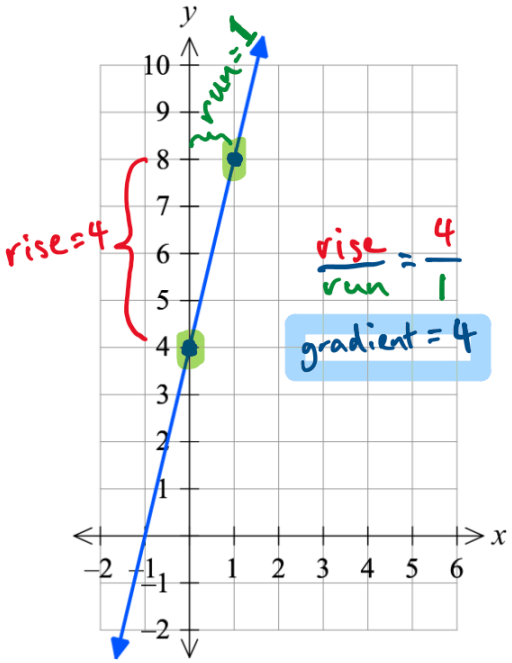
A scientific calculator is permitted throughout this exercise.

Ex 10.1

Worked Example for Simple Questions

Name:

What is the gradient of the line below?



1. Using the grid, find where the line goes through two grid square corners
2. Find the vertical distance between your two corners, this is rise.
3. Find the horizontal distance between your two corners, this is run.
4. Use $\frac{\text{rise}}{\text{run}}$ = gradient to find the gradient.

A	B	C
4	-4	6

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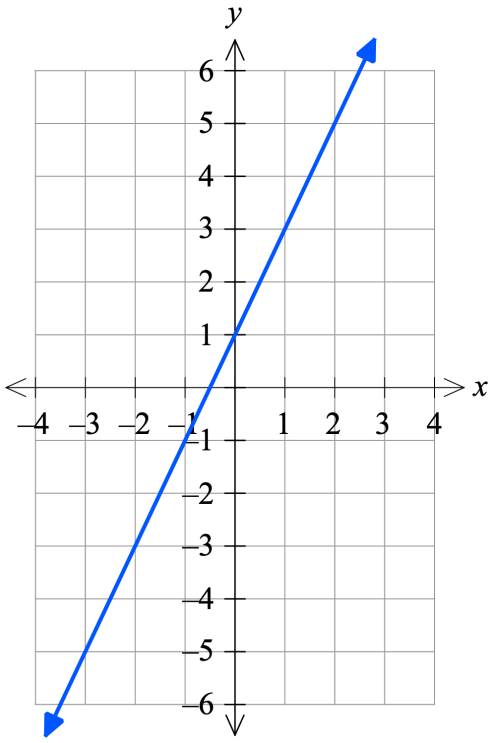
Finding the Gradient from a Graph

Question 1

What is the gradient of the line below?



Circle the correct option

A

-2

B

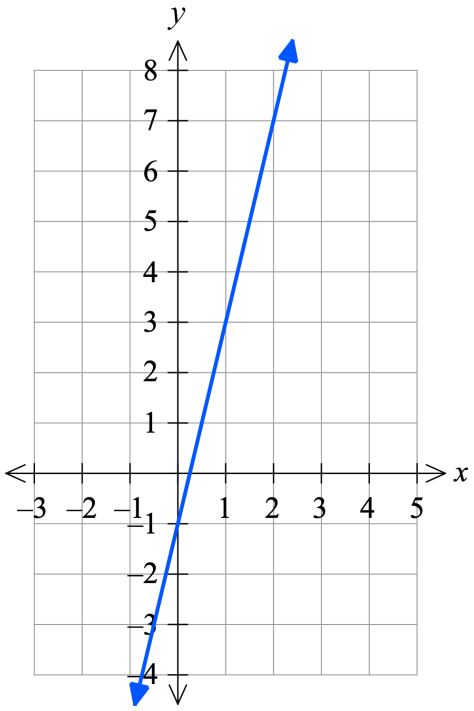
2

C

3

Question 2

What is the gradient of the line below?



Circle the correct option

A

3

B

-4

C

4

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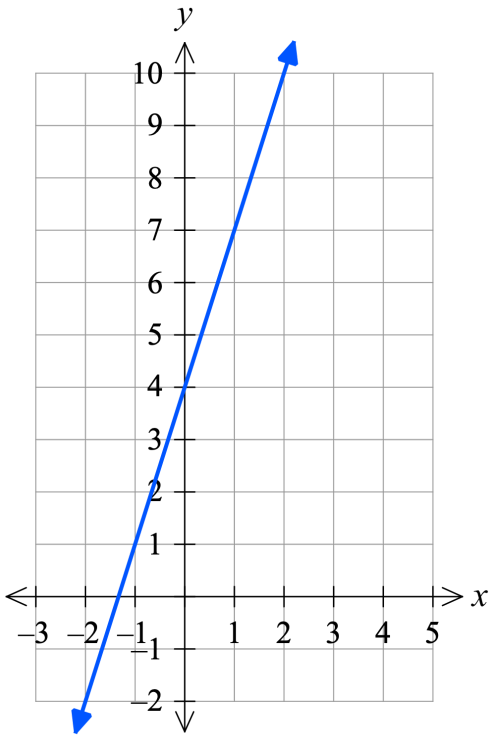
Finding the Gradient from a Graph

Question 3

What is the gradient of the line below?



