

### Equation of a Line 3

1. For each question below, find the coordinates of the point where the line cuts the y-axis.

- (a)  $y = 2x - 6$       (b)  $y = 5x + 3$       (c)  $2y = 5x - 8$       (d)  $3y = 7x - 4$   
(e)  $5y = 2x - 11$       (f)  $2x + 3y = 12$       (g)  $4x + 3y - 5 = 0$       (e)  $6x - 3y - 15 = 0$

2. For each question below, find the coordinates of the point where the line cuts the x-axis.

- (a)  $y = 4x - 20$       (b)  $y = 3x + 12$       (c)  $2y = 4x - 8$       (d)  $3y = 5x - 4$   
(e)  $4y = 7x - 11$       (f)  $3x + 4y = 24$       (g)  $2x + 5y - 7 = 0$       (h)  $6x - 5y - 1 = 0$

3. For each question below, find the coordinates of the point where the line cuts the x and y axes.

- (a)  $y = 3x - 18$       (b)  $3y = 2x - 12$       (c)  $5x + 2y = 10$       (d)  $2x - 5y - 6 = 0$

4. A line has equation  $y = 3x - 9$ .

- (a) Does the point (6,9) lie on this line?  
(b) The point (m,4m) lies on this line. Find the value of m.

5. A line has equation  $y = 2x + 8$ .

- (a) Does the point (-3,-2) lie on this line?  
(b) The point (k,14) lies on this line. Find the value of k.

6. A line has equation  $4y = 5x - 8$ .

- (a) Does the point (4,3) lie on this line?  
(b) Where does this line cross the y axis?

7. A line has equation  $3x + 2y - 12 = 0$ .

- (a) The point (u,3) lies on this line. Find the value of u.  
(b) Does the point (3,3) lie on this line?  
(c) Find where this line cuts the x axis.

8. Find the gradient and the coordinates of the y intercept of each line below.

- (a)  $y = 4x - 10$       (b)  $y = \frac{1}{2}x - 5$       (c)  $y = -4x$       (d)  $2y = 6x - 8$   
 (e)  $4y = 3x - 12$       (f)  $5y = 2x + 1$       (g)  $2x + 3y = 6$       (h)  $4x + 5y = 2$   
 (i)  $2x + 3y - 15 = 0$       (j)  $2x + 7y - 4 = 0$       (k)  $x - 2y + 10 = 0$       (l)  $3x - 4y - 7 = 0$

9. For each question below

- (1) Copy and complete the table
- (2) Draw the line on a coordinate graph
- (3) Write down the gradient of the line

(a)  $y = 2x + 3$

|   |   |   |    |
|---|---|---|----|
| x | 3 | 0 | -4 |
| y |   |   |    |

(b)  $y = 4x - 5$

|   |   |   |    |
|---|---|---|----|
| x | 2 | 0 | -1 |
| y |   |   |    |

(c)  $y = -3x + 8$

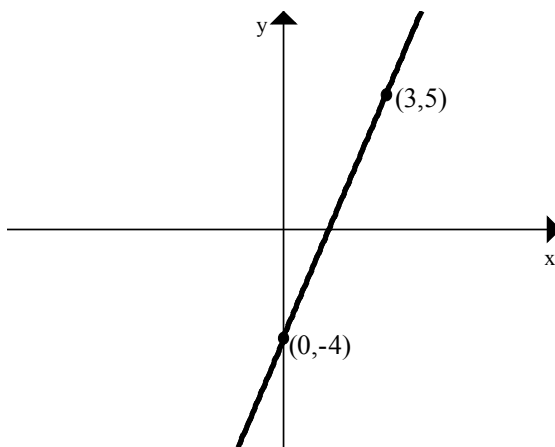
|   |   |   |   |
|---|---|---|---|
| x | 4 | 0 | 1 |
| y |   |   |   |

(d)  $y = \frac{1}{3}x - 4$

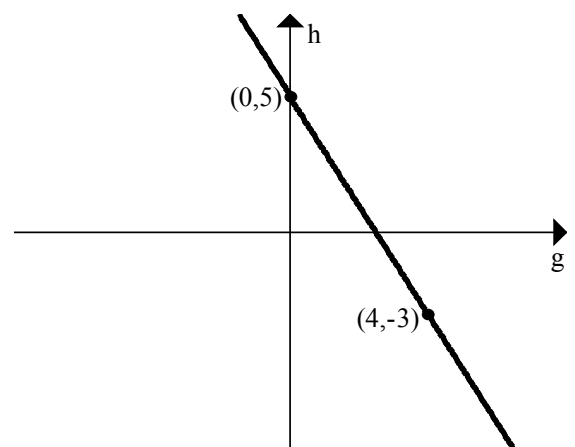
|   |   |   |    |
|---|---|---|----|
| x | 3 | 0 | -6 |
| y |   |   |    |

