



A local company offers a cell phone plan that has a fixed cost per month and a cost related to the number of text messages sent. The fixed cost is \$20 and each message sent cost 15 cents.

$$\begin{array}{r|l} 0 & 20 \\ 1 & 20.15 \\ 2 & 20.30 \end{array} \begin{array}{l} \left. \begin{array}{l} \\ \\ \end{array} \right\} 0.15 \\ \left. \begin{array}{l} \\ \\ \end{array} \right\} 0.15 \end{array}$$

i) Write an equation that relates the total cost, C , to the number of text messages sent, t .

$$C = 0.15t + 20$$

ii) How much would your bill be if you sent 123 text messages in one month?

$$\begin{aligned} C &= 0.15t + 20 \\ &= 0.15(123) + 20 \\ &= 18.45 + 20 \\ &= 38.45 \end{aligned}$$

It will cost \$38.45

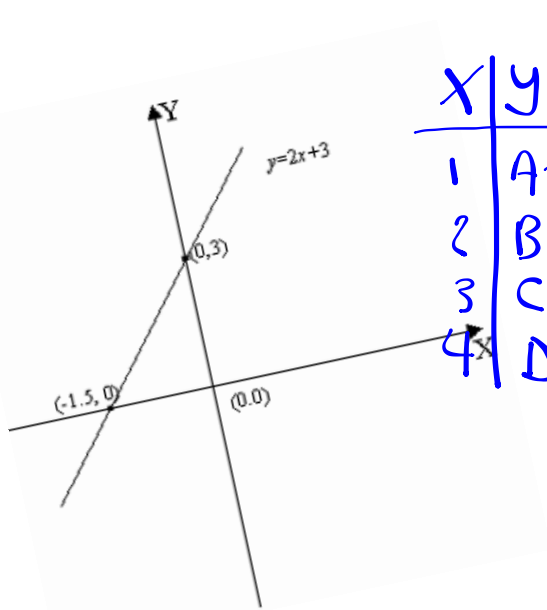
Extra practice - did anyone need help.

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16 to 20

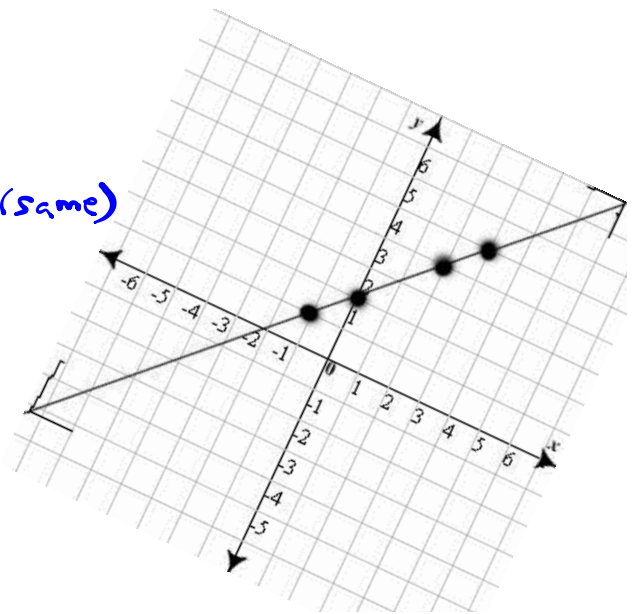
Section 4.2

Linear Relations



X	Y
1	A
2	B
3	C
4	D

$\left. \begin{matrix} A \\ B \\ C \\ D \end{matrix} \right\} 2 \text{ (same)}$



Remember ME

Let's look at it again.

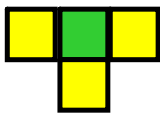


Figure 1

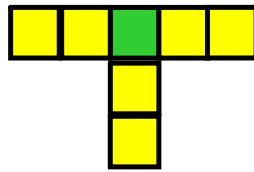


Figure 2

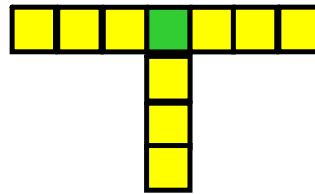


Figure 3

Figure #	# of Blocks
1	4
2	7
3	10
6	19
10	31

$3f + 1$

THUS

Write an equation that relates the number of blocks, n , to the figure number, f .

$n = 3f + 1$

$n = 3(6) + 1$
 $= 19$

$n = 3(10) + 1$
 $= 31$

Remember ME

Let's look at it again.

