

4.2.1 Circle Parts

Name: _____ Class: _____ Date: _____

KEY WORDS segment

<!-- Session 2 native-skill companion -->

Objective

Practise circle parts within the labelled native lessons. Public original tasks; locally authored answer guidance.

1 Key knowledge and worked examples

■ Circle parts and geometric definitions · Foundation

A circle consists of points a fixed radius from its centre. A diameter is a chord through the centre and has length $2r$. A chord joins two circumference points; an arc is part of the circumference. A sector lies between two radii and an arc. A segment lies between a chord and an arc. A tangent touches at one point and is perpendicular to the radius there.

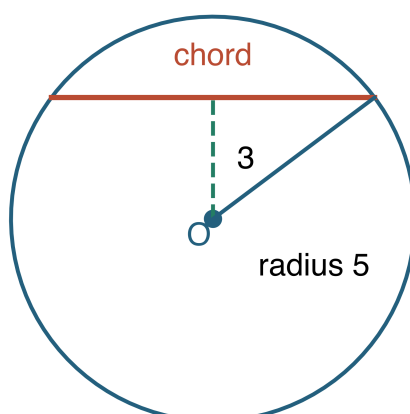
$$d = 2r, \quad \left(\frac{c}{2}\right)^2 + h^2 = r^2$$

For centre O and radius 5 cm, every circumference point is 5 cm from O and the diameter is 10 cm. A chord 3 cm from O has half-length $\sqrt{(5^2-3^2)}=4$ cm, so its whole length is 8 cm. The perpendicular from O meets the chord at its midpoint. Joining the two chord endpoints to O creates a sector; the smaller region between chord and arc is a segment. At the rightmost circumference point, the vertical touching line is tangent and the horizontal radius is perpendicular to it. The circumference is a length, $2\pi r=10\pi$ cm, rather than an area.

A chord need not pass through the centre; only a diameter must. Sector and segment have different straight boundaries. Do not confuse circumference length with the shaded area inside a circle.

AQA G9 includes all named circle parts at Foundation. Use the given radius and position labels to identify the part; Higher circle-theorem proofs are developed separately.

Circle of radius 5: distances use one consistent scale



Perpendicular bisects chord: half-length 4

Original native-lesson illustration; labels belong to its worked example.

2 Practice

2.1 (Foundation) Find the diameter when radius is 5 cm.

2.2 (Foundation) Find the half-chord for radius 5 and perpendicular centre distance 3.

2.3 (Foundation) Find the whole chord length in that example.

3 Exam-style questions

3.1 Decide whether this claim is true. Justify with a concrete calculation or counterexample: A sector is bounded by a chord and an arc.

Solutions

2.1 Diameter= $2 \times 5 = 10$ cm.

2.2 Use $\sqrt{(25-9)} = 4$ cm.

2.3 The perpendicular bisects the chord: $2 \times 4 = 8$ cm.

3.1 False. A sector uses two radii and an arc. A chord and its arc bound a segment; a quarter-circle sector illustrates the two radii meeting at the centre.

Local review guidance: show the chosen method; give the checked result; explain the condition or failed shortcut. This is authored classroom guidance.