Worked answers | Pythagoras' theorem

Finding a shorter side

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. Hypotenuse 17 cm, one leg 8 cm: find the other. [2 marks]

$x^2 = 289 - 64 = 225$.

Take the positive root.

Answer: 15 cm.

2. Hypotenuse 25 m, one leg 7 m: find the other. [2 marks]

$x^2 = 625 - 49 = 576$.

The positive root is 24.

Answer: 24 m.

3. Hypotenuse 15 cm, one leg 12 cm: find the other. [2 marks]

$x^2 = 225 - 144 = 81$.

The positive root is 9.

Answer: 9 cm.

4. Hypotenuse 5 m, one leg 300 cm: find the other in metres. [3 marks]

Convert 300 cm to 3 m.

$x^2 = 25 - 9 = 16$.

Answer: 4 m.

5. Hypotenuse 1.3 m, one leg 0.5 m: find the other. [2 marks]

$x^2 = 1.69 - 0.25 = 1.44$.

The positive root is 1.2.

Answer: 1.2 m.

6. A student writes $x^2 = 6^2 - 10^2$ when the hypotenuse is 10 cm and the known leg is 6 cm. Correct the setup and answer. [3 marks]

The hypotenuse square is the total.

Subtract 36 from 100, then root 64.

Answer: $x^2 = 10^2 - 6^2$; x = 8 cm.