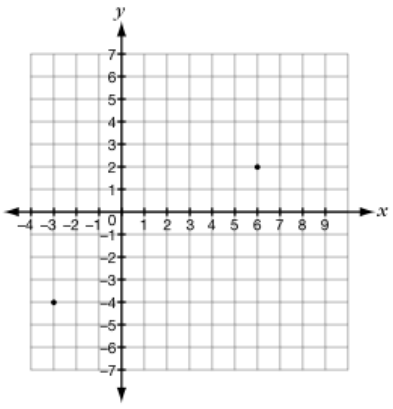
1.

The points (–3, –4) and (6, 2) are marked on an xy-plane.



Which statement about the line through (–3, –4) and (6, 2) is **not** true?

A Its x-intercept is 3.

B Its slope is positive.

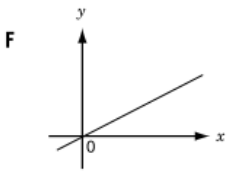
C Its y-intercept is –2.

D It passes through (4, 9).

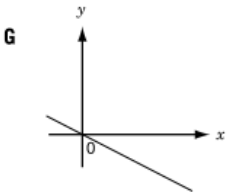
2.

Which graph below is likely the graph for $y = 2x$?

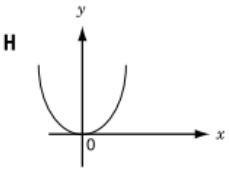
F



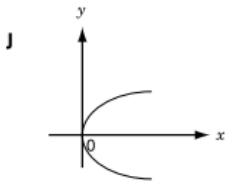
G



H



J



3.

Given A (2, 5) and B (–6, 5), which statement about the line segment AB is **true?**

F The slope of AB is zero.

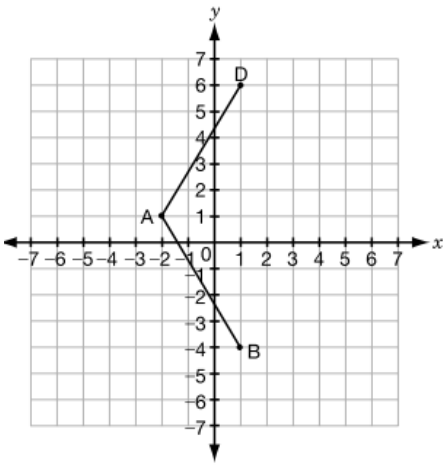
G The slope of AB is positive.

H The slope of AB is negative.

J The slope of AB is undefined.

4.

A is the point (–2, 1), B is the point (1, –4) and D is the point (1, 6).



If ABCD is a **rhombus,** which of the following is **point C**?

F (1, 1)

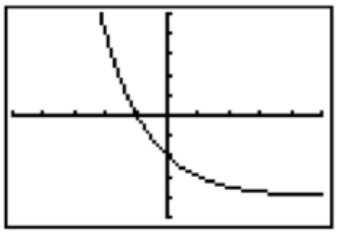
G (1, 4)

H (4, 1)

J (4, 4)

5.

The graph below shows the display on Kalib's graphing calculator. The horizontal axis is the x-axis and the vertical axis is the y-axis.



Which statement describes the **change** in ***y* as *x* increases**?

F y increases linearly.

G y decreases non-linearly.

H y decreases linearly.

J y increases non-linearly.

6.

Demetrius's science class is performing an experiment.
Demetrius fills a beaker with **room temperature** water.
He slowly **heats** the water over a source of constant heat and records the **water temperature** at **different times** in the table below.

Time elapsed, x (min)	Water temperature, y (°C)	First differences
2	30	
4	43	
6	54	
8	66	
10	77	

a) i) Complete the **first differences** column in the table of values above.

ii) Is the **relationship** between the **water temperature** and the **time elapsed** linear or non-linear?

Check one: ❑ linear or ❑ non-linear

Give reasons for your answer.

7.

Inez created the following table of values based on a relationship between x and y and calculated the first differences. The values of y have been concealed.

x	y	First differences
11		
12		–3
13		–3
14		–3

Which statement describes the relationship between x and y?

a y increases linearly as x increases.

b y decreases linearly as x increases.

c y increases non-linearly as x increases.

d y decreases non-linearly as x increases.

8.

