Functions and graphs

- Describing a straight line using an equation
- Writing an equation for a straight line in the form $y = mx + c$
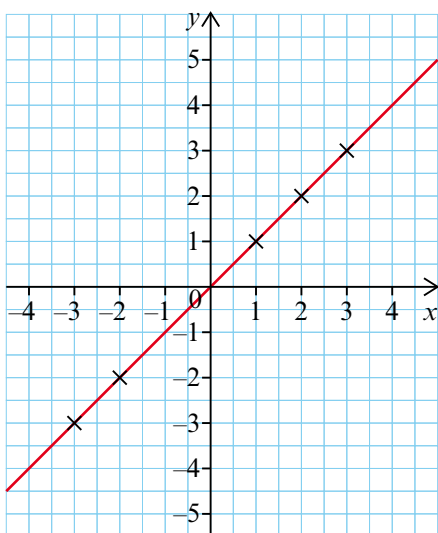
Keywords

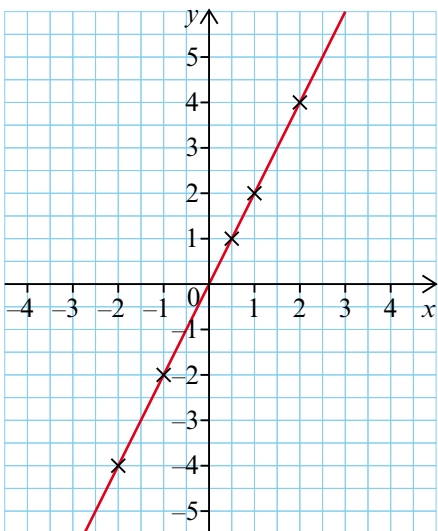You should know

explanation 1

1 For each graph, copy and complete the table. The tables show the coordinates of the points marked with crosses.

a

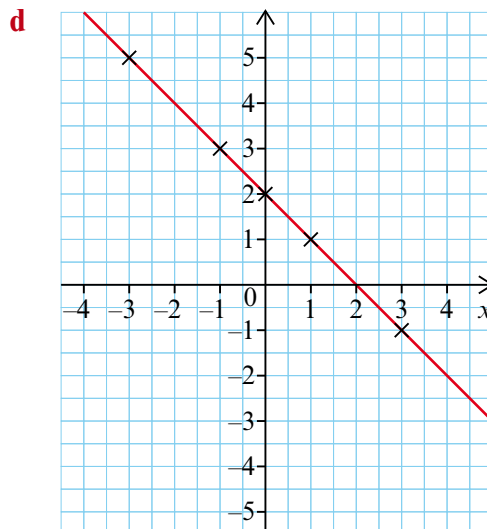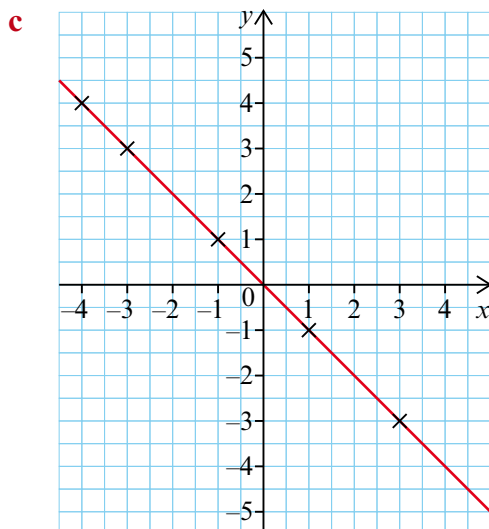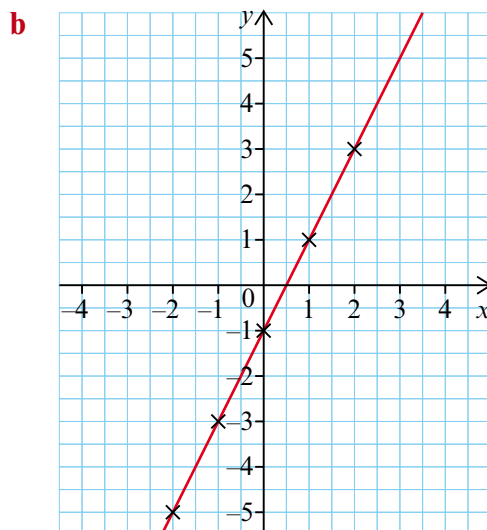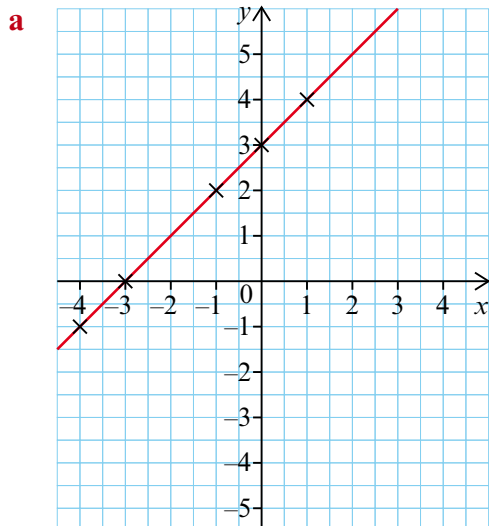| x	y
-3	
-2	
1	
2	
3	

b

x	y
-2	
-1	
$\frac{1}{2}$	
1	
2	

2 Draw a table like this for each of the graphs below.

In each table, write the coordinates of the points marked on the line.

