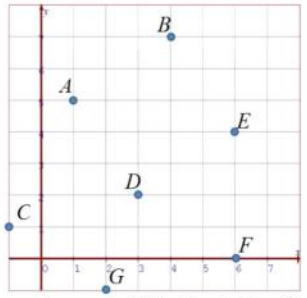
SOL HW 10.1

May 13, 2017 10:18 AM

Name:_____ Date:_____

Math 8 HW Section 10.1 Linear Relations

1. Given the following grid, find the coordinates of each of the following points



$A(1,5)$ $B(4,7)$

$C(-1,1)$ $D(3,2)$

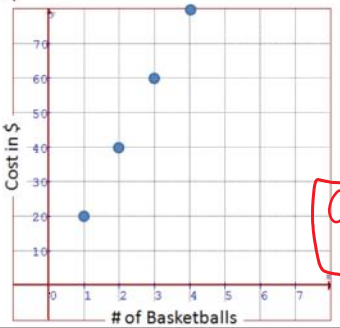
$E(6,4)$ $F(6,0)$

$G(2,-1)$

2. Given each graph, fill in the table of values given:

ANSWER SHHH....

a)



Cost = 20 x # of Baskets

Cost	20	40	60	80	160	180	200
# Baskets	1	2	3	4	8	9	10

How much does it cost to buy 10 basketballs?

$200

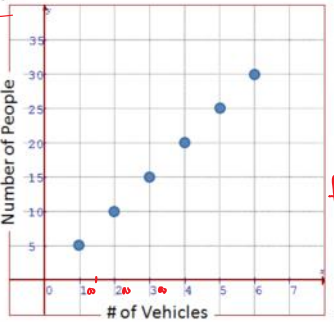
If you had $100, how many basketballs can you buy?

5

Write an equation for the relationship between the cost and the number of basketballs

Cost = $20 × (Number of Basketballs)

b)



people = cars x 5

# People	5	20	25	30	100	150
# Cars	1	4	5	6	20	30

How many people can each car take?

5 people

How many cars will you need for 85 people?

17 cars

Write an equation for the number of people and the number of cars required:

P = 5C

3. For the two graphs above, should we connect the dots? Explain why or why not.

No, b/c the number of basketballs or cars have to be whole numbers

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4. Given each scenario, indicate whether if it is a linear relationship or not. If not, explain why:

i) Tim saves 3.25 each day and puts it in his piggy bank. The relationship between the number of days and how much he saves.

Because when the # of days increase by 1, the money increased by 3.25, it's constant in rate. Y

ii) The number of people in a school doubles every day for 12 straight weeks. The relationship between the number of people vs the number of weeks.

The number of people increased every-day is not constant. N

S	P
1	4
2	8
3	12
4	16

+1, +4, +1, +4, +1, +4

iii) The side length of a square and the perimeter of a square

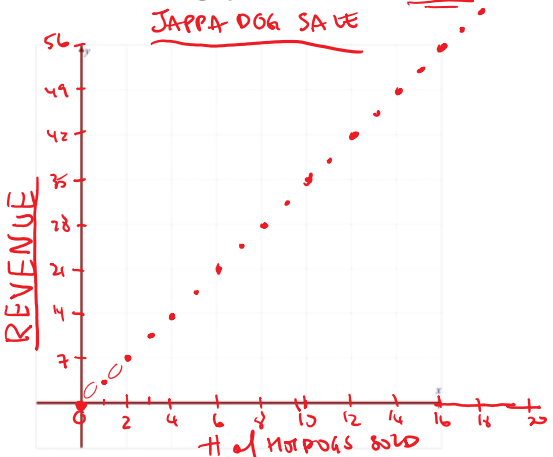
Everytime the side length increase by 1 the perimeter increase by 4 Y

iv) The side length of a cube and the volume of a cube

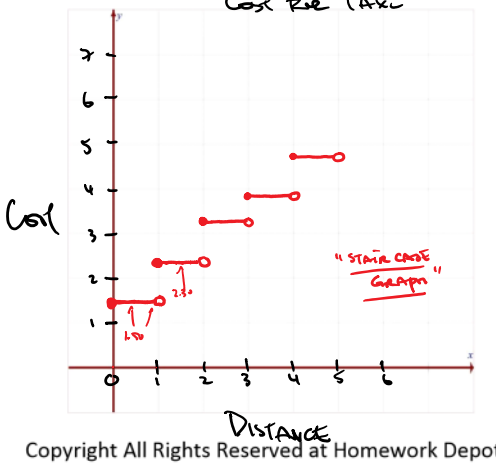
The # of the volume does not increase in a constant rate N

5 ~~8~~ 27 37

5. Jason owns a JappaDog stand and sells hotdogs at $3.50 each. Make a TOV for the first twenty hotdogs that he sells. Use the graph to illustrate his revenue. Label the graph.



