

Mathematics

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

(Class – IX)

Exercise 12.1

Question 3:

The sides of a triangle are 56 cm, 60 cm and 52 cm long. Then the area of the triangle is

- (A) 1322 cm² (B) 1311 cm² (C) 1344 cm² (D) 1392 cm²

 **Answer 3:**

- (C) 1344 cm²

Solution:

Since, the three sides of triangle $a = 56\text{cm}$, $b = 60\text{cm}$ and $c = 52\text{cm}$.

Then, semi – perimeter of a triangle,

$$s = \frac{a+b+c}{2} = \frac{56+60+52}{2} = \frac{168}{2} = 84 \text{ cm}$$

Area of a triangle = $\sqrt{s(s-a)(s-b)(s-c)}$ [by Heron's formula]

$$= \sqrt{84(84-56)(84-60)(84-52)}$$

$$= \sqrt{84 \times 28 \times 24 \times 32}$$

$$= \sqrt{4 \times 7 \times 3 \times 4 \times 7 \times 4 \times 2 \times 3 \times 4 \times 4 \times 2}$$

$$= \sqrt{(4)^6 \times (7)^2 \times (3)^2}$$

$$= (4)^3 \times 7 \times 3 = 1344 \text{ cm}^2$$

Hence, the area of triangle is 1344 cm².

