

Chapter 12

HERON'S FORMULA

Example-1:

Find the area of triangle whose two sides are 18 cm and 10 cm and the perimeter is 42 cm.

Solution:

Let the sides are $a = 18$ cm, $b = 10$ cm and $C = c$ cm

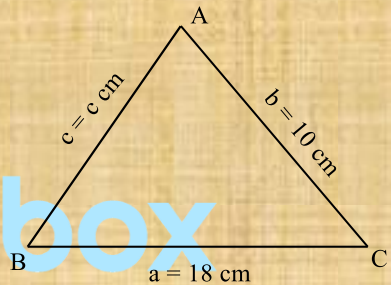
$\therefore$ Perimeter of triangle = 42.

$$\Rightarrow a + b + c = 42$$

$$\Rightarrow 18 + 10 + c = 42$$

$$\Rightarrow 28 + c = 42$$

$$\Rightarrow c = 42 - 28 = 14 \text{ cm}$$



Now,

$$S = \frac{a+b+c}{2} = \frac{18+10+14}{2} = \frac{42}{2} = 21$$

$$\text{Area of triangle} = \sqrt{S(S-a)(S-b)(S-c)}$$

$$\text{Area of triangle} = \sqrt{21(21-18)(21-10)(21-14)}$$

$$= \sqrt{21(3)(11)(7)}$$

$$= \sqrt{7 \times 3 \times 3 \times 11 \times 7}$$

$$\text{Area of triangle} = 21\sqrt{11} \text{ cm}^2.$$