Page No.
Date

1) The perimeter of an Equilateral triangle is 60 m. Find its area.

Perimeter of Equilateral triangle = $3 \times a$

$$60 = 3 \times a$$

$$a = \frac{60}{3} = 20$$

$$\boxed{a = 20 \text{ cm}}$$

Area of Equilateral triangle = $\frac{\sqrt{3}}{4} a^2$

$$= \frac{\sqrt{3}}{4} \times 20 \times 20$$

$$\boxed{A = 100\sqrt{3}}$$

2) The perimeter of a triangle is 36cm and its sides are in the ratio of 3:4:5 then find the value of its sides a, b, c.

Sides are in the ratio of 3:4:5

Sides are $3x$, $4x$, $5x$.

As per given condition.

$$3x + 4x + 5x = 36 \quad [\text{perimeter}]$$

$$12x = 36$$

$$x = \frac{36}{12}$$

$$\boxed{x = 3 \text{ cm}}$$

$a = 3x = 3 \times 3 = 9\text{cm}$

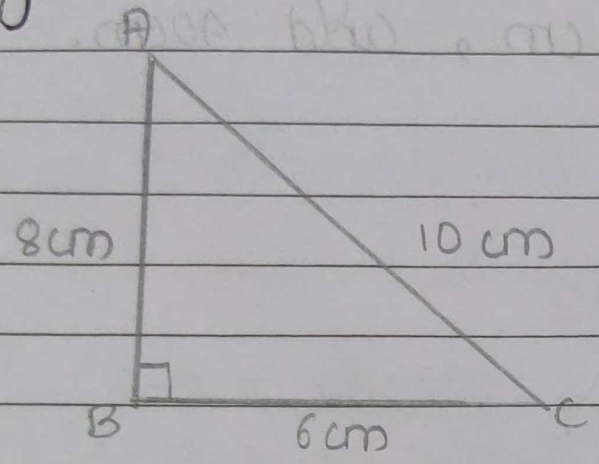
$b = 4x = 4 \times 3 = 12\text{cm}$

$c = 5x = 5 \times 3 = 15\text{cm}$

sides are 9cm, 12cm, 15cm.

3) The base of a right triangle is 6cm and hypotenuse is 10 cm. Find its area.

→



$AC^2 = BC^2 + AB^2$

$10^2 = 6^2 + AB^2$

$100 = 36 + AB^2$

$100 - 36 = AB^2$

$AB^2 = 64$

$AB = \sqrt{64} = 8\text{cm}$

$s = \frac{a+b+c}{2} = \frac{8+6+10}{2} = \frac{24}{2} = 12$

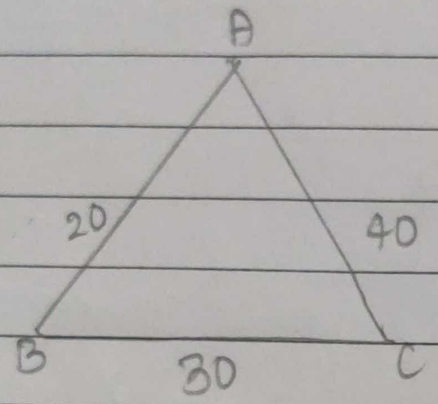
$s-a = 12-8 = 4$

$s-b = 12-6 = 6$

$s-c = 12-10 = 2$

$$A = \sqrt{12 \times 4 \times 6 \times 2}$$
$$= \sqrt{2 \times 6 \times 2 \times 2 \times 6 \times 2}$$
$$= \sqrt{2^2 \times 2^2 \times 6^2}$$
$$= 2 \times 2 \times 6$$
$$\boxed{A = 24\ cm^2}$$

4) Find the area of a triangle whose sides are 20 cm, 30 cm, and 40 cm.



By Heron's Formula

$$s = \frac{a+b+c}{2} = \frac{20+30+40}{2} = \frac{90}{2} = 45$$

$$A = \sqrt{s[s-a][s-b][s-c]}$$
$$= \sqrt{45[45-20][45-30][45-40]}$$
$$= \sqrt{45 \times 25 \times 15 \times 5}$$
$$= \sqrt{5 \times 9 \times 5 \times 5 \times 5 \times 3 \times 5}$$
$$= \sqrt{5^2 \times 5^2 \times 5 \times 9 \times 3}$$
$$= 5 \times 5\sqrt{5 \times 9 \times 3}$$
$$= 25\sqrt{135}$$

= 25 × 11.6

= 290 cm^2

$A = 290\ cm^2$

5) The sides of a triangular field are 51m, 37m, and 20m. Find the number of rose beds that can be prepared in the field if each rose bed occupies a space of 6 sq.m.

$a = 51m$, $b = 37m$, $c = 20m$

$s = \frac{a+b+c}{2} = \frac{51+37+20}{2} = \frac{108}{2} = 54\ cm$

$s - a = 54 - 51 = 3$

$s - b = 54 - 37 = 17$

$s - c = 54 - 20 = 34$

$A = \sqrt{54 \times 3 \times 17 \times 34}$

$= \sqrt{9 \times 2 \times 3 \times 3 \times 17 \times 17 \times 2}$

$= \sqrt{3^2 \times 3^2 \times 2^2 \times 17}$

$= 3 \times 3 \times 2 \times 17 =$ $A = 306\ m^2$

Number of Rose beds =

$\frac{\text{Area of Rose field}}{\text{Area of one rose bed}} = \frac{306}{6}$

Number of Rose beds = $51\ m^2$