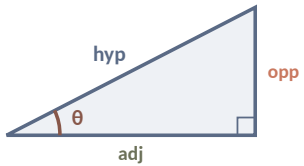
Trigonometry: fact sheet

Planner week 15 · Learn these facts

Label the sides



Hyp: opposite the right angle

Opp: opposite the angle θ

SOH

sin θ = opp ÷ hyp

Opposite and hypotenuse

CAH

cos θ = adj ÷ hyp

Adjacent and hypotenuse

TOA

tan θ = opp ÷ adj

Opposite and adjacent

Finding a side

x = 16 × sin 38°

= 9.85 cm

Side on top: multiply

Side on the bottom: divide

Finding an angle

cos θ = 7 ÷ 11

θ = cos^{-1}(7 ÷ 11) = 50.5°

Use SHIFT then sin, cos or tan

Exact values

sin 30° = $\frac{1}{2}$ cos 60° = $\frac{1}{2}$

tan 45° = 1

sin 90° = 1 cos 0° = 1

Learn these for non-calculator

Calculator

Mode	degrees (D)
Angle	SHIFT sin / cos / tan
Round	at the end

Key words

- **Hypotenuse** the longest side, opposite the right angle
- **Opposite** the side facing the angle
- **Adjacent** the side next to the angle (not the hyp)
- **SOH CAH TOA** the three ratios

Exam tips

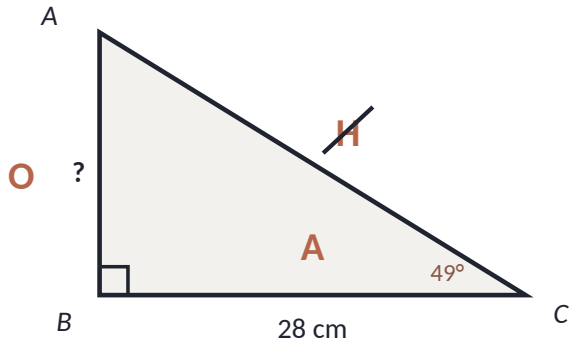
- Label hyp, opp, adj from the angle you use.
- Tick the two sides in the question: pick SOH, CAH or TOA.
- Check your calculator shows D (degrees).
- Missing angle: use sin^{-1}, cos^{-1} or tan^{-1}.
- Round only at the end, to what the question asks.
- Hyp must be the longest side: check your answer.

Trigonometry: fact sheet

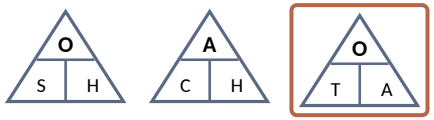
Trigonometry · Planner week 15 · Work out which type it is, follow the example

1 Find a side

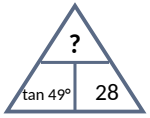
ABC is right-angled at B. BC = 28 cm and angle C = 49°. Work out the length of AB.



1. **An angle** is given: trigonometry
2. **Label the sides** O, A, H. Cross out the one you don't need (H)
3. **Choose** the triangle with O and A:



4. **Fill in:**

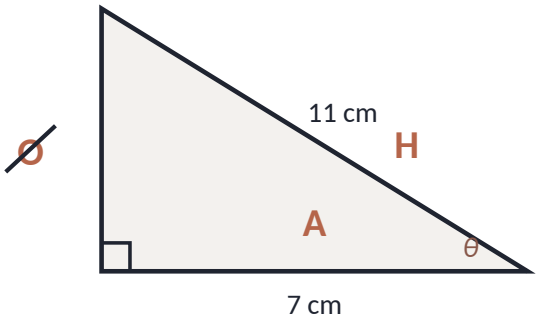


O = tan 49° × 28 = **32.2 cm**

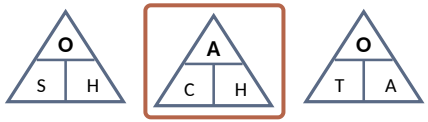
Use this when: you know an angle and a side, and want another side

2 Find an angle

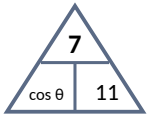
The hypotenuse is 11 cm. The side next to angle θ is 7 cm. Work out angle θ.



1. **An angle** is wanted: trigonometry
2. **Label the sides** O, A, H. Cross out the one you don't need (O)
3. **Choose** the triangle with A and H:



4. **Fill in:**



θ = $\cos^{-1}(7 \div 11)$ = **50.5°**

Use this when: you know two sides, and want an angle (use SHIFT)

The big question

Is there an **angle** in the question?

No angle → Pythagoras. An angle given or wanted → trigonometry.

Pythagoras: do I want a **shorter side** (subtract) or the **longest side** (add)?

Watch out

- Labelling from the wrong angle.
- Calculator in radians: check it shows D.
- Dividing when the side is on top.