

January Exam 2011 Review - Unit 4

Multiple Choice

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

- D 1. In the equation $P = 8n + 5$, determine the value of P when $n = 13$.
 a. 144 b. 26 c. 105

1. $P = 8n + 5$
 $P = 8(13) + 5$
 $= 104 + 5$
 $= 109$
 (d) 109

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

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

2. $y = 2x$
 $t = 2f$

- C (a) $2f$ b. $2 + f$ c. $2f$ 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. $C = 7.1s$

3. $C = 0.55s + 6.55$

- B 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

4. $y = 27 + 4.27h$
 $= 27 + 4.27(8)$
 $= 27 + 34.16$
 $= \$61.16$

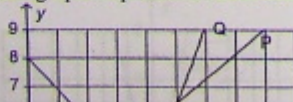
- A 5. The pattern in this table continues. Determine an equation that relates the term value to the term number.

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

$y = 4x + 2$
 $w = 4s + 2$

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

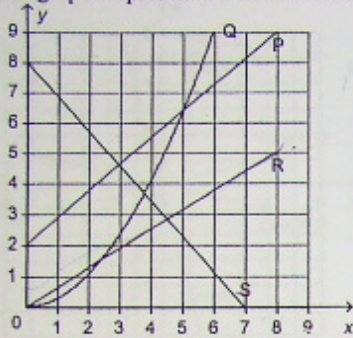
- D 6. Which graphs represent a linear relation?



S, P, R

D

- a. $w = 4s + 2$ b. $w = 6s$ c. $w = 3s + 2$ d. $w = 2s + 4$
6. Which graphs represent a linear relation?

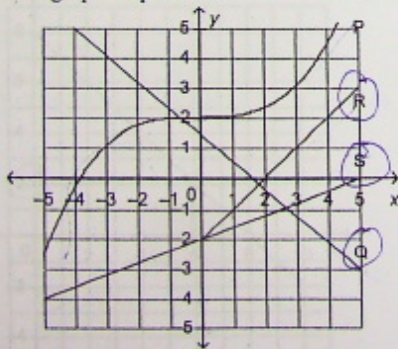


S, P, R

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

B

7. Which graphs represent a linear relation?



Q, S, R

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

8. Which tables of values represent a linear relation?

i)

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

ii)

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

iii)

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

iv)

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

- 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)

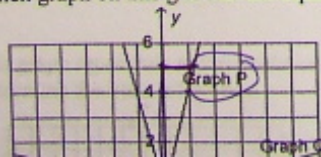
- a. Q and R b. P and Q c. P and R d. R and S

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

- ~~A vertical line that intersects the x-axis at 8.~~
~~A horizontal line that intersects the y-axis at -8.~~
 c. A vertical line that intersects the x-axis at -8.
~~A horizontal line that intersects the y-axis at 8.~~

9. $y = 12 - 5(1) = 12 - 5 = 7$
 $y = 12 - 5(2) = 12 - 10 = 2$
 $y = 12 - 5(0) = 12 - 0 = 12$

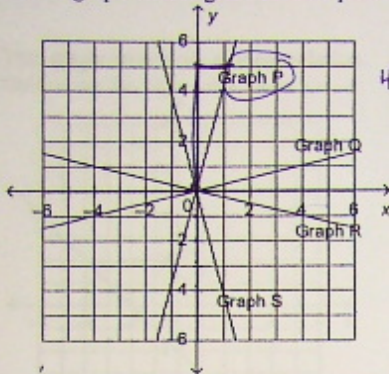
11. Which graph on this grid has the equation $y = 4x + 0$?



4/1 10.
 Slope = $\frac{4}{1}$
 y-intercept = 0

$y = 4x + 0$
 $y = mx + b$

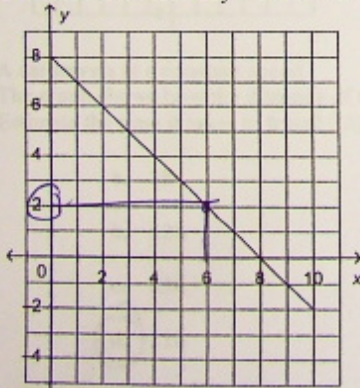
11. Which graph on this grid has the equation $y = 4x + 0$



10.
 $4/1$
 Slope = $\frac{4}{1}$
 $y\text{-int} = 0$
 $y = 4x + 0$
 $y = mx + b$

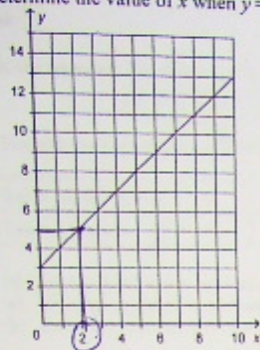
- a. Graph Q b. Graph R c. Graph S d. Graph P

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



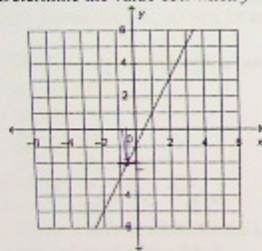
- a. 2 b. 0 c. 8 d. 14

Determine the value of x when $y = 5$.



