**5A Converting Between Radians & Degrees**

1. Convert the following angle to degrees
2. $\frac{7π}{8} rad$
3. $\frac{4π}{15} rad$
4. Convert the following angle to degrees
5. $150°$
6. $110°$

Equivalence relationships



1. Sketch the graph of $y=cos\left(x+π\right)$ for $0\leq x\leq 2π$.

**5B Trig Key Values as Radians**



1. Find the exact value of:

$$cos\frac{4π}{3}$$

1. Find the exact value of:

$$sin\left(-\frac{7π}{6}\right)$$

**5C Arc Length**



1. Find the length of the arc of a circle of radius 5.2cm. The arc subtends an angle of 0.8c at the centre of the circle.
2. Arc AB of a circle, with centre O and radius r, subtends an angle of θ radians at O. The Perimeter of sector AOB is P cm. Express r in terms of P and θ.
3. The border of a garden pond consists of a straight edge AB of length 2.4m, and a curved part C, as shown in the diagram below. The curved part is an arc of a circle, centre O and radius 2m. Find the length of C.



**5D Area of Sectors & Segments**

Sectors



Segments



1. In the diagram, the area of the minor sector AOB is 28.9cm2. Given that angle AOB is 0.8 rad, calculate the value of r.



1. A plot of land is in the shape of a sector of a circle of radius 55m. The length of fencing that is needed to enclose the land is 176m. Calculate the area of the plot of land.
2. Calculate the Area of the segment shown in the diagram below.



1. In the diagram AB is the diameter of a circle of radius r cm, and angle BOC = θ radians. Given that the Area of triangle AOC is 3 times that of the shaded segment, show that 3θ –4sinθ = 0.



**5E Solving Equations in Radians**

1. Solve the equation:

$4cosθ=2,$ $0\leq θ\leq 2π$

1. Solve the equation:

$17cosθ+3sin^{2}θ=13,$ $0\leq θ\leq 2π$

1. Solve the equation:

$sin3θ=\frac{\sqrt{3}}{2},$ $0\leq θ\leq 2π$

**5F Small Angle Approximations**

1. When $θ$ is small, find the approximate value of:

$$\frac{sin2θ+tanθ }{2θ}$$

1. When $θ$ is small, find the approximate value of:

$$\frac{cos4θ-1}{θsin2θ}$$

1. Show that, when $θ$ is small:

$$sin5θ+tan2θ-cos2θ≈2θ^{2}+7θ-1$$

1. Hence, state the approximate value of $sin5θ+tan2θ-cos2θ$ for small values of $θ$