Write your name, centre number and candidate number in the boxes below.

Surname	Other names

Centre number | | | | | |

Candidate number | | | | |

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Scale drawings and bearings

Time allowed: 35 minutes

Subject code **0580**

Mathematics

Questions from Paper 1, Paper 2 and Paper 3

You must have: a ruler marked in centimetres and millimetres, a protractor, compasses, a pen, an HB pencil and an eraser.
You may use a calculator.

Total marks

/ 27

Instructions

- Answer every question in the space provided on this paper.
- Write in black or dark blue ink. Pencil may be used for diagrams and graphs.
- Fill in your name, centre number and candidate number above.
- Show your working: a correct method can earn marks even if the answer is wrong.
- Unless a question says otherwise, give answers that are not exact to 3 significant figures, and angles in degrees to 1 decimal place.

Information

- This paper has 9 questions worth 27 marks in total.
- The marks for each question or part are shown in brackets, for example [3].

Advice

- Read every question through once before you write anything.
- Use the marks in brackets to judge how long to spend on each part.
- If you finish early, go back and check your working.

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Print at 100% (Actual size) so diagrams keep their real measurements.

1 The scale of a map is 1 : 125 000.
On a map, the length of an island is 9.4 cm.

Calculate the actual length of the island, giving your answer in kilometres.

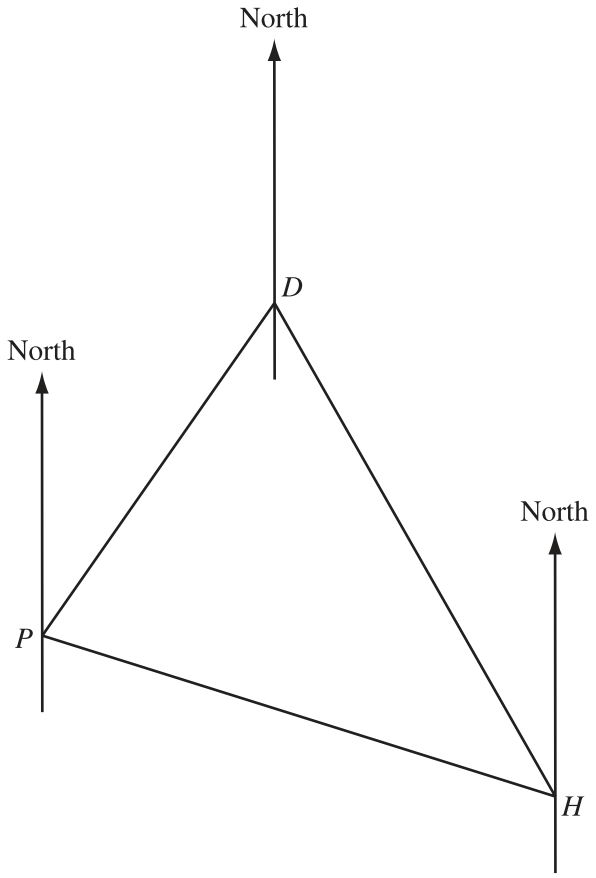
..... km [2]

Scale drawings Click for more variations

1	11.75	**2**	**M1** for $\frac{9.4\times125000}{100\times1000}$ oe or **B1** for figs 1175 or 1 cm : 1.25 km

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2



The positions of Perth (P), Darwin (D) and Hobart (H) are shown on the diagram.

Measure accurately any angles you need and write down the bearing of

(a) D from P,

Answer(a) ..... [1]

(b) P from H.

Answer(b) ..... [1]

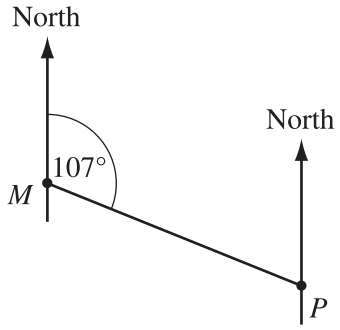
(a) Bearings (b) Bearings Click for more variations

2	**(a)** (0)34 to (0)36 **(b)** 286 to 289	1 1	

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3

NOT TO SCALE



The bearing of P from M is 107°.
Work out the bearing of M from P.

Answer ..... [2]

Bearings Click for more variations

3	287°	2	**W1** for 73 or 107 marked in correct position **at *P*** or **M1** 107 + 180

4 The scale drawing shows the position of a hospital, H.
The scale is 1 centimetre represents 6 kilometres.



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Scale: 1 cm to 6 km

A school, S, is 33 km from H on a bearing of 155°.

