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

Surname	Other names

Centre number | | | | | |

Candidate number | | | | |

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Coordinates, length and midpoint

Time allowed: 1 hour

Subject code **0580**

Mathematics

Questions from Paper 1, Paper 2 and Paper 4

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

/ 50

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 10 questions worth 50 marks in total.
- The marks for each question or part are shown in brackets, for example [3].

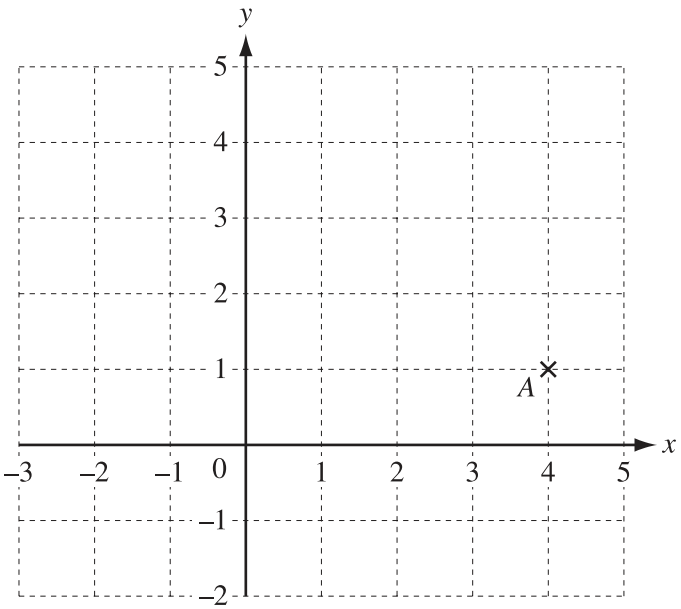
Advice

- 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



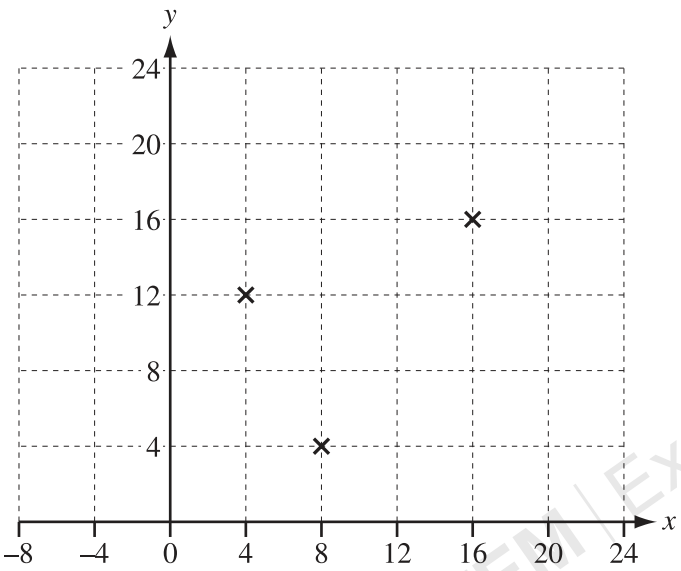
(a) Write down the co-ordinates of point A.

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

(b) On the grid, plot the point (–1, 3). [1]

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

2 Three of the vertices of a parallelogram are at (4, 12), (8, 4) and (16, 16).



Write down the co-ordinates of two possible positions of the fourth vertex.

Answer (..... , ...) and (..... , ...) [2]

Coordinates Click for more variations

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3 A is the point $(-3, 5)$ and B is the point $(5, 2)$.

Find the coordinates of the midpoint of the line AB.

(..... , ...) [2]

Midpoint of a line Click for more variations

4 Find the mid-point of AB where $A = (w, r)$ and $B = (3w, t)$.
Give your answer in its simplest form in terms of w, r and t.

