BECA / IB Math 01-Linear functions Name:
7 October 2021

PreQuiz: I can model with linear functions

Equations of a straight line: $f(x) = mx + c$, $ax + by + d = 0$, $(y - y_1) = m(x - x_1)$

Gradient: $m = \dfrac{y_2 - y_1}{x_2 - x_1}$

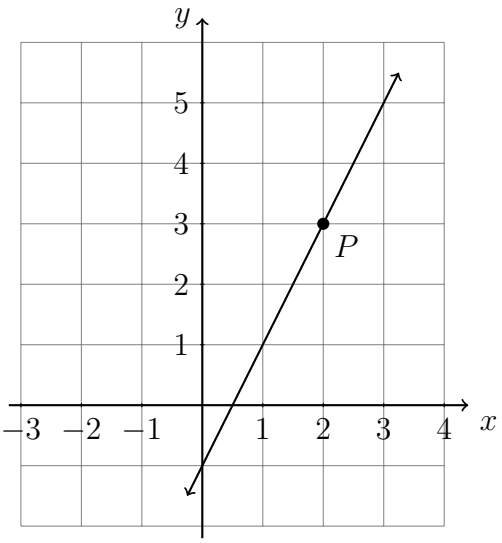
1. A linear function f is graphed below.

   (a) Write down it's slope.
   $m =$

   (b) Write down it's y-intercept.
   $b =$

   (c) Write down the equation of the line.

   (d) State the coordinates of the point P.



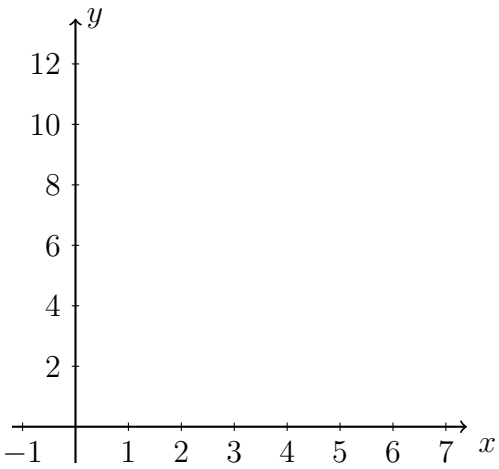
2. Write the linear equation $y - 2 = 3(x + 1)$ in the form $y = mx + c$.

3. A line has a gradient (slope) of 3 and goes through the point $(1, 4)$. Find the equation of the line in the form $y = mx + b$.

4. A line goes through the points $(2, 10)$ and $(5, 18)$. Find the gradient and the equation of the line in the form $y = mx + b$.

   (a) Find the gradient of the line.

   (b) Find the equation of the line.



5. Find the equation of the line through the points $(-2, 5)$ and $(3, 20)$.

BECA / IB Math 01-Linear functions Name:
7 October 2021

6. A function f is shown in the table. [5]

x	0	2	4	6	8
$f(x)$	0	1	2	3	4

(a) Is f a linear function? Why or why not?

(b) Is f a direct variation? Explain.

(c) Find the gradient of the function.

(d) Write down the equation of f in the form $y = mx + c$

(e) Complete the table of the inverse of f.

x					.
$f^{-1}(x)$					.

7. A linear function is such that $f(1) = 5$ and $f(5) = 1$.

   (a) Name two of the function's points as ordered pairs.

   (b) Find the gradient (slope) for the function f

   (c) Substitute the slope and one point into the formula $f(x) = mx + c$

   (d) Solve for the y-intercept

   (e) Find $f(-3)$

8. Given the direct variation (and also a linear function) $f(x) = 2x$. [6]

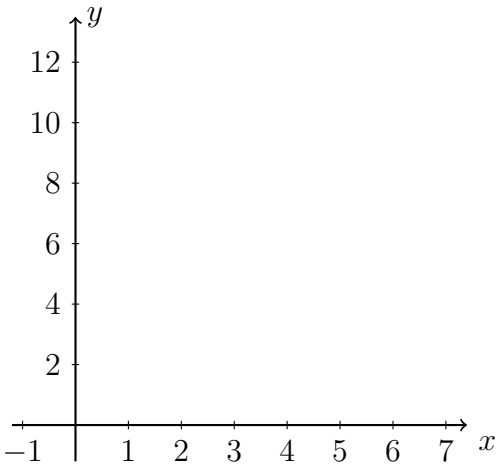
   (a) Find $f(3)$

   (b) $f(x) = 10$. Find x.

   (c) Plot the answers to the first two parts, (a) and (b), as points on the grid and label them as ordered pairs.

   (d) Draw a straight line through the points to represent the function.

   (e) What is the constant of proportionality?



9. The gasoline used by a car is the function of the distance driven in miles, as shown in the table.

BECA / IB Math 01-Linear functions Name:
7 October 2021

Distance (miles)	10	20	40	50	200	500
Gas (gallons)	0.5	1	2	2.5	10	25

(a) Is gas usage a linear function of distance driven? Explain.

(b) Is it a direct variation?

(c) What is the gradient?

(d) What is the gas mileage in terms of miles per gallon?

(e) Discuss which is the independent and dependent variables.