x	y

a

b

c

d

3 Look at the graphs in questions **1** and **2**.

  i In words, write the rule that links the x-coordinate and the y-coordinate of each point in each of the graphs in questions **1** and **2**.

  ii Write an equation for each rule in the form $y = \square$.

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4 Copy and complete the table for each of these equations of straight lines.

x	y
-2	
-1	
0	
1	
2	

a $y = x + 2$

b $y = x - 4$

c $y = 2x + 1$

d $y = 2x - 2$

e $y = 3x$

f $y = -x + 1$

g $y = -2x + 3$

h $y = \frac{1}{2}x$

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

j $y = -\frac{1}{2}x + 1$

5 Using each of your tables of coordinates from question **4**, plot the points on a pair of axes.
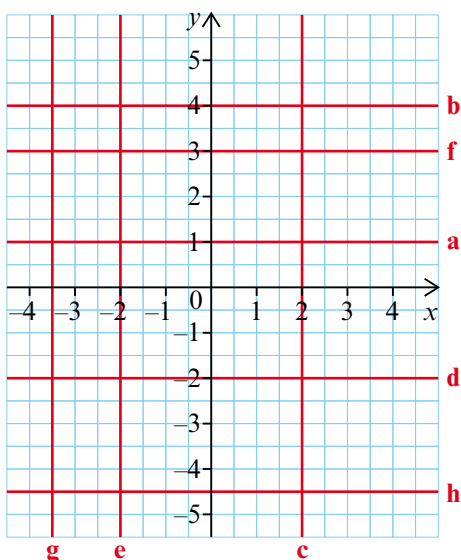
Draw a straight line through the points.

6 Some of the lines you drew in question **5** are parallel to each other.

a Write down the equations of all the pairs of parallel lines.

b What do the equations of parallel lines have in common?
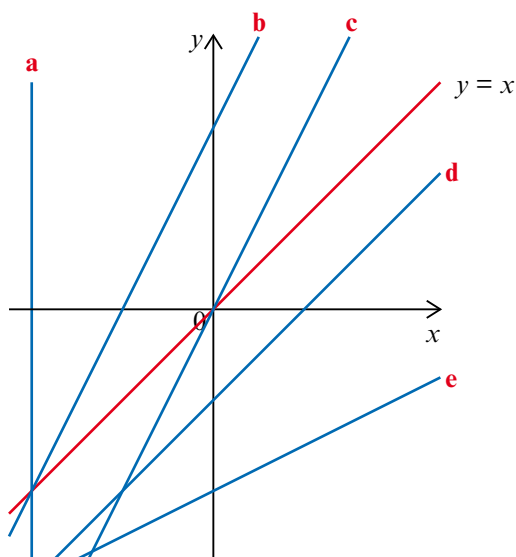
explanation 2

7 Write the equation of each of the straight lines in the diagram.

8 Which line do you think matches which equation? The line $y = x$ is labelled.
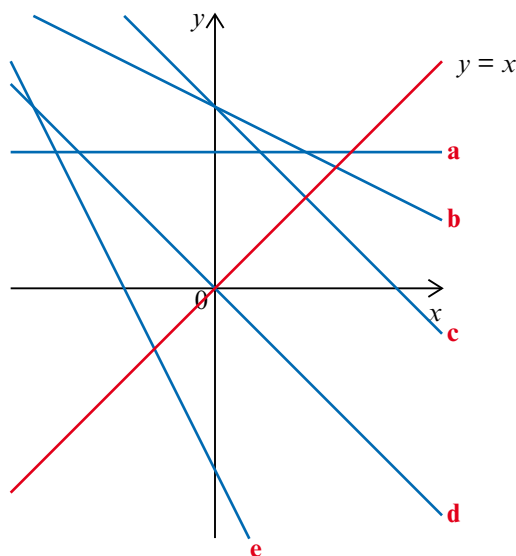

$$y = 2x + 4$$
$$x = -3$$
$$y = x - 2$$
$$y = 2x$$
$$y = \frac{1}{2}x - 4$$

9 Which line do you think matches which equation? The line $y = x$ is labelled.

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