



Drawing with conditions

When is a triangle possible?

- Today: decide whether given conditions make no triangle, one, or many.

Sides 3 cm, 4 cm, 10 cm

- Can you draw this triangle?

Turn & talk: yes or no?

Can the short sides REACH?

- Lay 3 and 4 along the 10: they span only 7.
- $7 < 10$, so the ends never meet. No triangle.

Two shorter sides must ADD TO MORE than the longest.

The boundary case

- Sides 5, 5, 10: $5 + 5 = 10$ exactly.
- The sides reach — but only by lying flat.

A straight line, not a triangle. So it must be $>$, not $\geq$.

Angles are a different question

- Three angles must sum to 180° .
- $60^\circ, 60^\circ, 60^\circ$ is valid — but how big is the triangle?

Your turn

- Sides 4, 9, 12 — possible?
- Thumbs up when you decide.

Angles fix SHAPE, not SIZE

- A 1 cm and a 100 cm equilateral triangle have identical angles.
- So three angles give INFINITELY MANY triangles.

You need at least one length to pin down one triangle.

Now you

- → In-class practice sheet