

Construction — triangles from sides, bisecting lines and angles

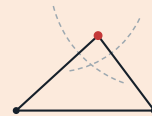
WHAT THIS LESSON TEACHES

A compass and ruler can build shapes **exactly** — no eyeballing. To construct a triangle from three sides: draw the longest side, then swing an arc of each other side from each end; the arcs cross at the third vertex.

→ **Triangle 5 cm / 7 cm / 6 cm**: draw 7 cm baseline → arc 5 cm from one end → arc 6 cm from the other → join the crossing to both ends.

→ **Bisect a line**: from each end swing two arcs of equal radius (more than half the line); the line between the crossings cuts the original line exactly in half.

→ **Bisect an angle**: from the vertex swing one arc cutting both rays; from each cut swing equal arcs; the line through the vertex and the new crossing splits the angle.



- 1 **Baseline**
draw the longest side
- 2 **Arcs**
swing from each end
- 3 **Join**
lines to the crossing

MODEL THIS ON THE BOARD

CONSTRUCT A TRIANGLE WITH SIDES 6 CM, 8 CM, 10 CM

- 1 Draw the **longest side** (10 cm) with a ruler. Mark the two ends **A** and **B**.
- 2 Set your compass to **6 cm**. Plant the point on **A**. Swing an arc above the line.
- 3 Set your compass to **8 cm**. Plant the point on **B**. Swing an arc above the line — it crosses the first arc.
- 4 The crossing point is the third vertex **C**. Join **A → C** and **B → C**. The triangle is exact.

ANSWER KEY

W1: 45°

W2: a trapezium

Q1: scalene

Q2: an isosceles triangle

Q3: a regular hexagon

Q4: isosceles

EXTENSION SHEET · STRETCH ANSWERS

S1: a regular hexagon

S2: an isosceles trapezium

S3: 39°

S4: an isosceles triangle

S5: a trapezium