

SCORE

# Algebra

With Classified  
answer book

8

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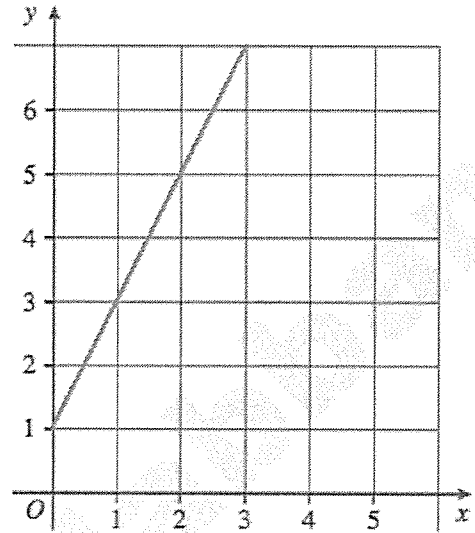
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## 16- Equations of Straight Line

1. A straight line L is shown on the grid.

Work out the equation of line L

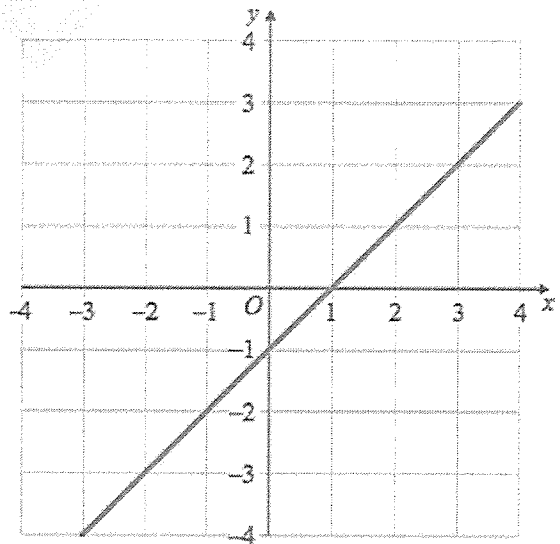
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2. A straight line L is shown on the grid.

Work out the equation of line L

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3. The point A (-3, 5) and the point B (1, -15) lie on the line L

Find the equation of the line L.

.....

4. The point A (1, 1) and the point B (5, -1) lie on the line L

Find the equation of the line L.

.....

5. A line has a gradient of 8 and passes through the point (2, 3).

Find the equation of the line.

.....

6. A line has a gradient of  $-\frac{1}{2}$  and passes through the point (-6, -8).

Find the equation of the line.

.....

7. A line has a gradient of  $-\frac{4}{5}$  and passes through the point (30, 24).

Find the equation of the line.

.....

8. The line L passes through the points (0, 7) and (3, 19)

Work out the equation of the line L.

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Yuri's teacher asks him to write down three properties that the graphs of  $y = 2x + 1$  and  $y = 6x + 1$  both have in common.

Yuri has written down two properties.

1 They are both straight lines.

2 They both have a positive gradient.

3 .....

.....

Complete Yuri's list by writing down another property the two graphs both have in common.

9. (a) Write down the gradient of the straight line with equation  $y = 8x + 2$

.....

The line cuts the y-axis at the point A

- (b) Write down the coordinates of the point A.

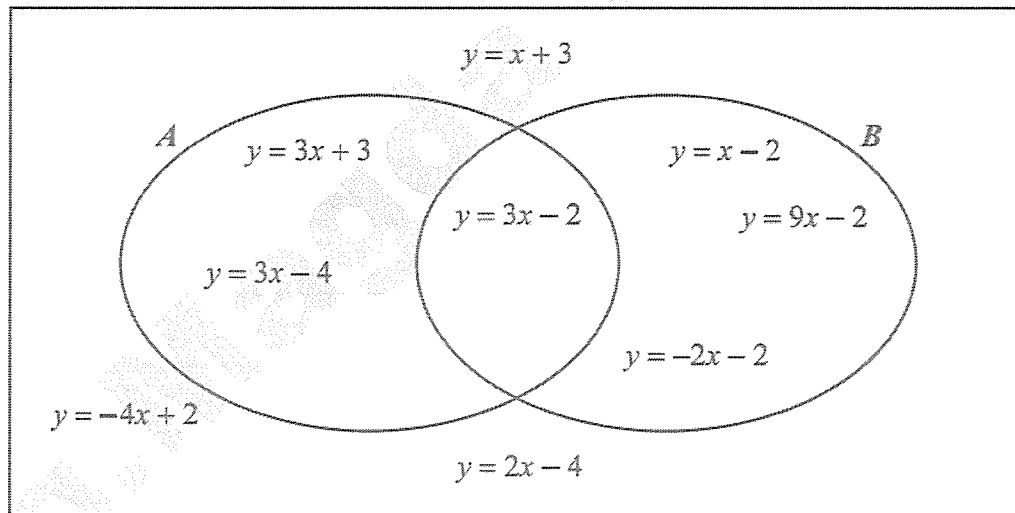
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The line cuts the x-axis at the point B

