TRIGONOMETRY

- CALCULATING ANGLES / SIDES OF TRIANGLES
- VERY IMPORTANT / PRACTICAL

TRIANGLES

FOR JUNIOR CERT, WE ONLY DEAL WITH RIGHT-ANGLED TRIANGLES, SO THERE ARE ONLY 2 METHODS

IS AN ANGLE INVOLVED IN THIS QUESTION?

YES

USE

SIN / COS / TAN

NO

USE

PYTHAGORAS

1. DRAW TRIANGLE
2. LABEL SIDES
3. CHOOSE SIN/COS/TAN → USE RHyme
4. MAKE AN EQUATION
5. SOLVE IT

\[ a^2 + b^2 = c^2 \]

HYPOTENUSE (LONGER)
**PYTHAGORAS (no angle involved)**

Use when we don't care about angles.

If we know two sides, we can work out the length of the other one.

\[ a^2 + b^2 = c^2 \]

**Hypotenuse always on its own**

Don't worry about the letters \( a, b, c \).

**Example 1**

\[ \begin{align*}
5^2 + 12^2 &= 13^2 \\
25 + 144 &= 169 \\
169 &= 169
\end{align*} \]

\[ \sqrt{169} = 13 \]

\[ a = 13 \]

**Example 2**

\[ \begin{align*}
15^2 + 12^2 &= x^2 \\
225 + 144 &= x^2 \\
369 &= x^2 \\
\sqrt{369} &= 9
\end{align*} \]

\[ x = 9 \]

---

**SIN / COS / TAN**

Use when we are given information, or we want to find out about the angle.

**Important:** Decide which angle you're using.

1. **Label sides** \( \text{opp} / \text{adj} / \text{hyp} \)
2. **Choose** \( \text{sin} / \text{cos} / \text{tan} \)
3. **Write an equation** using \( \text{sin} / \text{cos} / \text{tan} \).
4. **Solve.**

Remember: Use inverse \( \text{sin} / \text{cos} / \text{tan} \) if we want to calculate the angle.

This is in tables book, but not as clear as this.

So, remember rhyme:

Summer on holidays

Christmas at home

Thanksgiving—over in America
89. A person is standing 7m from a building. He uses a clinometer to measure the angle to the top of the building from the ground level. He measures this angle to be 63°. Calculate the height of the building.

1. Draw
2. Label
3. Write \( \tan \)
4. Write equation

\[
\tan 63^\circ = \frac{x}{7}
\]

\[
7 \times \tan 63^\circ = x
\]

\[
13.74 \text{ m} = x
\]