

Linear Relationships TOPIC TEST

1. Which of the equations below represent linear relationships?

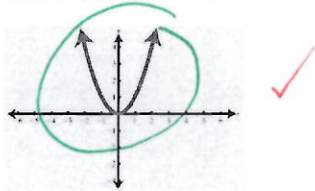
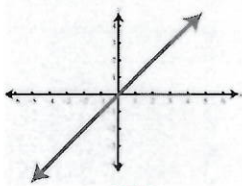
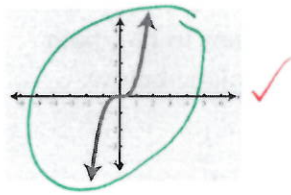
(A) $y = 3x^2 - 5$ ✗

(B) $y = 3x - 5$ ✓

(C) $3x + y = 5$ ✓

(D) $\frac{y}{3x} = 5$ ✗

2. Circle the non-linear relationships graphed below:



3. Write the linear relationship represented by each table of values:

(A) $y = 5x - 1$ ✓

x	-2	-1	0	1	2
y	-11	-6	-1	4	9

Handwritten annotations: Green arrows above the x-axis show a constant difference of 1 between consecutive x-values. Green arrows below the y-axis show a constant difference of 5 between consecutive y-values.

(B) $y = -2x - 11$ ✓

x	-7	-6	-5	-4	-3
y	3	1	-1	-3	-5

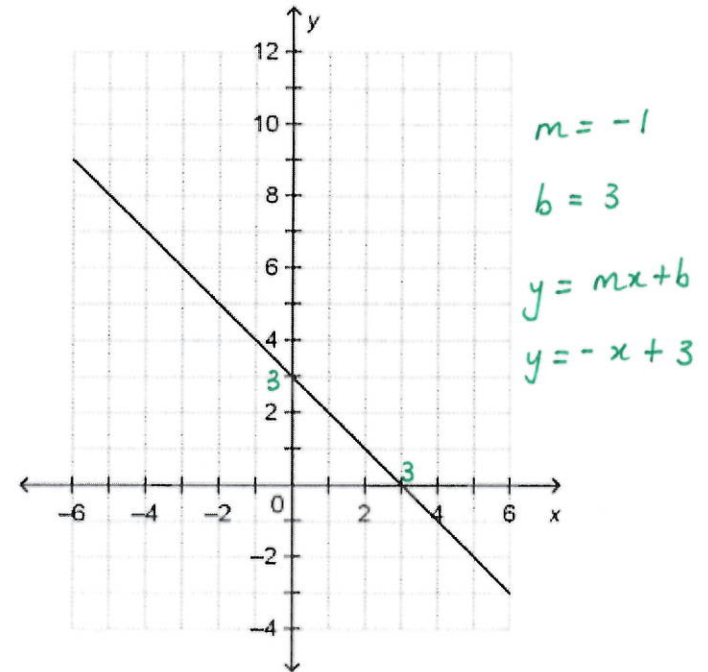
Handwritten annotations: Green arrows above the x-axis show a constant difference of 1 between consecutive x-values. Green arrows below the y-axis show a constant difference of -2 between consecutive y-values.

(C) $y = \frac{3}{2}x + 8$ ✓

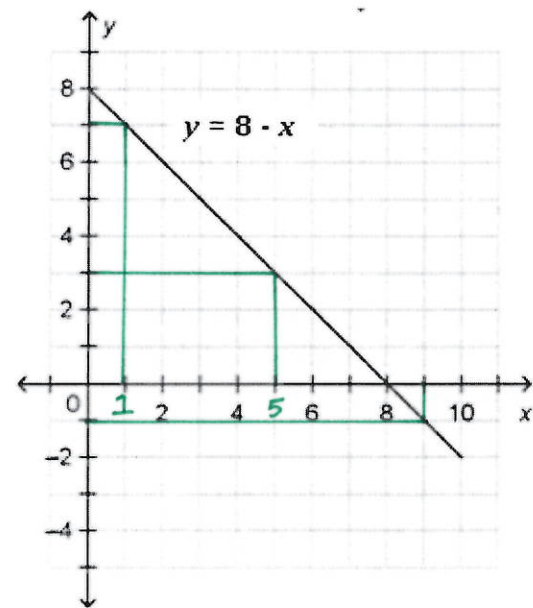
x	-2	0	2	4	6
y	5	8	11	14	17

Handwritten annotations: Green arrows above the x-axis show a constant difference of 2 between consecutive x-values. Green arrows below the y-axis show a constant difference of 3 between consecutive y-values.

