

Write your name here

Surname

Other names

**Pearson Edexcel**  
**Level 3 GCE**

Centre Number

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Candidate Number

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# Mathematics

Year 11 to Year 12 Transition Paper

## Straight Line Graphs

**You must have:**

Mathematical Formulae and Statistical Tables,  
calculator

Total Marks

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**Candidates may use any calculator permitted by Pearson regulations. Calculators must not have the facility for algebraic manipulation, differentiation and integration, or have retrievable mathematical formulae stored in them.**

### Instructions

- Use **black** ink or ball-point pen.
- If pencil is used for diagrams/sketches/graphs it must be dark (HB or B).
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions and ensure that your answers to parts of questions are clearly labelled.
- Answer the questions in the spaces provided  
– *there may be more space than you need.*
- You should show sufficient working to make your methods clear. Answers without working may not gain full credit.
- Answers should be given to three significant figures unless otherwise stated.


### Information

- A booklet 'Mathematical Formulae and Statistical Tables' is provided.
- The marks for **each** question are shown in brackets  
– *use this as a guide as to how much time to spend on each question.*

### Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.
- If you change your mind about an answer cross it out and put your new answer and any working out underneath.

Turn over ►

Calculators may NOT be used to answer these questions unless a  symbol is shown next to the question.

1. The line **L** is given by the equation  $3y - 2x = 24$ .

(a) Write the equation for **L** in the form  $y = mx + c$ .

(2)

(b) Find an equation of the line parallel to line **L** and which passes through the point (3, 3).

(2)

(Total for Question 1 is 4 marks)

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2. The line  $l_1$  has equation  $4y - 3x = 10$   
The line  $l_2$  passes through the points (5, -1) and (-1, 8).

Determine, giving full reasons for your answer, whether lines  $l_1$  and  $l_2$  are parallel, perpendicular or neither.

(4)

(Total for Question 2 is 4 marks)

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3. The line  $l$  passes through the points  $A(3, 1)$  and  $B(4, -2)$ .  
Find an equation for  $l$ .

(Total for Question 3 is 3 marks)

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4. The line  $l_1$  has equation  $2x + 4y - 3 = 0$   
The line  $l_2$  has equation  $y = mx + 7$ , where  $m$  is a constant.

Given that  $l_1$  and  $l_2$  are perpendicular,

(a) find the value of  $m$ .

(2)

The lines  $l_1$  and  $l_2$  meet at the point  $P$ .

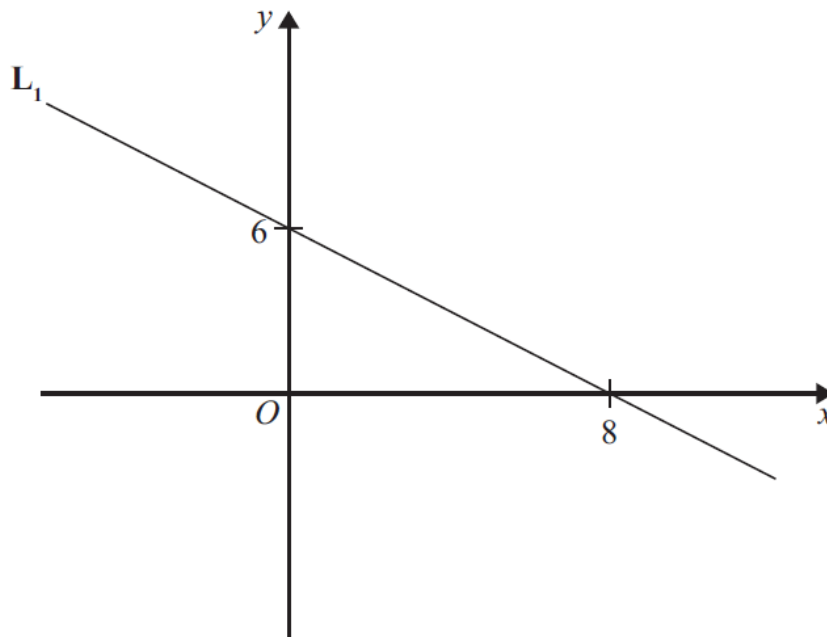
(b) Find the  $x$  coordinate of  $P$ .

(2)

(Total for Question 4 is 4 marks)

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5. The diagram shows a straight line  $L_1$ .



The line  $L_2$  is parallel to  $L_1$  and passes through the point  $(2, 1)$ .

(a) Find an equation of the line  $L_2$ .

Give your answer in the form of  $y = mx + c$ .

(3)

The line  $L_3$  is perpendicular to  $L_1$  and passes through the point  $(0, -5)$ .

(b) Find an equation of the line  $L_3$ .

