

January Exam Review - Unit 4

Multiple Choice

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

1. In the equation $P = 8n + 5$, determine the value of P when $n = 13$.
 a. 144 b. 26 c. 105 **(d.) 109**

$$P = 8n + 5$$

$$P = 8(13) + 5$$

$$P = 104 + 5$$

$$P = 109$$

2. The pattern in this table continues. Determine the expression that relates the number of triangles to the figure number.

Figure, f	1	2	3	4	5
Number of Triangles, t	2	4	6	8	10

$$t = 2f$$

$$2(3)$$

$$6$$

- a. $2f$ b. $2 + t$ c. $2t$ d. $2 + f$

3. The cost to print stickers is \$6.55, plus \$0.55 per sticker. Determine an equation that relates the total cost, C dollars, to the number of stickers, s .
 a. $C = 0.55s$ b. $C = 6.55 + s$ **(c.) $C = 6.55 + 0.55s$** d. $C = 7.1s$

$$C = 6.55 + 0.55s$$

4. The cost to rent a piece of equipment is \$27, plus \$4.27 per hour. Calculate the cost of renting the equipment for 8 h.
 a. \$39.27 **(b.) \$61.16** c. \$250.16 d. \$922.32

$$27 + 4.27(8)$$

$$27 + 34.16$$

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

Term Number, s	1	2	3	4	5
Term Value, w	6	10	14	18	22

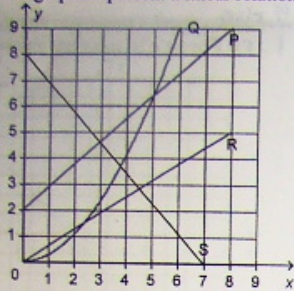
$$w = 4s + 2$$

$$4(2)$$

$$8 + 2$$

- a. $w = 4s + 2$ b. $w = 6s$ c. $w = 3s + 2$ d. $w = 2s + 4$

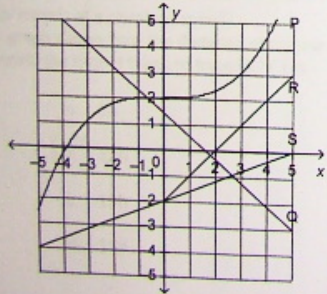
6. Which graphs represent a linear relation?



P, R, and S

- a. P only
- b. P and S
- c. P and R
- d. P, R, and S

7. Which graphs represent a linear relation?



- a. P and R
- b. Q, R, and S
- c. Q and S
- d. Q and R

Q, S, and R

8. Which tables of values represent a linear relation?

i)

x	1	2	3	4	5
y	3	6	11	18	27

No

ii)

x	0	1	2	3	4
y	0	3	6	9	12

Yes

iii)

x	1	2	3	4	5
y	5	9	13	17	21

Yes

iv)

x	0	1	2	3	4
y	14	13	12	11	10

Yes

- a. i and iv **b.** ii, iii, and iv c. All of these d. ii and iii

9. Which points lie on the graph represented by the equation $y = 12 - 5x$?

P(1, 7), Q(2, 14), R(2, 2), S(0, 7)

- a. Q and R b. P and Q **c.** P and R d. R and S

10. Describe the graph of the equation $x + 8 = 0$.

- a. A vertical line that intersects the x-axis at 8.
 b. A horizontal line that intersects the y-axis at -8.
 $x + 8 = 0 \rightarrow x = -8$
c. A vertical line that intersects the x-axis at -8.
 d. A horizontal line that intersects the y-axis at 8.

