

**Grade Nine Mathematics
Unit 4 Review**

Name: _____

1. Using the equation $A = 3t - 5$, what is the value of A when $t = -2$?

1. A

$= 3(-2) - 5 = -6 - 5 = -11$

(A) -11 B) -4 C) 1 D) 11

2. Which relation below is linear?

2. B and D

~~X~~

x	y
1	3
2	5
3	8

1 { 2 } 3

(B)

x	y
-3	-3
-4	-4
-5	-5

2 { -1 } 3

~~X~~

x	y
1	2
2	4
3	8

1 { 2 } 4

(D)

x	y
10	5
20	10
30	15

10 { 5 } 15

3. Which is an oblique line? 2 variables

3. C

A) $x = 3$ B) $y - 5 = 8$ (C) $3x - y = 10$ D) $5x = -20$

4. Which equation represents a vertical line? cuts the x-axis

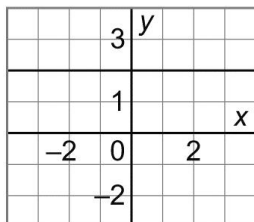
4. A

(A) $x = 10$ B) $y = 10$ C) $x + y = 10$ D) x-axis

5. What is the equation of the line graphed below?

5. B

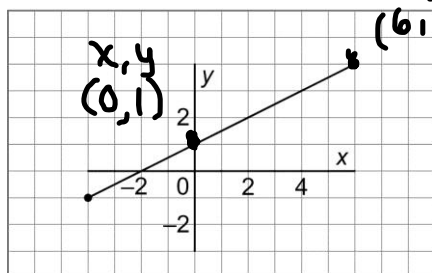
- A) $x = 2$
(B) $y = 2$
C) $x = -2$
D) $y = -2$



6. What is the equation of the graph shown?

6. c) $2(1) + 0 = 2$
 $2 + 0 = 2$
 $2(4) + 6 = 2$
 $8 + 6 \neq 2$

- ~~A) $2x + y = 2$~~
~~B) $2x - y = 2$~~
~~C) $2y + x = 2$~~
 (D) $2y - x = 2$



x, y
 $(0, 1)$
 $(2, 0)$
 $2(0) + 1 = 2$
 $0 + 1 \neq 2$
 $2(0) - 1 = 2$
 $0 - 1 \neq 2$

$2(1) - 0 = 2$
 $2 - 0 = 2 \checkmark$

$2(4) - 6 = 2$
 $8 - 6 = 2 \checkmark$

Remember check 2 points

7. How many line segments would there be in figure 10?

7. _____

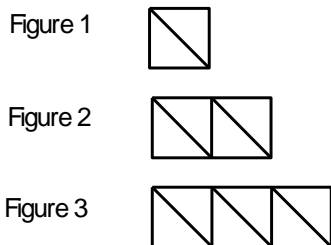


Figure # f	# Segments S
1	5
2	9
3	13

$$S = 4f + 1$$

$$= 4(10) + 1$$

$$= 40 + 1 = 41$$

↑
numerical coefficient

- A) 14 B) 40 C) 50 D) 60

8. Rachel takes care of homes during the summer while their owners are away on vacation. She charges \$8, plus \$2.50 a day. Write an equation that relates the charge, C dollars, to the number of days, n , that the owners are away.

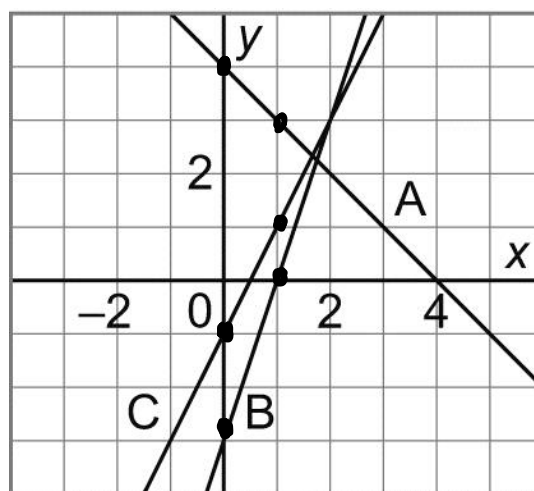
$$C = 8 + 2.50n \quad \text{or} \quad C = 2.50n + 8$$