The following tables express distance, in metres, as a function of time, in seconds.

Which table represents a **linear** relation?

a

Time (s)	Distance (m)
0	236
1	231
2	216
3	191

b

Time (s)	Distance (m)
0	1
1	2
2	4
3	8

c

Time (s)	Distance (m)
0	28
1	46
2	50
3	64

d

Time (s)	Distance (m)
0	16
1	12
2	8
3	4

9.

Gerry has a table of values representing a linear relation. Two of the numbers are hidden behind a ketchup spill.

x	y
–2	–6
–1	
0	
1	18

The values that are hidden are

a –2 and 14.

b 0 and 12.

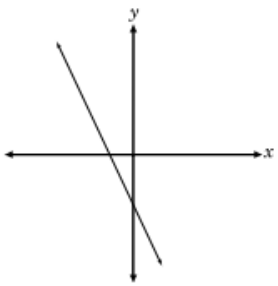
c 2 and 10.

d 3 and 9.

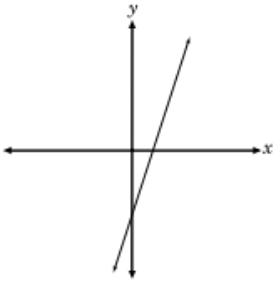
10. Which of the following graphs best represents the line with

- a slope of 3 and
- a y-intercept of -2?

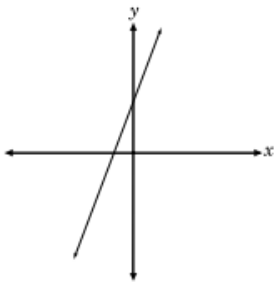
a



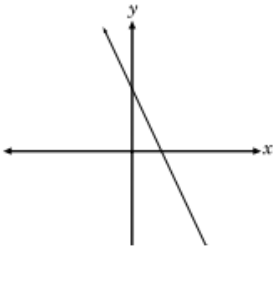
c



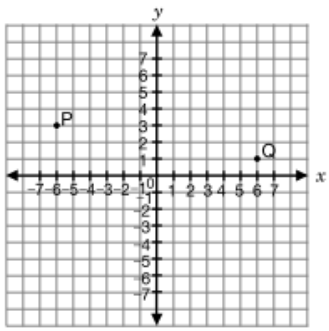
b



d



11. P is the point $(-6, 3)$ and Q is the point $(6, 1)$.



Which statement about the line segment PQ is **true**?

a It has a positive slope.

b It has a negative slope.

c It has a slope of 0.

d It is parallel to the y-axis.

12. The following tables express distance, in metres, as a function of time, in seconds.

Which table represents a **linear** relation?

a

Time (s)	Distance (m)
0	236
1	231
2	216
3	191

b

Time (s)	Distance (m)
0	1
1	2
2	4
3	8

c

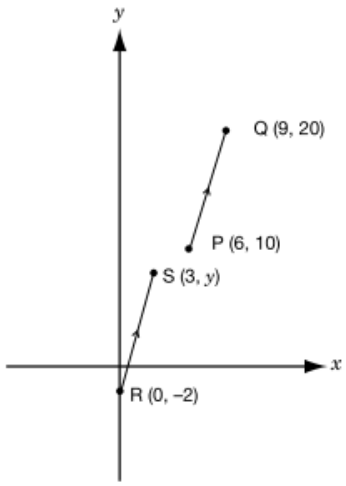
Time (s)	Distance (m)
0	28
1	46
2	50
3	64

d

Time (s)	Distance (m)
0	16
1	12
2	8
3	4

13.

PQ and RS are parallel line segments. What is the value of y?



a 5

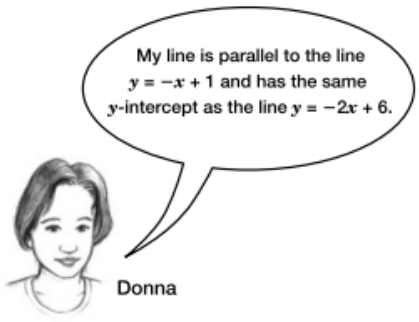
b 6

c 7

d 8

14.

Donna has correctly drawn a line on an xy-plane.



