1.12 Coordinates: 1-hour Pack

EDEXCEL 1MA1 · Calculator allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A is the point (6, 2) and B is the point (-7, -3). Find the coordinates of the midpoint of AB.

(Total for Question 1 is 2 marks)

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2 ABCD is a rectangle with sides parallel to the axes. A is the point (-4, -3), B is the point (-2, -3) and C is the point (-2, 2). Find the coordinates of D.

(Total for Question 2 is 2 marks)

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3 M is the midpoint of the line AB. A is the point (3, 6) and M is the point (-2, -2). Find the coordinates of B.

(Total for Question 3 is 3 marks)

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4 ABCD is a rectangle with sides parallel to the axes. A is the point (1, 0), B is the point (5, 0) and C is the point (5, 7). Find the coordinates of D.

(Total for Question 4 is 2 marks)

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5 A is the point (-5, 0) and B is the point (-1, 2). Find the coordinates of the midpoint of AB.

(Total for Question 5 is 2 marks)

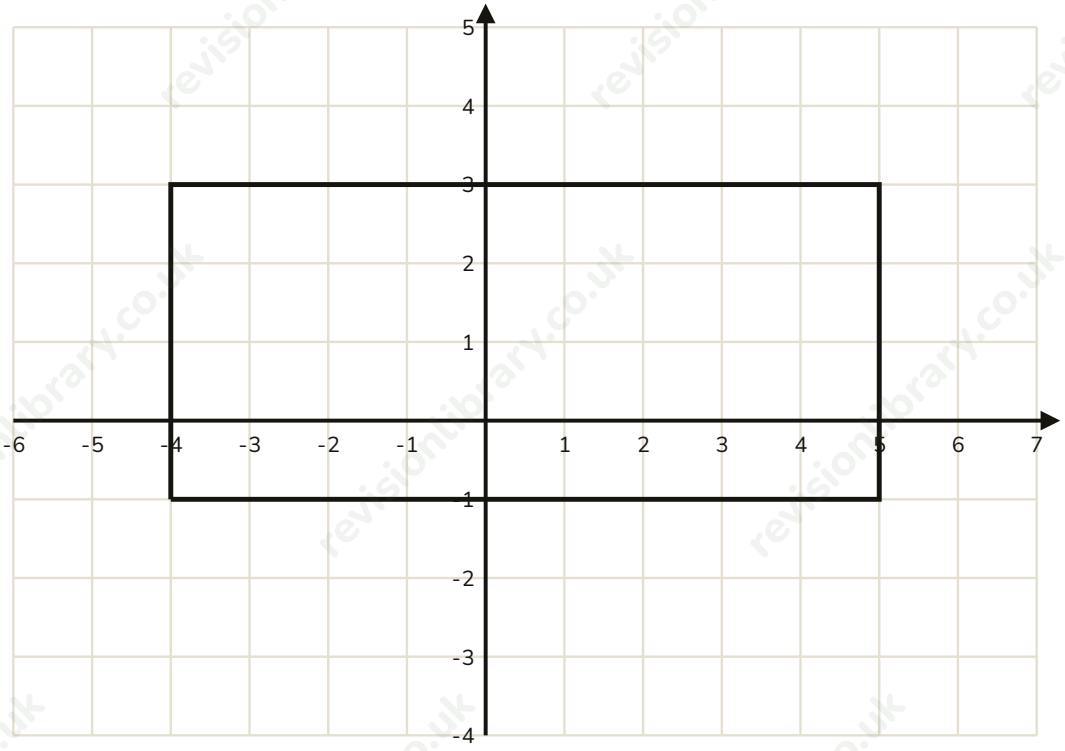
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6 M is the midpoint of the line AB. A is the point (0, -6) and M is the point (-1, -2). Find the coordinates of B.

(Total for Question 6 is 3 marks)

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7 A rectangle has vertices at (-4, -1), (5, -1), (5, 3) and (-4, 3). Work out (a) the perimeter and (b) the area of the rectangle. Each unit on the axes is 1 cm.



(Total for Question 7 is 3 marks)

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8 ABCD is a rectangle with sides parallel to the axes. A is the point (-5, -2), B is the point (3, -2) and C is the point (3, 1). Find the coordinates of D.

(Total for Question 8 is 2 marks)

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9 M is the midpoint of the line AB. A is the point (-4, 3) and M is the point (2, 2). Find the coordinates of B.

(Total for Question 9 is 3 marks)

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10 Four points are described below. Complete the table by writing down the coordinates of each point.

(a) Point E is 6 units to the right and 3 units up from the origin. **(1)**

.....

(b) Point F is on the x-axis, 8 units to the left of the origin. **(1)**

.....

(c) Point G is 4 units to the left and 5 units up from the origin. **(1)**

.....

(d) Point H is on the y-axis, 7 units below the origin. **(1)**

.....

(Total for Question 10 is 4 marks)

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11 Point J is at (6, 2). For each point below, state whether it is above, below, to the left of, or to the right of point J.

