2.16 Straight Line Graphs: y = mx + c: Test Pack

Calculators not allowed · about 55 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Plot the point (2, 3) on a coordinate grid. State the coordinates you plotted.

(1)

2 Given the line y = 4x - 6, a student plots the point (2, 3) and says it lies on the line. Is the student correct? Show your working.

(3)

3 Find the coordinates of the points where the line y = -3x + 6 crosses (a) the y-axis (b) the x-axis.

(2)

4 Find the coordinates of the points where the line y = 5x - 30 crosses (a) the y-axis (b) the x-axis.

(2)

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5 For the line y = -3x + 4, calculate y when x = 0 and when x = 2. Give both values.

(1)

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6 Find the coordinates of the point where the line y = -5x + 25 crosses the x-axis.

(2)

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7 Does the point (-3, -2) lie on the line y = 2x + 5? You must show your working.

(2)

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8 Draw the line y = x - 2 on a grid. Give the coordinates of two points on the line that you would plot.

(1)

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9 Complete a table of values for y = -x + 6 for x = -2, x = 3 and x = 4.

(2)

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10 Work out the gradient of the straight line through (3, -4) and (6, -13).

(2)

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11 A straight line has equation $2y = -16x + 4$.
Write down (a) the gradient (b) the y-intercept.

(2)

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12 The line $y = 0.5x + 3$ is drawn. What is the y-intercept? Give your answer as a coordinate point.

(1)

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13 Write down the equation of a straight line that is parallel to $y = -x - 3$ and crosses the y-axis at (0, -4).

(2)

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14 A line passes through the points (1, 2) and (3, 6). Calculate the gradient of this line.

(2)

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15 Does the point (-4, -15) lie on the line $y = 3x - 4$? You must show your working.

(2)

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16 Find the equation of the line with gradient 3 and y-intercept -1. Write your answer in the form $y = mx + c$.

(2)

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17 Write down the equation of a straight line that is parallel to y = 3x + 5 and crosses the y-axis at (0, -3).

(2)

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18 A straight line has gradient -8 and crosses the y-axis at (0, 3). Write down the equation of the line.

(2)

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19 A line has equation y = -2x + 5. A second line has equation y = -2x - 1. Explain whether the lines are parallel or not and why.

(2)

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20 The taxi fare is given by C = 33 + 5d, where the variable counts miles.
Work out the value of C for 4 miles.

(2)

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21 A line passes through the points (2, 5) and (6, 13). Find the equation of the line in the form y = mx + c. Then determine whether the point (10, 20) lies on this line.

(3)

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22 Find the equation of the line with gradient 4 and y-intercept -3. Write your answer in the form y = mx + c.

(2)

23 A line has equation y = -3x + 8. A second line has equation y = -3x - 2. Explain whether the lines are parallel or not, and why.

(2)

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Mark scheme · 2.16 Straight Line Graphs: y = mx + c: Test Pack

Question 1

Point correctly plotted at (2, 3) or coordinates stated as (2, 3) cao — **B1**

Answer: **(2, 3)**

Question 2

Substitute x = 2 into y = 4x - 6 to find expected y-value or state the check equation y = 4(2) - 6 — **M1**

Obtain y = 8 - 6 = 2 or show arithmetic leading to 2 — **M1**

State that (2, 3) is not on the line because y would be 2, not 3 cao — **A1**

Answer: **No. Substituting x = 2 gives y = 4(2) - 6 = 2, so the point (2, 3) is not on the line.**

Question 3

(a) (0, 6) — **B1**

(b) (2, 0) — **B1**

Answer: **(a) (0, 6), (b) (2, 0)**

Question 4

(a) (0, -30) — **B1**

(b) (6, 0) — **B1**

Answer: **(a) (0, -30), (b) (6, 0)**

Question 5

y = 4 when x = 0 and y = -2 when x = 2 cao — **B1**

Answer: **y = 4; y = -2**

Question 6

substitutes y = 0 — **M1**

(5, 0) cao — **A1**

Answer: **(5, 0)**

Question 7

substitutes x = -3 to get y = -1 — **M1**

No with comparison — **A1**

Answer: **No**

Question 8

Two correct points on the line, e.g. (0, -2) and (2, 0) or equivalent cao — **B1**

Answer: **(0, -2) and (2, 0)**

Question 9

at least one value of y correct — **M1**

all three values correct — **A1**

Answer: **x = -2: y = 8, x = 3: y = 3, x = 4: y = 2**

Question 10

(-13 - (-4))/(6 - (3)) or equivalent — **M1**

-3 cao — **A1**

Answer: **-3**

Question 11

(a) -8 — **B1**

(b) 2 — **B1**

Answer: **(a) -8, (b) 2**

Question 12

y-intercept (0, 3) cao — **B1**

Answer: **(0, 3)**

Question 13

gradient -1 used — **M1**

y = -x - 4 cao — **A1**

Answer: **y = -x - 4**

Question 14

Use gradient formula (change in y)/(change in x) = (6 - 2)/(3 - 1) or equivalent — **M1**

Gradient = 2 cao — **A1**

Answer: **2**

Question 15

substitutes x = -4 to get y = -16 — **M1**

No with comparison — **A1**

Answer: **No**

Question 16

Substitute gradient and intercept into y = mx + c form — **M1**

y = 3x - 1 cao — **A1**

Answer: **y = 3x - 1**

Question 17

gradient 3 used — **M1**

y = 3x - 3 cao — **A1**

Answer: **y = 3x - 3**

Question 18

y = mx + c with the gradient or intercept correct — **M1**

y = -8x + 3 cao — **A1**

Answer: **y = -8x + 3**

Question 19

States that gradients are equal (both -2) or states property of parallel lines — **M1**

Concludes the lines are parallel because they have the same gradient (different intercepts) cao — **A1**

Answer: **They are parallel because both have gradient -2 (different y-intercepts).**

Question 20

substitutes 4 — **M1**

53 cao — **A1**

Answer: **53**

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Question 21

correct gradient method, gradient = 2	**M1**
y = 2x + 1 cao	**A1**
correct conclusion: (10, 20) does not lie on the line, since 2(10) + 1 = 21	**B1**

Answer: **y = 2x + 1; (10, 20) does not lie on the line**

Question 22

identifies m = 4 and c = -3	**M1**
y = 4x - 3 cao	**A1**

Answer: **y = 4x - 3**

Question 23

compares the gradients of both lines	**M1**
parallel, because both lines have gradient -3	**A1**

Answer: **Parallel, because both have gradient -3**

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