Mark the position of S on the scale drawing. [2]

Bearings Click for more variations

4	*S* marked correctly	**2**	**B1** for *HS* drawn length 5.5cm **B1** for bearing of *S* from *H* 155°

5 **(a)** The scale on a map is 1 cm represents 12 km.

Write this in the ratio 1 : *n* .

1 : ..... [1]

(b) The bearing of *B* from *A* is 070°.

Find the bearing of *A* from *B*.

..... [2]

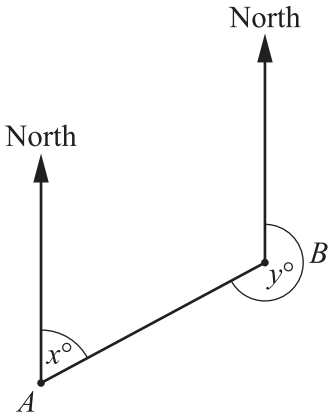
(a) Scale drawings (b) Bearings Click for more variations

5(a)	1 200 000	**1**	
5(b)	250	**2**	**M1** for 70 + 180 or correct diagram indicating angle

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6 The bearing of B from A is $x°$.
The bearing of A from B is $y°$.
$x : y = 2 : 7$

Calculate the value of y.



NOT TO SCALE

$y =$ ..... [3]

Bearings Click for more variations

6	252	**3**	**M2** for $180 \div (7 - 2)$ oe OR **M1** for $180 - x + y = 360$ oe **M1** for correct use of ratio

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7 The scale on a map is 1: 20 000.

(a) Calculate the actual distance between two points which are 2.7 cm apart on the map.
Give your answer in kilometres.

Answer(a) ..... km [2]

(b) A field has an area of 64 400 m^2.
Calculate the area of the field on the map in cm^2.

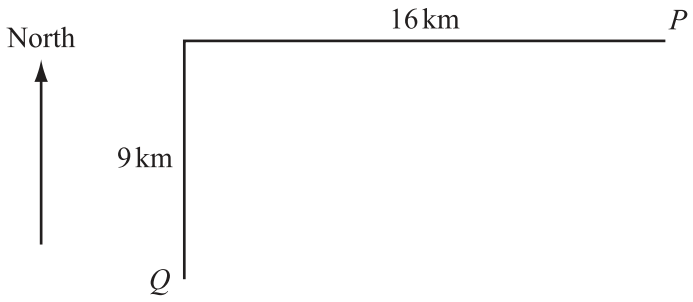
Answer(b) ..... cm^2 [2]

(a) Scale drawings (b) Similar areas and volumes Click for more variations

7	**(a)** 0.54	**2**	**M1** for $\frac{2.7 \times 20000}{100000}$ oe or **SC1** for figs 54 in answer
	(b) 1.61	**2**	**SC1** for figs 161 or **M1** 200^2 or $20\,000^2$ seen

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8



NOT TO SCALE

The diagram shows the route of a ship that leaves a port, P.
It travels due west for 16 km and then changes course to due south for 9 km.

(a) Calculate the straight line distance PQ.

Answer(a) PQ = ... km [2]

(b) Use trigonometry to calculate the bearing of P from Q.

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Answer(b) ..... [2]

(a) Pythagoras' theorem (b) Bearings Click for more variations

8	**(a)**	18.4	**2**	**M1** for $[PQ^2 =]16^2 + 9^2$ or better
	(b)	[0]60.4 to [0]60.73	**2**	**M1** for $\tan[\ldots =]\frac{16}{9}$ or better or $\sin[\ldots =]\frac{16}{their\textbf{(a)}}$ or better or $\cos[\ldots =]\frac{9}{their\textbf{(a)}}$ or better If zero scored, **SC1** for answer [0]29.3 to [0]29.4

9 The scale drawing shows the positions of two lighthouses, P and Q.
The scale is 1 centimetre represents 0.8 kilometres.



Scale: 1 cm to 0.8 km

(a) **(i)** Find the actual distance between P and Q.

..... km [2]

(ii) Measure the bearing of Q from P.

..... [1]

(b) A boat, B, is on a bearing of 127° from P.

Calculate the bearing of P from B.

..... [2]

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(a)(i) Scale drawings (a)(ii) Bearings (b) Bearings Click for more variations

9(a)(i)	7.6	**2**	**B1** for 9.5 [cm] or **M1** for $0.8\times k$, $9 \leqslant k \leqslant 10$
9(a)(ii)	102	**1**	
9(b)	307	**2**	**M1** for $180+127$ or $360-(180-127)$ or the correct angle is indicated on a sketch

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