



Congruence through transformations

Can I get there by moving it?

- Today: congruent means one figure can be MOVED onto the other.

The definition is a test you can run

- Congruent = some sequence of slides, flips and turns lands one on the other.
- Not “looks the same”. Something you can actually do.

If a sequence exists, they are congruent. If none does, they are not.

Sequences, not single moves

- One motion is rarely enough.
- Flip, then slide. Turn, then slide. Any order you like.

Read the **ORIENTATION** first

- Label the corners and read them round: $A \rightarrow B \rightarrow C$.
- Same direction? No reflection needed.
- Reversed? You **NEED** one.

One glance decides what your sequence must contain.

Why that works

- Slides and turns preserve orientation. Always.
- So no pile of slides and turns can ever reverse it.

Reversed orientation is a fingerprint. Only a reflection leaves it.

Describe it so someone else could DO it

- Reflection: name the mirror line.
- Rotation: name the centre AND the angle.
- Translation: name the vector.

“Flip it then slide it” describes nothing.

Congruent is not similar

- A 2× copy is the same SHAPE and a different SIZE.
- Rigid motions never resize, so it is not congruent.

Same shape AND same size. Both.

Your turn

- $(1,1)(4,1)(1,3)$ and $(5,3)(2,3)(5,5)$. Congruent?
- Read the orientation. Then write a sequence anyone could follow.

Check one side length before and after.