

Trigonometry: Finding an Angle

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



Name _____

Date _____

Show your method

Label the hypotenuse, opposite, and adjacent sides relative to the unknown angle. Choose sin, cos, or tan, substitute the two known sides, then use the inverse trig function to solve for x . Round to 1 decimal place if needed.

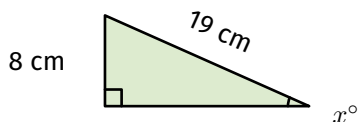
Worked example Find the missing angle x in a right-angled triangle with an opposite side of 7 cm and a hypotenuse of 14 cm.



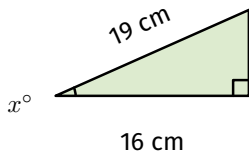
Using $\sin(x) = \frac{O}{H}$:

$$\sin(x) = 7 \div 14$$
$$\sin(x) = 0.5$$
$$x = \sin^{-1}(0.5) = 30^\circ$$

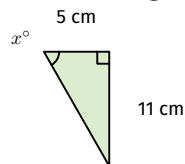
1. Find the size of angle x .



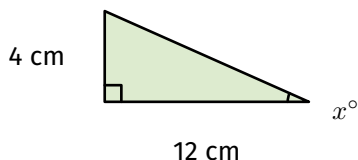
2. Find the size of angle x .



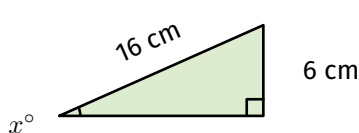
3. Find the size of angle x .



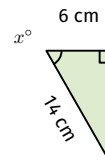
4. Find the size of angle x .



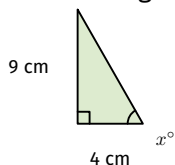
5. Find the size of angle x .



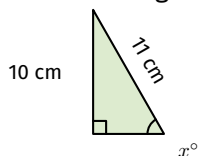
6. Find the size of angle x .



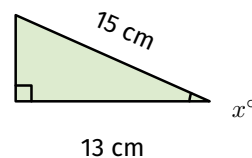
7. Find the size of angle x .



8. Find the size of angle x .



9. Find the size of angle x .



Trigonometry: Finding an Angle (continued)

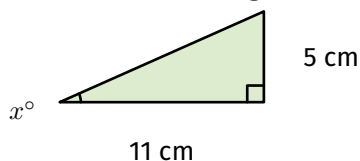
Apply SOH CAH TOA to find a missing angle in various contexts.



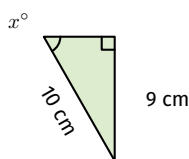
Name _____

Date _____

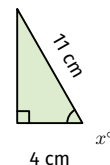
10. Find the size of angle x .



11. Find the size of angle x .



12. Find the size of angle x .



13. A ladder 5 m long leans against a wall. Its foot is 2 m from the wall. Find the angle it makes with the ground, to 1 d.p.

14. A ramp rises 2 m over a horizontal distance of 8 m. Find the angle the ramp makes with the ground, to 1 d.p.

15. A wire from the top of an 8 m pole meets the ground 5 m from the base. Find the angle the wire makes with the ground, to 1 d.p.

16. A kite string is 30 m long. The kite is flying at a height of 18 m. Find the angle the string makes with the ground, to 1 d.p.

17. A tower casts a shadow 12 m long when the tower itself is 20 m tall. Find the angle of elevation from the tip of the shadow to the top of the tower, to 1 d.p.

18. A zip-line cable spans a horizontal gap of 22 m between two platforms, dropping 9 m in height. Find the angle the cable makes with the horizontal, to 1 d.p.