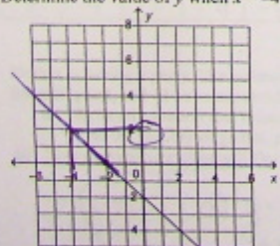
- a. 8
- b. 3
- c. 2
- d. 5

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



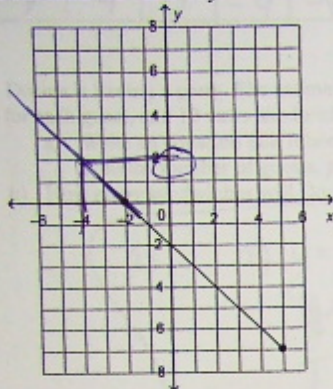
- a. -1
- b. -0.5
- c. 0.5
- d. -1.5

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



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

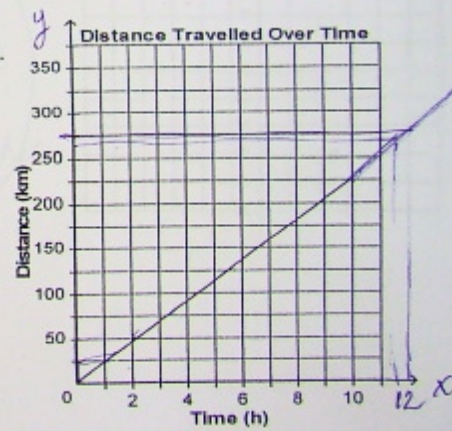
15. This graph represents a linear relation. Determine the value of y when $x = -4$.



- 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



$$y = 25x$$

$$270 = \frac{25x}{25}$$

$$x = 10.8h$$

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

$$R = 6(13 - 1) + 4$$

$$= 6(12) + 4$$

$$= 76$$

$$R = 76$$

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

Term Number, x	1	2	3	4	5
Term Value, y	5	8	11	14	17

$$18. y = 3x + 2$$

$$W = 3t + 2$$

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.
- b) Determine the amount of money in Shirley's account after 8 weeks.

$$19. a) A = 35n + 540$$

$$b) A = 35(8) + 540$$

$$= 280 + 540$$

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.

$$20. a) F = 1.75n + 2.50$$

$$b) F = 1.75(28) + 2.50$$

$$= 49 + 2.50$$

$$= \$51.50$$

21. Which equations represent a linear relation?

i) $y = 6x^2$

ii) $y = 7x + 4$

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

iv) $y + 3x = 12$
 $y = 12 - 3x$

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

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

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

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

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

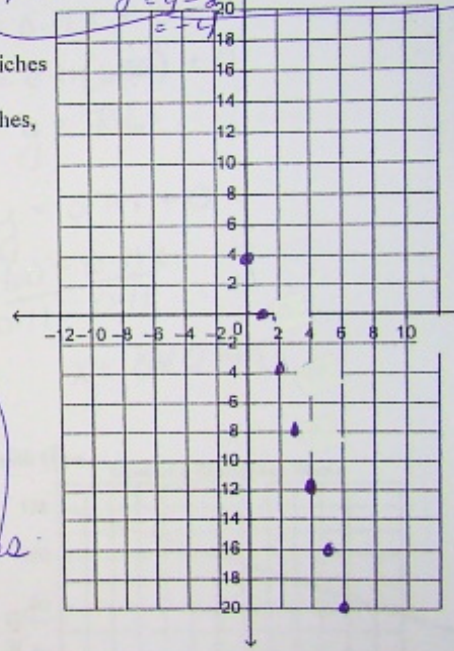
22. Create a table of values for the linear relation $y = 4 - 4x$, then graph the relation.
Use values of x from 0 to 6.

