THIRD SPACE LEARNING

GCSE Exam Questions

Gradient of a Line | Algebra

GCSE Exam Questions: Gradient of a Line

1) Below is a graph of a straight line L.

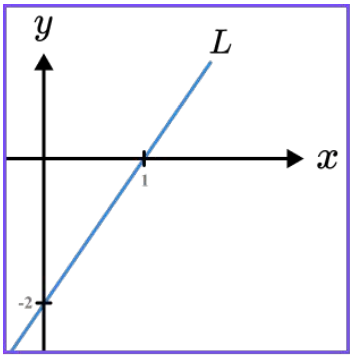


Diagram not to scale

(a) Calculate the gradient of L.

(2)

(b) State the equation of L. Write your answer in the form $y = mx + c$.

(2)

(c) State the equation of the line parallel to L, that passes through the origin.

(1)

(5 marks)

GCSE Exam Questions: Gradient of a Line

2) Below is a sketch of the two lines $y = 2x - 4$ and $2y = 8 - x$.

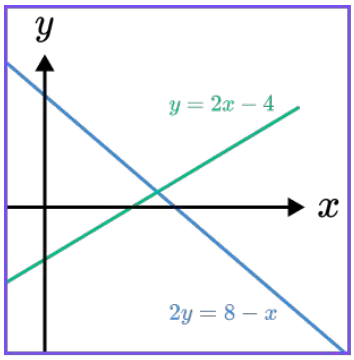


Diagram not to scale

(a) Find the gradient of the line $2y = 8 - x$.

(2)

(b) Two lines are perpendicular if the product of their gradients is -1.

Are these two lines perpendicular?

(2)

(4 marks)

3) **(a)** The point A has coordinates (0, - 1).

The point B has coordinates (5, 19).

Lucy says the gradient of the line is $\frac{1}{4}$.

Charlotte says the gradient of the line is 4.

Who is correct? Show how you decide.

(2)

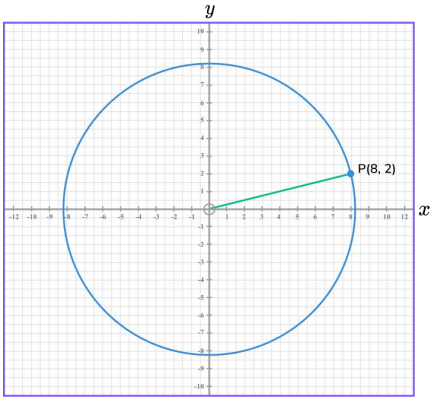
(b) Write down the equation of the line that passes through points A and B.

(2)

(4 marks)

GCSE Exam Questions: Gradient of a Line

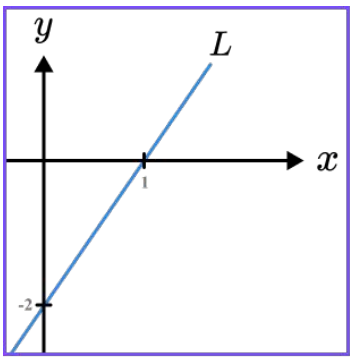
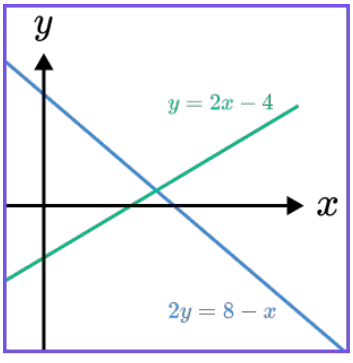
4) The circle with equation $x^2 + y^2 = 68$ passes through the point (8, 2).



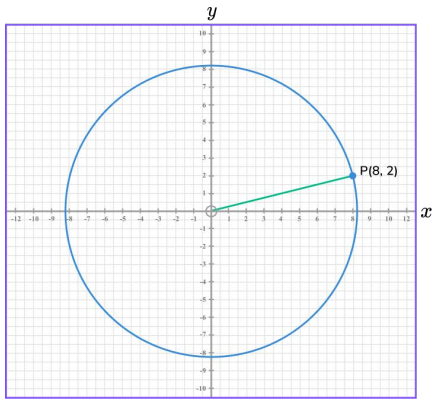
Find the gradient of the radius which touches the circle at the point (8, 2).

(2)

GCSE Exam Questions: Gradient of a Line Answers

	Question	Answer	Marks
1)	Below is a graph of a straight line L.  *Diagram not to scale*		
(a)	Calculate the gradient of L.	**(a)** $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-2 - 0}{0 - 1}$ $m = 2$	**(1)** **(1)**
(b)	State the equation of L. Write your answer in the form $y = mx + c$.	**(b)** $c = -2$ $y = 2x - 2$	**(1)** **(1)**
(c)	State the equation of the line parallel to L, that passes through the origin.	**(c)** $y = 2x$	**(1)**
2)	Below is a sketch of the two lines $y = 2x - 4$ and $2y = 8 - x$.  *Diagram not to scale*		
(a)	Find the gradient of the line $2y = 8 - x$.	**(a)** Dividing by 2 to get $y = 4 - \frac{1}{2}x$ $m = -\frac{1}{2}$	**(1)** **(1)**
(b)	Two lines are perpendicular if the product of their gradients is -1. Are these two lines perpendicular?	**(b)** $2 \times -\frac{1}{2} = -1$ Yes, the lines are perpendicular.	**(1)** **(1)**

GCSE Exam Questions: Gradient of a Line Answers

	Question	Answer	Marks
3) (a)	The point A has coordinates (0, - 1). The point B has coordinates (5, 19). Lucy says the gradient of the line is $\frac{1}{4}$. Charlotte says the gradient of the line is 4. Who is correct? Show how you decide.	**(a)** Gradient: $\frac{19 - -1}{5 - 0} = \frac{20}{5} = 4$ Charlotte is correct	**(1)** **(1)**
(b)	Write down an equation of the line that passes through points A and B.	**(b)** $c = -1$ $y = 4x - 1$	**(1)** **(1)**
4)	The circle with equation $x^2 + y^2 = 68$ passes through the point (8, 2).  Find the gradient of the radius which touches the circle at the point (8, 2).	Gradient: $\frac{2 - 0}{8 - 0}$ $= \frac{1}{4}$	**(1)** **(1)**

Where to go next?

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