

Mathematics

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(Chapter – 12) (Heron's Formula)(Exemplar Problems)

(Class – IX)

Exercise 12.1

Question 1:

An isosceles right triangle has area 8 cm^2 . The length of its hypotenuse is

- (A) $\sqrt{32} \text{ cm}$ (B) $\sqrt{16} \text{ cm}$ (C) $\sqrt{48} \text{ cm}$ (D) $\sqrt{24} \text{ cm}$

Answer 1:

- (A) $\sqrt{32} \text{ cm}$

Solution:

Given area of an isosceles right triangle = 8 cm^2

$$\text{Area of an isosceles triangle} = \frac{1}{2} (\text{Base} \times \text{Height})$$

$$\Rightarrow 8 = \frac{1}{2} (\text{Base} \times \text{Base})$$

[\because Base = height, as triangle is an isosceles triangle]

$$\Rightarrow (\text{Base})^2 = 16 \Rightarrow \text{Base} = 4 \text{ cm}$$

In ΔABC , using Pythagoras theorem,

$$AC^2 = AB^2 + BC^2 = 4^2 + 4^2 = 16 + 16$$

$$\Rightarrow AC^2 = 32 \Rightarrow AC = \sqrt{32} \text{ cm}$$

[taking positive square root because length is always positive]

Hence, the length of its hypotenuse is $\sqrt{32} \text{ cm}$.