- (c) Write down the coordinates of the point B.

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10. Some equations of straight lines have been placed in the Venn diagram.



- (a) Write down a description of the straight lines in set A.

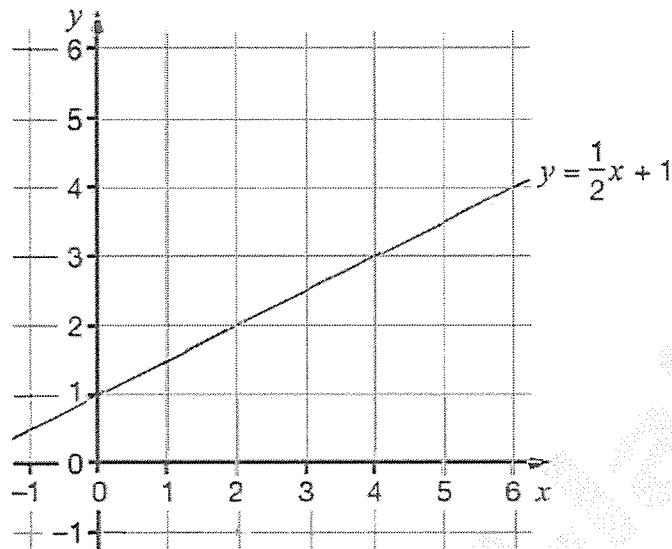
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- (b) Write down a description of the straight lines in set B.

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- (c) Write the equation  $y = -2x + 3$  in the correct part of the Venn diagram.

11. The graph shows the straight line with equation  $y = \frac{1}{2}x + 1$



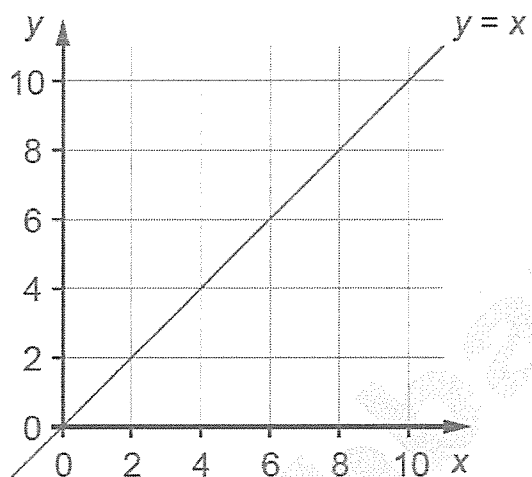
- (a) For each point in the table, tick ( $\checkmark$ ) the correct box to show if it is **above** the line, **on the line** or **below** the line. The first one is done for you.

Point	Above the line	On the line	Below the line
(6, 3)			$\checkmark$
(8, 5)			
(100, 60)			
(-4, -3)			

- (b) Write the equation of a different straight line that is always **below** the line with equation  $y = \frac{1}{2}x + 1$



12. (a) The grid shows a straight line.  
The equation of the line is  $y = x$



Two of the equations below also describe the straight line  $y = x$ . Put rings round the correct equations.

$$x = y$$

$$y = -x$$

$$yx = 0$$

$$x - y = 0$$

$$x + y = 0$$

- (b) Write the coordinates of two points that have an  $x$  coordinate that is one less than the  $y$  coordinate.

