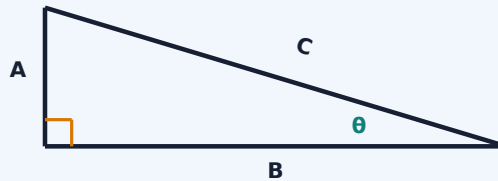


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Page 1

QUICK REFERENCE**SOH** $\sin(\theta) = \text{opposite} / \text{hypotenuse}$ **CAH** $\cos(\theta) = \text{adjacent} / \text{hypotenuse}$ **TOA** $\tan(\theta) = \text{opposite} / \text{adjacent}$ For missing angles, use $\sin^{-1}$, $\cos^{-1}$, or $\tan^{-1}$ in degree mode.**LEVEL 1 - LABEL THE TRIANGLE & CHOOSE THE RATIO****1 LABEL THE SIDES**Relative to θ , identify the opposite side, adjacent side, and hypotenuse.**2 CHOOSE THE RATIO**

You know the opposite side and the hypotenuse. Which trig ratio should you use?

SOH CAH TOA**3 CHOOSE THE RATIO**

You know the adjacent side and want to find the opposite side. Which trig ratio should you use?

SOH CAH TOA**SIDE-LABEL CHECK**Hypotenuse: across from 90° . Opposite: across from θ . Adjacent: next to θ , but not the hypotenuse.

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LEVEL 2 - FIND MISSING SIDES

4 SINE

A right triangle has a 38° angle and a hypotenuse of 14. Find the side opposite the 38° angle.



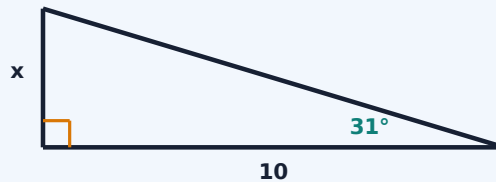
5 COSINE

A right triangle has a 52° angle and a hypotenuse of 18. Find the side adjacent to the 52° angle.



6 TANGENT

A right triangle has a 31° angle and an adjacent side of 10. Find the opposite side.



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LEVEL 3 - FIND MISSING ANGLES

7 INVERSE SINE

The side opposite θ is 8, and the hypotenuse is 15. Find θ to the nearest tenth of a degree.



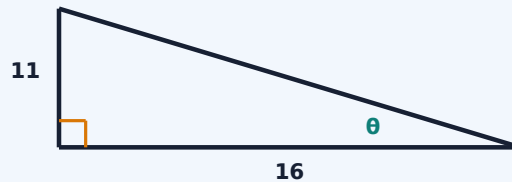
8 INVERSE COSINE

The side adjacent to θ is 12, and the hypotenuse is 17. Find θ to the nearest tenth of a degree.



9 INVERSE TANGENT

The side opposite θ is 11, and the adjacent side is 16. Find θ to the nearest tenth of a degree.



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LEVEL 4 - MIXED CHALLENGE

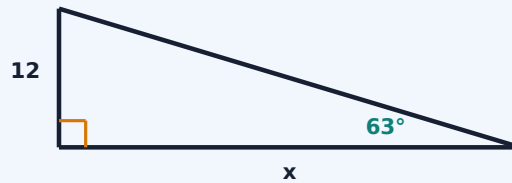
10 MISSING HYPOTENUSE

A right triangle has a 40° angle and an opposite side of 7. Find the hypotenuse to the nearest hundredth.



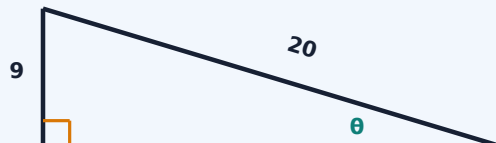
11 MISSING ADJACENT SIDE

A right triangle has a 63° angle and an opposite side of 12. Find the adjacent side to the nearest hundredth.



12 MISSING ANGLE

A right triangle has an opposite side of 9 and a hypotenuse of 20. Find θ to the nearest tenth of a degree.



Check the ratio first, then the algebra. Use degree mode for inverse trig.

1 Label the sides

Opposite = A
Adjacent = B
Hypotenuse = C

2 Choose the ratio

SOH
 $\sin(\theta) = \text{opposite} / \text{hypotenuse}$

3 Choose the ratio

TOA
 $\tan(\theta) = \text{opposite} / \text{adjacent}$

4 Sine

$\sin(38^\circ) = x / 14$
 $x = 14 \sin(38^\circ)$
 $x \approx 8.62$

5 Cosine

$\cos(52^\circ) = x / 18$
 $x = 18 \cos(52^\circ)$
 $x \approx 11.08$

6 Tangent

$\tan(31^\circ) = x / 10$
 $x = 10 \tan(31^\circ)$
 $x \approx 6.01$

7 Inverse sine

$\sin(\theta) = 8 / 15$
 $\theta = \sin^{-1}(8 / 15)$
 $\theta \approx 32.2^\circ$

8 Inverse cosine

$\cos(\theta) = 12 / 17$
 $\theta = \cos^{-1}(12 / 17)$
 $\theta \approx 45.1^\circ$

9 Inverse tangent

$\tan(\theta) = 11 / 16$
 $\theta = \tan^{-1}(11 / 16)$
 $\theta \approx 34.5^\circ$

10 Missing hypotenuse

$\sin(40^\circ) = 7 / x$
 $x = 7 / \sin(40^\circ)$
 $x \approx 10.89$

11 Missing adjacent side

$\tan(63^\circ) = 12 / x$
 $x = 12 / \tan(63^\circ)$
 $x \approx 6.11$

12 Missing angle

$\sin(\theta) = 9 / 20$
 $\theta = \sin^{-1}(9 / 20)$
 $\theta \approx 26.7^\circ$