(a) (6, 9) **(1)**

(b) (2, 2) **(1)**

(c) (6, -3) **(1)**

(d) (11, 2) **(1)**

(Total for Question 11 is 4 marks)

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12 A vertical line has the equation x = 4. A horizontal line has the equation y = -3. Write down the coordinates of the point where these two lines cross.

(Total for Question 12 is 2 marks)

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13 Kwame says: 'The point (-2, 0) lies on the x-axis because the x-coordinate is negative.'
Kwame's reasoning is incorrect. Explain why.

(Total for Question 13 is 2 marks)

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14 A robot starts at point (-4, -3) on a grid, where each unit represents 1 metre.

(a) The robot moves 6 metres to the right and 5 metres up to reach point R. Work out the coordinates of R. **(2)**

.....

(b) The robot then moves in a straight vertical line from R to point S(2, -6). Work out the distance the robot moves from R to S. **(2)**

.....

(Total for Question 14 is 4 marks)

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15 Work out the length of the horizontal segment joining the points (-4, 2) and (3, 2).

(Total for Question 15 is 2 marks)

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16 Show that the midpoint of the diagonal AC is (1, 2) for the rectangle with vertices A(-3, 0), B(5, 0), C(5, 4) and D(-3, 4).

(Total for Question 16 is 3 marks)

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17 A(1, 2), B(4, 5) and C(7, 2) are three vertices of a rectangle in that order. Find the coordinates of the fourth vertex D. Show your working.

(Total for Question 17 is 4 marks)

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Mark scheme · 1.12 Coordinates: 1-hour Pack

Question 1

adds the x-coordinates and divides by 2, or the y-coordinates **M1**

(-0.5, -0.5) cao **A1**

Answer: (-0.5, -0.5)

Question 2

uses the fact that D has the same x as A and same y as C **M1**

(-4, 2) cao **A1**

Answer: (-4, 2)

Question 3

finds the change from A to M **M1**

adds the same change again to M **M1**

(-7, -10) cao **A1**

Answer: (-7, -10)

Question 4

uses the fact that D has the same x as A and same y as C **M1**

(1, 7) cao **A1**

Answer: (1, 7)

Question 5

adds the x-coordinates and divides by 2, or the y-coordinates **M1**

(-3, 1) cao **A1**

Answer: (-3, 1)

Question 6

finds the change from A to M **M1**

adds the same change again to M **M1**

(-2, 2) cao **A1**

Answer: (-2, 2)

Question 7

finds side lengths **M1**

perimeter 26 cm **A1**

area 36 cm² **A1**

Answer: perimeter 26 cm, area 36 cm^2

Question 8

uses the fact that D has the same x as A and same y as C **M1**

(-5, 1) cao **A1**

Answer: (-5, 1)

Question 9

finds the change from A to M **M1**

adds the same change again to M **M1**

(8, 1) cao **A1**

Answer: (8, 1)

Question 10

(a) (6, 3) cao **B1**

(a) Answer: (6, 3)

(b) (-8, 0) cao **B1**

(b) Answer: (-8, 0)

(c) (-4, 5) cao **B1**

(c) Answer: (-4, 5)

(d) (0, -7) cao **B1**

(d) Answer: (0, -7)

Question 11

(a) above cao **B1**

(a) Answer: Above

(b) to the left cao **B1**

(b) Answer: To the left

(c) below cao **B1**

(c) Answer: Below

(d) to the right cao **B1**

(d) Answer: To the right

Question 12

x-coordinate 4 identified **B1**

(4, -3) cao **B1**

Answer: (4, -3)

Question 13

correctly identifies that the point does lie on the x-axis, but for the wrong reason: it is because the y-coordinate is 0 **B1**

valid supporting explanation/counter-example that the sign of the x-coordinate does not determine whether a point is on the x-axis, e.g. (3, 0) also lies on the x-axis despite having a positive x-coordinate **B1**

Answer: The point does lie on the x-axis, but this is because its y-coordinate is 0, not because the x-coordinate is negative. Any point with y = 0 lies on the x-axis, whatever the sign of x.

Question 14

(a) correct method, e.g. -4 + 6 and/or -3 + 5 **M1**

(a) (2, 2) cao **A1**

(a) Answer: (2, 2)

(b) correct method, e.g. 2 - (-6) oe **M1**

(b) 8 metres cao **A1**

(b) Answer: 8 metres

Question 15

find difference in x-coordinates: 3 - (-4) or equivalent **M1**

7 cao **A1**

Answer: 7

Question 16

show x-midpoint: (-3 + 5)/2 = 1 **M1**

show y-midpoint: (0 + 4)/2 = 2 **M1**

(1, 2) cso **A1**

Answer: (1, 2)

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Question 17

calculate vector BC = C - B = (3, -3) or show equivalent method	**M1**
state D = A + BC or show applying vector to A	**M1**
compute coordinates: (1+3, 2+(-3)) shown	**M1**
(4, -1) cao	**A1**

Answer: (4, -1)

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