

# Linear equations review

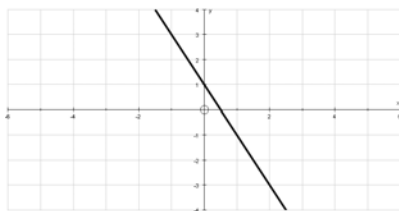
IB

1. Copy and complete the table below showing the gradient ( $m$ ) and the intercept in the  $y$ -axis ( $c$ ).

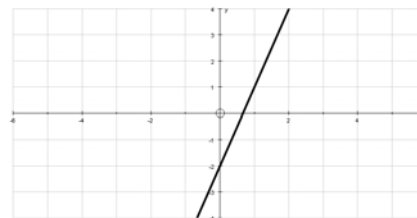
	Line	Gradient	Intercept
a)	$y = 4x + 1$		
b)	$y = 5 - \frac{1}{2}x$		
c)	$3y = 4x - 2$		
d)	$x + 2y - 1 = 0$		

2. Which of the following lines have a negative gradient?

a)  $y = 2 - x$   
 b)  $3x + 2y - 1 = 0$   
 c)



d)  $5y = 4x - 10$   
 e)  $2x - 5y = 0$   
 f)



3. **Sketch** the following lines with the aid of a GDC. Important: Use a ruler, label the axis, and show any points of interception on the  $x$  or the  $y$  axis.

a)  $y = \frac{1}{3}x - 1$

b)  $2x + y - 3 = 0$

4. Re-write each of the following in the form  $ax + by + c = 0$  where  $a$ ,  $b$ , and  $c$  are integers.

a)  $y = 9 - 2x$

b)  $3y = 1 - \frac{x}{2}$

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5. The points  $A$  and  $B$  have coordinates of  $(6,2)$  and  $(12,4)$  respectively.
- Find the length of the line segment joining  $A$  and  $B$ .
  - Find the coordinates of the mid-point,  $M$ , of line  $AB$ .
6. The points  $A$  and  $B$  have coordinates of  $(1,4)$  and  $(-3,-5)$  respectively.
- Find the coordinates of the mid-point,  $M$ , of line  $AB$ .
  - Find the length of the line segment joining  $A$  and  $M$ .
7. By graphing first on your GDC, find the solutions to the following simultaneous equations.
- $y = 5x - 7$   
 $y = 7 - 2x$
  - $y = 5x + 9$   
 $y = 2x + 6$
  - $2y = 16 + 4x$   
 $3y = 3 - x$
8. A gradient of a line is given as  $m$ , then the gradient of the normal (at right angles) to the line is given as,  $-\frac{1}{m}$ .

Find the equation of the normal to each of the following lines, at the points given. Give your answer in the form  $ax + by + c = 0$ .

- $y = 2x - 3$  at the point  $(4,1)$ .
- $2y = x - 1$  at the point  $(1,0)$ .
- $3x + 4y - 2 = 0$  at the point  $(6,-4)$ .

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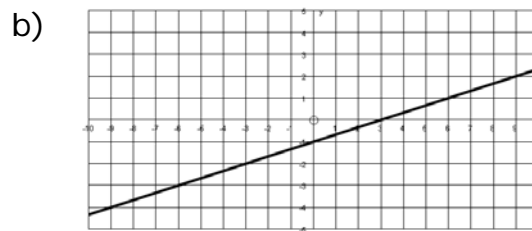
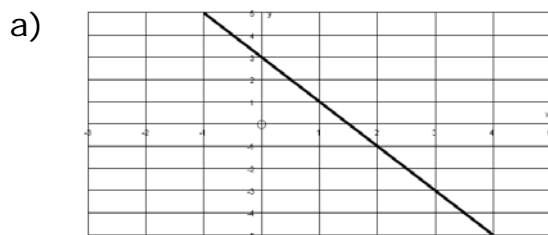
## Answers

1.

	Line	Gradient	Intercept
a)	$y = 4x + 1$	4	1
b)	$y = 5 - \frac{1}{2}x$	$-\frac{1}{2}$	5
c)	$3y = 4x - 2$	$\frac{4}{3}$	$-\frac{2}{3}$
d)	$x + 2y - 1 = 0$	$-\frac{1}{2}$	$\frac{1}{2}$

2. a), b), c)

3.



4. a)  $2x + y - 9 = 0$

b)  $x + 6y - 2 = 0$

5. a) 6.32

b) (9, 3)

6. a)  $\left(-1, -\frac{1}{2}\right)$

b) 4.92

7. a)  $x = 2, y = 3$

b)  $x = 1, y = -4$

c)  $x = -3, y = 2$

8. a)  $x + 2y - 6 = 0$

b)  $2x + y - 2 = 0$

c)  $4x - 3y - 36 = 0$