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Unit 4 Linear Relations Practice Test

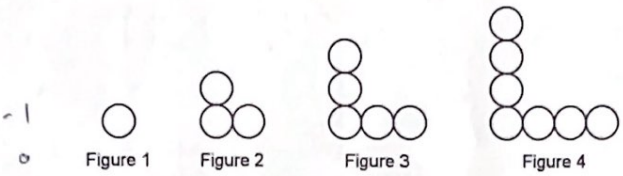
Multiple Choice

Identify the choice that best completes the statement or answers the question.

B 1. The cost to rent a piece of equipment is \$27, plus \$6.27 per hour. Calculate the cost of renting the equipment for 7 h.

a. \$40.27 b. \$70.89 c. \$1185.03 d. \$232.89

A 2. Determine an equation that relates the number of circles, C, to the figure number, n.



a. $C = 2n - 1$ b. $C = n \times n - 1$ c. $C = 2n + 1$ d. $C = n + 1$

B 3. Sean cycles at an average speed of 3 m/s. He travels a distance, d metres, in t seconds. Write an equation that relates d and t.

a. $d = t + 3$ b. $d = 3t$ c. $d = \frac{t}{3}$ d. $t = 3d$

C 4. For the equation $5x - 2y = 10$, make a table of values for $x = -2$, 0, and 2.

a.

x	–2	0	2
y	0	–5	10

b.

x	–2	0	2
y	10	5	1

c.

x	–2	0	2
y	–10	–5	0

d.

x	–2	0	2
y	–10	0	1

C 5. Which equation describes a horizontal line?

i) $x + 7 = 2$
ii) $y + x = 7$
iii) $y - x = 0$
iv) $y + 2 = 7$

a. iii b. ii c. iv d. i

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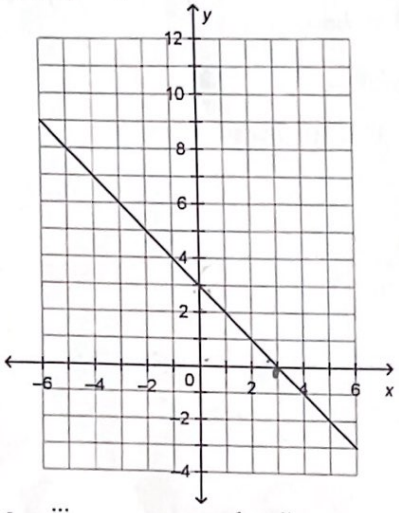
D 6. Which equation describes the graph?

i) $x+y=3$ $y=-x+3$

ii) $x-y=3$

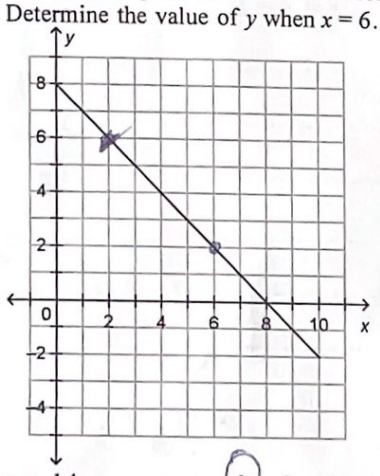
iii) $y-x=3$

iv) $x+y=-3$



a. iii b. ii c. iv d. i

B 7. This graph represents a linear relation. Determine the value of y when $x=6$.



a. 14 b. 2 c. 8 d. 0

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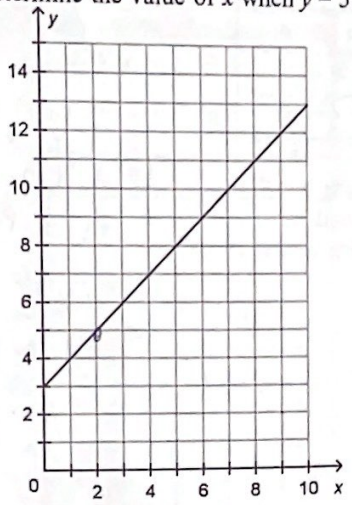
B

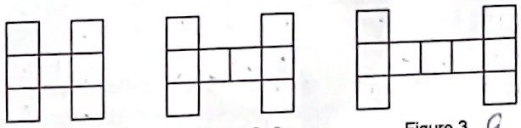
8. This graph represents a linear relation.
Determine the value of x when $y = 5$.



a. 3 b. 2 c. 5 d. 8

Short Answer

9. This pattern of unit squares continues.
Determine an equation that relates the number of unit squares, n, to the figure number, f.