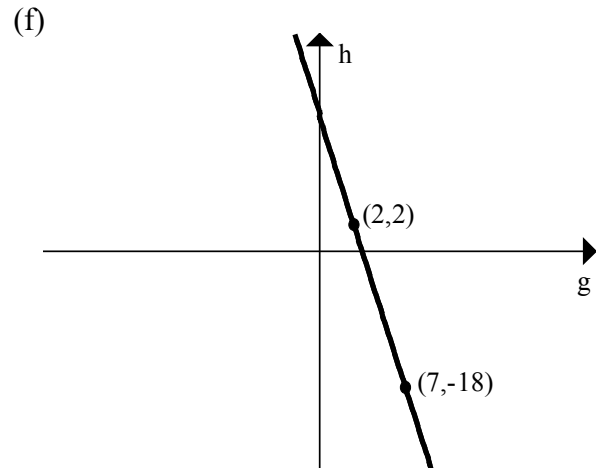
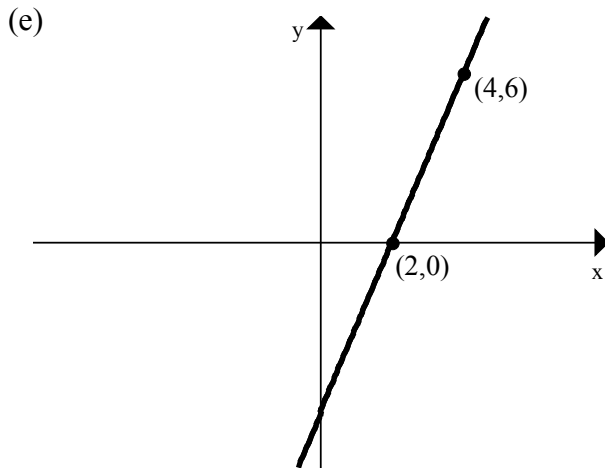
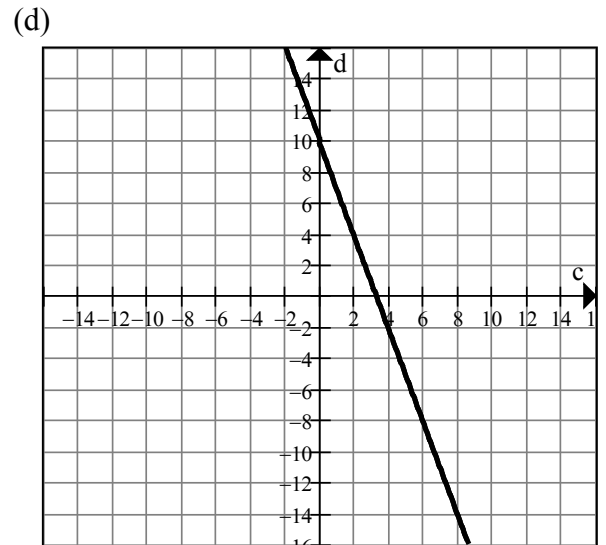
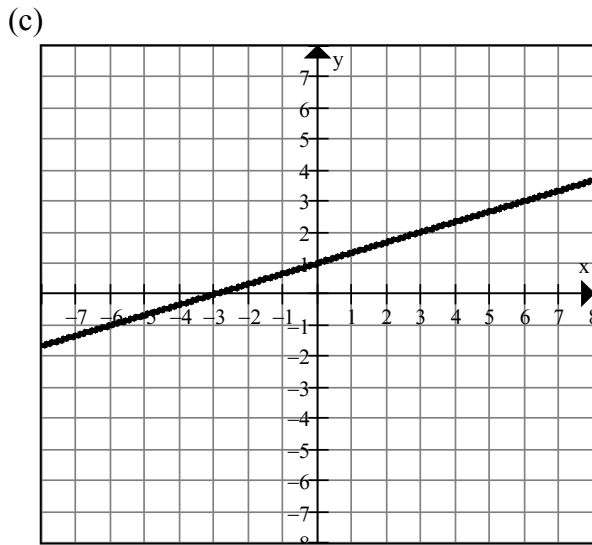
10. Find the equation of each line below.

(a)



(b)





11. (a) Find the equation of the line joining the points  $(-2,3)$  and  $(1,12)$ .

(b) Find the equation of the line joining the points  $(0,-4)$  and  $(2,8)$ .

(c) Find the equation of the line joining the points  $(2,3)$  and  $(8,6)$ .

(d) Find the equation of the line joining the points  $(0,-2)$  and  $(2,1)$ .

(e) Find the equation of the line joining the points  $(2,5)$  and  $(-1,9)$ .