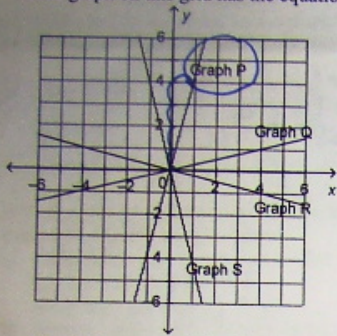
(x, y)

$$y = 12 - 5x$$

$7 = 12 - 5(1)$	$7 = 12 - 5$	$7 = 7$	\checkmark	P (1, 7)
$14 = 12 - 5(2)$	$14 = 12 - 10$	$14 \neq 2$	\times	Q (2, 14)
$2 = 12 - 5(2)$	$2 = 12 - 10$	$2 = 2$	\checkmark	R (2, 2)
$S(0, 7)$				

11. Which graph on this grid has the equation $y = 4x$?

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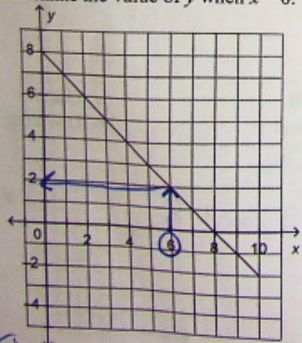
- a. Graph Q b. Graph R c. Graph S d. Graph P

slope = $\frac{4 \text{ rise}}{1 \text{ run}}$

$5(0, 7)$

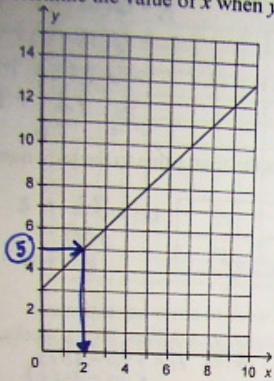
$y = 12 - 5x$
 $7 = 12 - 5(0)$
 $7 \neq 12$
 No

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



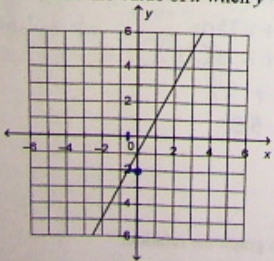
- a. 2 b. 0 c. 8 d. 14

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



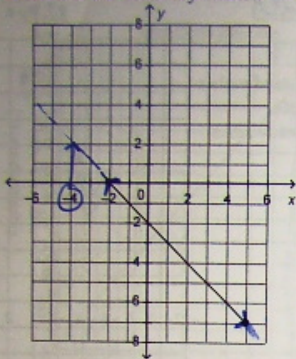
- a. 8
- b. 3
- c. 2
- d. 5

14. This graph represents a linear relation.
Determine the value of x when $y = -2$.



- a. -1
- b. -0.5
- c. 0.5
- d. -1.5

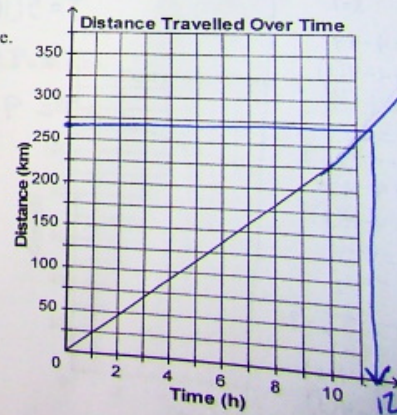
15. This graph represents a linear relation.
Determine the value of y when $x = -4$.



- a. 1
- b. 0
- c. 2
- d. 6

16. A car travels at a constant speed.
The graph shows how the distance of the car changes with time.
Estimate the time it takes to travel 270 km.

- a. 1h
- b. 12h
- c. 13h
- d. 11h



Short Answer

17. In the equation $R = 6(w - 1) + 4$, determine the value of R when $w = 13$.

$$\begin{aligned} R &= 6(w - 1) + 4 \\ &= 6(13 - 1) + 4 \\ &= 6(12) + 4 \\ &= 72 + 4 \\ &= 76 \end{aligned}$$

18. 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

$$\begin{aligned} w &= 3t + 2 \\ 3(2) \\ 6 + 2 \end{aligned}$$

19. Shirley has \$540 in her bank account. She withdraws \$35 each week to cover her expenses.

a) Write an equation that relates the amount of money in her account, A dollars, after n weeks. $A = 540 - 35n$

b) Determine the amount of money in Shirley's account after 8 weeks. $A = 540 - 35(8)$
 $540 - 280 = 260$

20. The cost of a taxi ride is the sum of a fixed cost of \$2.50 for the first kilometer, plus \$1.75 for each additional kilometer.