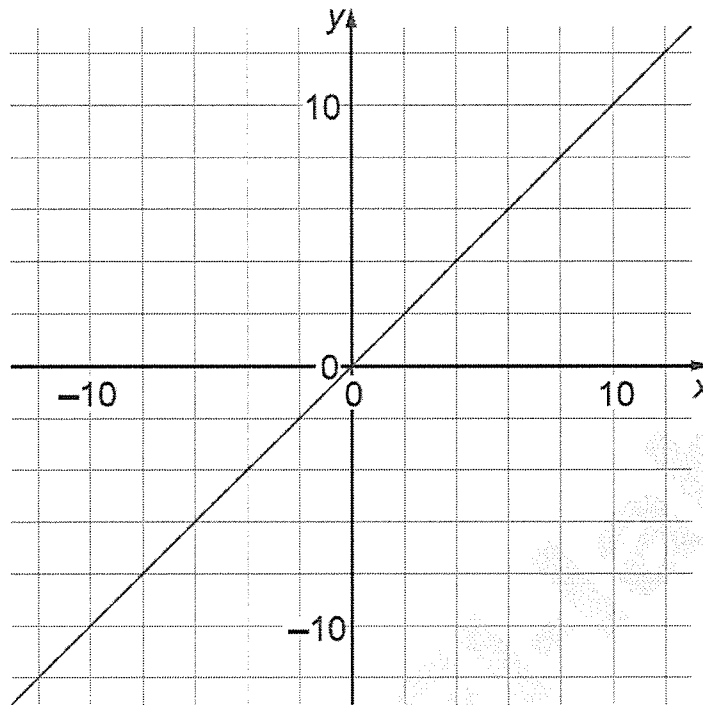
( \_\_\_\_\_ , \_\_\_\_\_ )

( \_\_\_\_\_ , \_\_\_\_\_ )

What would be the equation of the straight line through these two points?

\_\_\_\_\_

13. The graph shows a straight line with gradient 1



(a) On the graph, draw a different straight line with gradient 1

(b) The equation of another straight line is  $y = 5x + 20$

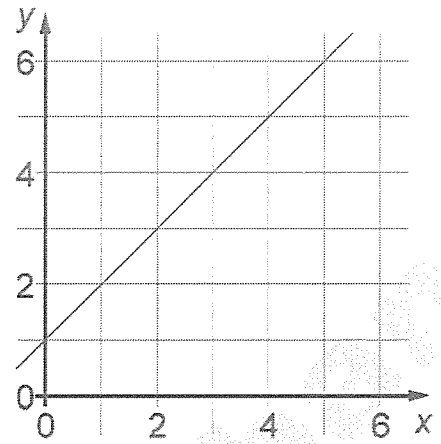
Write the missing number.

The straight line  $y = 5x + 20$  passes through  $(0, \quad)$



14. The graph shows the straight line with equation  $y = x + 1$

This straight line passes through the point  $(0, 1)$



Write the equations of two different straight lines that also pass through the point  $(0, 1)$

\_\_\_\_\_ and \_\_\_\_\_

15. Giri plotted the line graph of each of these equations on a set of axes.

A)  $2y = 4x + 2$

B)  $y = 3x + 2$

C)  $4y = 8x + 4$

D)  $2y = 3x + 6$

E)  $y = 3x + 3$

- (a) Which two lines are identical?

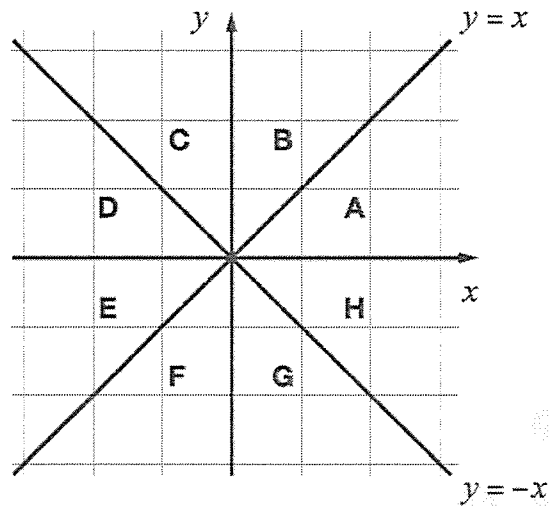
..... and .....

