Sine/cosine/tangent

6 questions | 13 marks

Equivalent correct methods earn the corresponding marks.

1. A right triangle has opposite leg 8 and hypotenuse 17. Find $\sin\theta$ as a fraction. [2 marks]

Sine is opposite divided by hypotenuse.

Answer: $\frac{8}{17}$

2. A right triangle has adjacent leg 12 and hypotenuse 13. Find $\cos\theta$. [2 marks]

Cosine is adjacent divided by hypotenuse.

Answer: $\frac{12}{13}$

3. A right triangle has opposite leg 9 and adjacent leg 4. Find $\tan\theta$. [2 marks]

Tangent is opposite divided by adjacent.

Answer: $\frac{9}{4}$ or 2.25

4. Find the opposite leg when the adjacent leg is 14 m and $\theta = 28^\circ$. Round to one decimal place. [2 marks]

$\tan 28^\circ = \frac{x}{14}$.

$x = 14\tan 28^\circ$.

$x \approx 7.4\,\text{m}$.

Answer: 7.4 m

5. Find an acute angle with opposite leg 5 cm and hypotenuse 9 cm. Round to one decimal place. [2 marks]

$\sin\theta = \frac{5}{9}$.

$\theta = \sin^{-1}\left(\frac{5}{9}\right)$.

$\theta \approx 33.7^\circ$.

Answer: 33.7°

6. A calculation gives $\sin\theta = 1.2$ for a right triangle. Can an acute angle satisfy this? Explain. [3 marks]

The opposite side is shorter than the hypotenuse, so $0 < \sin\theta < 1$.

A value 1.2 indicates an incorrect ratio or inconsistent data.

Answer: No.