a) Write an equation that relates the cost of a taxi ride, F dollars, to the distance travelled, n .

b) Determine the cost of a 28-km taxi ride.

$$\begin{aligned} F &= 2.50 + 1.75n \\ &= 2.50 + 1.75(28) \\ &= 2.50 + 49 \\ &= 51.50 \end{aligned}$$

21. Which equations represent a linear relation?

i) $y = 6x^2$

ii) $y = 7x + 4$ Linear

iii) $y = \frac{12}{x}$

iv) $y + 3x = 12$ Linear

22. Create a table of values for the linear relation $y = 4 - 4x$, then graph the relation. Use values of x from 0 to 6.

x	0	1	2	3	4	5	6
y	4	0	-4	-8	-12	-16	-20

23. Dorina is having a party. She estimates that she will need 5 sandwiches for each guest, and 12 extra sandwiches for unexpected guests.

- Write an equation that relates the total number of sandwiches, T , to the number of guests, p .
- How many sandwiches will Dorina need for 16 guests?

$x=0$
 $y = 4 - 4x$
 $= 4 - 4(0)$
 $= 4 - 0$
 $= 4$

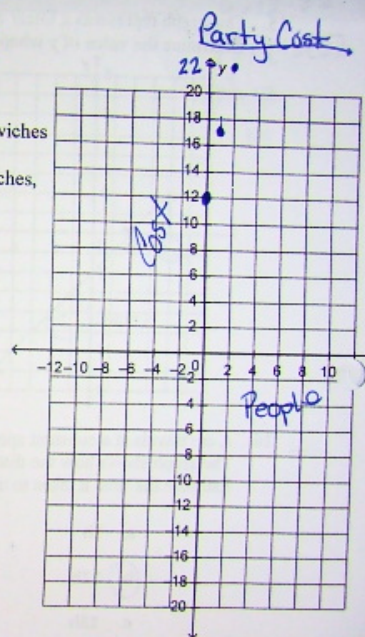
$x=1$
 $y = 4 - 4x$
 $= 4 - 4(1)$
 $= 4 - 4$
 $= 0$

$x=2$
 $y = 4 - 4x$
 $= 4 - 4(2)$
 $= 4 - 8$
 $= -4$

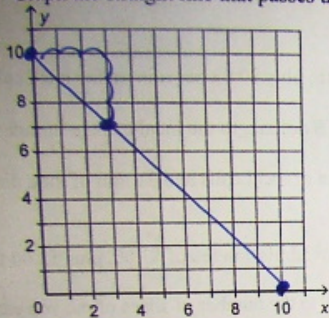
$x=3$
 $y = 4 - 4x$

a) $T = 5p + 12$

b) $T = 5p + 12$
 $T = 5(16) + 12$
 $T = 80 + 12$
 $T = 92$



24. a) Graph the straight line that passes through the points (0, 10), (3, 7), and (10, 0).



- b) Write an equation to describe the line.

$$\begin{aligned} \text{slope} &= \frac{\text{rise}}{\text{run}} \\ &= \frac{3}{-3} \\ &= -1 \end{aligned}$$

slope

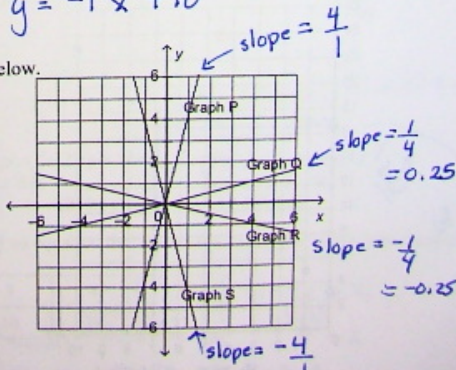
$$y = mx + b$$

$$y = -1x + 10$$

where the graph hits the y-axis

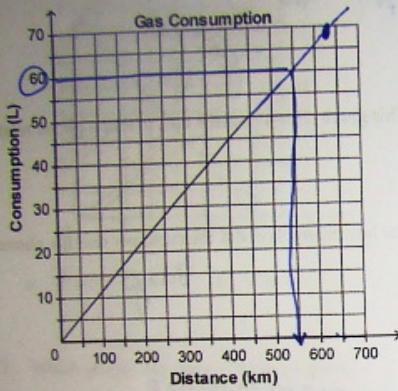
25. Match each equation with a graph on the grid below.

