 radians. Find the arc length and the perimeter of the sector.

Question 7 Security Light (3 points)

A security light on a wall sweeps through a 140° sector and its beam reaches 30 feet. Find the area lit and the length of the far edge of the lit region, to the nearest tenth.

Question 8 Comparing Sectors (2 points)

Two sectors have the same central angle. Their radii are 4 inches and 10 inches. Find the ratio of the arc lengths and the ratio of the areas, larger to smaller.