Pythagoras

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. Find the hypotenuse of a right triangle with legs 5 cm and 12 cm. [2 marks]

$c^2=25+144=169$.

$c=13$ cm.

Answer: 13 cm

2. A right triangle has hypotenuse 13 m and one leg 5 m. Find the other leg. [2 marks]

$b^2=169-25=144$.

$b=12$ m.

Answer: 12 m

3. Find the diagonal of a square with side 6 cm. Give an exact answer and then one decimal place. [3 marks]

$d^2=6^2+6^2=72$.

$d=\sqrt{72}=6\sqrt{2}\approx 8.5$ cm.

Answer: $6\sqrt{2}$ cm; 8.5 cm

4. A rectangular field is 9 m by 12 m. How far is it between opposite corners? [2 marks]

The diagonal is the hypotenuse.

$d=\sqrt{(9^2+12^2)}=15$ m.

Answer: 15 m

5. A 15 m cable reaches from the top of a vertical post to the ground 9 m away. Find the post's height. [2 marks]

$h^2=15^2-9^2=144$.

$h=12$ m.

Answer: 12 m

6. A student finds a missing leg in a triangle with hypotenuse 10 and other leg 6 by calculating $\sqrt{(100+36)}$. Explain and correct the error. [3 marks]

The unknown leg cannot exceed the hypotenuse.

$b^2=100-36=64$, so $b=8$.

Answer: Subtract instead: the missing leg is 8 units.