Edexcel GCSE
Mathematics (Linear) – 1MA0

Equations of Linear Graphs

Materials required for examination
Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser.
Tracing paper may be used.

Items included with question papers
Nil

Instructions

Use black ink or ball-point pen.
Fill in the boxes at the top of this page with your name, centre number and candidate number.
Answer all questions.
Answer the questions in the spaces provided – there may be more space than you need.
Calculators must not be used.

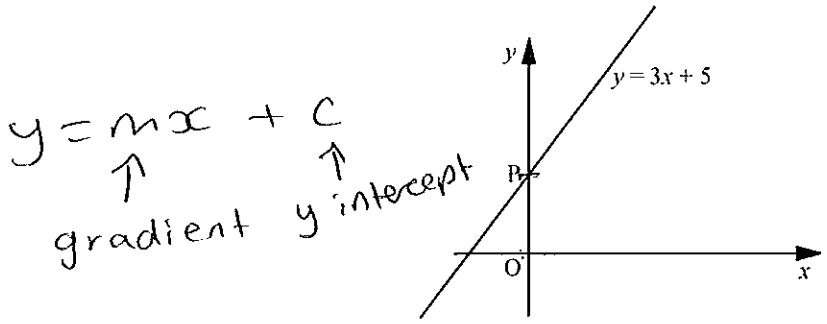
Information

The total mark for this paper is 100.
The marks for each question are shown in brackets – use this as a guide as to how much time to spend on **each** question.
Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed – you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression.

Advice

Read each question carefully before you start to answer it.
Keep an eye on the time.
Try to answer every question.
Check your answers if you have time at the end.

1.



(a) The line $y = 3x + 5$ crosses the y axis at **P**. What is the value of y at **P**?

5

[1]

(b) Write down the equation of another line which is parallel to $y = 3x + 5$.

same gradient

$y = 3x + 6$

[1]

2. A line passes through the point (0, 4).
The gradient of this line is 2.
Write down the equation of this line.

$y = 2x + 4$

[2]

3. A straight line has equation $y = 5 - 3x$

(a) Write down the gradient of the line.

-3

(1)

(b) Write down the coordinates of the point where the line crosses the y axis.

(0, 5)

(1)

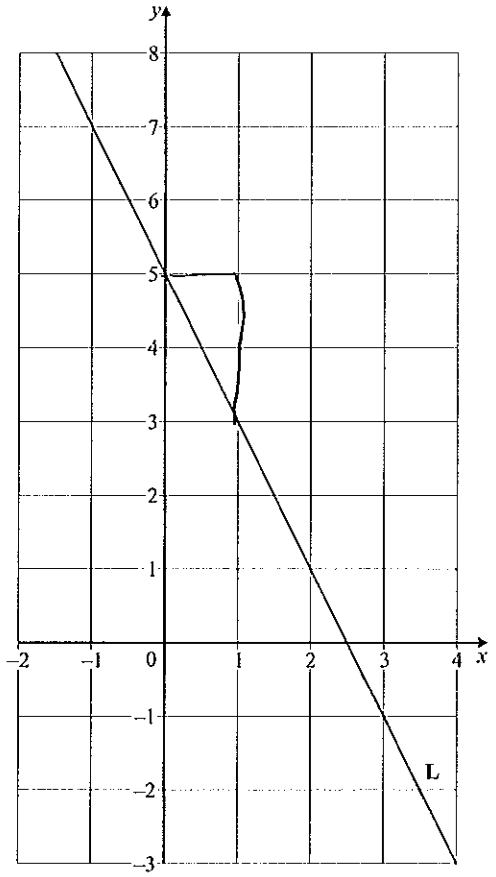
4. The equation of a straight line is $y = 3x - 2$.

Write down the coordinates of the point where this line crosses the y-axis.

(0 , −2)

[1]

5.



$m = -2$

$c = 5$

Find the equation of line **L**

$y = -2x + 5$

.....

[3]

$y = mx + c$

6. A straight line has equation $4y - 5x = 2$
Work out the gradient of this line.

$4y = 5x + 2$

$y = \frac{5}{4}x + \frac{1}{2}$

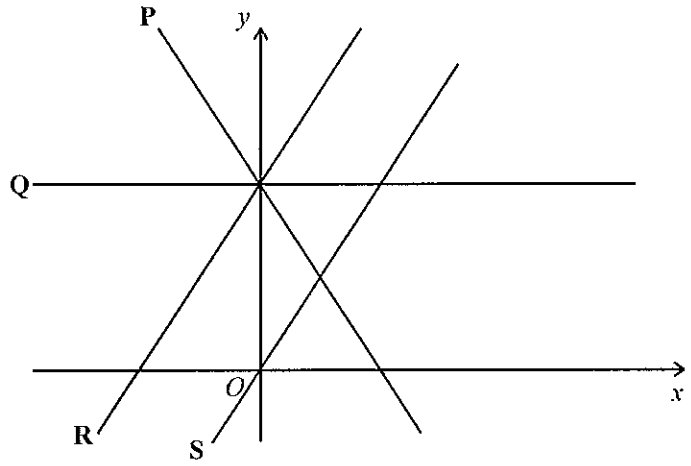
$5/4$

.....

(2)

7. The diagram shows 4 straight lines, labelled **P**, **Q**, **R** and **S**.

The equations of the straight lines are



A: $y = 2x$

B: $y = 3 - 2x$

C: $y = 2x + 3$

D: $y = 3$

Match each straight line, **P**, **Q**, **R** and **S** to its equation.