Circle the correct option

A

3

B

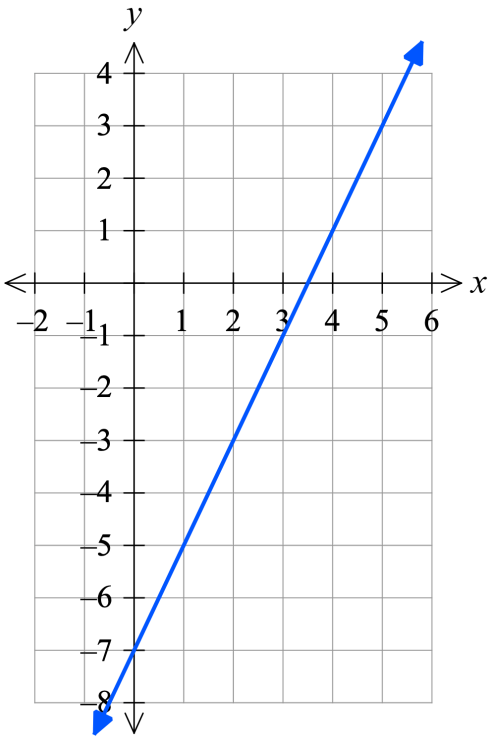
-3

C

4

Question 4

What is the gradient of the line below?



Circle the correct option

A

4

B

-2

C

2

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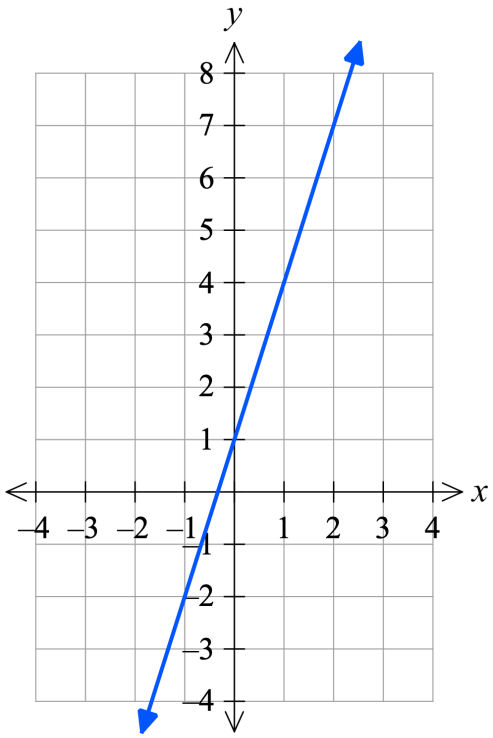
Finding the Gradient from a Graph

Question 5

What is the gradient of the line below?



Circle the correct option

A

3

B

-3

C

6

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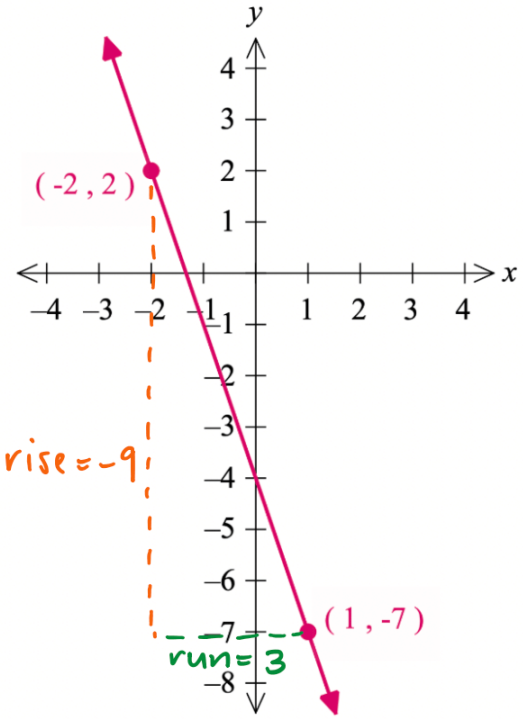
Worked Example for Standard Questions

Find the gradient of the line.

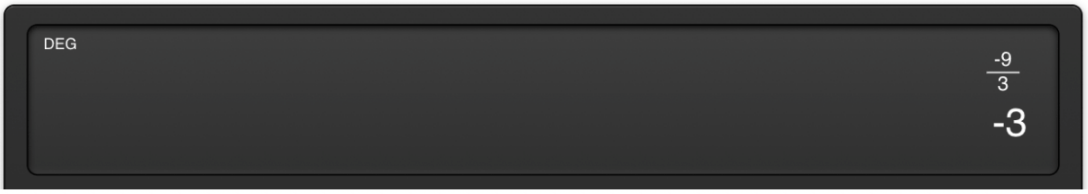


* The gradient is negative.
* Use the points to find the rise and the run of the line.
* gradient $= \frac{\text{rise}}{\text{run}}$

$= \frac{-9}{3}$

$= -3$

gradient $= -3$



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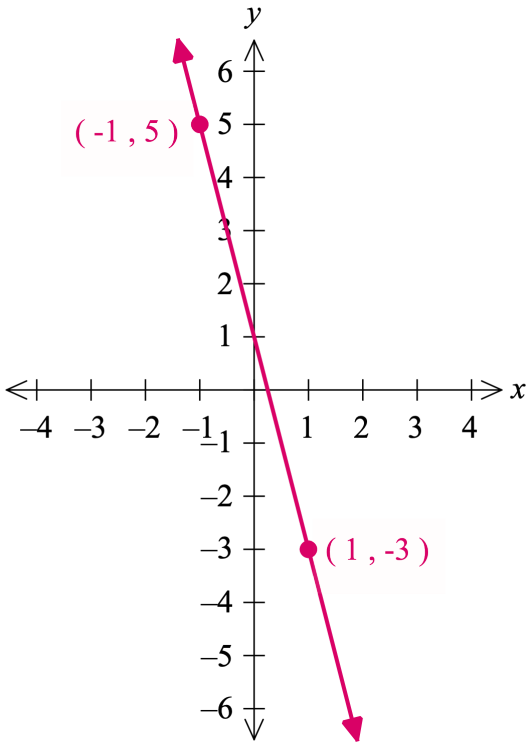
Finding the Gradient from a Graph