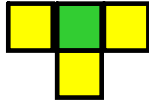


Figure 1

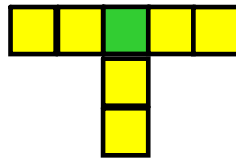


Figure 2

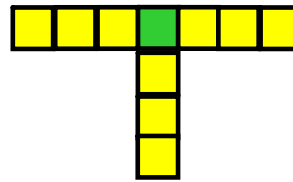
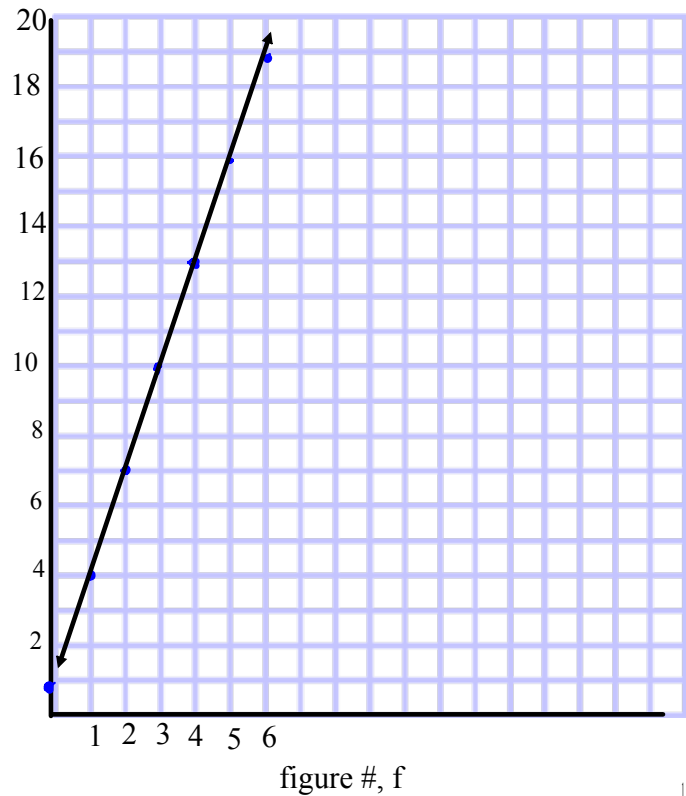


Figure 3

Figure #	# of Blocks
1	4
2	7
3	10
4	13
5	16
6	19

Handwritten notes: Blue arrows point from the 'Figure #' column to the '3' values in the '3f+1' formula. Blue brackets on the right side of the table indicate the constant difference of 3 between consecutive rows.

$n = 3f + 1$



THUS

For figure f , the number of blocks will be $3f + 1$

If n is the number of blocks then the equation is: $n = 3f + 1$

What changes the value of n ???

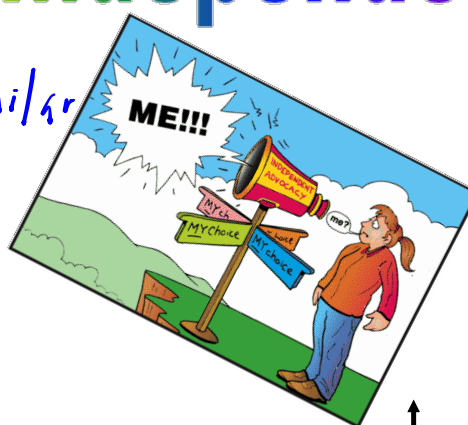
So the value of _____ depends on the value of _____.

