



Year 8 Mathematics

Linear Relationships Practice Test 1

- 1 Draw a number plane extending from - 4 to 4 on both axes then plot and label these points.

a) A (2, 3) b) B (0, 4) c) C (- 1, 2.5) d) D (- 3.5, 0) e) E (- 2, - 2.5) f) F (2, - 4)

- 2 For the rule $y = 2x - 1$ construct a table and draw a graph.

- 3 Decide if the points (1, 3) and (- 2, - 4) lie on the graph of $y = 3x$.

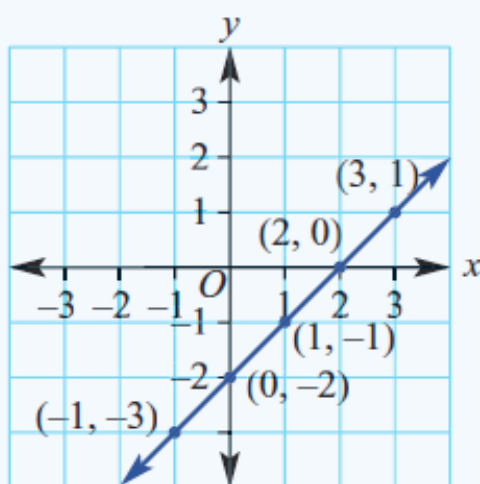
- 4 Find the rule for this table of values

x	-2	-1	0	1	2
y	-8	-5	-2	1	4

- 5 Find the rule for this table of values

x	3	4	5	6	7
y	-5	-7	-9	-11	-13

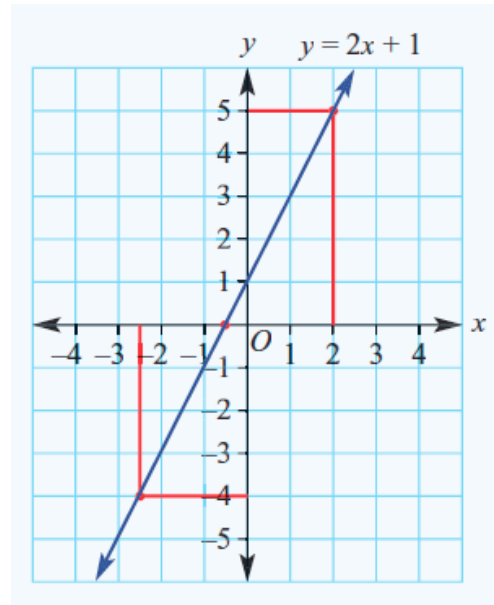
- 6 Find the rule for this graph by first constructing a table of (x , y) values. Write the rule in words.



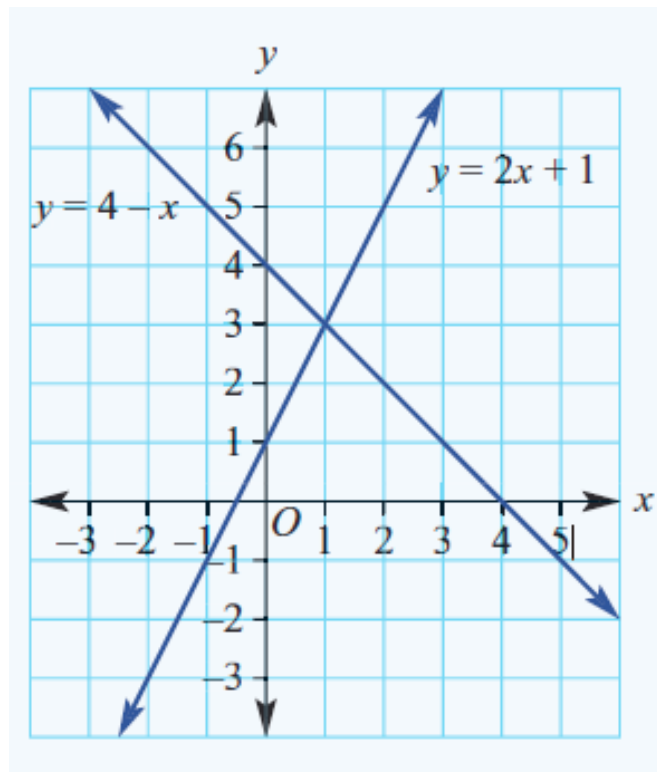
7 Find the area of these shapes by addition or subtraction

Use the graph of $y = 2x + 1$ shown here to solve each of the following equations:

- a $2x + 1 = 5$
- b $2x + 1 = 0$
- c $2x + 1 = -4$



8 Use the graph of $y = 4 - x$ and $y = 2x + 1$, shown here, to answer these questions.

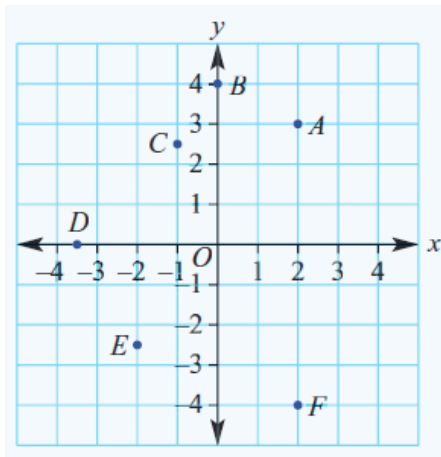


- a Write two equations that each have $x = -2$ as a solution.
- b Write four solutions (x, y) for the line with equation $y = 4 - x$.
- c Write four solutions (x, y) for the line with equation $y = 2x + 1$.
- d Write the solution (x, y) that is true for both lines and show that it satisfies both line equations.
- e Solve the equation $4 - x = 2x + 1$.

