

Introduction to Trigonometry: Finding a Side

Use SOH CAH TOA and the diagram to find the missing side.



Name _____

Date _____

Show your method

Label the hypotenuse, opposite, and adjacent sides relative to the marked angle. Choose sin, cos, or tan, substitute the known values, then solve for x . Round to 1 decimal place if needed.

Worked example Find the missing side x , opposite the marked angle, in a right-angled triangle with hypotenuse 14 cm and marked angle 30 degrees.

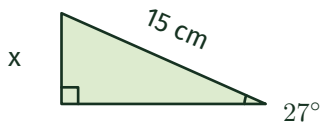


Using $\sin(A) = \frac{O}{H}$:

$$x = 14 \times \sin(30^\circ)$$
$$x = 14 \times 0.5$$
$$x = 7 \text{ cm}$$

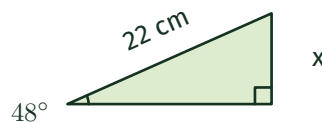
1. Find the length of x .

Solution: $x = 15 \sin(27^\circ) \approx 6.8$



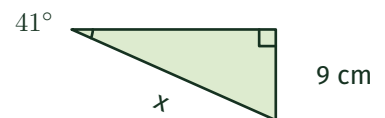
2. Find the length of x .

Solution: $x = 22 \sin(48^\circ) \approx 16.3$



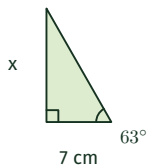
3. Find the length of x .

Solution: $x = 9 / \sin(41^\circ) \approx 13.7$



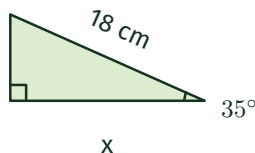
4. Find the length of x .

Solution: $x = 7 \tan(63^\circ) \approx 13.7$



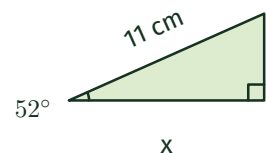
5. Find the length of x .

Solution: $x = 18 \cos(35^\circ) \approx 14.7$



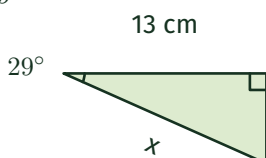
6. Find the length of x .

Solution: $x = 11 \cos(52^\circ) \approx 6.8$



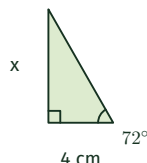
7. Find the length of x .

Solution: $x = 13 / \cos(29^\circ) \approx 14.9$



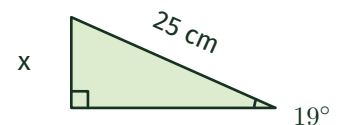
8. Find the length of x .

Solution: $x = 4 \tan(72^\circ) \approx 12.3$



9. Find the length of x .

Solution: $x = 25 \sin(19^\circ) \approx 8.1$



Introduction to Trigonometry (continued)

Solutions for finding a missing side in various contexts.

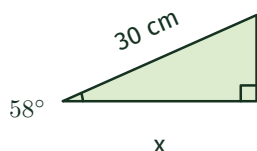


Name _____

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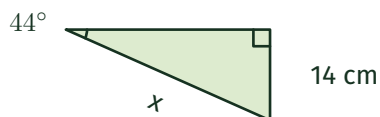
10. Find the length of x .

Solution: $x = 30 \cos(58^\circ) \approx 15.9$



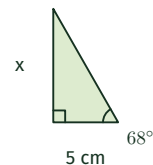
11. Find the length of x .

Solution: $x = 14 / \sin(44^\circ) \approx 20.2$



12. Find the length of x .

Solution: $x = 5 \tan(68^\circ) \approx 12.4$



13. Ladder 6 m, angle 65°.

Solution: $6 \sin(65^\circ) \approx 5.4$ m

14. Ramp base 10 m, angle 8°.

Solution: $10 / \cos(8^\circ) \approx 10.1$ m

15. Kite: 12 m horizontal, angle 50°.

Solution: $12 / \cos(50^\circ) \approx 18.7$ m

16. Wire from 9 m pole, angle 40°.

Solution: $9 / \sin(40^\circ) \approx 14.0$ m

17. Ramp: 5 m slope, angle 14°.

Solution: $5 \sin(14^\circ) \approx 1.2$ m

18. Tower: 40 m base, angle 33°.

Solution: $40 \tan(33^\circ) \approx 26.0$ m