

③.  $\text{Semi-perimeter} = \frac{15 + 11 + 6 \text{ m}}{2} = \frac{32}{2} = 16$

$$\begin{aligned} \text{Area} &= \sqrt{s(s-a)(s-b)(s-c)} \\ &= \sqrt{16 \times (16-15)(16-11)(16-6)} \\ &= \sqrt{16 \times 1 \times 5 \times 10} \\ &= \sqrt{2 \times 2 \times 2 \times 2 \times 1 \times 5 \times 2 \times 2} \\ &= 4 \times 2 \times 5 \sqrt{2} \\ &= 20\sqrt{2} \text{ m}^2 \end{aligned}$$

④. Perimeter = 42 cm

Length of two sides = 18 and 10 cm.

Length of third side = ~~28~~  $42 - (18 + 10)$   
 $= 42 - 28 = 14 \text{ cm}$

$s = \frac{42}{2} = 21 \text{ cm}$

$$\begin{aligned} \text{Area} &= \sqrt{s(s-a)(s-b)(s-c)} \\ &= \sqrt{21(21-18)(21-10)(21-14)} \\ &= \sqrt{21 \times 3 \times 11 \times 7} \\ &= \sqrt{3 \times 7 \times 3 \times 11 \times 7} \\ &= 3 \times 7 \sqrt{11} = 21\sqrt{11} \end{aligned}$$

⑤. perimeter = 540 cm

Ratio = 12 : 17 : 25.

$12x + 17x + 25x = 540$

$54x = 540$

$x = 10$

$12x = 120$ ,  $17x = 170$ ,  $25x = 250$ .

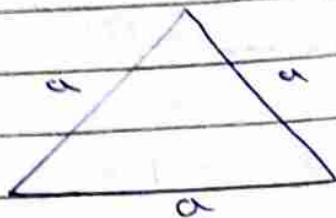
Semi-perimeter =  $\frac{540}{2} = 270 \text{ cm}$ .

$$\begin{aligned} &\sqrt{270(270-120)(270-170)(270-250)} \\ &= \sqrt{270 \times 150 \times 100 \times 20} \end{aligned}$$

Ch-12 Herons Formula.

Exercise 12.1

①



perimeter = 180 cm.  $s = \frac{180}{2} = 90$   
 $3a = 180$   
 $a = 60$

$$\sqrt{s(s-a)(s-b)(s-c)} = \sqrt{90(90-60)(90-60)(90-60)}$$

$$= \sqrt{90 \times 30 \times 30 \times 30}$$

$$= \sqrt{\underline{3 \times 3 \times 5 \times 2} \times \underline{3 \times 5 \times 2} \times \underline{3 \times 5 \times 2}}$$

$$= 3 \times 5 \times 2 \sqrt{10} = 30\sqrt{10} \text{ Any}$$

②. Sides = 122, 22, 120.

s perimeter =  $\frac{122+22+120}{2} = \frac{264}{2} = 132$

$$\sqrt{132(132-122)(132-22)(132-120)}$$

$$= \sqrt{132 \times 10 \times 110 \times 12}$$

$$= \sqrt{\underline{2 \times 2 \times 3 \times 11} \times \underline{5 \times 2} \times \underline{11 \times 5 \times 2} \times \underline{2 \times 2 \times 3}}$$

$$= 2 \times 3 \times 11 \times 5 \times 2 \times 2$$

$$= 1320 \text{ cm}^2$$

Rent per year = £5000.

Rent for 3 months = ~~5000~~ £

Rent per m<sup>2</sup> = £5000.

$$\text{Rent for } 1320 = 5000 \times 1320$$

$$= 660000$$

Rent for 3 months = £330000

Any