9. Match each equation with a graph on this grid. Show all workings!!!

Equation #1: $y = 2x - 1$

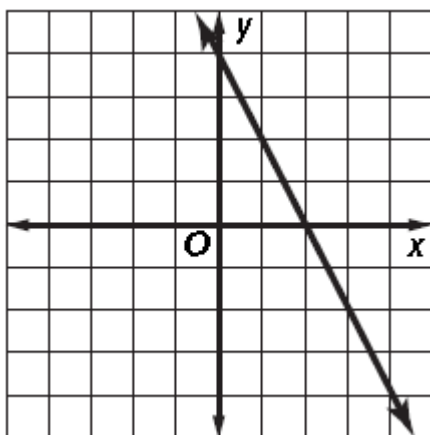
Equation #2: $y = -x + 4$

Equation #3: $y = 3x - 3$



$y = 2x - 1$	$y = -x + 4$	$y = 3x - 3$
$x = 0$ $y = 2(0) - 1$ $= 0 - 1$ $= -1$ $(0, -1)$	$x = 0$ $y = -(0) + 4$ $= 0 + 4$ $= 4$ $(0, 4)$	$x = 0$ $y = 3(0) - 3$ $= 0 - 3$ $= -3$ $(0, -3)$
$x = 1$ $y = 2(1) - 1$ $= 2 - 1$ $= 1$ $(1, 1)$	$x = 1$ $y = -(1) + 4$ $= -1 + 4$ $= 3$ $(1, 3)$	$x = 1$ $y = 3(1) - 3$ $= 3 - 3$ $= 0$ $(1, 0)$
Graph C	Graph A	Graph B

10. Examine the graph, then use the graph to complete the table of values and find the equation of the linear relation.



x	y
0	4
1	2
2	0
3	-2

} -2
 } -2
 } -2
 ↑

numerical coefficient

Equation
$y = -2x + 4$

$$-2x + 4$$

11. The graph shows how the cost of a long distance call changes with the time for the call. A grid is provided below if you need one.

- A) Estimate the cost of a 7-min call.

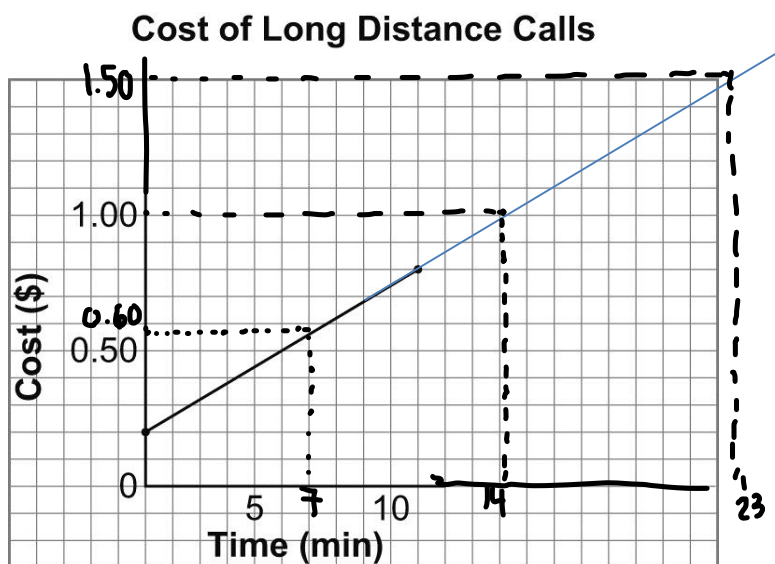
\$0.58

- B) The cost of a call was \$1.00.
Estimate the time for the call.

14.1 min

- C) The cost of a call was \$1.50.
Estimate the time for the call.

22.8 min



- D) Which question(s) above were an example of extrapolation?

B and C because it was outside the given data values.

- E) Which question(s) above an example of interpolation?

A because it was inside the given data values.

12. Graph each equation below:

A) $y + 7 = -5$
 $-7 \quad -7$

$y = -12$

B) $8x = 5 + y$

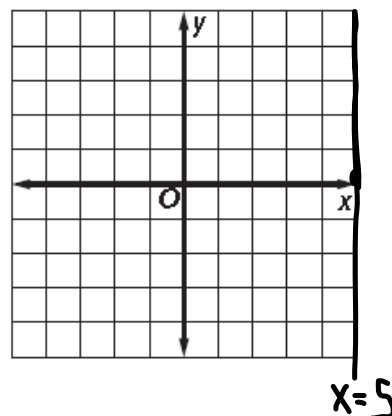
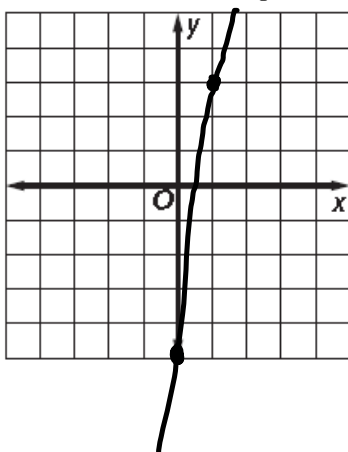
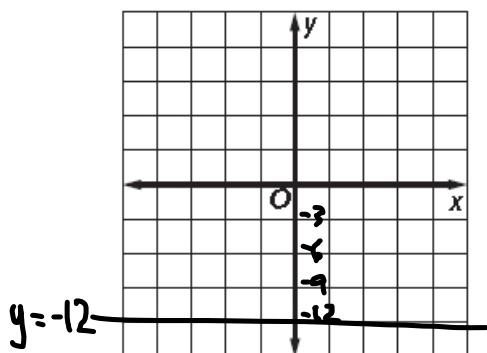
$x=0 \quad 8(0) = 5 + y$
 $0 = 5 + y$
 $-5 \quad -5$

