

Mathematics

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

(Class – IX)

Exercise 12.2

Write **True** or **False** and justify your answer:

Question 3:

The area of the isosceles triangle is $\frac{5}{4}\sqrt{11}$ cm² if the perimeter is 11 cm and the base is 5 cm.

Answer 3:

True

Let equal sides of an isosceles triangle be b .

$$\therefore \text{Perimeter of a triangle,} \quad 2s = b + b + 5$$

$$\therefore \quad \quad \quad 11 = 2b + 5$$

$$\Rightarrow \quad \quad \quad 2b = 11 - 5 \Rightarrow 2b = 6$$

$$\Rightarrow \quad \quad \quad b = \frac{6}{2} = 3 \text{ cm}$$

We know that, area of an isosceles triangle = $\frac{a}{4}\sqrt{4b^2 - a^2}$

Here, sides of triangle are $a = 5$ cm and $b = 3$ cm

\therefore Area of a isosceles triangle

$$= \frac{5\sqrt{4(3)^2 - (5)^2}}{4}$$

$$= \frac{5\sqrt{4 \times 9 - 25}}{4}$$

$$= \frac{5\sqrt{36 - 25}}{4}$$

$$= \frac{5\sqrt{11}}{4} \text{ cm}^2$$

