Interpret $y = mx + c$

R

1 Match the cards to show what each letter represents in the general equation of a straight line.

y	The y-intercept of the line
m	The horizontal coordinate of a given point on the line
x	The vertical coordinate of a given point on the line
c	The gradient of the line

2 Here are the equations of eight lines.

A $y = 5x - 2$	**C** $y = -7x - 2$	**E** $y = 12 - \frac{3}{2}x$	**G** $5x + 7 = y$
B $y = 3x - 9$	**D** $y = \frac{-3x}{2} + 2$	**F** $y = 5 + 3x$	**H** $19 - 7x = y$

a) What is the gradient of each line?

A $m =$ ☐ **C** $m =$ ☐ **E** $m =$ ☐ **G** $m =$ ☐

B $m =$ ☐ **D** $m =$ ☐ **F** $m =$ ☐ **H** $m =$ ☐

b) Identify the four pairs of parallel lines.

_____

How did you identify them?

_____

_____

3 Write the equations of three lines parallel to $y = 9x + 1$

_____ _____ _____

Compare answers with a partner. How many different answers are there?

4 Here are the equations of eight lines.

A $y = 3x + 7$	**C** $y = \frac{1}{2}x - 2$	**E** $5x - 2 = y$	**G** $y = 7 - 4x$
B $\frac{3x}{4} + \frac{9}{2} = y$	**D** $y = 4.5 - x$	**F** $\frac{19}{5} - 17x = y$	**H** $y = 11x + 3.8$

a) What is the y-intercept of each line?

A $c =$ ☐ **C** $c =$ ☐ **E** $c =$ ☐ **G** $c =$ ☐

B $c =$ ☐ **D** $c =$ ☐ **F** $c =$ ☐ **H** $c =$ ☐

b) There are four pairs of lines that intercept the y-axis at the same point.

Identify these lines and the point at which they intercept the y axis.

Lines ____ and ____ both intercept the y-axis at the point (☐, ☐).

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Lines ____ and ____ both intercept the y-axis at the point (☐, ☐).

5 Line P is given by the equation $y = 23x + 19.2$

Write the equations of three lines that intercept the y-axis at the same point as line P.

_____ _____ _____

Compare answers with a partner. How many different answers are there?

6 Write the values of m and c for each line.

a) $y = 15x + 7$ $m =$ ☐ $c =$ ☐

b) $y = 15x - 7$ $m =$ ☐ $c =$ ☐

c) $y = 7 - 15x$ $m =$ ☐ $c =$ ☐

7 Complete the table.

The first row has been done for you.

Equation	Gradient	Coordinates of y-intercept
$y = mx + c$	m	$(0, c)$
$y = 5x + 7$		
$y = 3x - 17$		
$y = 2 - 11x$		
$\frac{15}{3}x + \frac{1}{4} = y$		
$y = x$		
$3 + 5 - x = y$		
$y = 3x +$ ☐		(0, 9)
$y =$ ☐ $x + 2.5$	-5	

8 Whitney is identifying the gradient and y-intercept of a straight line.

$$y = 13 - 2x$$
$$m = 13 \qquad c = 2$$

a) Write two things wrong with Whitney's workings.

1. _____

2. _____

b) Write the correct gradient and y-intercept of the straight line.

$m =$ ☐ $c =$ ☐

9 Line Q is given by the equation $y = 1 + 9x$.

Line R is given by the equation $y = 9x + \frac{7}{7}$

Dexter says, "Lines Q and R are parallel because they have the same gradient."

Do you agree with Dexter? _____

Explain your answer.

10 Three lines, L_1, L_2 and L_3, are drawn on a coordinate grid.

a) L_1 has a gradient of $\frac{5}{4}$ and intercepts the y-axis at the point $(0, -1)$.

What is the equation of L_1?

_____

b) L_2 is parallel to L_1 and intercepts the y-axis at the point $(0, \frac{2}{3})$.

What is the equation of L_2?

_____

c) L_3 has a gradient of $-\frac{5}{7}$ and intercepts the y-axis at the same point as L_2

What is the equation of L_3?

_____