Selecting the right method

6 questions | 15 marks

Equivalent correct methods earn the corresponding marks.

1. Legs 7 and 10 are known. Which method finds the third side? Write its equation. [2 marks]

Two sides are known; a side is missing.

Answer: Pythagoras: $c^2 = 7^2 + 10^2$

2. Hypotenuse and an acute angle are known. Which equation finds adjacent? [2 marks]

Cosine connects adjacent and hypotenuse.

Answer: $a = h\cos\theta$

3. Opposite and hypotenuse are known. Write the expression for the acute angle. [2 marks]

Calculate $\frac{\text{opposite}}{\text{hypotenuse}}$, then use inverse sine.

Answer: $\theta = \sin^{-1}\left(\frac{o}{h}\right)$

4. A right triangle has one acute angle 45° but no side length. Can you find its hypotenuse? Explain. [3 marks]

Angles fix shape, not scale.

Many similar triangles satisfy the angle condition.

Answer: No

5. A student uses $c = a + b$ for legs 3 and 4. Correct the calculation. [2 marks]

$c^2 = 3^2 + 4^2 = 25.$

$c = 5$, not 7.

Answer: $c = 5$

6. A right triangle has legs 3 cm and 4 cm. Find the hypotenuse, then the acute angle opposite 3 cm to two decimal places. [4 marks]

$c = \sqrt{9 + 16} = 5$ cm.

$\theta = \tan^{-1}\left(\frac{3}{4}\right) \approx 36.87^\circ.$

Answer: 5 cm; 36.87°