4.13 Coordinates and Line Geometry: Test Pack

Calculators not allowed · about 55 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Look at the point P(-3, 4). State which quadrant P lies in.

(1)

2 In which quadrant does the point P (-3, -1) lie?

(1)

3 The point (k, 0) lies on the line y = 4x + 4. Find the value of k.

(2)

4 Does the point (-1, 1) lie on the line y = 4x + 5? You must show your working.

(2)

5 Write down the equation of (a) the horizontal line and (b) the vertical line that pass through the point (9, -8).

(2)

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6 Does the point (0, -4) lie on the line y = x - 4? You must show your working.

(2)

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7 The lines x = 6 and y = -1 cross at the point P. Write down the coordinates of P, and say where P is in relation to the origin (distance in a straight line, to 1 decimal place).

(3)

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8 Find the coordinates of the point where the line y = 4x - 24 crosses the x-axis.

(2)

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9 Work out the distance between (-3, -4) and (5, 4). Give your answer correct to 1 decimal place.

(3)

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10 Find the coordinates of the points where the line y = -5x - 15 crosses (a) the y-axis (b) the x-axis.

(2)

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11 Work out the gradient of the straight line through (-2, 8) and (2, 0).

(2)

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12 Find the coordinates of the points where the line y = -3x + 9 crosses (a) the y-axis (b) the x-axis.

(2)

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13 Three corners of a rectangle are (7, -4), (14, -4) and (14, 2). Write down the coordinates of the fourth corner and work out the area of the rectangle.

(3)

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14 The point (k, -15) lies on the line y = 3x - 3. Find the value of k.

(2)

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15 Does the point (4, 18) lie on the line y = 4x + 1? You must show your working.

(2)

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16 Calculate the distance between G(-8, 5) and H(7, 5).

(2)

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17 A line has equation y = 3x - 4. (a) State the gradient of the line. (b) Determine, showing your working, whether the point (5, 11) lies on the line.

(3)

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18 A line passes through P(-2, -1) and Q(4, 11).

(a) Find the gradient of the line PQ. **(1)**

.....

(b) Find the equation of the line PQ in the form y = mx + c. **(2)**

.....

(c) M is the midpoint of PQ. Find the coordinates of M, and verify that M lies on the line found in part (b). **(2)**

.....

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19 Reflect the point S(-4, 7) in the y-axis. Write down the coordinates of the image.

(1)

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20 Find the midpoint of C(-5, -2) and D(3, 6).

(2)

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Mark scheme · 4.13 Coordinates and Line Geometry: Test Pack

Question 1

Second quadrant cao (x negative, y positive) **B1**

Answer: **Second quadrant**

Question 2

third quadrant cao **B1**

Answer: **third quadrant**

Question 3

0 = 4k + 4 (or equivalent) **M1**

-1 cao **A1**

Answer: **-1**

Question 4

substitutes x = -1 to get y = 1 **M1**

Yes with comparison **A1**

Answer: **Yes**

Question 5

(a) y = -8 **B1**

(b) x = 9 **B1**

Answer: **(a) y = -8, (b) x = 9**

Question 6

substitutes x = 0 to get y = -4 **M1**

Yes with comparison **A1**

Answer: **Yes**

Question 7

(6, -1) **B1**

$\sqrt{6^2 + (-1)^2}$ **M1**

6.1 **A1**

Answer: **(6, -1), 6.1**

Question 8

substitutes y = 0 **M1**

(6, 0) cao **A1**

Answer: **(6, 0)**

Question 9

$8^2 + 8^2 = 128$ **M1**

$\sqrt{128}$ **M1**

11.3 cao **A1**

Answer: **11.3**

Question 10

(a) (0, -15) **B1**

(b) (-3, 0) **B1**

Answer: **(a) (0, -15), (b) (-3, 0)**

Question 11

(0 - (8))/(2 - (-2)) or equivalent **M1**

-2 cao **A1**

Answer: **-2**

Question 12

(a) (0, 9) **B1**

(b) (3, 0) **B1**

Answer: **(a) (0, 9), (b) (3, 0)**

Question 13

uses matching x and y values **M1**

(7, 2) **A1**

area 42 **A1**

Answer: **(7, 2), area 42**

Question 14

-15 = 3k - 3 (or equivalent) **M1**

-4 cao **A1**

Answer: **-4**

Question 15

substitutes x = 4 to get y = 17 **M1**

No with comparison **A1**

Answer: **No**

Question 16

recognise the points share a y-coordinate, so subtract the x-coordinates **M1**

15 cao **A1**

Answer: **15**

Question 17

gradient = 3 **B1**

substitute x = 5 into 3x - 4 **M1**

yes, (5,11) lies on the line, since 3(5)-4 = 11 cao **A1**

Answer: **gradient = 3; yes, (5, 11) lies on the line**

Question 18

(a) 2 cao **B1**

(a) Answer: **2**

(b) substitute P(-2,-1) into y = 2x + c to find c **M1**

(b) y = 2x + 3 cao **A1**

(b) Answer: **y = 2x + 3**

(c) find midpoint ((-2+4)/2, (-1+11)/2) = (1, 5) **M1**

(c) substitute x=1 into y=2x+3 to get y=5, which matches, confirming M lies on the line **A1**

(c) Answer: **M = (1, 5); lies on the line since 2(1)+3 = 5**

Question 19

(4, 7) cao **B1**

Answer: **(4, 7)**

Question 20

average the x-coordinates and the y-coordinates **M1**

(-1, 2) cao **A1**

Answer: **(-1, 2)**

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