6. A taxi driver charge $1.50 for the first minute and then $.80 for each additional km he travels. Make a TOV for the first 10km and then draw a graph to illustrate the relationship.



Dist	Cost
0	1.50
1	2.30
2	3.10
3	3.90
4	4.70
5	5.50
6	6.30

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HW Section 10.2 Finding Patterns in a Table of Values

1. The perimeter of a square is equal to the side length multiplied by 4. Complete the following table of values:

Perimeter (cm)	16	26	84	84
Side Length	4	6.5	21	21

2. The following table is for the relationship between the side length of a hexagon and its perimeter. Complete the TOV:

Perimeter (cm)	18	42	−30	72
Side Length	3	7	−5	12

3. Given that the relationship is supposed to be linear, which row does not belong in the table of values? Which value would you change to make it into a linear relationship?

x	y
2	3
4	6
6	9
8	12

x	y
1	5
2	9
3	13
4	17

x	y
−3	6
0	7 → 8
3	10
6	12

x	y
2	2
5	11
9	22 → 23
13	35

x	y
7	8
4	5
1	−2 → 2
5	6

4. Given each table of values, find the equation that relates the two variables and then find the values for the missing boxes:

x	y
1	9
2	10
3	11
4	12
5	
6	

$x+8=y$

x	y
1	−3
3	−1
5	1
7	3
11	
15	

$2x-4=y$

x	y
2	5
4	11
6	17
8	23
12	
16	

$3x-1=y$

x	y
2	5
5	8
8	11
11	14
	23
56	

$y=x+3$

x	y
−4	−4
−2	2
0	8
2	14
	26
	86

$y=3x+8$

x	y
5	10
3	15
1	20
−1	25
	−15
9	

$y=mx+b$

$10=5m+b$

$15=3m+b$

$-5=2m$

$-5=2(-2.5)$

$y=-2.5x+b$

$22.5=b$

$20=-2.5+b$

$+2.5 \quad +2.5$

$y=-2.5x+22.5$

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5. Given the figures below, derive a formula for the numbers of small little squares (S) vs the figure number (N)

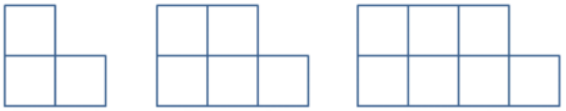
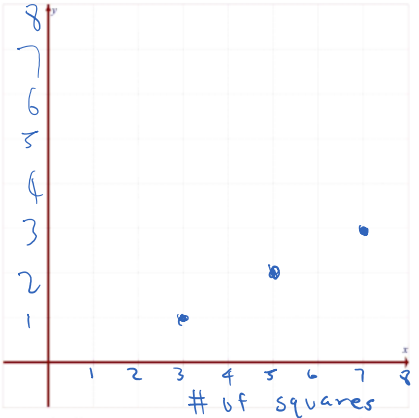


Figure 1 *Figure 2* *Figure 3*

a) Derive a formula for the total number of possible squares (T) vs the figure number (N)?

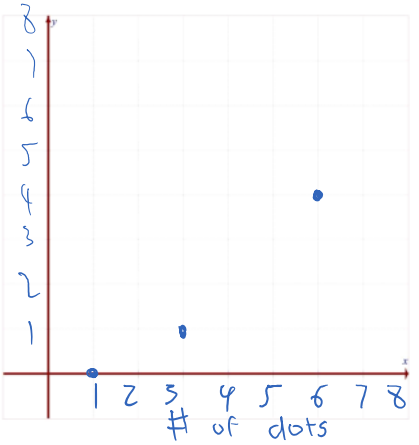
$T = 2N + 1$

b) Make a table of values and then graph it. Is this a linear relationship?



Yes

6. Challenge: Suppose you connect the dots next to each other and count the number of little triangles. Make a table of values for the number of dots and the number of little triangles. Is this relationship linear?



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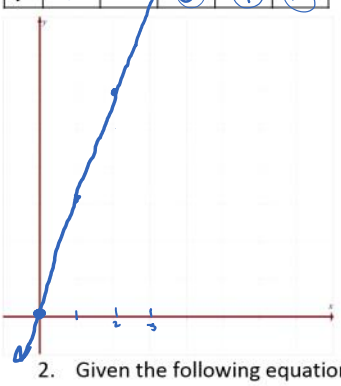
HW Section 10.3 Graphing Linear Equations

