

Chapter 12

HERON'S FORMULA

Example- 4:

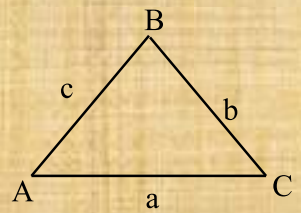
Find the Area of the triangle. Length of whose sides are 32 cm, 40 cm and 24 cm. Hence, find the height corresponding to the smallest side.

Solution:

Sides of the triangle are $BC = a = 32$ cm

$$CA = b = 40$$
 cm

$$AB = c = 24$$
 cm



$$\text{Semiperimeter}(S) = \frac{a+b+c}{2} = \frac{32+40+24}{2} = \frac{96}{2} = 48 \text{ cm.}$$

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

$$\text{Area of triangle} = \sqrt{48(48-32)(48-40)(48-24)}$$

$$= \sqrt{48 \times 16 \times 8 \times 24}$$

$$= \sqrt{8 \times 6 \times 16 \times 8 \times 6 \times 4}$$

$$= 8 \times 6 \times 4 \times 2$$

$$= 384 \text{ cm}^2.$$

Now, the smallest side = 24 cm.

$$\text{Area of triangle} = \frac{1}{2} \times \text{Base} \times \text{height}$$

$$384 = \frac{1}{2} \times \cancel{24}^{12} \times h$$

$$\Rightarrow h = \frac{\cancel{384}^{32}}{\cancel{12}_1}$$

$\therefore$ Height of smallest side = 32 cm.

