

Exercise walk-through

4.2.7

Sector Measure

AQA · GCSE · Mathematics

80. Circle parts and geometric definitions · Foundation

Circle parts and geometric definitions · Foundation

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.

99. Measuring angles and three-figure bearings · Foundation

Measuring angles and three-figure bearings · Foundation

From A to B the bearing 070° is 70° clockwise from north. From B to A it is $070+180=250^\circ$. A bearing of 320° reverses to $500-360=140^\circ$. East is 090° , not 90 without its three-digit form. A route bearing 120° points southeast of the starting point, making 30° below east. On a 1:10000 map, a 3 cm route represents 300 m; to construct bearing 120° , place the protractor centre at the route start, align its zero with north and measure clockwise. Keep the ruler scale and angular direction as separate decisions.

152. Arcs, sectors and reverse angle calculations · Foundation

Arcs, sectors and reverse angle calculations · Foundation

At $r=6$ cm and $\theta=120^\circ$, the fraction is $1/3$: arc is 4π cm, area is 12π cm² and perimeter is $4\pi+12$ cm. If another $r=6$ sector has area 9π cm², its fraction is $9\pi/36\pi=1/4$ and angle is 90° . If its arc instead measures 3π cm, its fraction is $3\pi/12\pi=1/4$, giving the same angle. A full 360° sector has the whole circle area, while the circle boundary has no extra radii. A 60° sector of radius 3 has area $(1/6)\times 9\pi=1.5\pi$ cm².

Exercises 2.1·2.3

2.1 (Foundation) For $r=6, \theta=120^\circ$, find the coefficient of π in arc length.

2.2 (Foundation) Find the coefficient of π in its area.

2.3 (Foundation) Find θ for $r=6$ sector area 9π .

3 Exam-style questions

Exercises 2.1·2.3

2.1 (Foundation) For $r=6, \theta=120^\circ$, find the coefficient of π in arc length.

2.1 $(120/360) \times 2 \times 6 = 4$.

2.2 (Foundation) Find the coefficient of π in its area.

2.2 $(120/360) \times 6^2 = 12$.

2.3 (Foundation) Find θ for $r=6$ sector area 9π .

3 Exam-style questions

2.3 $9/36$ of a turn: $360 \times 1/4 = 90^\circ$.

Exercise 3.1

3.1 Decide whether this claim is true. Justify with a concrete calculation or counterexample: A sector's arc length and perimeter are always the same.

Exercise 3.1

3.1 Decide whether this claim is true. Justify with a concrete calculation or counterexample: A sector's arc length and perimeter are always the same.

3.1 False. A radius-6 sector with angle 120° has arc length 4π . Its perimeter adds two radii and is $4\pi+12$.

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