$n = f + 6$

10. The pattern in this table continues. Write an equation that relates the term value to the term number.

Term Number, t	1	2	3	4	5
Term Value, w	5	8	11	14	17

$w = 3t + 2$

11. Shirley has \$550 in her bank account. She withdraws \$55 each week to cover her expenses.
a) Write an equation that relates the amount of money in her account, A dollars, after n weeks.
b) Determine the amount of money in Shirley's account after 7 weeks.

$A = -55n + 550$ a) $A = -55n + 550$

b) $A = -55(7) + 550$
$= \$165$

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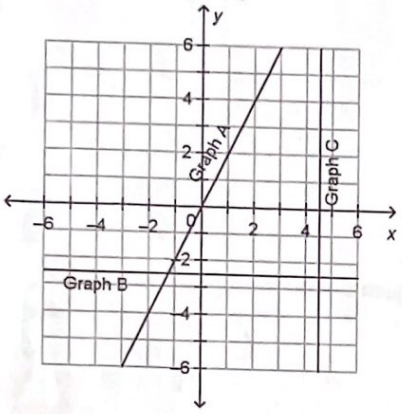
12. This table shows the perimeters and areas of squares with different side lengths.

Side Length, n (cm)	1	2	3	4	5
Perimeter, P (cm)	4	8	12	16	20
Area, A (cm^2)	1	4	9	16	25

a) Write an equation that relates the perimeter, P, to the side length, n.
b) Write an equation that relates the area, A, to the side length, n.
c) Determine the perimeter and the area of a square with side length 16 cm.

$P = 4n$
$A = n^2$
$P = 4(16)$ $A = 16^2$
$= 64\text{cm}$ $= 256\text{cm}^2$

13. Match each equation with a graph on the grid below.
i) $2x = 9$ → C
ii) $2y = -5$ → B
iii) $y = 2x$ — A



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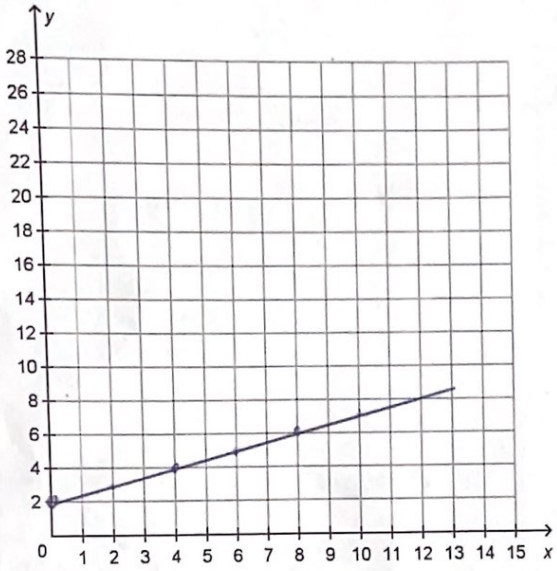
Problem

14. a) Create a table of values for the relation $y = 0.5x + 2$, then graph the relation. Use 0, 2, 4, 6, 8, 10 as values of x.

x	0	2	4	6	8	10
y	2	3	4	5	6	7



b) Is the relation linear? How do you know? Yes, constant change

c) What is the value of y when $x = 28$?

$y = 0.5(28) + 2$

$y = 16$

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15. Match each equation with a graph on the grid below. Justify your answer.

i) $x = 5$ A → no y

ii) $y = 4$ C → no slope

iii) $x + y = -1$ B → $y = mx + b$