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.

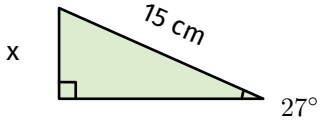
Using $\sin(A) = \frac{O}{H}$:

$x = 14 \times \sin(30°)$

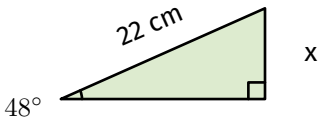
$x = 14 \times 0.5$

$x = 7$ cm

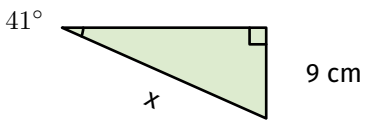
1. Find the length of x.



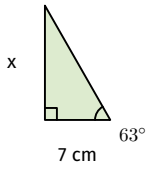
2. Find the length of x.



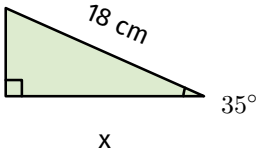
3. Find the length of x.



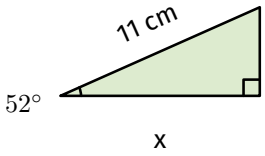
4. Find the length of x.



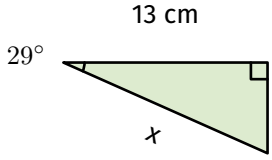
5. Find the length of x.



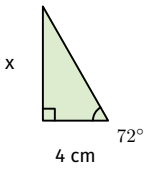
6. Find the length of x.



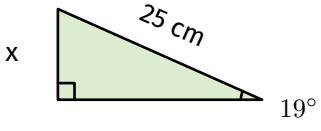
7. Find the length of x.



8. Find the length of x.



9. Find the length of x.

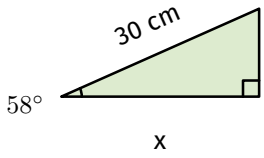


Introduction to Trigonometry (continued)

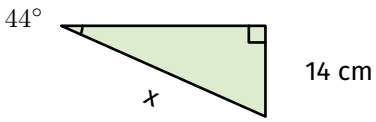
Apply SOH CAH TOA to find a missing side in various contexts.

Name _____ **Date** _____

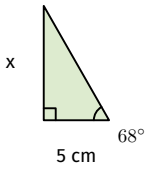
10. Find the length of x.



11. Find the length of x.



12. Find the length of x.



13. A ladder 6 m long leans against a wall at $65°$ to the ground. Find the height reached, to 1 d.p.

14. A ramp of horizontal length 10 m rises at $8°$ to the horizontal. Find the length of the sloped surface, to 1 d.p.

15. A kite string meets the ground at $50°$. The kite is 12 m, measured horizontally, from the flyer. Find the length of string let out, to 1 d.p.

16. A wire from the top of a 9 m pole meets the ground at $40°$ to the horizontal. Find the length of the wire, to 1 d.p.

17. A skateboard ramp rises at $14°$ over a sloped length of 5 m. Find the height gained, to 1 d.p.

18. From a point 40 m from the base of a tower, the angle of elevation to its top is $33°$. Find the height of the tower, to 1 d.p.