Question 6

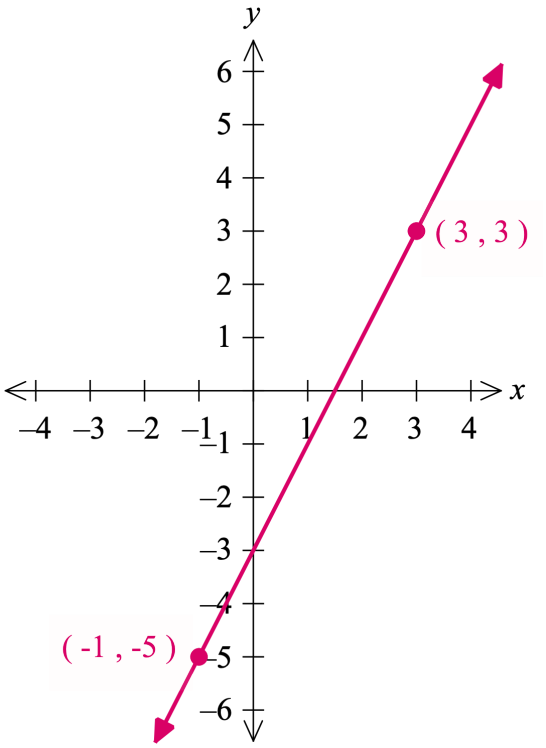
Find the gradient of the line.



gradient = ☐

Question 7

Find the gradient of the line.



gradient = ☐

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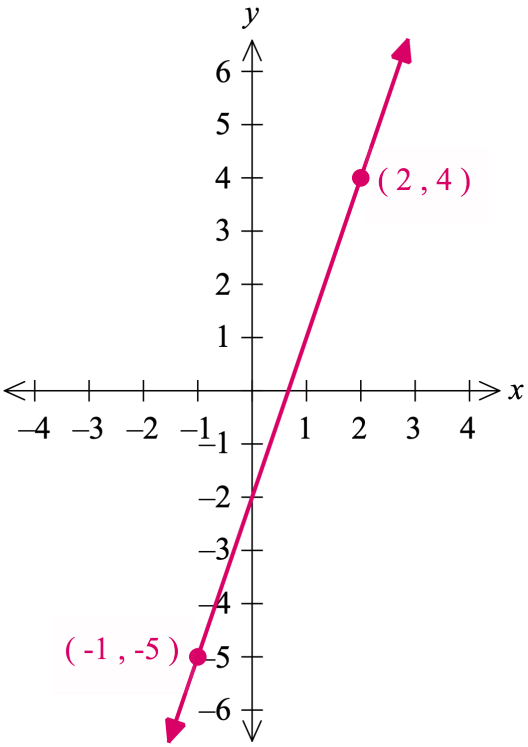
Finding the Gradient from a Graph

Question 8

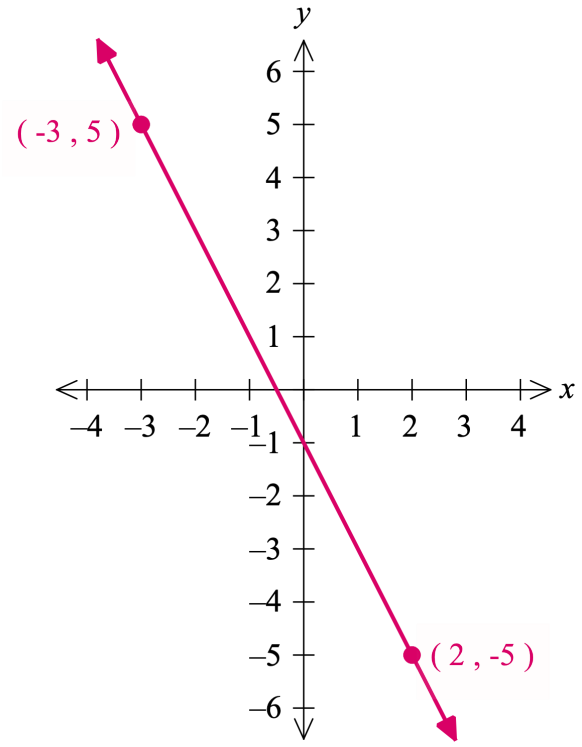
Find the gradient of the line.



gradient = ☐

Question 9

Find the gradient of the line.



gradient = ☐

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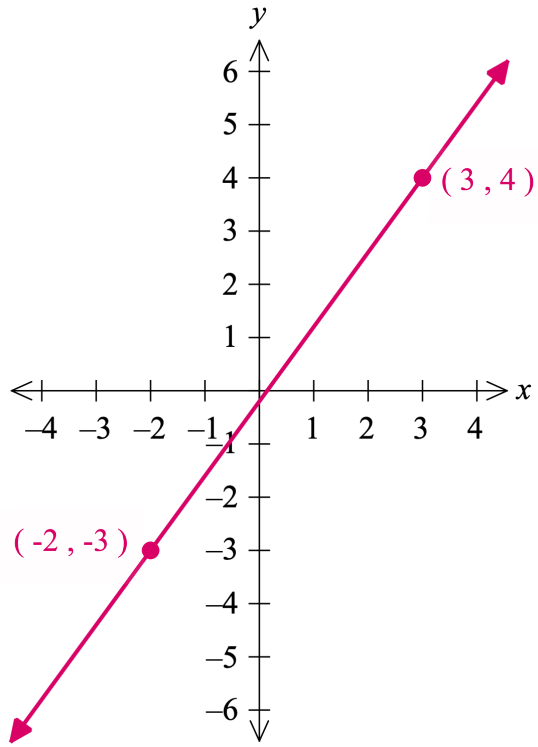
Finding the Gradient from a Graph

Question 10

Find the gradient of the line.



gradient $= \frac{\square}{\square}$

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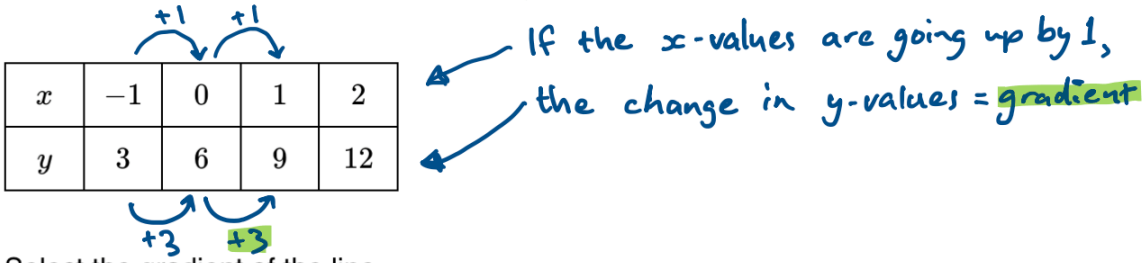
Finding the Gradient from a Table of Values

No calculators are permitted in this exercise.