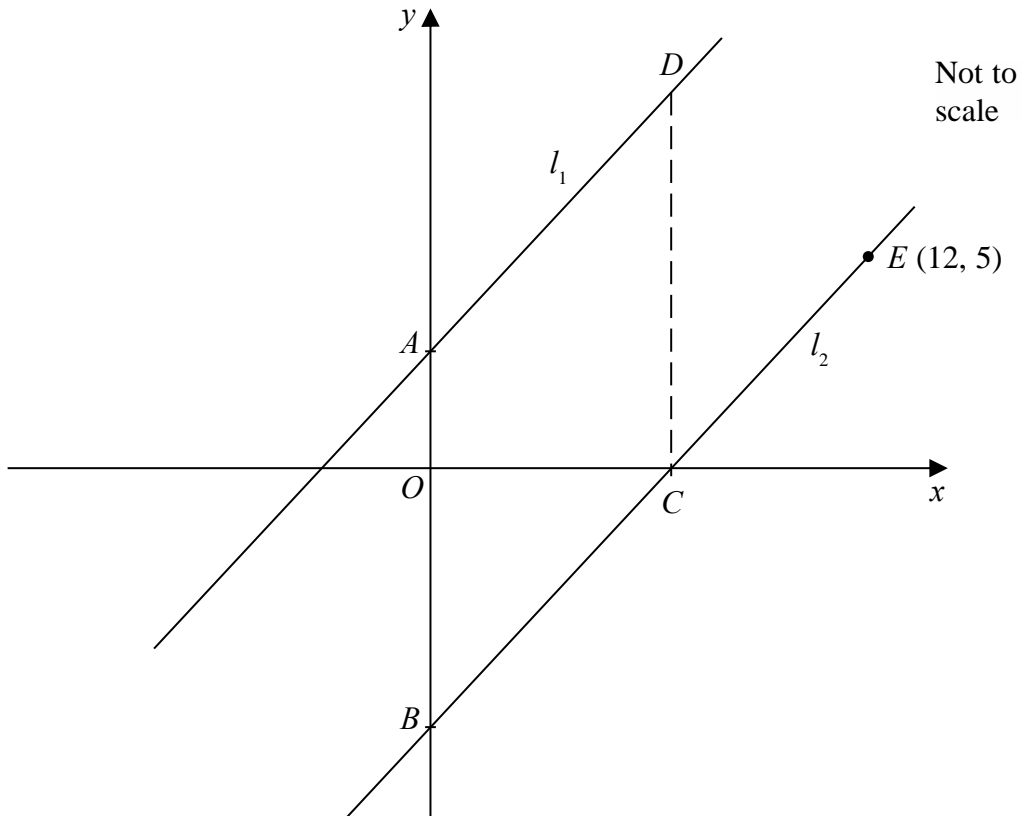
Give your answer in the form  $ax + by + c = 0$  where  $a$ ,  $b$  and  $c$  are integers.

(3)

(Total for Question 5 is 6 marks)

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6.



**Figure 2**

Figure 2 shows the straight line  $l_1$  with equation  $4y = 5x + 12$

- (a) State the gradient of  $l_1$  (1)

The line  $l_2$  is parallel to  $l_1$  and passes through the point  $E(12, 5)$ , as shown in Figure 2.

- (b) Find the equation of  $l_2$ . Write your answer in the form  $y = m x + c$ , where  $m$  and  $c$  are constants to be determined. (3)

The line  $l_2$  cuts the  $x$ -axis at the point  $C$  and the  $y$ -axis at the point  $B$ .

- (c) Find the coordinates of (2)
- (i) the point  $B$ ,
  - (ii) the point  $C$ .

The line  $l_1$  cuts the  $y$ -axis at the point  $A$ .

The point  $D$  lies on  $l_1$  such that  $ABCD$  is a parallelogram, as shown in Figure 2.

- (d) Find the area of  $ABCD$ . (2)

**(Total for Question 6 is 8 marks)**

7. The line  $l$  passes through the points  $A(5,8)$  and  $B(3, 11)$ .
- (a) Find an equation for  $l$  in the form  $ax + by + c = 0$ , where  $a, b$  and  $c$  are integers. (4)

- (b) Find the length  $AB$  leaving your answer in surd form. (2)

The point  $C$  has coordinates  $(t, 8)$  and  $AC = CB$ .

- (c) Find the value of  $t$ . (3)

- (d) Find the area of triangle  $ABC$ . (2)

**(Total for question 7 is 11 marks)**

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8. The straight line  $L_1$  passes through the points  $P$  and  $Q$  with coordinates  $(2, 5)$  and  $(6, -2)$  respectively.