Which of the following equations represents the line that Donna has drawn?

a $y = x + 3$

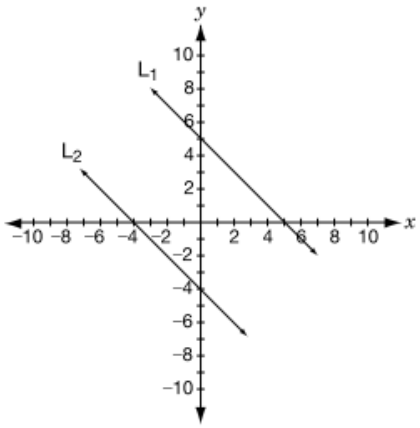
b $y = x + 6$

c $y = -x + 6$

d $y = -x + 3$

15.

Which pair of equations best matches the lines shown on the graph?



a $L_1: y = x + 5$
$L_2: y = x - 4$

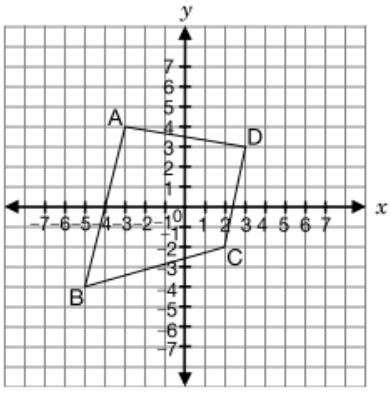
b $L_1: y = x + 5$
$L_2: y = -x + 4$

c $L_1: y = -x + 5$
$L_2: y = x - 2$

d $L_1: y = -x + 5$
$L_2: y = -x - 4$

16.

Four points, A, B, C and D, are marked on an xy-plane and joined by line segments as shown.



Which line segment has a **negative** slope?

a BA

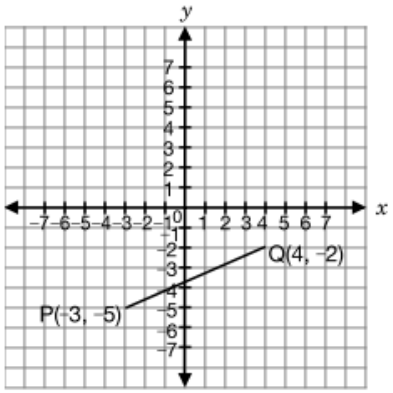
b BC

c CD

d AD

17.

PQ is a line segment with slope $\frac{3}{7}$, as shown below.



The point R is plotted so that RQ is **perpendicular** to PQ.

Which of the following points could be point R?

a (1, 5)

b (2, 4)

c (3, 2)

d (4, 1)

18.
The table below shows examples of linear and non-linear equations.

Equation Examples

Linear equations	Non-linear equations
$y = 5x - 3$	$y = 5x^2 - 3$
$y = 125 - 4.25x$	$y = 2x^3$
$y = -3x$	$2x^2 + 5y^2 = 10$

Which of these statements best describes how linear equations are different from non-linear equations in the table above?

a The exponent of both variables in the linear equations is 1.

b The exponent of exactly one variable in the linear equations is 1.

c The exponent of both variables in the non-linear equations is 1.

d The exponent of exactly one variable in the non-linear equations is 1.

19.
Identify the equation that represents the line with a y-intercept of 600 and a slope of 50.

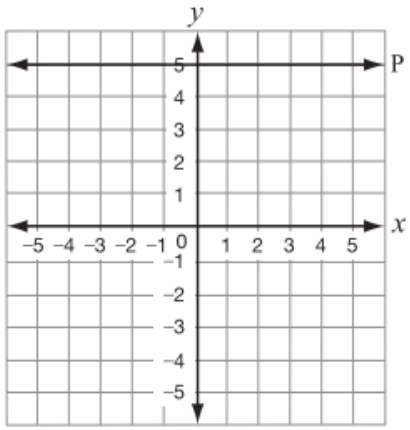
a $y = 50x$

b $x = 600y$

c $y = 600x + 50$

d $y = 50x + 600$

20.
Line P is shown below.



Which equation represents Line P?

a $x = 5$

b $y = 5$

c $y = x + 5$

d $x = y + 5$

21.
What is the equation of the line that passes through the points (2, 4) and (4, 0)?

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

b $y = -\frac{1}{2}x + 5$

c $y = -2x + 4$

d $y = -2x + 8$