11/12
8/08/21

CH-12 HERON'S FORMULA

Ex. 12.1

Q1) if each side is a
Sum of all sides = 3a = 180 cm, a = 180/3 = 60

Semiperimeter = 90 cm
Area = $\sqrt{90(90-60)(90-60)(90-60)}$
= $\sqrt{2\times3\times3\times5\times3\times2\times5\times3\times2\times5}$
= $4\times3\times3\times5\sqrt{3}$ = $900\sqrt{3}$ cm².

Q2) sides of ΔABC are 122 m, 22 m, 120 m.
Perimeter = 264 m.
Semiperimeter = 264/2 = 132 m.

By heron's formula, area = $\sqrt{s(s-a)(s-b)(s-c)}$
= $\sqrt{132\times10\times110\times12}$ m² = 1320 m².
given, rent = ₹5000/m².
rent of 1 wall for 3 months = $\frac{1320\times5000\times3}{12}$
= ₹1650000

Q3) Given sides of wall = 15 m, 11 m, 6 m.
Semiperimeter = $\frac{15+11+6}{2}$ = $\frac{16\text{ m}}{2}$ = 8 m.
using heron's formula = $\sqrt{16\times1\times5\times10}$ = $\sqrt{800}$ m²
= $20\sqrt{2}$ m².

04) Let 3rd side be x.
3 sides 18 cm, 16 cm, x cm.
perimeter = 42 cm.
$x = 42 - (18 + 16)$ cm = 14.
∴ The semi perimeter of $\Delta = \frac{42}{2} = 21$ cm.
Area:
$\sqrt{s(s-a)(s-b)(s-c)} = \sqrt{21 \times 3 \times 11 \times 7} = 21\sqrt{11}\ cm^2$

05) the given ratio = 12 : 17 : 25.
Let the sides be 12x, 17x and 25x.
perimeter = 540 = 12x + 17x + 25x.
x = 10 cm.
So sides are 120, 170, 250 cm.
semiperimeter = 270 cm.
Area:
$\sqrt{s(s-a)(s-b)(s-c)} = \sqrt{270 \times 150 \times 100 \times 20}\ cm^2$
$= 9000\ cm^2$.

06) Let 3rd side be x.
Equal sides = 12 cm.
perimeter = 30 cm.
$x + 2(12) = 30 \Rightarrow x = 6$ cm.
semiperimeter $= \frac{30}{2} = 15$ cm.
Area $= \sqrt{s(s-a)(s-b)(s-c)}$
$\Rightarrow \sqrt{15 \times 3 \times 3 \times 9}$
$\Rightarrow 9\sqrt{3 \times 5} = 9\sqrt{15}\ cm^2$