Ex 10.3

Worked Example for Simple Questions

Here is a table of values that form a straight line:



Select the gradient of the line.

A	B	C
-3	3	6

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Finding the Gradient from a Table of Values

Question 1

Here is a table of values that form a straight line:

x	-1	0	1	2
y	-1	4	9	14

Select the gradient of the line.

Circle the correct option

A

-5

B

4

C

5

Question 2

Here is a table of values that form a straight line:

x	-1	0	1	2
y	-4	-1	2	5

Select the gradient of the line.

Circle the correct option

A

-3

B

3

C

-1

Question 3

Here is a table of values that form a straight line:

x	-1	0	1	2
y	-6	-2	2	6

Select the gradient of the line.

Circle the correct option

A

4

B

-4

C

-2

Question 4

Here is a table of values that form a straight line:

x	-1	0	1	2
y	2	6	10	14

Select the gradient of the line.

Circle the correct option

A

-4

B

4

C

6

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Finding the Gradient from a Table of Values

Question 5

Here is a table of values that form a straight line:

x	-1	0	1	2
y	1	4	7	10

Select the gradient of the line.

Circle the correct option

A

-3

B

3

C

4

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Finding the Gradient from a Table of Values

Worked Example for Standard Questions

Here is a table of values that form a straight line:

x	1	2	3	4
y	15	12	9	6

+1 +1

-3 -3

← If the x-values are going up by 1, the change in y-values is the gradient

What is the gradient of the line?

Gradient = -3

Question 6

Here is a table of values that form a straight line:

x	-3	-2	-1	0
y	12	8	4	0

What is the gradient of the line?

Gradient =

Question 7

Here is a table of values that form a straight line:

x	-1	0	1	2
y	12	9	6	3

What is the gradient of the line?

Gradient =

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Finding the Gradient from a Table of Values

Question 8

Here is a table of values that form a straight line:

x	-2	-1	0	1
y	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$

What is the gradient of the line?

Gradient $=$ $\frac{\square}{\square}$

Question 9

Here is a table of values that form a straight line:

x	2	3	4	5
y	5	0	-5	-10

What is the gradient of the line?

Gradient = $\square$

Question 10

Here is a table of values that form a straight line:

x	-3	-2	-1	0
y	14	12	10	8

What is the gradient of the line?

Gradient = $\square$

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Finding the Gradient from the Equation of a Line

Ex 10.5

No calculators are permitted in this exercise.

Worked Example for Simple Questions

The gradient, m, of the line $y = 3 - 9x$ is:

A	B	C
3	-9	9

For the equation $y=mx+c$, m = gradient.
m is the coefficient (number infront) of x.
$m = -9$

Question 1

The gradient, m, of the line $y = 1 - 2x$ is:

Circle the correct option

A

2

B

-2

C

1

Question 2

The gradient, m, of the line $y = 9 - 7x$ is:

Circle the correct option

A

7

B

-7

C

9

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Question 3

The gradient, m, of the line $y = 4 - 6x$ is:

Circle the correct option

A

-6

B

6

C

4

Question 4

The gradient, m, of the line $y = 3 - 8x$ is:

Circle the correct option

A

3

B

8

C

-8

Question 5

The gradient, m, of the line $y = 10 - 3x$ is:

Circle the correct option

A

-3

B

3

C

10

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Finding the Gradient from the Equation of a Line

Worked Example for Standard Questions

What is the gradient of the line $y = 2x - 9$?

number in front of x

gradient = 2

For the equation $y = mx + c$, m = gradient.
m is the coefficient (number in front) of x.
$m = 2$

Question 6

What is the gradient of the line $y = 3x - 5$?

gradient =

Question 7

What is the gradient of the line $y = 11 - 3x$?

gradient =

Question 8

What is the gradient of the line $y = -0.8x + 1.2$?

gradient =

Question 9

What is the gradient of the line $y = 0.5x + 2$?

gradient =

Question 10

What is the gradient of the line $y = 10 + 6x$?

gradient =

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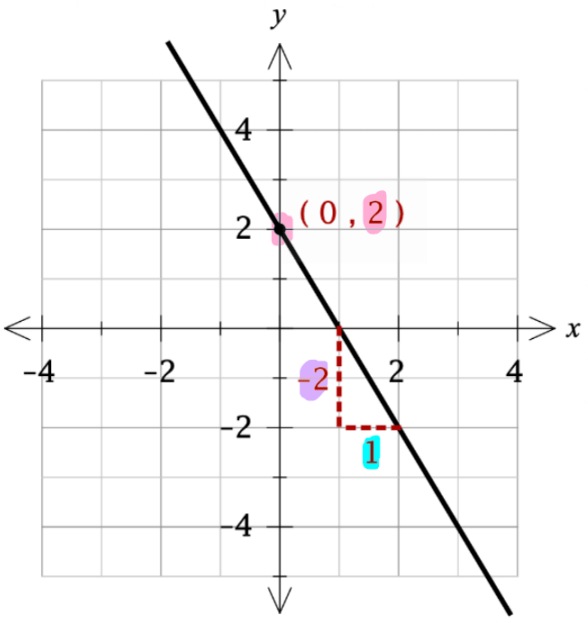
Ex 10.7

A calculator is permitted throughout this exercise.

Worked Example for Simple Questions

Choose the equation that matches the graph.