$y = -5 \quad (0, -5)$

$x=1 \quad 8(1) = 5 + y$
 $8 = 5 + y$
 $3 = y \quad (1, 3)$

C) $14 = 9 + x$
 $-9 \quad -9$

$5 = x$

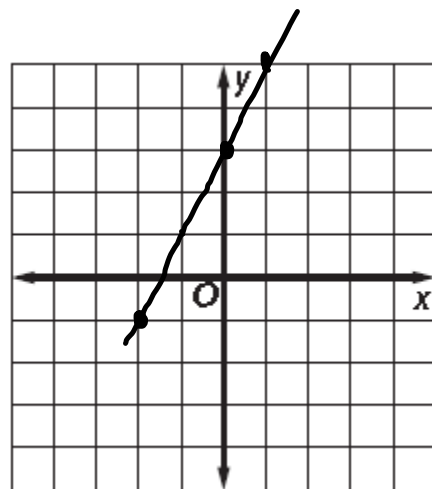


13. Graph the equation $y - 2x - 3 = 0$

x	y
-2	-1
0	3
1	5
3	9

$x = -2 \quad y - 2x - 3 = 0$
 $y - 2(-2) - 3 = 0$
 $y + 4 - 3 = 0$
 $y + 1 = 0$
 $-1 \quad -1$

$y = -1$

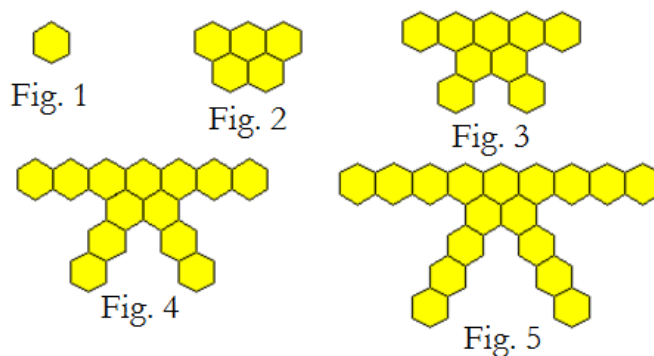


$x = 0 \quad y - 2x - 3 = 0$
 $y - 2(0) - 3 = 0$
 $y - 0 - 3 = 0$
 $y - 3 = 0$
 $+3 \quad +3$
 $y = 3$

$x = 1 \quad y - 2x - 3 = 0$
 $y - 2(1) - 3 = 0$
 $y - 2 - 3 = 0$
 $y - 5 = 0$
 $+5 \quad +5$
 $y = 5$

$x = 3 \quad y - 2x - 3 = 0$
 $y - 2(3) - 3 = 0$
 $y - 6 - 3 = 0$
 $y - 9 = 0$
 $+9 \quad +9$
 $y = 9$

14. Consider this pattern of shapes.



- A) Complete a table of values comparing Figure # to the # of tiles.

figure # f	# of tiles t
1	1
2	5
3	9
4	13
5	17

↑ numerical coefficient

- B) Write an equation that represents this linear relation.

