A Level Maths

Topic: Radian Measure

Instructions

Answer all questions. Show complete working. Use radians for all angle measurements where appropriate.

Practice Questions

1. Convert the following angles to radians:
   i $45°$
   ii $120°$
   iii $270°$
   iv $360°$
2. Find the length of an arc with a radius of 5 cm and a central angle of $\frac{\pi}{3}$ radians.
3. Calculate the area of a sector with a radius of 4 cm and a central angle of 2 radians.
4. If a circle has a radius of 7 cm, what is the central angle in radians for an arc length of 14 cm?
5. Convert 3 radians to degrees.
6. Find the value of θ if the radius of a circle is 8 cm and the arc length is 16 cm. (Use radians)
7. A circle has a radius of 10 cm. Calculate the area of a sector with a central angle of $\frac{\pi}{4}$ radians.
8. The radius of a circle is r. If the arc length is $2r$, find the central angle θ in radians.

Multiple-Choice Questions

1. The radian measure of $90°$ is:

   A. $\frac{\pi}{4}$
   B. $\frac{\pi}{2}$
   C. $\frac{\pi}{3}$
   D. $\frac{\pi}{6}$

2. The length of an arc with a radius of 5 cm and a central angle of $\frac{\pi}{2}$ radians is:

   A. 2.5 cm
   B. 5 cm
   C. 7.5 cm
   D. 10 cm

3. The area of a sector with a central angle of $\frac{\pi}{6}$ radians and a radius of 4 cm is:

   A. $\frac{2\pi}{3}$ cm^2
   B. $\frac{\pi}{3}$ cm^2
   C. $\frac{\pi}{2}$ cm^2
   D. $\frac{\pi}{6}$ cm^2

4. The radian measure of $180°$ is:

   A. π
   B. 2π
   C. $\frac{\pi}{2}$
   D. $\frac{\pi}{4}$

5. The central angle of a circle in radians is equal to:

   A. the angle in degrees multiplied by $\frac{\pi}{180}$
   B. the angle in radians multiplied by $\frac{180}{\pi}$
   C. the arc length divided by the radius
   D. the radius divided by the arc length