- Use $y = mx + c$, where m = gradient and c = y-intercept
- Use $m = \frac{\text{rise}}{\text{run}}$ to find the gradient

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

- c = y-intercept
  $= 2$
- Sub into $y = mx + c$

$$y = -2x + 2$$

A

$y = 2x + 2$

B

$y = -2x + 2$

C

$y = -2x$

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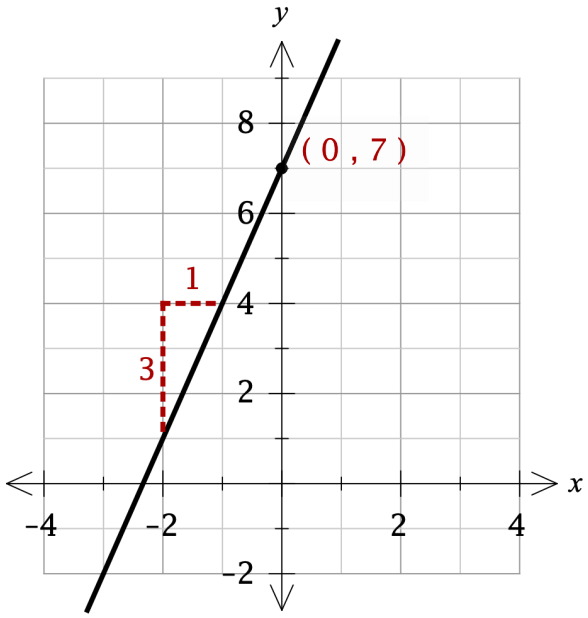
Writing the Equation of a Line from a Graph

Question 1

Choose the equation that matches the graph.



Circle the correct option

A

$y = -3x + 7$

B

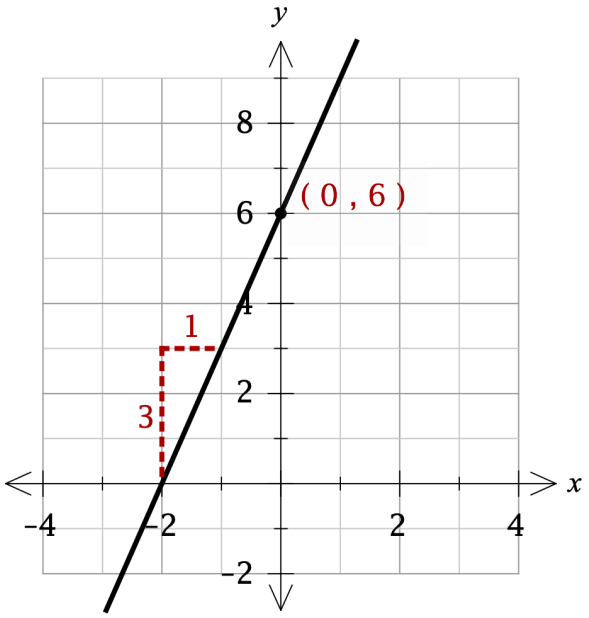
$y = 3x + 7$

C

$y = 3x$

Question 2

Choose the equation that matches the graph.



Circle the correct option

A

$y = 3x$

B

$y = -3x + 6$

C

$y = 3x + 6$

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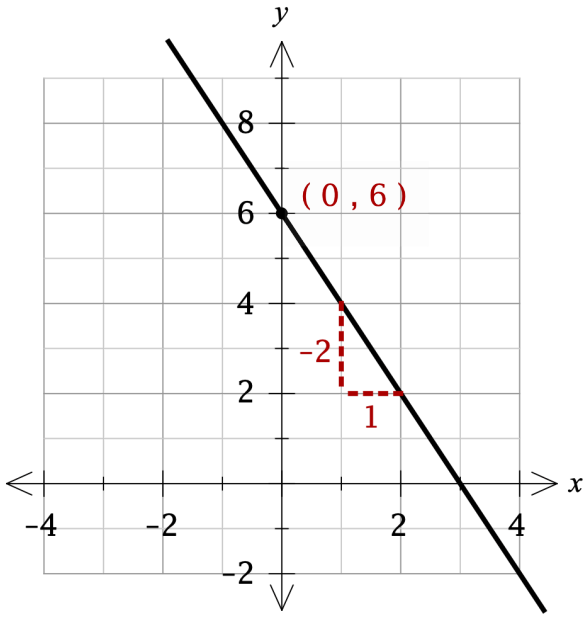
Writing the Equation of a Line from a Graph

Question 3

Choose the equation that matches the graph.



Circle the correct option

A

$y = -2x + 6$

B

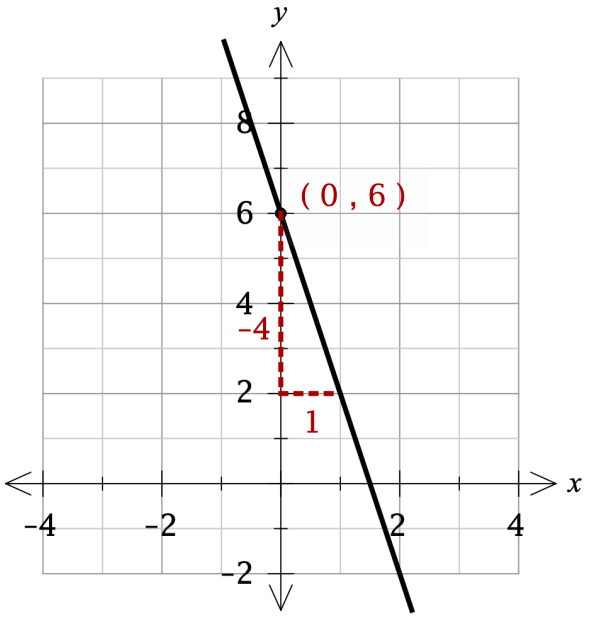
$y = 2x + 6$

C

$y = -2x$

Question 4

Choose the equation that matches the graph.



