

Exercise walk-through

Geometrical constructions ■ E4.2

eXercise

You must be able to

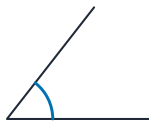
- describe how to construct a triangle from given sides
- use a scale to convert between drawing and real lengths
- work out a bearing and a back bearing

Method — Constructions, scale and bearings

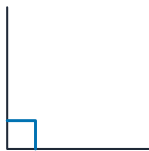
- **Construct a triangle (3 sides):** draw the base, then mark each other side as a compass **arc**; the arcs cross at the third vertex.
- **Scale drawing** 比例图: e.g. 1 cm represents 5 m $\rightarrow$ a 6 cm line is 30 m.
- **Bearing** 方位角: three figures, clockwise from north. **Back bearing** differs by 180° .

Answer shapes: **M1** a correct method, **A1** the correct answer.

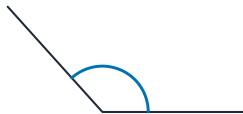
Method — Constructions, scale and bearings



acute
 $< 90^\circ$



right
 $= 90^\circ$



obtuse
 $90^\circ - 180^\circ$



reflex
 $180^\circ - 360^\circ$

Angles by size: acute, right, obtuse, reflex

Practice 2.1 ■ 2 marks

A map uses a scale of 1 cm to 4 km. A road is 7 cm long on the map. Find its real length.

Solution 2.1

Worked steps

$7 \times 4 = 28$ km **M1** **A1** *for $\times 4$; for 28.*

Practice 2.2 ■ 2 marks

The bearing of Q from P is 060° . Find the bearing of P from Q .

Solution 2.2

Method: Constructions, scale and bearings

Worked steps

$060 + 180 = 240^\circ$ **M1** **A1** *for +180; for 240°.*

Practice 2.3 ■ 1 mark

Write down the three-figure bearing of due west.

Solution 2.3

Method: Constructions, scale and bearings

Worked steps

270° **B1**.

Exam-style 3.1 ■ 2 marks

A scale drawing uses 1 cm to represent 20 m. A field is 250 m long. Find the length on the drawing.

Solution 3.1

Method: Constructions, scale and bearings

Worked steps

$250 \div 20 = 12.5$ cm **M1** **A1** *for $\div 20$; for 12.5.*

Exam-style 3.2 ■ 2 marks

The bearing of B from A is 145° . Find the bearing of A from B .

Solution 3.2

Method: Constructions, scale and bearings

Worked steps

$145 + 180 = 325^\circ$ **M1** **A1** *for +180; for 325° .*

Exam-style 3.3 ■ 2 marks

Describe how to construct a triangle with sides 6 cm, 5 cm and 4 cm.

Solution 3.3

Method: Constructions, scale and bearings

Worked steps

draw the 6 cm base with a ruler **M1**; from one end set compasses to 5 cm and from the other end to 4 cm, draw two arcs that cross — the crossing point is the third vertex; join it to both ends **A1** *for a clear arc method*.