- 9 A hiker walks at a constant rate of 4 kilometres per hour for 4 hours.
- a Draw a table of values using t for time in hours and d for distance in kilometres. Use t between 0 and 4.
 - b Draw a graph by plotting the points given in the table in part a .
 - c Write a rule linking d with t .
 - d Use your rule to find the distance travelled for 2.5 hours of walking.
 - e Use your rule to find the time taken to travel 8 km.
- 10 The initial volume of water in a dish in the sun is 300 mL. The water evaporates and the volume decreases by 50 mL per hour for 6 hours.
- a Draw a table of values using t for time in hours and V for volume in millilitres.
 - b Draw a graph by plotting the points given in the table in part a .
 - c Write a rule linking V with t .
 - d Use your rule to find the volume of water in the dish after 4.2 hours in the sun.
 - e Use your rule to find the time taken for the volume to reach 75 mL.
- 11 Plot points to draw the graph of $y = x^2 - 2$ using a table.

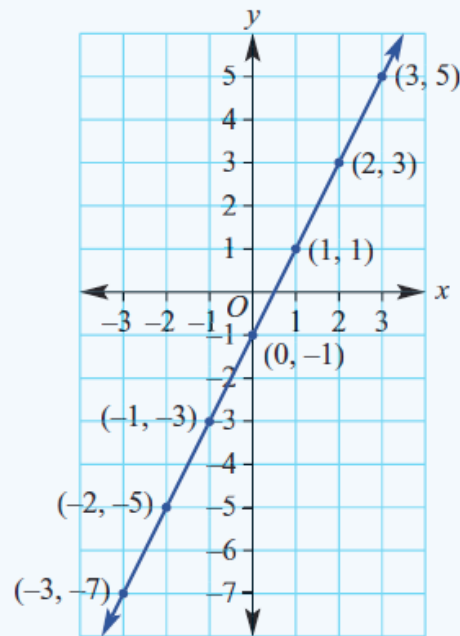
ANSWERS

1.



2.

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



3 a) $y = 3x$ (1, 3)

$y = \underline{3}$

$3x = 3 \times 1$

$= \underline{3}$

SAME The point lies on the line

b) $y = 3x$ (-2, -4)

$y = \underline{-4}$

$3x = 3 \times -2$

$= \underline{-6}$

NOT THE SAME The point does not lie on the line

4 $y = 3x - 2$

5 $y = -2x + 1$

6

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

$y = x - 2$ Rule in words: To find a y value, start with x then subtract 2.

7 a) $x = 2$

b) $x = 0.5$

c) -2.5

8 a) $4 - x = 6$ $2x + 1 = -3$ b) $(-2, 6)$ $(-1, 5)$ $(1, 3)$ $(4, 0)$ c) $(-2, -3)$ $(0, 1)$ $(1, 3)$ $(2, 5)$

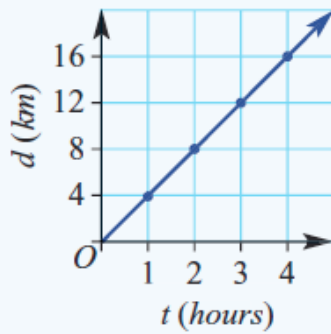
d) Substitute $(1, 3)$ into both equations and get 3 for both e) $x = 1$

9

a

t	0	1	2	3	4
d	0	4	8	12	16

b



c) $d = 4t$

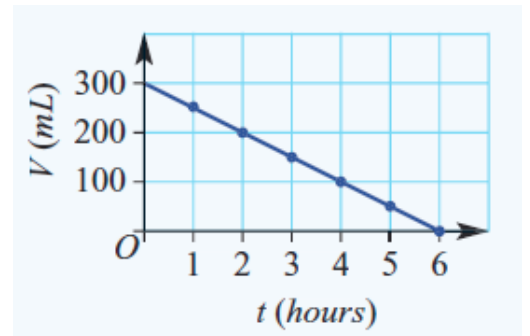
d) The distance is 10 km after 2.5 hours of walking

e) It takes 2 hours to travel 8 km

10 a)

t	0	1	2	3	4	5	6
V	300	250	200	150	100	50	0

b)



c) $v = -50t + 300$

d) The volume of water in the dish is 90 millilitres after 4.2 hours.

e) It takes 4.5 hours for the volume to reach 75 mL.

11

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

