* Extra Questions :-

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

→ 'a' = a, 'b' = a, 'c' = a

$\therefore s = \frac{a+b+c}{2} = \frac{a+a+a}{2} = \frac{3a}{2}$

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

$= \sqrt{\frac{3a}{2}\left[\frac{3a}{2}-a\right]\left[\frac{3a}{2}-a\right]\left[\frac{3a}{2}-a\right]}$

$= \sqrt{\frac{3a}{2}\left[\frac{a}{2}\right]\left[\frac{a}{2}\right]\left[\frac{a}{2}\right]}$

$= \sqrt{\frac{3a^4}{16}} = \frac{\sqrt{3}}{4}a^2$

Perimeter $= 60m$

$a+b+c = 60$

$a+a+a = 60$

$3a = 60$

$a = \frac{\cancel{60}^{20}}{\cancel{3}_1} = 20m$

Then, Area $= \frac{\sqrt{3}}{4} a^2 = \frac{\sqrt{3}}{4} \times (20)^2$

$= \frac{\sqrt{3}}{\cancel{4}_1} \times \cancel{400}^{100}$

$= 100\sqrt{3}\ m^2$.

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

→ Let us take sides as 3K, 4K and 5K

Then, Perimeter $= 3K + 4K + 5K = 12K$ cm

According to question,

$12K = 36$

$K = \frac{\cancel{36}^3}{\cancel{12}_1} = 3$

$\therefore a = 3K = 3 \times 3 = 9$ cm

$b = 4K = 4 \times 3 = 12$ cm

$c = 5K = 5 \times 3 = 15$ cm

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

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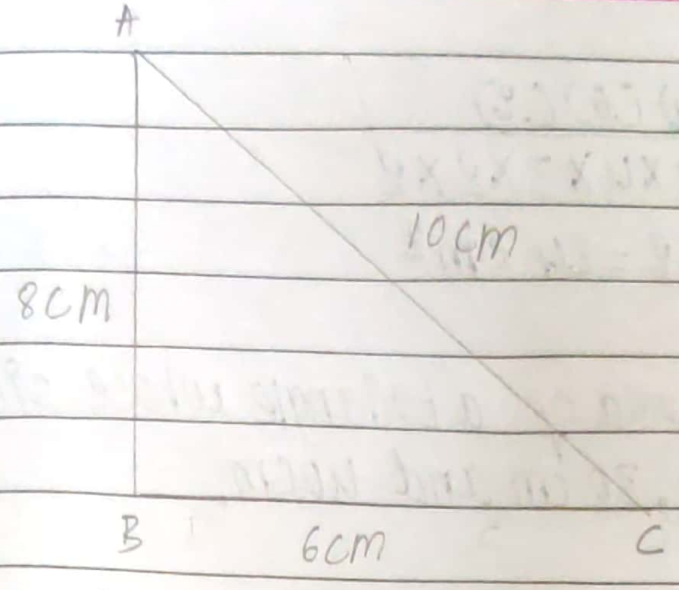

By Pythagarous theorem,

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

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

$100 = AB^2 + 36$

$100 - 36 = AB^2$

$64 = AB^2$

$AB^2 = 64$

$AB = \sqrt{64}$

$AB = 8$ cm

$a = 8, b = 6, c = 10$

$\therefore s = \frac{a+b+c}{2} = \frac{8+6+10}{2} = \frac{\cancel{24}^{12}}{\cancel{2}_{1}} = 12$ cm

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

$= \sqrt{12(12-8)(12-6)(12-10)}$

$$= \sqrt{12(4)(6)(2)}$$
$$= \sqrt{4 \times 3 \times 4 \times 3 \times 2 \times 2}$$
$$= 4 \times 3 \times 2 = 24 \text{ cm}^2$$

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

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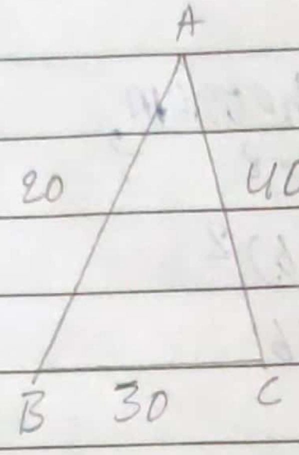

$a = 20,\ b = 30,\ c = 40$

$$\therefore s = \frac{a+b+c}{2} = \frac{20+30+40}{2} = \frac{\cancel{90}^{45}}{\cancel{2}_{1}}$$

$$\therefore A = \sqrt{s(s-a)(s-b)(s-c)}$$
$$= \sqrt{45(45-20)(45-30)(45-40)}$$
$$= \sqrt{45(25)(15)(5)}$$
$$= \sqrt{15 \times 3 \times 5 \times 5 \times 15 \times 5}$$
$$= 15 \times 5 \sqrt{3 \times 5}$$
$$= 75\sqrt{15}$$
$$= 290.47 \text{ cm}^2$$

5) The sides of a triangular field are 51 m, 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.

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

$$\therefore s = \frac{51+37+20}{2} = \frac{\cancel{108}^{54}}{\cancel{2}_{1}} = 54m$$

$$\therefore Area = \sqrt{s(s-a)(s-b)(s-c)}$$
$$= \sqrt{54(54-51)(54-37)(54-20)}$$
$$= \sqrt{54(3)(17)(34)}$$
$$= 306 m^2$$

Area of each rose bed $= 6m^2$

$\Rightarrow$ Number of rose beds $= \frac{\cancel{306}^{51}}{\cancel{6}_{1}} = 51.$