- (a) Find an equation for  $L_1$  in the form  $ax + by = c$  where  $a, b$  and  $c$  are integers. (3)

The straight line  $L_2$  is perpendicular to  $L_1$  and passes through the point  $(7, 5)$ .

- (b) Find an equation for  $L_2$  in the form  $y = mx + c$  (3)

The straight lines  $L_3$  and  $L_4$  have equations  $y = 3x$  and  $x = 3y$  respectively.

- (c) Are the lines  $L_3$  and  $L_4$  perpendicular to each other?  
Give a reason for your answer. (1)

**(Total for Question 8 is 7 marks)**

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9. The straight line  $L_1$  has gradient  $\frac{4}{5}$  and passes through the point with coordinates  $(2, -1)$

(a) Find an equation for  $L_1$  in the form  $px + qy + r = 0$  where  $p$ ,  $q$  and  $r$  are integers. (3)

The straight line  $L_2$  is parallel to  $L_1$  and passes through the point with coordinates  $(3, 4)$

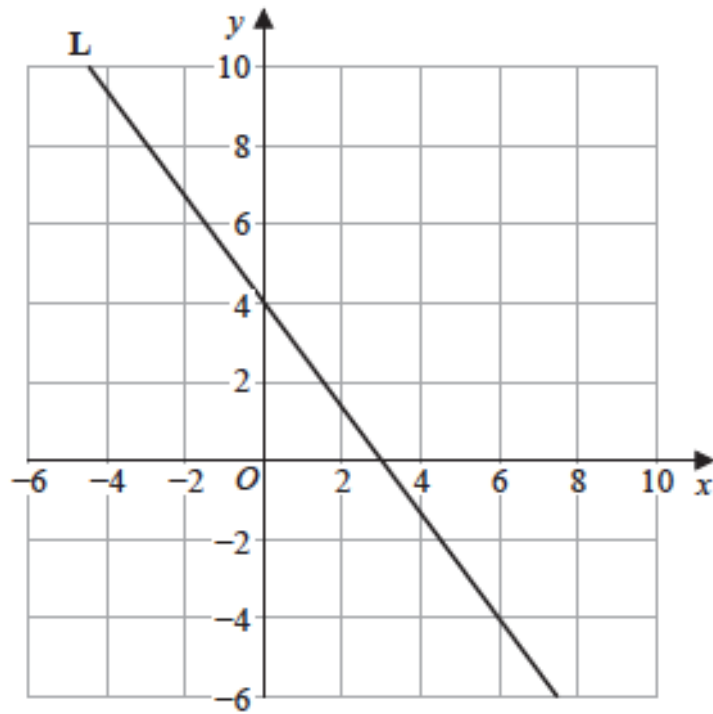
(b) Find an equation for  $L_2$  in the form  $y = mx + c$  (3)

(c) Show, by considering gradients, that the line with equation  $3x + 2y = 4$  is perpendicular to the line with equation  $2x - 3y = 6$  (2)

(Total for question 9 is 8 marks)

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10. The straight line **L** is drawn on the grid.



- (a) Find an equation for **L**  
Give your answer in the form  $ax + by + c = 0$  where  $a$ ,  $b$  and  $c$  are integers.

(3)

The straight line **L<sub>1</sub>** is parallel to **L**

- (b) Find the gradient of **L<sub>1</sub>**

(1)

(Total for Question 10 is 4 marks)

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11. The straight line **L<sub>1</sub>** has equation  $y = \frac{1}{2}x - 1$

- (a) Write the equation of **L<sub>1</sub>** in the form  $ax + by = c$  where  $a$ ,  $b$  and  $c$  are integers.

(1)

The straight line **L<sub>2</sub>** is parallel to **L<sub>1</sub>** and passes through the point with coordinates  $(-2, -6)$

- (b) Find an equation for **L<sub>2</sub>** in the form  $y = mx + c$

(3)

(Total for Question 11 is 4 marks)

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12. The straight line  $L_1$  passes through the points  $P$  and  $Q$  with coordinates  $(1, 5)$  and  $(3, 2)$  respectively.

The line  $L_2$  is perpendicular to the line  $L_1$  and passes through the point  $P$ .

Find the equation of the line  $L_2$

Give your answer in the form  $y = mx + c$

**(Total for Question 12 is 4 marks)**

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13. The straight line  $M$  has equation  $y = -\frac{2}{5}x + 3$

The point  $A$  has coordinates  $(3, 4)$

- (a) Find an equation of the straight line which passes through  $A$  and is parallel to  $M$ .  
Give your answer in the form  $y = mx + c$

**(3)**

- (b) Find an equation of the straight line which passes through  $A$  and is perpendicular to  $M$ .

**(2)**

**(Total for Question 13 is 5 marks)**

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