12. A straight line is represented by the equation  $y = ax + b$ . On separate diagrams make sketches of lines where

(i)  $a > 0$  and  $b < 0$

(ii)  $a < 0$  and  $b < 0$

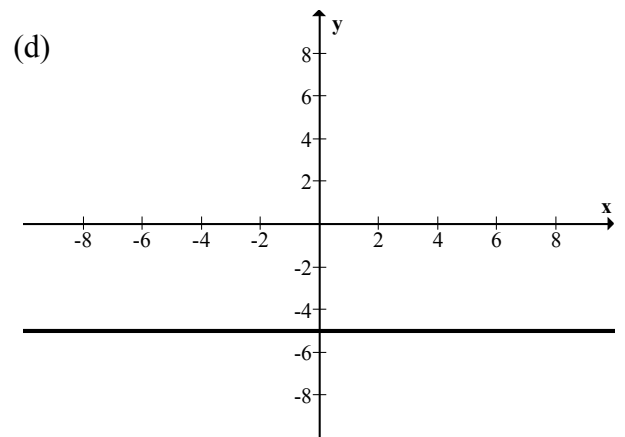
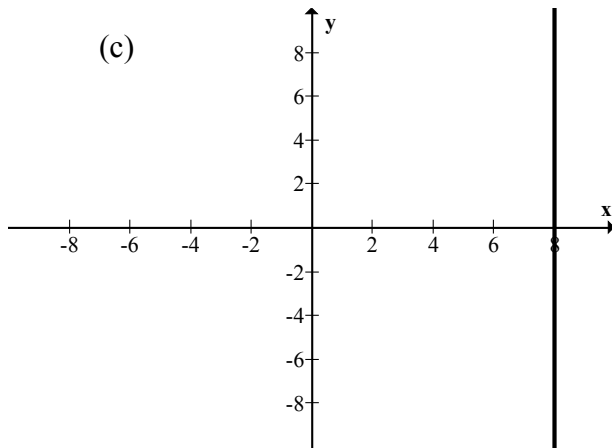
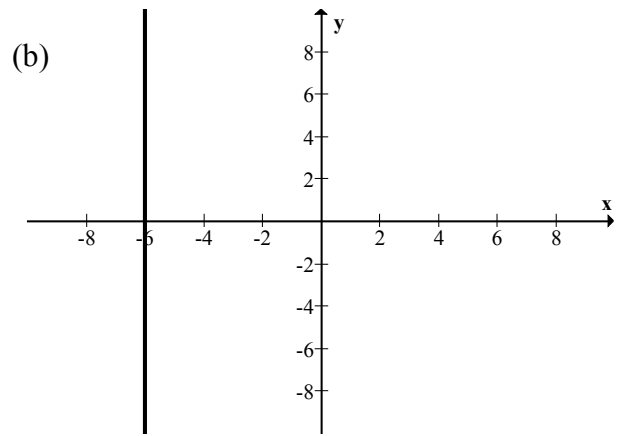
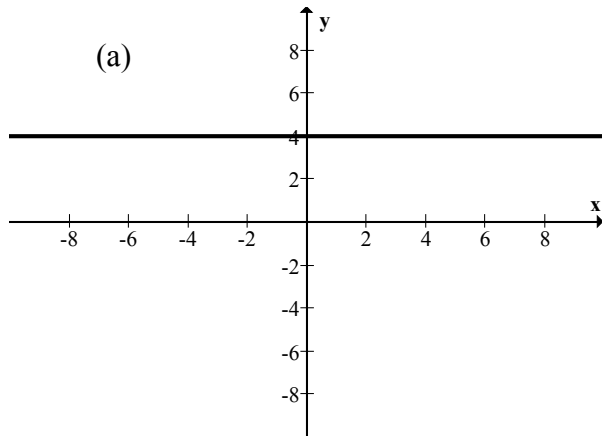
(iii)  $a > 1$  and  $b > 0$

(iv)  $a = 0$  and  $b > 0$

(v)  $a < 0$  and  $b = 0$

(vi)  $a = 1$  and  $b = 0$

13. Write down the equation of each line below.



14. Draw a coordinate graph with x and y axes from -10 to 10.

On this graph sketch the following lines.

- (a)  $y = 3$       (b)  $x = 5$       (c)  $x = -9$       (d)  $y = -8$

15. A tank contains 40 litres of water. When a tap is opened water flows from the tank at a rate of 5 litres per minute.

- (a) Draw a graph of the volume  $V$  litres, of the tank against the time  $t$  minutes.  
 (b) Write down an equation connecting  $V$  and  $t$ .

16. Cyclohire hire out bicycles. They charge a £20 deposit plus £10 per hour hire.

- (a) Draw a graph of the cost, £ $C$ , of hiring a bicycle for  $h$  hours.  
 (b) Write down an equation connecting  $C$  and  $h$ .

17. A bucket contains 10 litres of water. More water is added at a rate of 2 litres per minute for the next 8 minutes.

- (a) Draw a graph of the volume,  $V$  litres, of water in the bucket after  $t$  minutes.  
 (b) Write down an equation connecting  $V$  and  $t$ .