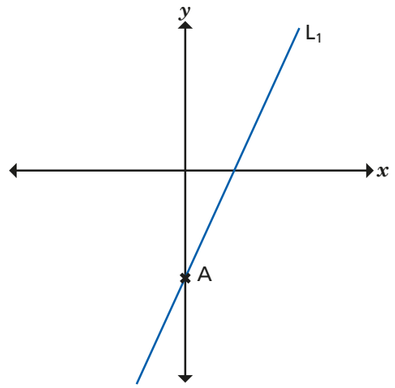
Equation of a straight-line graph given one point and gradient

1 The graph shows a straight line, L_1

The gradient of L_1 is 3

The coordinates of point A are (0, –4).

What is the equation of L_1?



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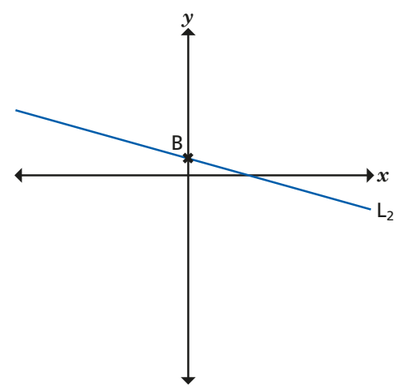
2 The graph shows a straight line, L_2

The gradient of L_2 is $-\frac{1}{2}$

The coordinates of point B are (0, 1).

What is the equation of L_2?



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3 A straight line has a gradient of 5 and intercepts the y-axis at the point (0, 9).

What is the equation of the line?

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4 A straight line has a gradient of –7 and passes through the origin.

What is the equation of the line?

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5 The table shows the gradients of some lines and a point on the line.

Complete the table.

Gradient	Point on the line	Equation of line
3	(0, 9)	
–3	(0, 9)	
–3	(0, –9)	
3	(0, –9)	
$-\frac{1}{3}$	(0, 11)	
$\frac{2}{5}$	$(0, \frac{1}{4})$	

6 The equation of L_1 is $y = 6 - 5x$.

L_2 is parallel to L_1 and passes through the point (0, 43).

What is the equation of L_2?

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7 A straight line has a gradient of $\frac{5}{4}$ and passes through the point (4, 7).

Dexter is working out the equation of the line. Here are his workings.

$m = \frac{5}{4}$ $\quad c = 7$

Equation: $y = x + 7$

a) Substitute the values of x and y from the given point on the line into Dexter's equation to show that he is incorrect.

b) What mistake has Dexter made?

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8 All these points lie on the line $y = 2x + c$.

(1, 9) (3, 13) (5, 17) (–3, 1) (–10, –13)

What is the value of c?

$c =$ ☐

Explain your method to a partner.

9 A straight line has a gradient of 4

The point (5, 18) lies on the line.

What is the equation of the line?

10 A straight line has a gradient of –3

The point (2, 0) lies on the line.

What is the equation of the line?

11 L_1 and L_2 intersect at the point (5, –6).

a) Explain why L_1 and L_2 cannot be parallel.

b) The gradient of L_1 is $\frac{1}{2}$

Work out the equation of L_1

c) The gradient of L_2 is –7

Work out the equation of L_2

12 Work out the equation of a straight line parallel to $3y - 8x = 17$ that passes through the point (–15, 7).

13 Points P, Q, R and S are the vertices of a parallelogram.

P (–1, 3)	**Q** (1, 15)	**R** (9, 19)	**S** (7, 7)

The gradient of line segment PQ is 6

The gradient of line segment QR is $\frac{1}{2}$

Work out the equations of the straight lines that border the parallelogram.