

<b>Student Name:</b> _____	<b>Grade:</b> _____
<b>Date:</b> _____	<b>Score:</b> _____

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## 5 Year 8 Term 4 Week 5 Homework

### 5.1 Linear Relationships

#### 5.1.1 Linear equations

Exercise 5.1.1 Find the equation of the line which passes through the following points.

1.

$x$	0	1	2	3	4
$y$	0	4	8	12	16

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2.

$x$	-2	-1	0	1	2
$y$	-3	-2	-1	0	1

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3.

$x$	1	2	3	4	5
$y$	6	5	4	3	2

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4.

$x$	0	1	2	3	4
$y$	3	7	11	15	19

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**5.1.2 Intersection of lines****Exercise 5.1.2** For each of the following lines:

1. find the *y*-intercept by substituting  $x = 0$  into the equation
2. find the *x*-intercept by substituting  $y = 0$  into the equation
3. sketch the line using these intercepts with the axis

**a**  $x - 3y = 9$

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**b**  $y = 6 - 3x$

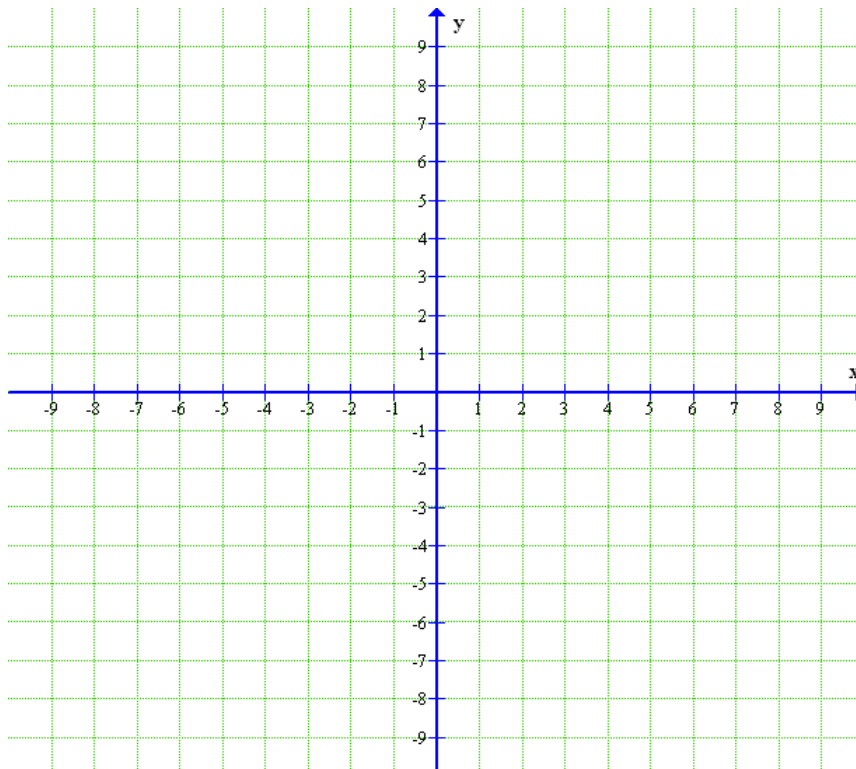
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**c**  $3x + 4y = 12$

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**Exercise 5.1.3 State whether the following lines increase or decrease from left to right.**

