

CLASS 8 · HOTS · OLYMPIAD PREPARATION · SHORT NOTES

Chapter 11: HOTS: Baudhayana-Pythagoras Theorem (Class 8)

Topic-wise short notes with solved examples

Higher order thinking questions on the Baudhayana-Pythagoras theorem for Class 8: finding sides of right triangles, testing a triple, ladders and poles, and doubling a square, each with a full solution.

1 Solved HOTS questions

- In a right-angled triangle the square of the hypotenuse equals the sum of the squares of the other two sides: $c^2 = a^2 + b^2$. If $a^2 + b^2 = c^2$ for the three sides of a triangle, the triangle is right-angled (the converse). The square on the diagonal of a square has twice the area of the square.

Example 1.1 The legs of a right triangle are 9 cm and 12 cm. Find the hypotenuse.

SOLUTION

$$\sqrt{81 + 144} = \sqrt{225}.$$

15 cm

Example 1.2 Is (7, 24, 25) a Pythagorean triple?

SOLUTION

$$7^2 + 24^2 = 49 + 576 = 625 = 25^2.$$

Yes

Example 1.3 A ladder 13 m long has its foot 5 m from a wall. How high up the wall does it reach?

SOLUTION

$$\text{Height} = \sqrt{13^2 - 5^2} = \sqrt{144}.$$

12 m

Example 1.4 A rectangle has a diagonal of 25 cm and a length of 24 cm. Find its breadth and its area.

SOLUTION

$$\text{Breadth} = \sqrt{25^2 - 24^2} = \sqrt{49} = 7 \text{ cm}.$$

$$\text{Area} = 24 \times 7.$$

7 cm and 168 square cm

Example 1.5 A square has side 5 cm. Find the side of a square whose area is double that of the first.

SOLUTION

The area of the first square is 25 square cm, so the new area is 50 square cm.

The side of the new square is $\sqrt{50} = 5\sqrt{2}$ cm, which is the diagonal of the first square.

$5\sqrt{2}$ cm, about 7.07 cm

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