(..... , ...) [2]

Midpoint of a line Click for more variations

5 A is the point $(7, 12)$ and B is the point $(2, -1)$.

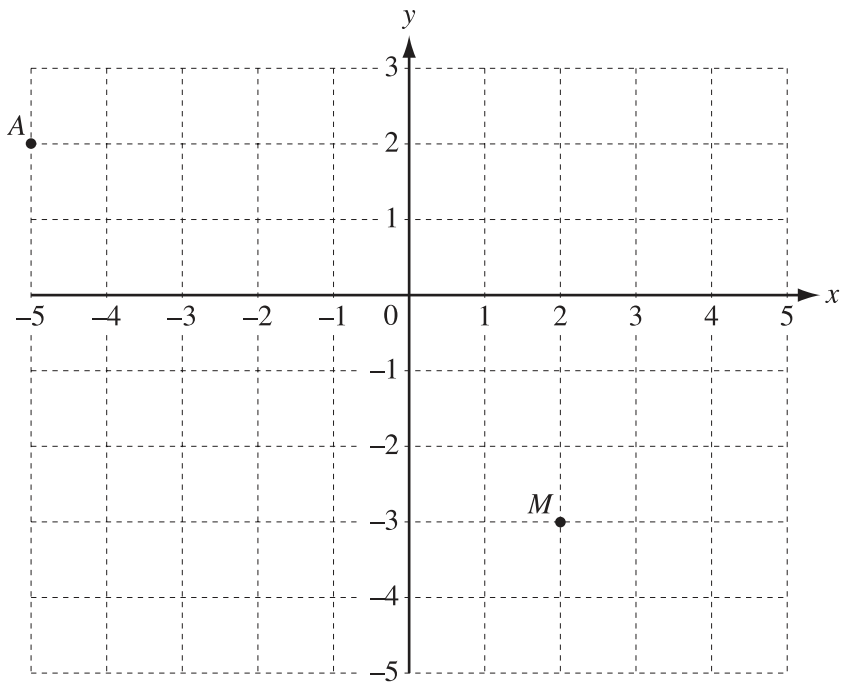
Find the length of AB.

..... [3]

Length of a line Click for more variations

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6



The diagram shows two points A (–5, 2) and M (2, –3).

(a) B is the point (5, –2).

(i) On the grid, mark the point B. [1]

(ii) Write $\overrightarrow{AB}$ as a column vector.

Answer(a)(ii) $\overrightarrow{AB}$ = $\begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [1]

(b) M is the midpoint of the line BD.

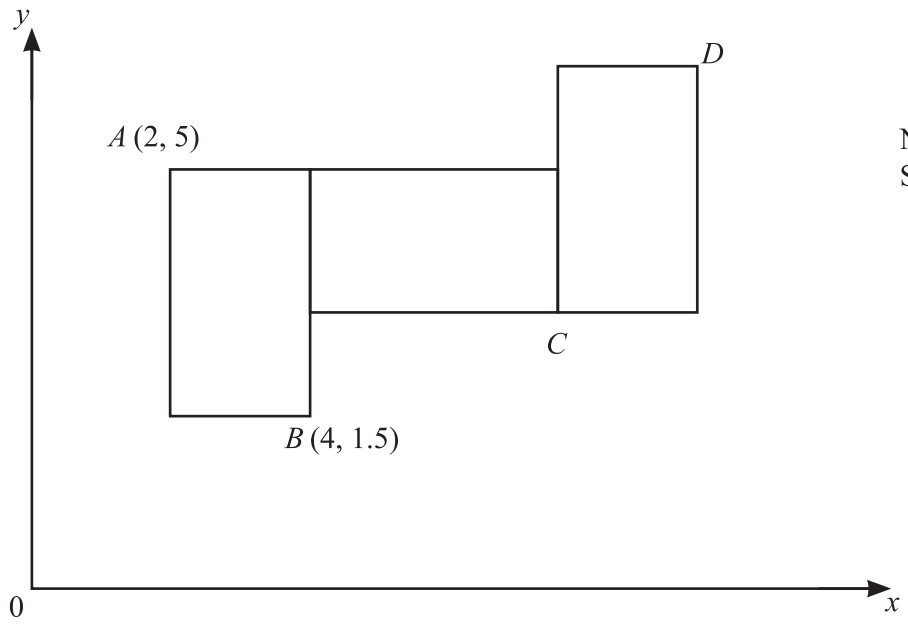
Find the co-ordinates of D.

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

(a)(i) Coordinates | (a)(ii) Position and displacement vectors | (b) Midpoint of a line | Click for more variations

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7



NOT TO SCALE

A pattern is formed by 3 congruent rectangles.
Each rectangle is a rotation of 90° around one vertex of the rectangle next to it.
The point A has coordinates $(2, 5)$.
The point B has coordinates $(4, 1.5)$.

