

Lesson 71 **MIXED****Constructing triangles from given measurements**

WHAT THIS LESSON TEACHES

To build a triangle from three given side lengths (SSS), draw the base then use a compass to swing arcs from each end with the other two lengths; their crossing point is the third corner.

→ Base 6 cm with arcs of 5 cm and 4 cm cross at one point.

→ Sides 5 cm, 5 cm, 5 cm always make the same equilateral triangle.

MODEL THIS ON THE BOARD

BUILD TRIANGLE WITH SIDES 5 CM, 4 CM, 3 CM

- ① Draw the 5 cm base with ruler.
- ② Set compass to 4 cm and swing arc from one end.
- ③ Set compass to 3 cm and swing arc from the other end.
- ④ Mark the point where the arcs cross as the third corner.

ANSWER KEY

Scaffold: visual check on the page

Q1: isosceles $\triangle$ (sides 7 cm, 8 cm, 7 cm)

Q2: equilateral $\triangle$ 5 cm

Q3: no triangle (arcs miss)

a) Always — The arcs cross at only one possible point above the base.

b) Never — If the sum of two sides is less than the third the arcs never meet.

c) Always — The SSS rule fixes the shape no matter where the base is drawn.

d) Always — Only valid lengths allow the compass arcs to reach each other.

EXTENSION SHEET · STRETCH ANSWERS

S1: isosceles

S2: a trapezium

S3: scalene

S4: 39°

S5: an isosceles triangle