Circle the correct option

A

$y = -4x$

B

$y = 4x + 6$

C

$y = -4x + 6$

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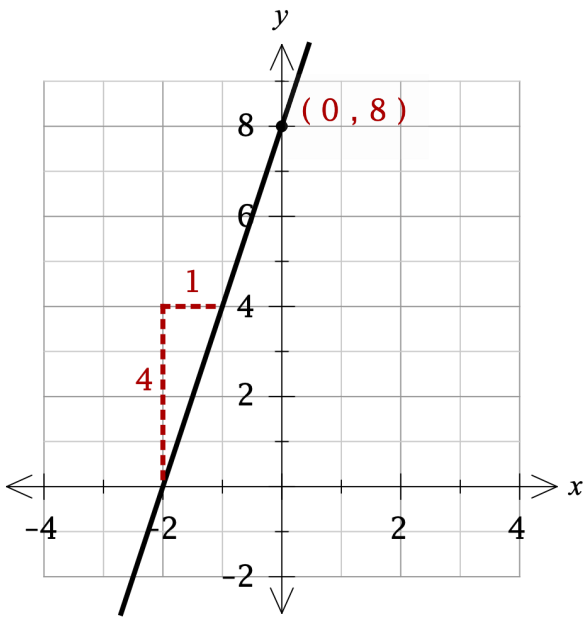
Question 5

Choose the equation that matches the graph.



Circle the correct option

A

$y = 4x + 8$

B

$y = -4x + 8$

C

$y = 4x$

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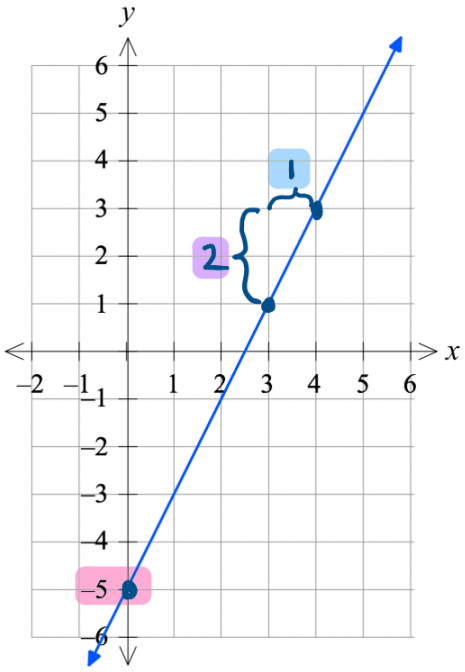
Worked Example for Standard Questions

Write the equation for the linear graph shown below.



$y =$ $2x - 5$

* Use $y = mx + c$ where m = gradient and c = y-intercept.
- Use $m = \frac{\text{rise}}{\text{run}}$ to find the gradient where the line crosses the corners of 2 squares.

$$m = \frac{\text{rise}}{\text{run}} = \frac{2}{1} = 2$$

- c = y-intercept $= -5$
- Sub into $y = mx + c$

$$y = 2x - 5$$

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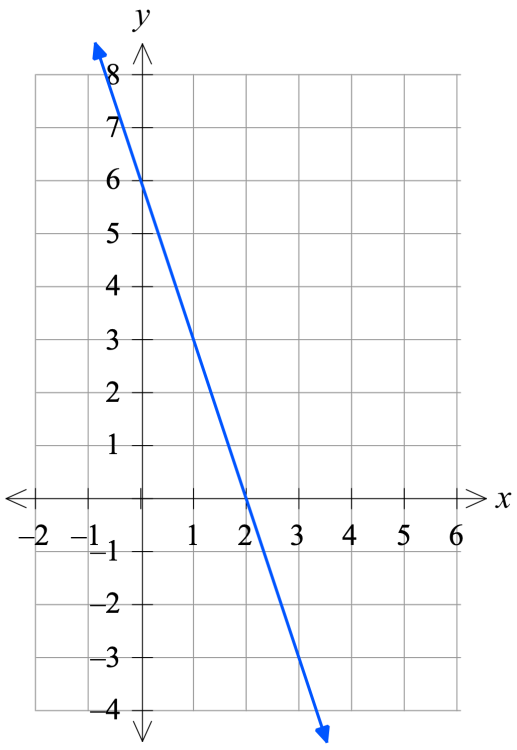
Writing the Equation of a Line from a Graph

Question 6

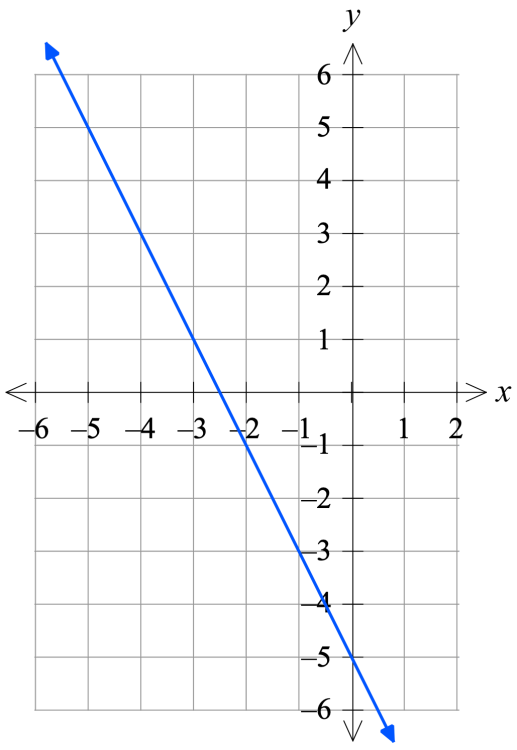
Write the equation for the linear graph shown below.



$y =$ ____

Question 7

Write the equation for the linear graph shown below.



$y =$ ____

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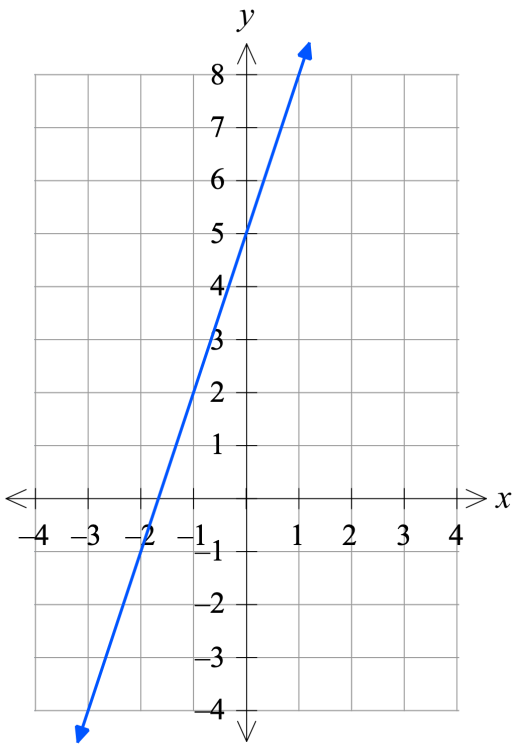
Writing the Equation of a Line from a Graph