Dependent VS. Independent

If the equation is: $y = 2x + 4$
 $P = 2n + 4$ Similar

P is the dependent variable

n is the independent variable



Dependent variable is always plotted on vertical axis (y-axis) ↑

Independent variable is always plotted on the horizontal axis (x-axis) ←

$$m = 2n + 5$$

$$\text{Mary} = 2(\text{student}) + 5$$



dependent
variable



independent
variable

Linear Relation

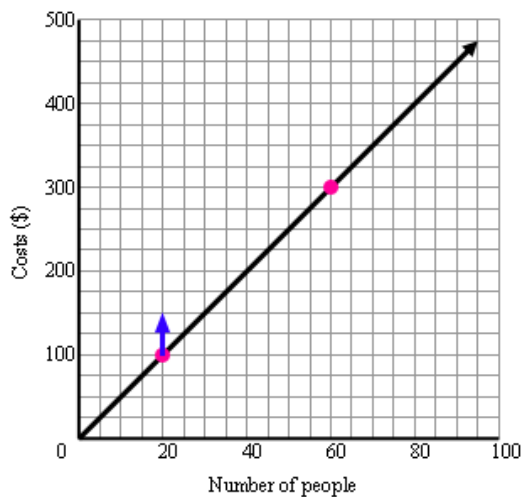
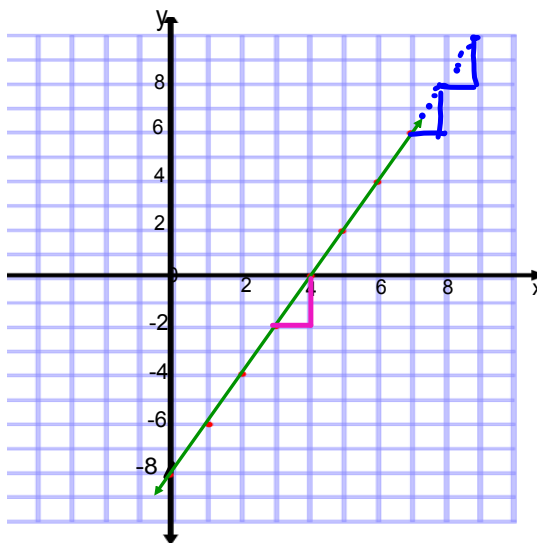
- is when the graph is a straight line
- a constant change in 'x' causes a constant change in 'y'

$$y = 2x - 8$$

Table of Values

	x	y
+1	0	-8
	1	-6
	2	-4
	3	-2

+2



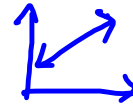
Concrete vs. Discrete

Discrete : Unconnected
Data



pizza toppings

Concrete : Connected
Data



age



Think about the two situations



Cost of video games

Number of Video games	Cost, C(\$)
1	25
2	50
3	75

Can you buy 1.5 video games?

So would you connect the dots???

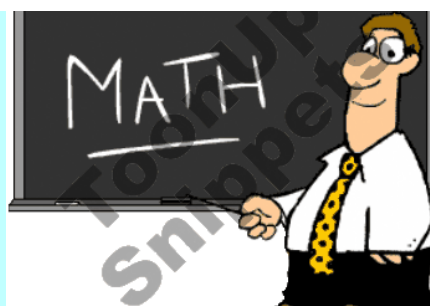
Babysitting Job

Number of Hours	Earnings, C(\$)
1	10
2	20
3	30

Can you work 1.5 hours?

So would you connect the dots???

A relationship has the equation: $y = 7 - 2x$



a) Create a table of values for the relation for values -2 to 2.

x	y
-2	11
-1	9
0	7
1	5
2	3

Handwritten arrows on the right side of the table indicate a constant decrease of -2 in the y-value for each unit increase in the x-value.

We have to do some work!

for $x = -2$

$$y = 7 - 2(x)$$

$$y = 7 - 2(-2)$$

$$y = 7 - (-4)$$

$$y = 11$$

$$y = 7 - 2(0)$$

$$= 7$$

$$y = 7 - 2(x)$$

$$= 7 - 2(-1)$$

$$= 7 + 2$$

$$= 9$$

$$y = 7 - 2(1)$$

$$= 7 - 2$$

$$= 5$$

$$y = 7 - 2(2)$$

$$= 7 - 4$$

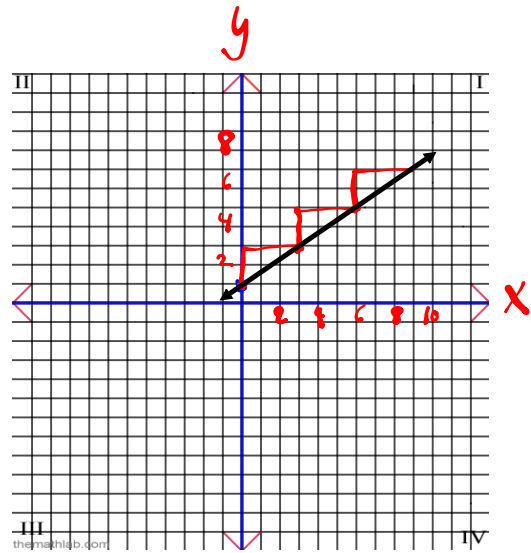
$$= 3$$

Choose Numbers that are easy to work with

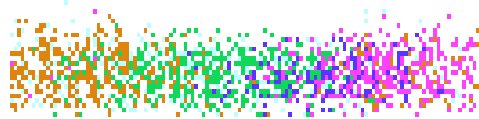
$$y = \frac{2}{3}x + 1$$

x	y
-6	-3
-3	-1
0	1
3	3
6	5

Handwritten annotations: Blue arrows labeled '+3' point from x to the next x value. Blue arrows labeled '+2' point from y to the next y value.



Class/Homework



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