Extra Content for Foundation GCSE

127. Calculating Arc Lengths, Angles, and Areas of Sectors

Practice Questions

1. What is the formula for the arc length of a circle?

2. What is the formula for the area of a sector?

3. Find the arc length of a circle with a radius of 10 cm and a sector angle of 60°.

4. A sector has a radius of 8 cm and an angle of 90°. Find its area.

5. A circle has a radius of 5 cm. Find the arc length for a 120° sector.

6. A sector has an area of 25 cm² and a radius of 10 cm. Find the angle of the sector.

7. A pizza has a diameter of 30 cm. A slice is 45°. Find the area of the slice.

8. A circular pond has a radius of 12 m. Find the arc length for a 150° sector.

9. A wheel has a radius of 50 cm. How far does a point on the edge move when the wheel rotates by 72°?

10. A circular plate has a sector with an area of 20 cm² and an angle of 40°. Find the radius.

Scenario Questions

1. A fairground ride moves along a circular track with a radius of 15 m. If it rotates 30°, how far does it travel along the track?

2. A clock's minute hand is 12 cm long. How far does the tip of the hand move in 10 minutes?

3. A carousel has a radius of 8 m. If it turns through 90°, find the arc length traveled.

4. A road sign is a circular sector with an angle of 60° and a radius of 50 cm. Find the area of the sign.

5. A bike wheel with a 40 cm radius rotates by 45°. How far does a point on the rim move?

6. A fountain is circular with a radius of 10 m. A quarter of it is covered in plants. Find the area covered by plants.

7. A pizza has a 16 cm radius, and a slice is 30°. Find the area of the slice.

8. A sector-shaped garden has a radius of 5 m and an area of 20 m². Find the sector angle.

9. A fan rotates 60°. The blade is 20 cm long. How far does the tip move?

10. A park walkway is part of a circular track with a radius of 25 m and covers a 120° sector. Find the arc length.

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Practice Questions

1. $L = \left(\frac{\theta}{360}\right) \times \pi \times d$
2. $A = \left(\frac{\theta}{360}\right) \times \pi r^2$
3. $\frac{10\pi}{3}$ cm
4. 16π cm^2
5. $\frac{10\pi}{3}$ cm
6. $\frac{90°}{\pi}$ (or approximately $28.65°$)
7. $\frac{225\pi}{8}$ cm^2
8. 10π m
9. 20π cm
10. 6 cm

Answers

Scenario Questions

1. $\frac{5\pi}{2}$ m
2. 4π cm
3. 4π m
4. $\frac{1250\pi}{3}$ cm^2
5. 10π cm
6. 25π m^2
7. $\frac{64\pi}{3}$ cm^2
8. $\frac{288°}{\pi}$ (or approximately $91.67°$)
9. $\frac{20\pi}{3}$ cm
10. $\frac{50\pi}{3}$ m