Exercise 17A

Question 22:
Perimeter of triangle = 324 cm
(i) Length of third side = (324 - 85 - 154) m = 85 m
Let a = 85 m, b = 154 m, c = 85 m

$$\text{Then, } s = \frac{a+b+c}{2} = \left(\frac{85+154+85}{2}\right)\text{m} = 162 \text{ m}$$

$$\therefore (s-a) = 77,\ (s-b) = 8 \text{ and } (s-c) = 77$$

$$\text{Area} = \sqrt{s(s-a)(s-b)(s-c)}$$

$$= \sqrt{162 \times 77 \times 8 \times 77} = 36 \times 77 = 2772 \text{ m}^2$$

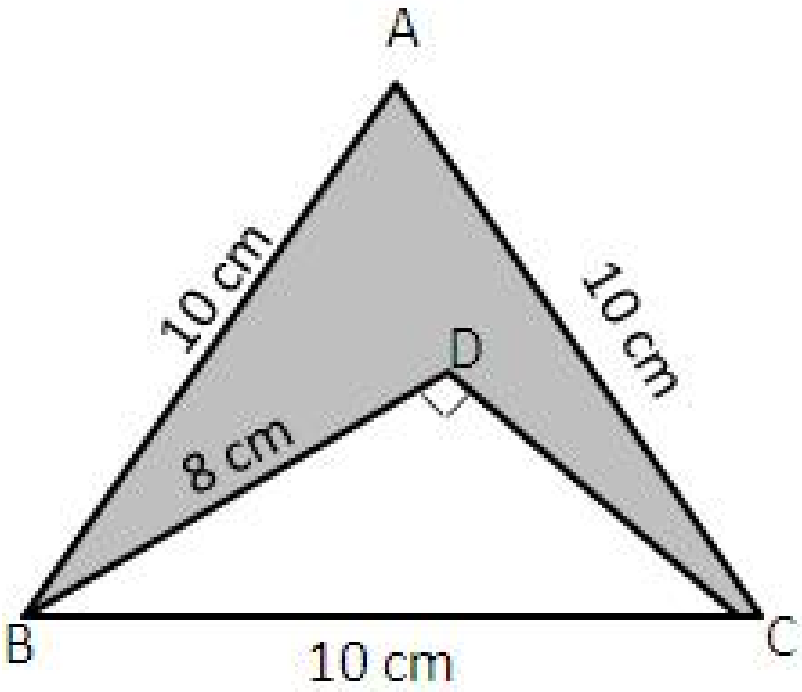
(ii) The base = 154 cm and let the perpendicular = h cm

$$\text{Area of triangle} = \left(\frac{1}{2} \times 154 \times h\right) = 2772 \text{ m}^2$$

$$h = \frac{2772}{77} = 36 \text{ m}$$

Hence, required length of the perpendicular of the triangle is 36 m.

Question 23:



Area of shaded region = Area of ΔABC – Area of ΔDBC
First we find area of ΔABC

$$\therefore \text{Area} = \frac{\sqrt{3}}{4}a^2 = \left(\frac{\sqrt{3}}{4} \times 10 \times 10\right)\text{cm}^2$$

$$= 43.30 \text{ cm}^2$$

Second we find area of ΔDBC which is right angled

$$\therefore \text{Area of } \Delta DBC = \frac{1}{2} \times \text{Base} \times \text{Height}$$

$$\text{Height} = \sqrt{BC^2 - DB^2} = \sqrt{10^2 - 8^2}$$

$$= \sqrt{100 - 64} = \sqrt{36}\,\text{cm} = 6 \text{ cm}$$

$$\therefore \text{Area} = \frac{1}{2} \times DB \times DC = \left(\frac{1}{2} \times 8 \times 6\right)\text{cm}^2$$

$$= 24 \text{ cm}^2$$

Area of shaded region = Area of ΔABC – Area of ΔDBC
= (43.30 - 24) = 19. 30
Area of shaded region = 19.3

Question 24:
Let ΔABC is a isosceles triangle. Let AC, BC be the equal sides
Then AC = BC = 10cm. Let AB be the base of ΔABC right angle at C.

$$AB = \sqrt{AC^2 + BC^2} = \sqrt{(10)^2 + (10)^2} \text{ cm}^2$$

$$= \sqrt{200} \text{ cm} = 10\sqrt{2} \text{ cm}$$

$$\text{Perimeter} = (2a + b)\,\text{sq.unit}$$

$$= (2 \times 10 + 10\sqrt{2})\,\text{cm}$$

$$= (20 + 10 \times 1.414)\,\text{cm}$$

$$= (20 + 14.14)\,\text{cm}$$

$$= 34.14 \text{ cm}$$

Area of right isosceles triangle ABC

$$= \frac{1}{2} \times 10 \times 10 \text{ cm}^2 = 50 \text{ cm}^2$$

Hence, area = 50 cm^2 and perimeter = 34.14 cm

********** END **********