Question 8

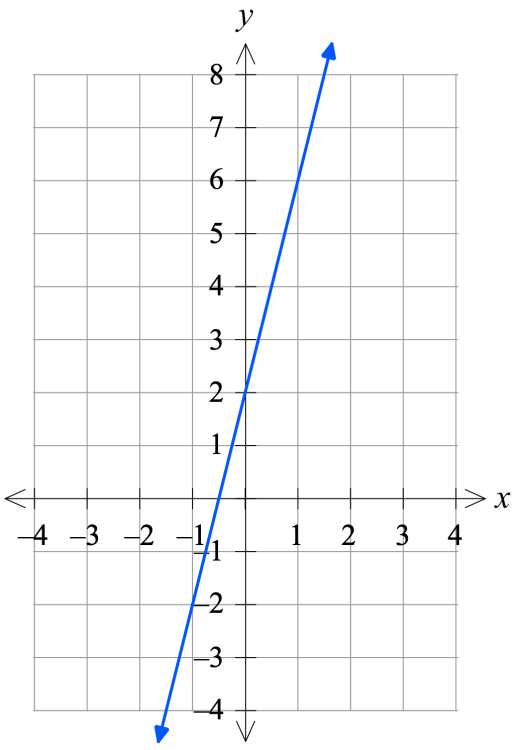
Write the equation for the linear graph shown below.



$y =$ ☐

Question 9

Write the equation for the linear graph shown below.



$y =$ ☐

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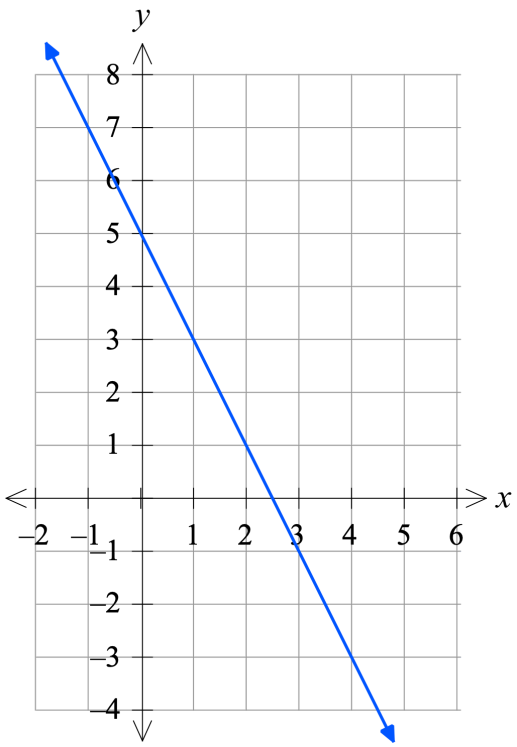
Writing the Equation of a Line from a Graph

Question 10

Write the equation for the linear graph shown below.



$y =$ ☐

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Writing the Equation of a Line from a Table of Values

Ex 10.9

A calculator is permitted throughout this exercise.

Worked Example for Simple Questions

Here is a table of values that form a straight line:

x	-1	0	1	2
y	-7	-3	1	5

+1 +4

The equation of the line is:

Using $y = mx + c$ where m = gradient and c = y-intercept

* $m = 4$
* y-intercept is where $x = 0$

$c = -3$

$\therefore y = 4x - 3$

A

$y = 4x - 7$

B

$y = -x - 7$

C

$y = 4x - 3$

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Writing the Equation of a Line from a Table of Values

Question 1

Here is a table of values that form a straight line:

x	-1	0	1	2
y	-3	3	9	15

The equation of the line is:

Circle the correct option

A

$y = -x + 3$

B

$y = 6x - 3$

C

$y = 6x + 3$

Question 2

Here is a table of values that form a straight line:

x	-1	0	1	2
y	-8	-2	4	10

The equation of the line is:

Circle the correct option

A

$y = -x - 2$

B

$y = 6x - 8$

C

$y = 6x - 2$

Question 3

Here is a table of values that form a straight line:

x	-1	0	1	2
y	-9	-3	3	9

The equation of the line is:

Circle the correct option

A

$y = 6x - 3$

B

$y = -x - 3$

C

$y = 6x - 9$

Question 4

Here is a table of values that form a straight line:

x	-1	0	1	2
y	-7	-2	3	8

The equation of the line is:

Circle the correct option

A

$y = -x - 2$

B

$y = 5x - 2$

C

$y = 5x - 7$

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Writing the Equation of a Line from a Table of Values

Question 5

Here is a table of values that form a straight line:

x	-1	0	1	2
y	-4	-1	2	5

The equation of the line is:

Circle the correct option

A

$y = -x - 1$

B

$y = 3x - 1$

C

$y = 3x - 4$

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Writing the Equation of a Line from a Table of Values

Worked Example for Standard Questions

Write the equation for the straight line shown by the coordinates in the table below.

x	-3	-2	-1	0	1
y	12	7	2	-3	-8

+1 +1

−5 −5

$y = -5x - 3$

Using $y = mx + c$ where m = gradient and c = y-intercept

* $m = -5$
* y-intercept is where $x = 0$

$c = -3$

$\therefore y = -5x - 3$

Question 6

Write the equation for the straight line shown by the coordinates in the table below.

x	-1	0	1	2	3
y	4	-1	-6	-11	-16

$y =$

Question 7

Write the equation for the straight line shown by the coordinates in the table below.

x	-1	0	1	2	3
y	0	3	6	9	12

$y =$

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Writing the Equation of a Line from a Table of Values

Question 8

Write the equation for the straight line shown by the coordinates in the table below.

x	-2	-1	0	1	2
y	6	8	10	12	14

$y =$ ____

Question 9

Write the equation for the straight line shown by the coordinates in the table below.

x	-4	-3	-2	-1	0
y	-15	-13	-11	-9	-7

$y =$ ____

Question 10

Write the equation for the straight line shown by the coordinates in the table below.

x	-3	-2	-1	0	1
y	19	13	7	1	-5

$y =$ ____

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Ex 10.11

A scientific calculator is permitted throughout this exercise.

