

SOH-CAH-TOA

10th Grade

Three ratios, and the labelling step that decides which one you need.

In a right triangle, each trig ratio compares two specific sides, defined relative to the angle you are using.

$$\sin = O/H \cdot \cos = A/H \cdot \tan = O/A$$

Have O and H, want θ

$$\sin^{-1}(O/H)$$

Inverse sine gives the angle back.

Have A and H, want O

use tan or sin

Depends which sides you have, not which you want.

$\theta = 30^\circ$, $H = 10$, find O

$$O = 10 \sin 30^\circ = 5$$

Rearranged from $\sin = O/H$.

Which is adjacent?

next to θ , not the hypotenuse

The hypotenuse is always opposite the right angle.

THE COMMON MISTAKE

✗ using the same 'opposite' for both acute angles

✓ opposite depends on which angle you mean

Swap the angle and opposite/adjacent swap places.

The hypotenuse never changes. Only opposite and adjacent depend on which angle you chose.