1. Graph each of the following equations by making a table of values.

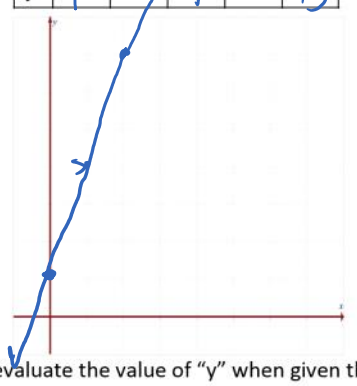
a) $y = 3x$

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



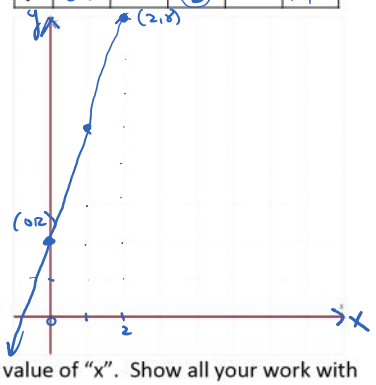
b) $y = 3x + 1$

x	0	1	2	3	4
y	1	4	7	10	13



c) $y = 3x + 2$

x	0	1	2	3	4
y	2	5	8	11	14



2. Given the following equation, evaluate the value of "y" when given the value of "x". Show all your work with the space given:

a) $y = \frac{2}{3}x$

i) $x = 6$

$y = \frac{2}{3}(6)$

$y = 4.$

ii) $x = 12$

$y = \frac{2}{3}(12)$

$= 8$

i) $x = 24$

$y = \frac{2}{3}(24)$

$= 16.$

b) $y = 3x + 5$

i) $x = 4$

$y = 3(4) + 5$

$= 17$

ii) $x = 8$

i) $x = 24$

c) $y = \frac{x-1}{2}$

i) $x = 2$

$y = \frac{(2)-1}{2}$

$y = 0.5$

ii) $x = 7$

$y = \frac{(7)-1}{2}$

$y = 3$

$(7,3)$

i) $x = 18$

$y = \frac{(18)-1}{2}$

$= \frac{17}{2} = 8.5$

d) $y = \frac{2x}{3} + 4$

i) $x = 0$

$y = \frac{2(0)}{3} + 4$

$= 4$

ii) $x = 3$

$y = \frac{2(3)}{3} + 4$

$= 6$

i) $x = 9$

$y = \frac{2}{3}(9) + 4$

$y = 10$

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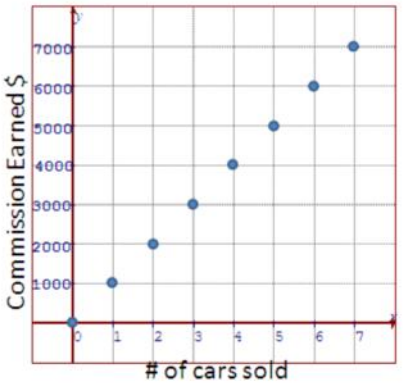
3. Given the following equation, indicate which points will not be on the line $y = 3x - 4$. Show all your work and steps: $A(-2,-10)$, $B(0,-4)$, $C\left(\frac{2}{3},-2\right)$, $D(5,-11)$, $E(20,54)$

$-10 = 3(-2) - 4$ $-4 = 3(0) - 4$ $-2 = \frac{2}{3}(3) - 4$ $-11 = 3(5) - 4$ $54 = 3(20) - 4$

$-10 = -10$ ✓ $-4 = -4$ ✓ $-2 = 2 - 4$ $-11 = 11$ $54 = 60 - 4$

$-2 = -2$ $54 \neq 56$

4. The following graph shows how much Zack earns from commission for the number of cars he sells in a month. Use the graph below to answer the following questions:



a) How much does Zack earn if he sold 4 cars?

$4000

b) If he earned $7000 in commission, how many cars did he sell?

He sold 7 cars

c) How much commission will he earn if he did not sell any cars?

$0 if he sells 0 cars

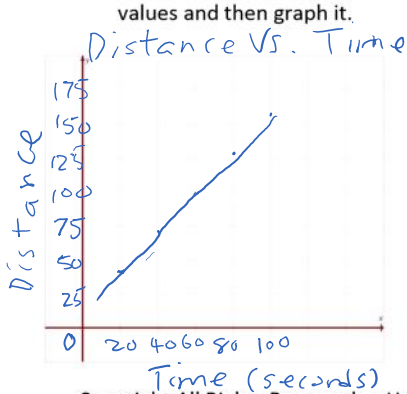
d) Give an equation that relates the number of cars (N) sold with the commission earned (C)

$C = 1000n$

e) Should we connect the dots in the graph? Explain why or why not

No because there is no value in between the dots

5. Neil is jogging around his neighbourhood at a constant speed and his distance away from home is given by the formula: $D = \frac{4}{3}t + 20$. "D" is the distance in meters and "t" is the time in seconds. Make a table of values and then graph it.



t	D
20	46.6
40	73.3
60	100
80	126.6
100	153.3

$D = \frac{4}{3} \times 20 + 20 = \frac{80}{3} + 20$

$D = \frac{4}{3} \times 40 + 20 = \frac{160}{3} + 20$

$D = \frac{4}{3} \times 60 + 20 = \frac{240}{3} + 20$

$D = \frac{4}{3} \times 80 + 20 = \frac{320}{3} + 20$

$D = \frac{4}{3} \times 100 + 20 = \frac{400}{3} + 20$

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