- i) $y = -0.25x$ Graph R
- ii) $y = 4x$ Graph P
- iii) $y = -4x$ Graph S
- iv) $y = 0.25x$ Graph Q



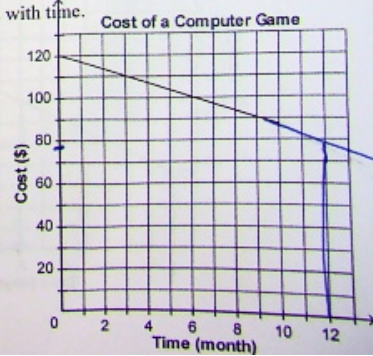
26. This graph shows the gas consumption rate of a car.

- a) Estimate the volume of gas required to travel 630 km. *Extend the graph around 67L*
- b) Estimate the distance the car can travel on 60 L of gas. *around 550Km*



27. This graph shows how the cost of a new computer game changes with time.
Estimate the cost of the game 12 months after it is released.

Around \$79

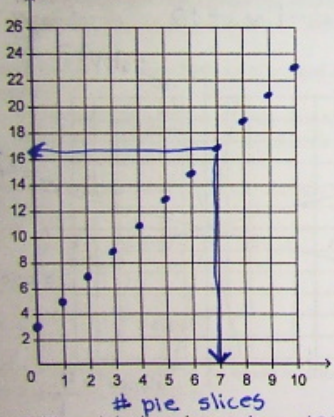


Omit this question please

omit

28. A phone company charges a fixed cost of \$2.35 per month, plus \$0.53 per minute for local calls and \$1.07 per minute for long distance calls.
- Write an equation that relates the total monthly cost, C dollars, to the local calls, x minutes, and long distance calls, y minutes.
 - Determine the phone bill for a month in which 53 min of local calls and 31 min of long distance calls were made.

29. Amir went to a pie-tasting festival. The festival charges an admission fee of \$3.00, plus \$2.00 for every slice of pie you eat.
- Write an equation that relates the total cost, C dollars, to the number of slices of pie you eat, r .
 - Graph the equation. Which variable will you plot on the horizontal axis? Explain your reasoning.



a) $C = 3 + 2r$

b)

You can't purchase $\frac{1}{2}$ of a piece of pie, so don't connect the dots.

- Will you join the points on the graph? Explain.
- If Amir spent \$17.00, how many slices of pie did he eat?

Use the graph \rightarrow 17

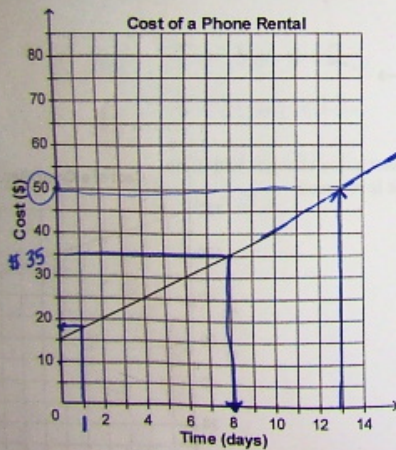
OR $C = 3 + 2r$
 $17 = 3 + 2r$
 $17 - 3 = 2r$
 $14 = 2r$

Use the equation \leftarrow

Use the graph 17 or $C = 3 + 2r$
 $17 = 3 + 2r$
 $17 - 3 = 2r$
 $14 = 2r$
 $7 = r$ Use the equation

30. A resort rents out mobile phones by the day. This graph shows how the cost to rent a phone relates to the number of days the phone is rented.

- a) Estimate the cost to rent a phone for:
 i) 1 day around \$18
 ii) 13 days around \$50
 b) A customer paid \$35.00 to rent a phone. For how many days did the customer rent the phone?



8 days

extend the line