Worked Example for Simple Questions

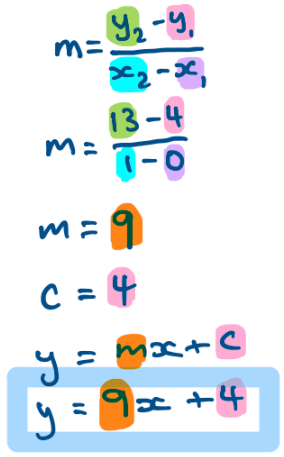
For the equation $y = mx + c$;
the gradient (m) between two points (x_1, y_1) and (x_2, y_2) is given by:

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

and y-intercept $= (0, c)$.

The coordinate points $(0, 4)$ and $(1, 13)$ form a straight line.

What is the equation of the line?

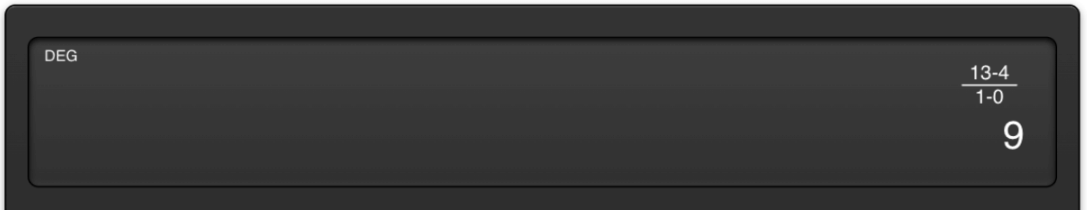


A

$y = 9x + 4$

B

$y = -3x + 4$



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Finding the Equation of a Line from Two Points

Question 1

For the equation $y = mx + c$;
the gradient (m) between two points (x_1, y_1) and (x_2, y_2) is given by:

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

and y-intercept $= (0, c)$.

The coordinate points $(0, 4)$ and $(1, 8)$ form a straight line.

What is the equation of the line?

Circle the correct option

A

$y = 4x + 4$

B

$y = -4x + 4$

Question 2

For the equation $y = mx + c$;
the gradient (m) between two points (x_1, y_1) and (x_2, y_2) is given by:

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

and y-intercept $= (0, c)$.

The coordinate points $(0, 6)$ and $(1, 9)$ form a straight line.

What is the equation of the line?

Circle the correct option

A

$y = -3x + 6$

B

$y = 3x + 6$

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Question 3

For the equation $y = mx + c$;
the gradient (m) between two points (x_1, y_1) and (x_2, y_2) is given by:

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

and y-intercept $= (0, c)$.

The coordinate points $(0, 2)$ and $(1, 6)$ form a straight line.

What is the equation of the line?

Circle the correct option

A

$y = 4x + 2$

B

$y = -4x + 2$

Question 4

For the equation $y = mx + c$;
the gradient (m) between two points (x_1, y_1) and (x_2, y_2) is given by:

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

and y-intercept $= (0, c)$.

The coordinate points $(0, 5)$ and $(1, 8)$ form a straight line.

What is the equation of the line?

Circle the correct option

A

$y = -3x + 5$

B

$y = 3x + 5$

Question 5

For the equation $y = mx + c$;
the gradient (m) between two points (x_1, y_1) and (x_2, y_2) is given by:

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

and y-intercept $= (0, c)$.

The coordinate points $(0, 2)$ and $(1, 6)$ form a straight line.

What is the equation of the line?

Circle the correct option

A

$y = 4x + 2$

B

$y = -4x + 2$

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Worked Example for Standard Questions

For the equation $y = mx + c$;
the gradient (m) between two points (x_1, y_1) and (x_2, y_2) is given by:

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

and y-intercept $= (0, c)$.

The coordinate points $(2, 1)$ and $(0, 5)$ form a straight line.

What is the equation of the line?

$y = -2x + 5$

$m = -2$, $c = 5$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{5 - 1}{0 - 2}$$

$$m = \frac{4}{-2}$$

$$m = -2$$

$$c = 5$$

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Finding the Equation of a Line from Two Points

Question 6

For the equation $y = mx + c$;
the gradient (m) between two points (x_1, y_1) and (x_2, y_2) is given by:

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

and y-intercept $= (0, c)$.

The coordinate points $(3, 7)$ and $(0, 5)$ form a straight line.

What is the equation of the line?

$y = \frac{\square}{\square} x + \square$

Question 7

For the equation $y = mx + c$;
the gradient (m) between two points (x_1, y_1) and (x_2, y_2) is given by:

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

and y-intercept $= (0, c)$.

The coordinate points $(3, 2)$ and $(0, -4)$ form a straight line.

What is the equation of the line?

$y = \square x - \square$

Question 8

For the equation $y = mx + c$;
the gradient (m) between two points (x_1, y_1) and (x_2, y_2) is given by:

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

and y-intercept $= (0, c)$.

The coordinate points $(3, 3)$ and $(0, 9)$ form a straight line.

What is the equation of the line?

$y = \square x + \square$

Question 9

For the equation $y = mx + c$;
the gradient (m) between two points (x_1, y_1) and (x_2, y_2) is given by:

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

and y-intercept $= (0, c)$.

The coordinate points $(3, 4)$ and $(0, -8)$ form a straight line.

What is the equation of the line?

$y = \square x - \square$

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Finding the Equation of a Line from Two Points

Question 10

For the equation $y = mx + c$;
the gradient (m) between two points (x_1, y_1) and (x_2, y_2) is given by:

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

and y-intercept $= (0, c)$.

The coordinate points $(2, 6)$ and $(0, 3)$ form a straight line.

What is the equation of the line?

$y = \frac{\square}{\square} x + \square$

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