4. Find the equation of the line graphed below:



5. Use the graph of $y = 8 - x$ below to solve the following equations:



(A) $8 - x = 7$ $x = 1$

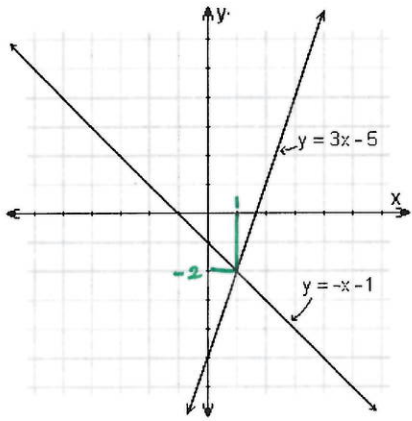
(B) $8 - x = 3$ $x = 5$

(C) $8 - x = -1$ $x = 9$

6. Does the point $(-2, -7)$ lie on the line $y = 1 - 3x$?

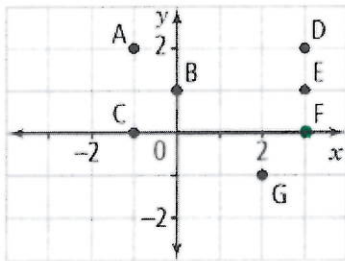
LHS = y
RHS = $1 - 3x$
 $= 1 - 3(-2)$

7. Write down the point of intersection of the two lines below:



Point of intersection: $(1, -2)$

8. Write down the coordinates of each point plotted below:



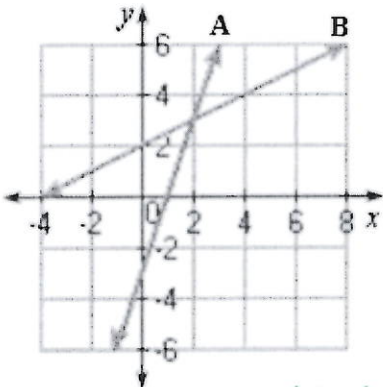
A = $(-1, 2)$ B = $(0, 1)$

C = $(-1, 0)$ D = $(3, 2)$

E = $(3, 1)$ F = $(3, 0)$

G = $(2, -1)$

9. Write down one similarity and one difference between line A and line B graphed below:



- line A and B point both have positive gradients ✓
 - line A is steeper than line B ✓
 - line B has a positive y-intercept and line A has a negative y-intercept ✓
- Mrs Manners (2016)

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(A) Complete the table of values for the line $y = 4x - 3$ and $y = 3x + 1$.

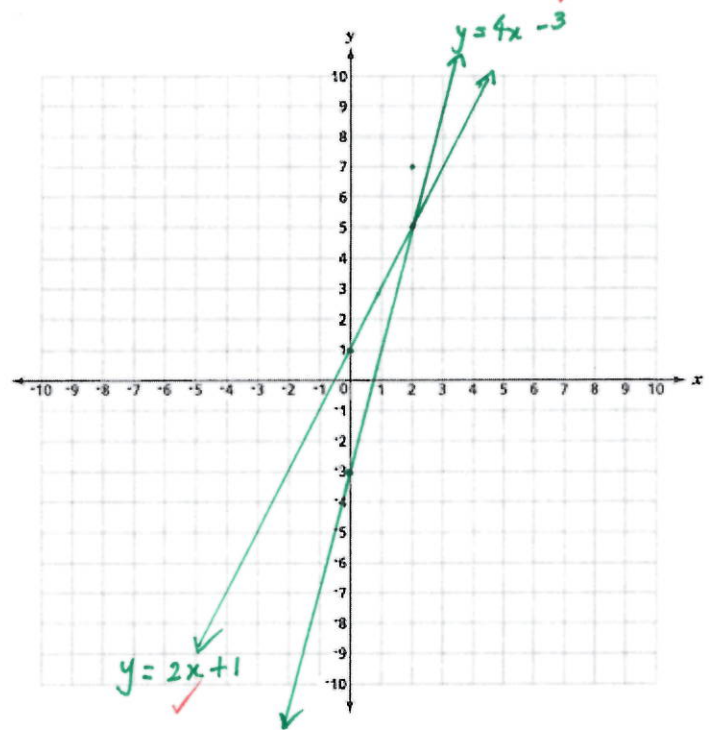
$y = 4x - 3$

x	-2	-1	0	1	2
y	-11	-7	-3	1	5

$y = 2x + 1$

x	-2	-1	0	1	2
y	-3	-1	1	3	5

(B) Use your table of values to plot both points on the coordinate plane below.



(C) Write down the point of intersection of both lines.

$(2, 5)$

11. CHALLENGE: The point $(m, -5)$ lies on the line $y = 4x + 11$. Find the value of m .

LHS	RHS
$= y$	$= 4x + 11$
$= -5$	$= 4m + 11$

If the point lies on the line,
LHS = RHS