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

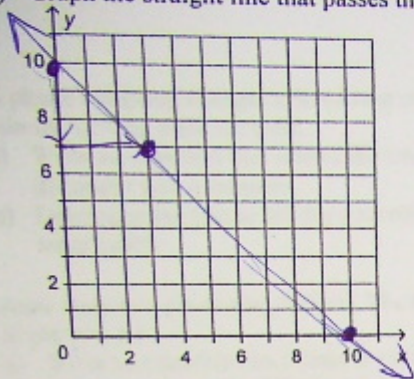
22. $x=0$ $y=4-4(0)$ $y=4-0$ $y=4$
 $x=1$ $y=4-4(1)$ $y=4-4$ $y=0$
 $x=2$ $y=4-4(2)$ $y=4-8$ $y=-4$

23. Dorina is having a party. She estimates that she will need 5 sandwiches for each guest, and 12 extra sandwiches for unexpected guests.
 a) Write an equation that relates the total number of sandwiches, T , to the number of guests, p .
 b) How many sandwiches will Dorina need for 16 guests?

23. a) $y = 5x + 12$
 $T = 5p + 12$
 b) $T = 5(16) + 12$
 $T = 80 + 12$
 $T = 92$ sandwiches



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



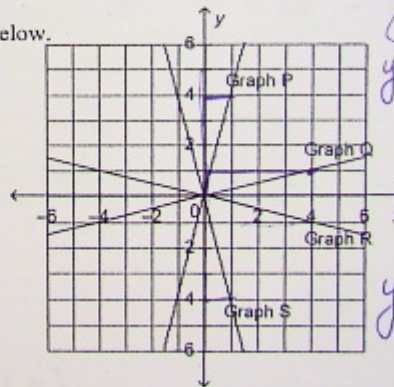
$$\frac{-3}{3} = -1$$

b) Write an equation to describe the line. →

$$y = -1x + 10$$

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

- i) $y = -0.25x + 0$ (R)
- ii) $y = 4x + 0$ (P)
- iii) $y = -4x + 0$ (S)
- iv) $y = 0.25x + 0$ (Q)



Ⓟ $y = 4x + 0$

Ⓠ $y = \frac{1}{4}x + 0$

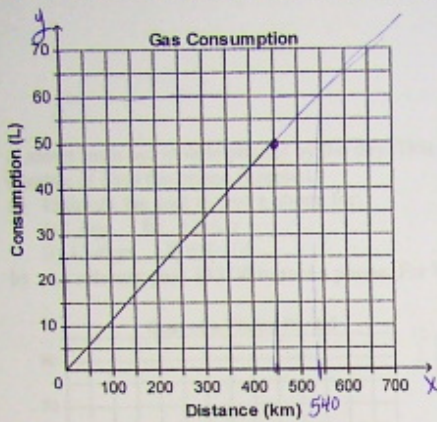
Ⓡ $y = -\frac{1}{4}x + 0$

Ⓢ $y = -4x + 0$

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

- a) Estimate the volume of gas required to travel 630 km.
- b) Estimate the distance the car can travel on 60 L of gas.

26. This graph shows the gas consumption rate of a car.
 a) Estimate the volume of gas required to travel 630 km.
 b) Estimate the distance the car can travel on 60 L of gas.



$\frac{50}{450}$

a) $y = 0.11x + 0$
 $y = 0.11(630) + 0$
 $y = 70L$

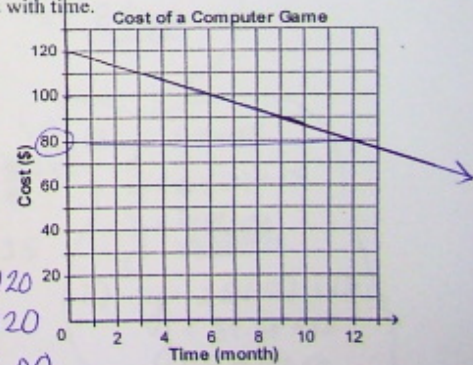
b) $y = 0.11x + 0$
 $\frac{60}{0.11} = \frac{0.11x}{0.11}$
 $x = 540 \text{ km}$

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.