1.  $y = -5x + 3$  \_\_\_\_\_

2.  $y = -\frac{1}{4}x + 5$  \_\_\_\_\_

3.  $y = \frac{2}{5}x - 4$  \_\_\_\_\_

**Exercise 5.1.4 Which line is parallel to  $y = 3x - 1$ ?**

1.  $y = 7x - 3$  \_\_\_\_\_

2.  $y = -7x + 3$  \_\_\_\_\_

3.  $y = 3x - 3$  \_\_\_\_\_

**Exercise 5.1.5 Which line passes through the origin?**

1.  $y = 3x - 2$  \_\_\_\_\_

2.  $y = \frac{1}{3}x + 2$  \_\_\_\_\_

3.  $y = -\frac{1}{3}x$  \_\_\_\_\_

**Exercise 5.1.6 State whether each equation represents a linear relationship.**

1.  $y = 5x - 9$  \_\_\_\_\_

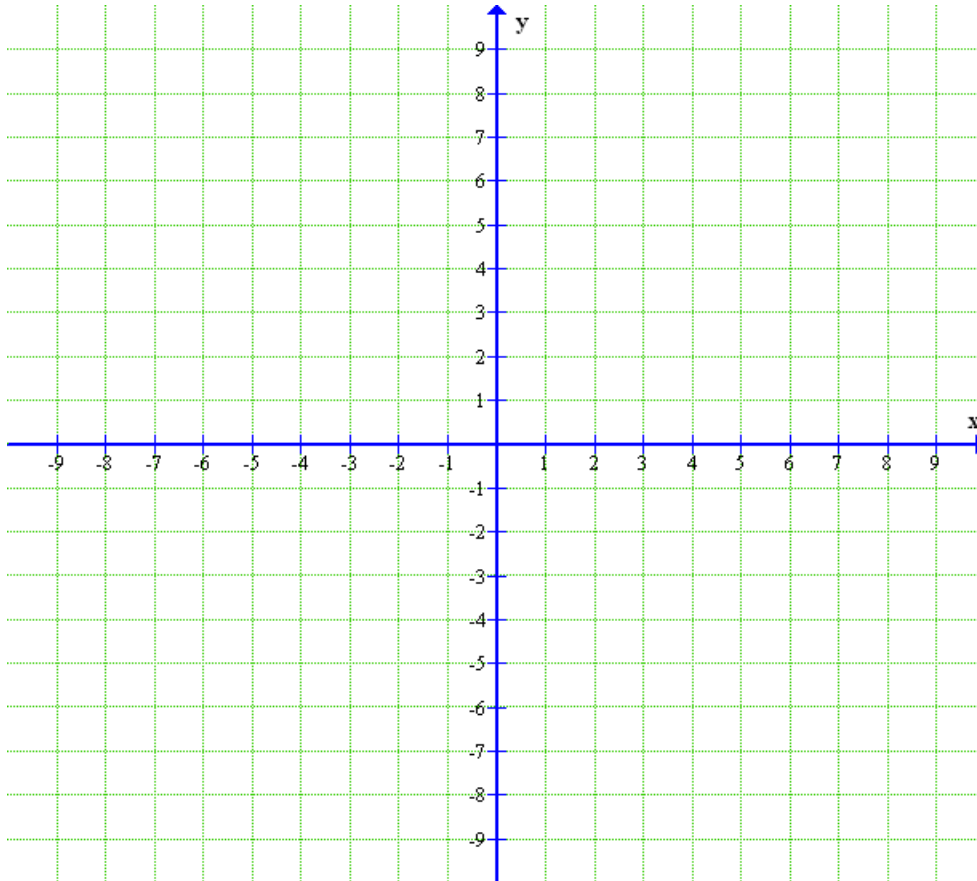
2.  $y = 5x^2 - 9$  \_\_\_\_\_

3.  $y = \frac{1}{5}x - 9$  \_\_\_\_\_

## 5.2 Miscellaneous Exercise

### Exercise 5.2.1

1. Plot the points  $A(-1, 3)$  and  $B(-4, 7)$  on a number plane, then form a right-angle triangle with  $AB$  as the hypotenuse.



2. Use Pythagoras' Theorem to find the length of the interval  $AB$ .

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3. Hence find the perimeter of the triangle and the area of the triangle.

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**Exercise 5.2.2**

1. Write down the co-ordinates of the point of intersection of the lines  $y = 2$  and  $x = -1$ .

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2. Find the equation of the line that passes through the point  $(3, -1)$  and is parallel to the y-axis.

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3. Find the equation of the line that passes through the point  $(-2, 3)$  and is parallel to x-axis.

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4. Show by substitution that  $B(3, 7)$  lies on both the lines  $y = 3x - 2$  and  $y = 4x - 5$ .

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5. The minutes hand of a clock is 6.2 cm and the hour hand is 5.8 cm. Find the total distances travelled by the tip of both hands in one day, correct your answer to nearest cm.

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6. A room 6.5 m long, 5.8 m wide and 2.8 m high is to be painted. The room contains two windows, each 150 cm by 180 cm, and a door 110 cm by 200 cm. What amount of paint is needed for the room if 4 L cover  $12 \text{ m}^2$ ? (Answer correct to 2 decimal places.)

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### 5.3 Maths Challenge

#### Exercise 5.3.1

1. Which of the following points lie on the line  $y - 3x + 2 = 0$ ?

**a**  $(4, 1)$  \_\_\_\_\_

**b**  $(3, 7)$  \_\_\_\_\_

**c**  $(-1, 1)$  \_\_\_\_\_

2. Which of the following lines pass through the point  $(1, 5)$ ?

**a**  $y - x + 12 = 0$

\_\_\_\_\_  
\_\_\_\_\_

**b**  $y = 2x + 3$

\_\_\_\_\_  
\_\_\_\_\_

**c**  $y - 1 + 3x = 0$

\_\_\_\_\_  
\_\_\_\_\_

3.  $y = 3x + 2$ ,  $y = 4x$ ,  $y = 6 - x$  and  $y = 6x - 1$ . Three of these lines are concurrent because they pass through the point  $(1, 5)$ . Name the three concurrent lines.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Exercise 5.3.2**

1. Show that the line  $x + y = 2$ ,  $2x - y = 7$  and  $x - 2y = 5$  are concurrent.

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2. Simplify the following expression:  $\frac{\frac{1}{3} + \frac{1}{3x}}{\frac{1}{x} + \frac{1}{3}}$

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3. The number of people on the school board is represented by  $x$ . Two subcommittees with an equal number of members are formed. One with  $\frac{2}{3}x - 5$  members and other with  $\frac{x}{4}$  members. How many people are on the school board?

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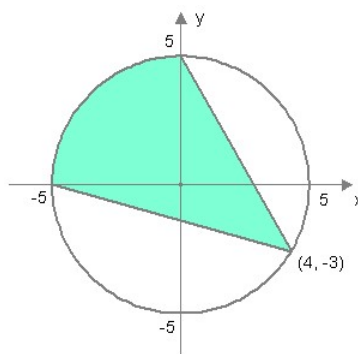


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4. Find the area of the shaded region in the given figure, in terms of  $\pi$ .




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