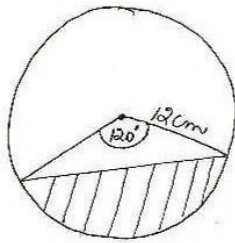


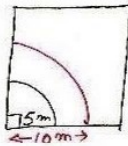
7



area of segment

$$\begin{aligned}
 &= r^2 \left(\frac{\pi \theta}{360} - \frac{\sin \theta}{2} \right) \\
 &= 12 \times 12 \left[\frac{3.14 \times 120}{360 \times 3} - \frac{\sin 120}{2} \right] \\
 &= 144 \left[\frac{3.14}{3} - \frac{\sqrt{3}}{2} \times \frac{1}{2} \right] \\
 &= 144 \left[\frac{3.14}{3} - \frac{\sqrt{3}}{2} \times \frac{1}{2} \right] \\
 &= 144 \left[\frac{12.56 - 1.73 \times 3}{6} \right] \\
 &= 12 [12.56 - 5.19] \\
 &= 12 \times 7.37 \\
 &= 88.44 \text{ cm}^2
 \end{aligned}$$

8



i) area horse can graze

$$\begin{aligned}
 &= \pi r^2 \frac{\theta}{360} \\
 &= 3.14 \times 15 \times 15 \times \frac{90}{360} \\
 &= 19.625 \text{ m}^2
 \end{aligned}$$

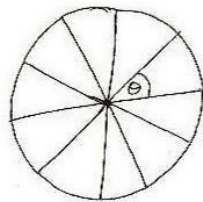
ii) area horse can graze with 10 m rope

$$\begin{aligned}
 &= \pi r^2 \frac{\theta}{360} \\
 &= 3.14 \times 10 \times 10 \times \frac{90}{360} \\
 &= \frac{157}{2} \\
 &= 78.5 \text{ m}^2
 \end{aligned}$$

Increase in area

$$\begin{aligned}
 &= 78.5 - 19.625 \\
 &= 58.875 \text{ m}^2
 \end{aligned}$$

9



$$\begin{aligned}
 \theta &= \frac{360}{10} \\
 &= 36^\circ
 \end{aligned}$$

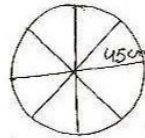
i) total wire required

$$\begin{aligned}
 &= 5 \text{ diameter} + 2\pi r \\
 &= 5 \times 35 + 2 \times \frac{22}{7} \times \frac{35}{2} \\
 &= 175 + 110 \\
 &= 285 \text{ mm}
 \end{aligned}$$

ii) area of each sector

$$\begin{aligned}
 &= \pi r^2 \frac{\theta}{360} \\
 &= \frac{22}{7} \times \frac{35}{2} \times \frac{35}{2} \times \frac{36}{360} \\
 &= \frac{385}{4} \\
 &= 96.25 \text{ mm}^2
 \end{aligned}$$

10

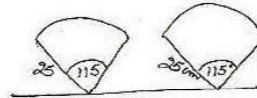


$$\begin{aligned}
 \theta &= \frac{360}{8} \\
 &= 45^\circ
 \end{aligned}$$

reqd area =

$$\begin{aligned}
 &= \pi r^2 \frac{\theta}{360} \\
 &= \frac{22}{7} \times 45 \times 45 \times \frac{45}{360} \\
 &= \frac{22275}{28} \\
 &= 795.54 \text{ cm}^2
 \end{aligned}$$

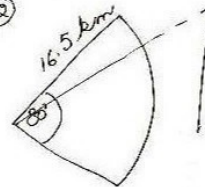
11



total area cleaned in each sweep =

$$\begin{aligned}
 &= 2 \pi r^2 \frac{\theta}{360} \\
 &= 2 \times \frac{22}{7} \times 25 \times 25 \times \frac{115}{360} \\
 &= \frac{158125}{126} \\
 &= 1254.96 \text{ cm}^2
 \end{aligned}$$

12



$$\begin{aligned}
 \text{reqd. area} &= \pi r^2 \frac{\theta}{360} \\
 &= 3.14 \times 16.5 \times 16.5 \times \frac{80}{360} \\
 &= 189.97 \text{ km}^2
 \end{aligned}$$

13) area of design

$$\begin{aligned}
 &= \text{area of } \odot - \text{area of hexagon} \\
 &= \pi r^2 - 6 \times \frac{\sqrt{3}}{4} s^2 \\
 &= \frac{22}{7} \times 28 \times 28 - \frac{6 \times 1.7}{4} \times 28 \times 28 \\
 &= 28 (88 - 71.4) \\
 &= 28 \times 16.6 \\
 &= 464.8 \text{ cm}^2
 \end{aligned}$$

$$\begin{aligned}
 \text{Cost} &= 464.8 \times 0.35 \\
 &= \text{Rs } 162.68
 \end{aligned}$$