Work out the coordinates of point C and point D.

C (..... , ...)

D (..... , ...)

[3]

Coordinates Click for more variations

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8 **(a)** A is the point $(a, 12)$ and B is the point $(b, 27)$.

(i) Find the y-coordinate of the midpoint of AB.

..... [1]

(ii) The line AB has gradient 3.

Find an expression for a in terms of b.

$a =$ ..... [3]

(b) D is the point $(22, 34)$ and E is the point $(23, 39)$.
D is the point on CE such that $2CE = 5DE$.

Find the coordinates of C.

(..... , ...) [3]

(a)(i) Midpoint of a line (a)(ii) Gradient of a line (b) Midpoint of a line Click for more variations

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9 B is the point $(-3, 1)$ and D is the point $(-5, 9)$.
BD is a diagonal of the kite $ABCD$.

(a) The ratio of the lengths of the diagonals $BD : AC = 2 : 3$.

Work out the length of AC.
Give your answer as a surd in its simplest form.

..... [5]

(b) Find the coordinates of the midpoint of BD.

(..... , ...) [2]

(c) The diagonal AC of the kite passes through the midpoint of BD.

Find an equation of AC.
Give your answer in the form $y = mx + c$.

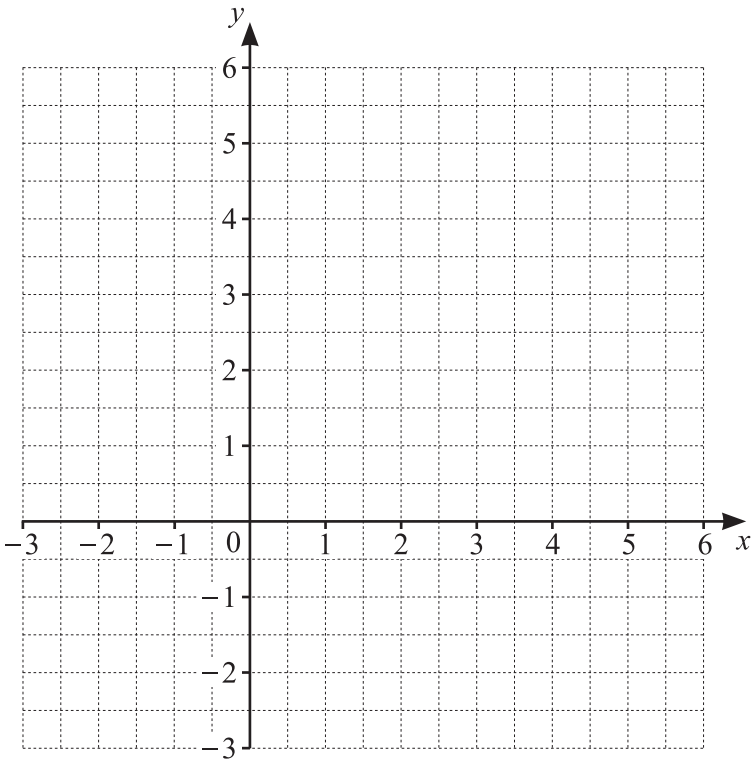
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$y =$ ..... [4]

(a) Length of a line (b) Midpoint of a line (c) Perpendicular lines Click for more variations

10 **(a)** In the square $ABCD$, A has coordinates $(-2, 1)$ and B has coordinates $(1, 5)$.
C has coordinates (a, b), where a and b are both positive integers.

Find the coordinates of C and the coordinates of D.
You may use the grid to help you.



C (..... , ...)

D (..... , ...) [4]

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(b) P has coordinates $(-1, 3)$ and Q has coordinates $(6, 4)$.

(i) Find the coordinates of the midpoint of PQ.

(..... , ...) [2]

(ii) Find the length PQ.

..... [3]

(iii) Find the gradient of PQ.

..... [2]

(iv) Find the equation of the line parallel to PQ that crosses the x-axis at $x = 2$.

..... [3]

(a) Coordinates (b)(i) Midpoint of a line (b)(ii) Length of a line (b)(iii) Gradient of a line
(b)(iv) Parallel lines Click for more variations

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