



Exercise 7A

Question 16:

Let a be the side of an equilateral triangle.

$$\therefore \text{Height of an equilateral triangle} = \frac{\sqrt{3}}{2}a \text{ units}$$

$$\text{Height of an equilateral triangle} = 9\text{cm} \quad [\text{given}]$$

$$\Rightarrow \frac{\sqrt{3}}{2}a = 9$$

$$\Rightarrow a = \frac{9 \times 2}{\sqrt{3}}$$

$$\Rightarrow = \frac{9 \times 2 \times \sqrt{3}}{\sqrt{3} \times \sqrt{3}} \quad [\text{Rationalizing the denominator}]$$

$$\Rightarrow = \frac{9 \times 2\sqrt{3}}{\sqrt{3} \times \sqrt{3}}$$

$$\Rightarrow a = 6\sqrt{3}$$

$$\Rightarrow \text{base} = 6\sqrt{3}$$

$$\text{Area of the equilateral triangle} = \frac{1}{2} \times \text{base} \times \text{height}$$

$$= \frac{1}{2} \times 6\sqrt{3} \times 9 \quad [\because \text{base} = 6\sqrt{3} \text{ and height} = 9\text{cm}]$$

$$= 27\sqrt{3}$$

$$\text{Area of the equilateral triangle} = 27 \times 1.732 = 46.764$$

$$= 46.76\text{cm}^2$$

[Correct to 2 places of decimal]

Question 17:

Let $a=50\text{cm}$, $b=20\text{cm}$ and $c=50\text{cm}$.

Let us find s :

$$s = \frac{1}{2}(a + b + c)$$

$$= \left(\frac{50 + 20 + 50}{2} \right) \text{cm} = \left(\frac{120}{2} \right) \text{cm}$$

$$= 60 \text{ cm}$$

Now, area of one triangular piece of cloth

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

$$= \sqrt{60(60-50)(60-20)(60-50)}$$

$$= \sqrt{60 \times 10 \times 40 \times 10}$$

$$= \sqrt{6 \times 10 \times 10 \times 4 \times 10 \times 10}$$

$$= \sqrt{10 \times 10 \times 10 \times 10 \times 2 \times 2 \times 2 \times 3}$$

$$= 10 \times 10 \times 2\sqrt{6}$$

$$= 200\sqrt{6} = 200 \times 2.45 = 490 \text{ cm}^2$$

$$\therefore \text{area of one piece of cloth} = 490 \text{ cm}^2$$

$$\text{Now area of 12 pieces} = (12 \times 490) \text{ cm}^2 = 5880 \text{ cm}^2$$

***** END *****

