2. Area of part of a circle

1. (a) $A = \frac{120}{360} \times \pi \times 10^2 - \frac{1}{2} \times 100 \times 10 \sin 12$

$= 104.72 - 43.30 = 61.42m^2$

(b) (ii) $\frac{120}{360} \times 2 \times 10 \times 20$

$= 418.9m^2$

(b) Total area $= 61.42 + 61.42 + 418.9$

$= 541.74m^2$

Cost $= 541.74 \times 310 = 167{,}939$

2. a) $\cos 54° = \frac{x}{10}$

$X = 5.878$

$\therefore$ size $= 2 \times 5.878 = 11.756$

Area of $\Delta = \frac{1}{2} \times 10^2 \sin 72° = 47.55$

Total area of $\Delta s = 47.55 \times 5 = 237.8cm2$

b) Area of circle $= \frac{22}{7} \times 10 \times 10 = 314.8$

Shaded region $= \frac{3}{5}(3.143 - 237.8)$

$= 45.9cm^2$

3. (a) $7.8^2 = 6.6^2 + 5.9^2 - 2 \times 6.6 \times 5.9 \cos R$

$\cos R = \frac{6.6^2 + 5.9^2 - 7.8^2}{2 \times 6.6 \times 5.9}$

$= \frac{78.37 - 60.84}{77.88}$

$= 0.2251$

$\angle R = 77^o$

$\frac{7.8}{\sin 77} = 2r$

$r = \frac{7.8}{2 \sin 77}$

$= 4 \text{ cm}$

(b) $\frac{5.9}{\sin p} = \frac{7.8}{\sin 77}$

$\sin P = \frac{5.9 \sin 77}{7.8}$

$= 0.7370$

$\angle P = 47.5^o$

$\angle Q = 180 - (77 + 47.5) = 55.5^o$

(c) Area of shaded region

$= 3.142 \times 4^2 - \frac{1}{2} \times 6.6 \times 5.9 \sin 77$

$= 50.27 - 18.97 = 31.30$

4. $(\frac{60}{360} \times \frac{22}{7} \times 24 \times 24) - (\frac{60}{360} \times \frac{22}{7} \times 12 \times 12)$

$301.71 - 75.43 = 226.26$