

# C4.3 Scale drawings

Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

**Total: 20 marks**

**KEY WORDS** scale drawing 比例图 • bearing 方位角 • clockwise 顺时针 • edge 棱  
• segment 弓形

## Objective

Use scale drawings to solve Core IGCSE Mathematics problems.

**You must be able to:**

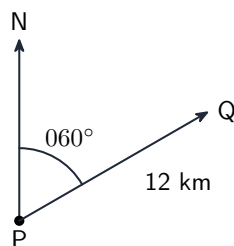
- Convert real and drawing lengths with a stated scale
- Measure three-figure bearings clockwise from north
- Find reverse bearings and check compass directions

## 1 Key knowledge and worked examples

### ■ Key knowledge: Scale drawings

Write the scale with matching units. If 1 cm represents 4 km, multiply drawing cm by 4 for km, or divide real km by 4 for drawing cm. A ratio scale 1 : 500 means every drawing length is  $1/500$  of its real length in the same units. Bearings are three figures, measured clockwise from north. For the reverse bearing, add or subtract  $180^\circ$  to stay within a full turn.

### ■ Worked example: Scale drawings



At 1 cm to 3 km, a 4.5 cm map line represents  $D = 4.5 \times 3 = 13.5$  km. A real 18 km route is  $l = 18/3 = 6$  cm.

- Bearing  $065^\circ$  means turn clockwise 65 degrees from north.
- Its reverse is  $b = 65 + 180 = 245^\circ$ .
- Due east is  $090^\circ$ ; south  $180^\circ$ ; west  $270^\circ$ .

■ **Method check**

Bearings are measured clockwise from north at the point named after the word from.  
A reverse bearing differs by 180 degrees, reduced to the interval 000–359.

## 2 Practice

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**2.1** A map scale is 1 cm to 5 km. Find the real length of a 3.6 cm line. [2]

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**2.2** At scale 1 : 200, find the drawing length for 14 m. [2]

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**2.3** Write the three-figure bearings for east and south. [2]

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**2.4** The bearing of B from A is  $230^\circ$ . Find the bearing of A from B. [2]

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### 3 Exam-style questions

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**3.1** Apply the scale drawings methods below. Show working and include units where appropriate.

(a) A ship travels 12 km from P on bearing  $060^\circ$ . At 1 cm to 2 km, find the drawing length. [2]

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(b) Make a scale drawing showing north at P and the ship at Q. [2]

(c) Find the bearing of P from Q. [2]

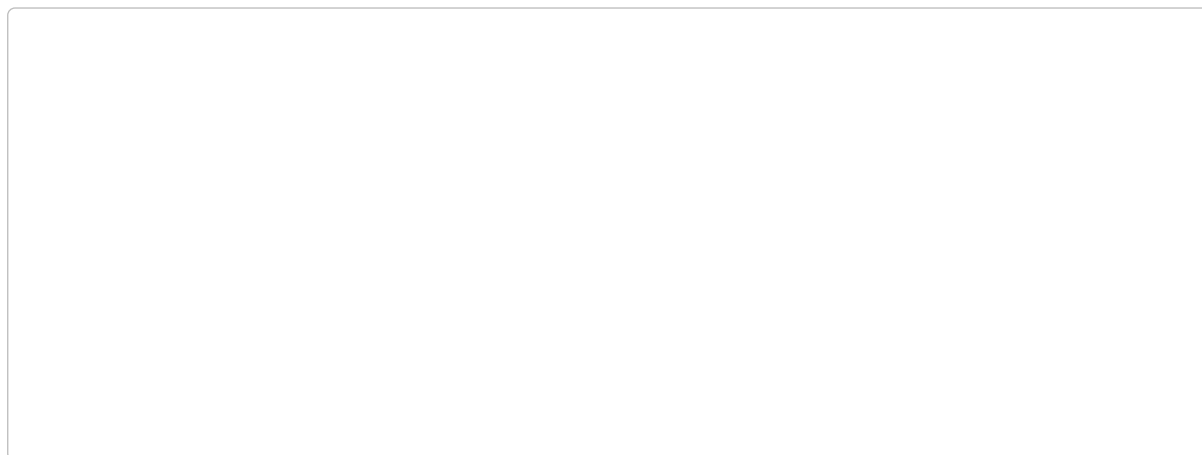
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**3.2** At a scale of 1 cm to 4 km, Q is 20 km from P on bearing  $135^\circ$ .

(a) Draw PQ to scale, with a north arrow at P. Find the bearing of P from Q. [3]



(b) A second map shows the same PQ distance using a 2.5 cm line. Find its scale in km per cm and explain which map is more enlarged. [3]

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