- (c) Which two lines go through the point  $(0, 3)$ ?

..... and .....

16. Look at the graph.

The  $x$ -axis, the  $y$ -axis and the lines  $y = x$  and  $y = -x$  divide the graph into eight regions, A to H.



(a) Write down the letters of the four regions where  $x \geq 0$

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_

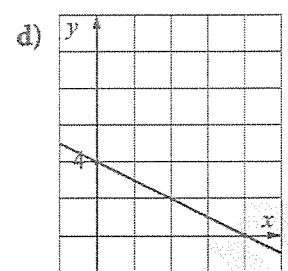
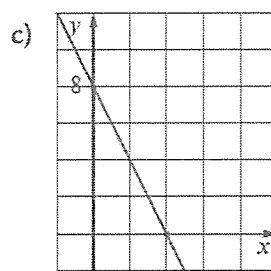
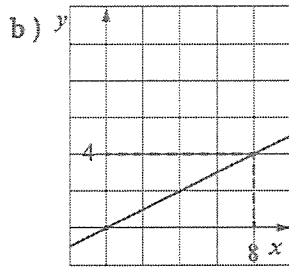
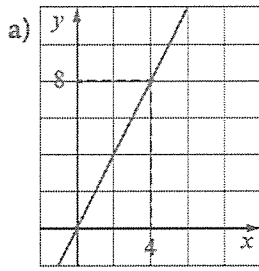
(b) Write down the letters of the four regions where  $y \geq x$

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_

(c) Write down the letters of the four regions where  $xy \geq 0$

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_

17. Match each graph with the correct equation.



a)  $2x + y = 8$

b)  $2y + x = 8$

c)  $y = 2x$

d)  $x = 2y$

.....

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18. A straight line is given by the equation  $y = \frac{1}{2}x - 4$

What is the gradient of the line? .....

State the coordinates of the y-intercept of the line. ....

19. match the equations that represent the same straight lines .  
check by testing with coordinates of some points on the lines.

$y = \frac{x}{4}$

$y = x - 4$

$4y = x$

$x - 4 = y$

$x - y = 4$

$y = 4 - x$

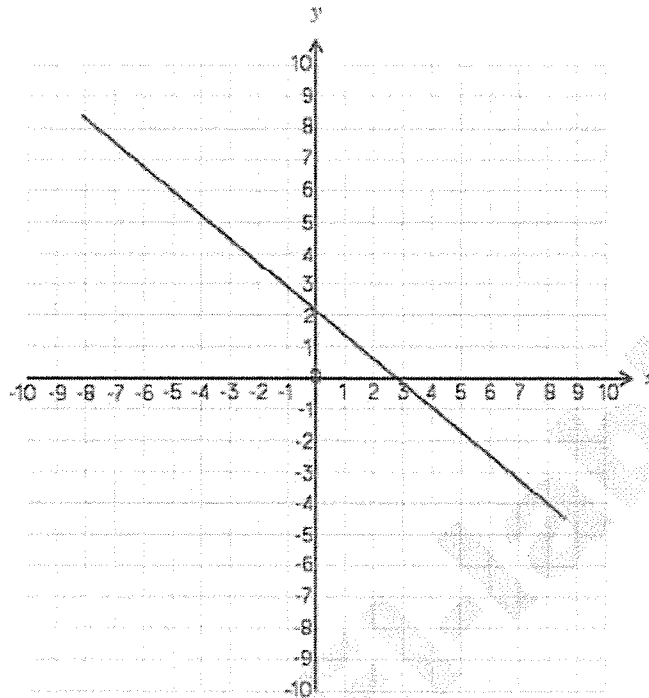
$4y = x$

$y = x + 4$

$y = 4x$

$x + y = 4$

20. True or False?  
The line has a positive gradient.



When  $x$  is 0,  $y$  is 2

When  $x$  is 3,  $y$  is 0

When  $x$  is a negative number,  $y$  is a positive number.

$y$  is always less than  $x$

As  $x$  increases,  $y$  decreases.

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