Exact values from special triangles

6 questions | 13 marks

Equivalent correct methods earn the corresponding marks.

1. Find sin 30° exactly. [2 marks]

The shorter leg is half the hypotenuse.

Answer: 1/2

2. Find cos 45° exactly. [2 marks]

$\cos 45^\circ = 1/\sqrt{2} = \sqrt{2}/2$.

Answer: $\sqrt{2}/2$

3. Find tan 30° exactly. [2 marks]

$\tan 30^\circ = 1/\sqrt{3} = \sqrt{3}/3$.

Answer: $\sqrt{3}/3$

4. A right triangle has hypotenuse 10 cm and an angle of 45°. Find the opposite leg exactly. [3 marks]

$x = 10\sin 45^\circ = 10(\sqrt{2}/2) = 5\sqrt{2}$ cm.

Answer: $5\sqrt{2}$ cm

5. Evaluate 2 cos 60° + sin 30° exactly. [2 marks]

$2(1/2) + 1/2 = 3/2$.

Answer: 3/2

6. Are sin 60° and tan 60° equal? Give exact values to justify. [2 marks]

$\sin 60^\circ = \sqrt{3}/2$ whereas $\tan 60^\circ = \sqrt{3}$.

The ratios have different denominators.

Answer: No.