Complete the table.

Equation	**A**	**B**	**C**	**D**
Straight line	S	P	R	Q

(2)

8. A straight line passes through the points (0, 5) and (3, 17).

Find the equation of the straight line.

$$\text{gradient} = \frac{\text{change in } y}{\text{change in } x}$$

$$= \frac{17-5}{3-0} = \frac{12}{3}$$

$$= 4$$

$y = 4x + 5$

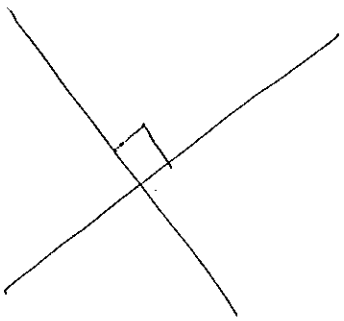
.....

(3)

9. A straight line, **L**, passes through the point with coordinates (4, 7) and is perpendicular to the line with equation $y = 2x + 3$.

$x \quad y$

Find an equation of the straight line **L**.



$$m = -\frac{1}{2}$$

$$y = -\frac{1}{2}x + c$$

$$7 = -\frac{1}{2}(4) + c$$

$$7 = -2 + c$$

$$c = 9$$

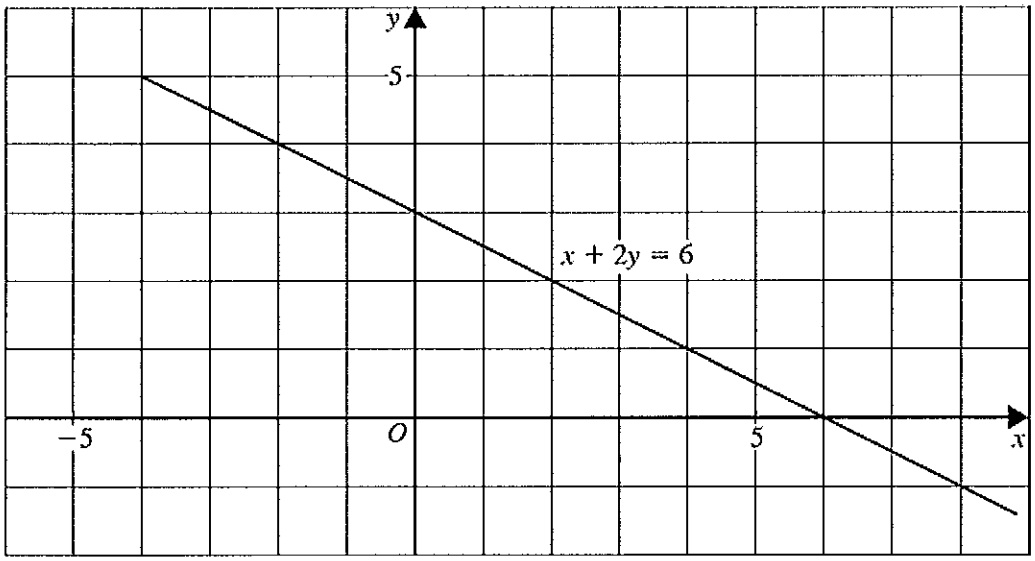
$y = -\frac{1}{2}x + 9$

.....

(3)

10.

The line with equation $x + 2y = 6$ has been drawn on the grid.



(a) Rearrange the equation $x + 2y = 6$ to make y the subject.

$2y = -x + 6$

$y = -\frac{1}{2}x + 3$

$y =$ $-\frac{1}{2}x + 3$

(2)

(b) Write down the gradient of the line with equation $x + 2y = 6$

$-\frac{1}{2}$

(2)

(c) Write down the equation of the line which is parallel to the line with equation $x + 2y = 6$ and passes through the point with coordinates (0, 7).

$y = -\frac{1}{2}x + 7$

(1)

11.

A straight line has equation $y = \frac{1}{2}x + 1$

The point P lies on the straight line.
P has a y-coordinate of 5. $y = 5$

(a) Find the x-coordinate of P.

$5 = \frac{1}{2}x + 1$

$4 = \frac{1}{2}x$

8

(2)

(b) Rearrange $y = \frac{1}{2}x + 1$ to make x the subject.

$y - 1 = \frac{1}{2}x$

$2y - 2 = x$

$x = 2y - 2$

(2)

12. The straight line L_1 has equation $y = 2x + 3$

The straight line L_2 is parallel to the straight line L_1. same gradient
The straight line L_2 passes through the point (3, 2).
$x \quad y$

Find an equation of the straight line L_2.

$y = 2x + c$

$2 = 2(3) + c$

$2 = 6 + c$

$c = -4$

$y = 2x - 4$

(3)

13. A straight line has equation $2y - 6x = 5$

$2y = 6x + 5$

$y = 3x + \frac{5}{2}$

(a) Find the gradient of the line.

3

(2)

The point $(k, 6)$ lies on the line.

(b) Find the value of k.

$y = 6$

$6 = 3x + \frac{5}{2}$

$3.5 = 3x$

$x = \frac{3.5}{3} = \frac{7}{6}$

$k = \frac{7}{6}$

(2)

14. A straight line passes through the points (0, 5) and (3, 17).
Find the equation of the straight line.

$y = 4x + 5$

(3)