Graph \rightarrow \$80.00

$-\frac{20}{6}$

Equation \rightarrow $y = -3.\bar{3}x + 120$
 $y = -40 + 120$
 $y = \$80.00$



Problem

28.

$$a) B = 0.53p + 1.07q + 2.35$$

$$b) B = 0.53(53) + 1.07(31) + 2.35$$

$$B = 28.09 + 33.17 + 2.35$$

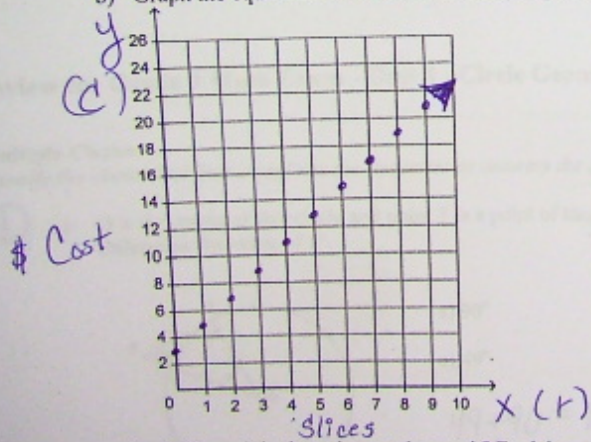
$$B = \$63.61$$

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, B dollars, to the local calls, p minutes, and long distance calls, q 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.



$$a) C = 2r + 3$$

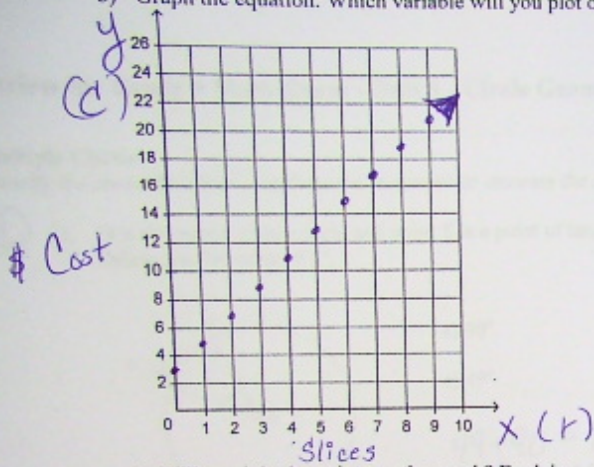
$$y = 2x + 3$$

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

→ No because they sell slices.
 $17 = 2r + 3$

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.

- a) Write an equation that relates the total cost, C dollars, to the number of slices of pie you eat, r .
- b) Graph the equation. Which variable will you plot on the horizontal axis? Explain your reasoning.



a) $C = 2r + 3$
 $y = 2x + 3$

- c) Will you join the points on the graph? Explain. → No because they sell slices.
- d) If Amir spent \$17.00, how many slices of pie did he eat?

$$17 = 2r + 3$$

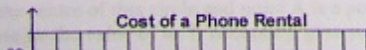
$$2r + 3 = 17 - 3$$

$$2r = 14$$

$$r = 7 \text{ slices}$$

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 \$17.50
 - ii) 13 days \$47.50
- b) A customer paid \$35.00 to rent a phone. For how many days did the customer rent the phone?



b) $35 = 2.50x + 15$

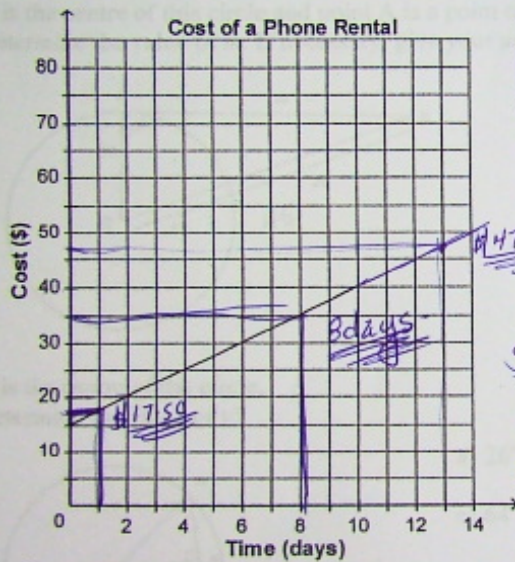
30. A resort rents out mobile phones by the day. This graph shows how the cost to rent a phone relates to the number of days the phone is rented.

a) Estimate the cost to rent a phone for:

i) 1 day \$ 17.50

ii) 13 days \$ 47.50

b) A customer paid \$35.00 to rent a phone. For how many days did the customer rent the phone?



b) $35 = 2.50X + 15$
 $2.50X + 15 = 35 - 15$
 $\frac{2.50X}{2.50} = \frac{20}{2.50}$
 $X = \underline{\underline{8 \text{ days}}}$

Slope = $\frac{5}{2} = \$2.50$
 y-int = 15

a) i) $y = \frac{1}{2}x + 15$
 $y = 2.5(1) + 15$
 $y = \underline{\underline{\$17.50}}$

ii) $y = 2.50(13) + 15$
 $y = 32.50 + 15$
 $y = \underline{\underline{\$47.50}}$