$$t = 4f - 3$$

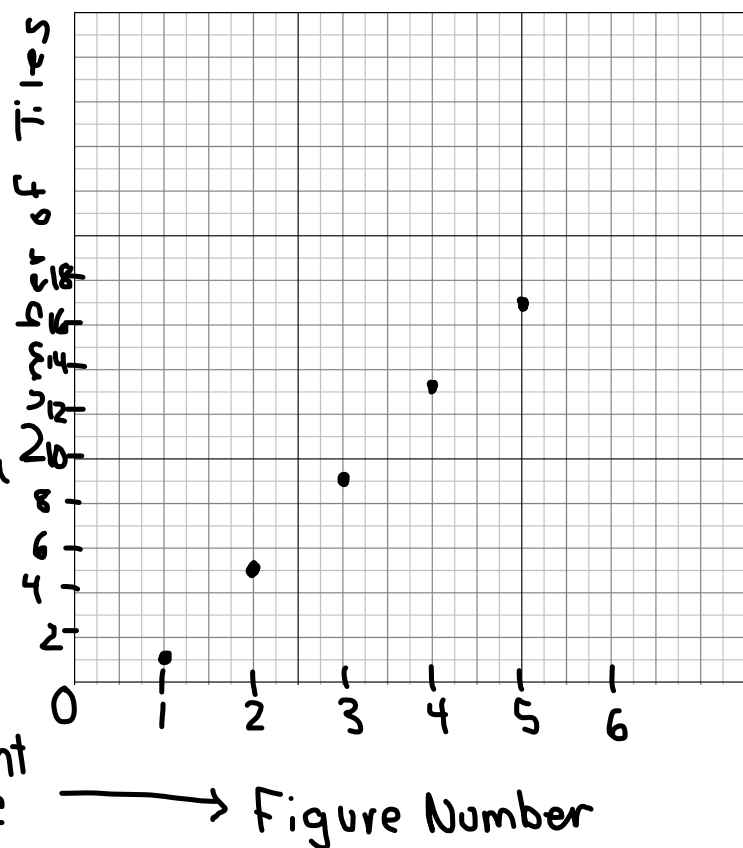
- C) Graph the relation.

- D) Is this data continuous or discrete?

Discrete because you cannot have parts of a figure. You can only have whole # figures.

Dependent variable

independent variable



15. A Maid-4-Hire company charges a base rate of \$60 plus \$40 per hour that they clean.

a. Let n be the # of hours and C be the total cost. Make a table to show how the cost per hour.

$$C = 60 + 4n \quad \text{or} \quad C = 4n + 60$$

n	C
1	100
2	140
3	180
4	220

b. Write an equation that relates the total cost to the number of hours.

c. Is the data continuous or discrete?

Discrete

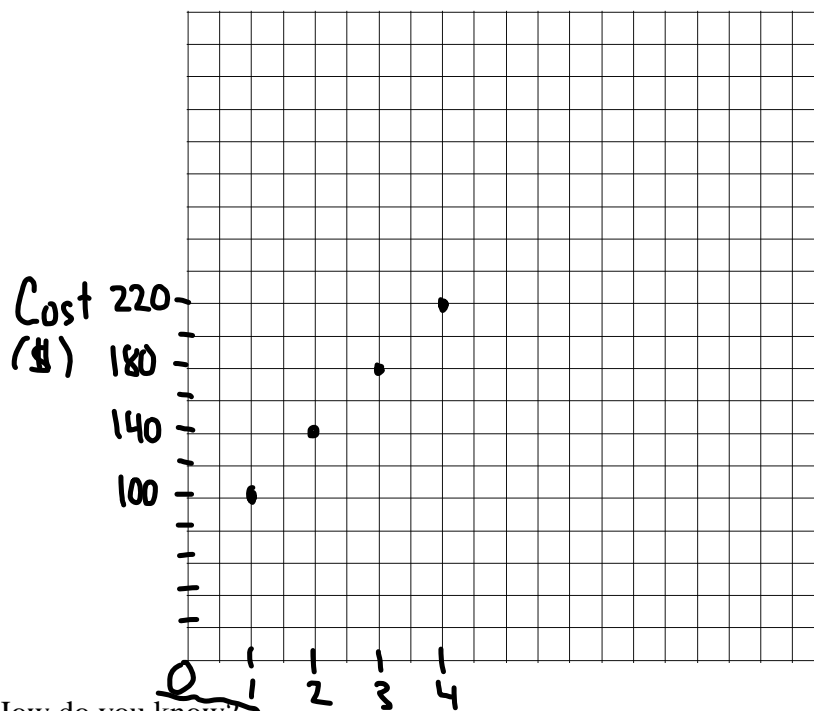
d. Independent Variable:

Cost, C

Dependent Variable:

Number of hours, n

e. Graph the equation.



f. Is this a linear relation? How do you know?

Yes because the points lie in a straight line

g. What is the total cost for 7 hours of cleaning?

$$\begin{aligned} C &= 60 + 40n \\ &= 60 + 40(7) \\ &= 60 + 280 \\ &= \$340 \end{aligned}$$

h. How many hours of cleaning would it take if the total cost was \$440?

$$\begin{aligned} C &= 60 + 40n \\ 440 &= 60 + 40n \\ -60 &\quad -60 \\ 380 &= 40n \\ \frac{380}{40} &= \frac{40n}{40} \\ n &= 9.5 \end{aligned}$$