

Algebra 4-6: Graphing $x + y = k$ and $x - y = k$

Warm-Up

Solve. Show your steps.

1. $-(n - 9) = 11$

$$\begin{array}{r} -n + 9 = 11 \\ \quad -9 \quad -9 \\ \hline -n = 2 \\ \frac{-n}{-1} = \frac{2}{-1} \quad \boxed{n = -2} \end{array}$$

2. $2 - (n + 3) = 4$

$$\begin{array}{r} 2 - 1n + -3 = 4 \\ -1 - 1n = 4 \\ \quad +1 \quad \quad +1 \\ \hline -1n = 5 \\ \frac{-1n}{-1} = \frac{5}{-1} \quad \boxed{n = -5} \end{array}$$

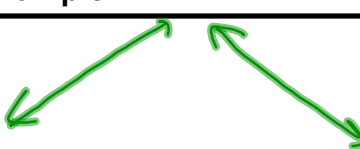
3. The dinner bill is \$50 before tax and tip. Tax is 6% and tip is 15% of the original dinner cost. What is the total amount of money spent on dinner after tax and tip?

$$50(.06) = \$3 + 50 = \$53$$

$$50(.15) = 7.50$$

$$53 + 7.50$$

$$\boxed{\$60.50}$$



Vocabulary	Definition	Example
Constant	- going up or down at the same rate	

Steps to Graph

1. Make a table

- > Let x represent something.
- > Let y represent something.
- > Fill in the table.

2. Create a graph.

- > Label x & y axes. 
- > Graph ordered pairs from the table.
- > Connect points only when we can fractions or parts of something.
 - For Example people → whole #s 

Examples

12

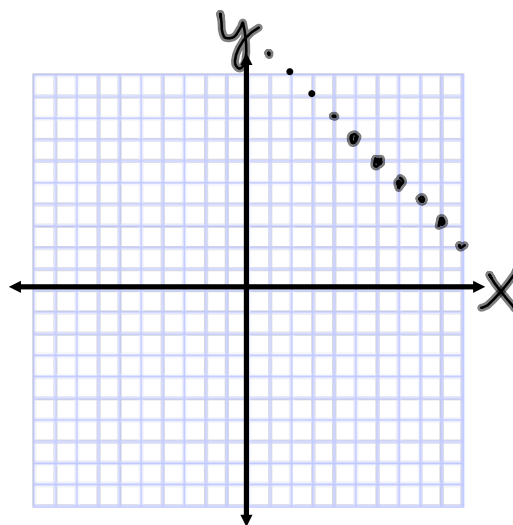
1. You need to buy breakfast for a dozen people. Each person will get one item. You decide to purchase donuts and bagels for the group.

There are different ways you can buy the dozen donuts and bagels. Graph the possibilities.

x = donuts
 y = bagels

Equation: $x + y = 12$

x	y	
6	6	(6, 6)
1	11	(1, 11)
5	7	(5, 7)
7	5	(7, 5)
8	4	(8, 4)



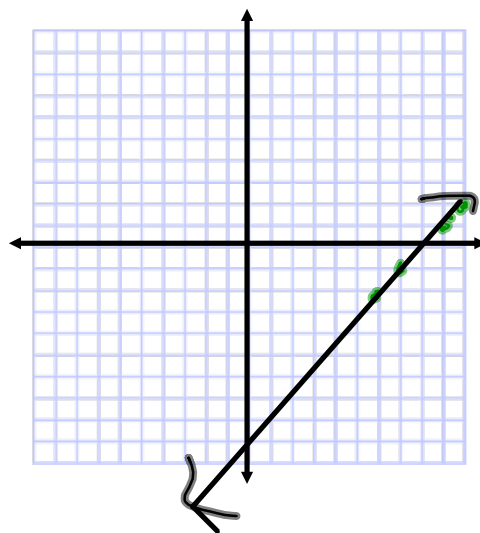
2. The difference of 2 numbers is 8.

a) Write an equation that describes the relationship. $x - y = 8$

b) Graph all ordered pairs of real numbers whose difference is 8.

x	y
10	2
9	1
7	-1
6	-2
9.5	1.5

$$7 - (-1) = 8$$
$$6 - (-2) = 8$$



9) a) $x = \# \text{ of Sals fish}$
 $y = \# \text{ of Als fish}$
 $x + y = 8$

x	y
6	2
2	6
3	5
5	3
4	4

b) Sal $\rightarrow 5$
Al $\rightarrow 3$

$$(5) \quad x + y = 7$$

a)

x	y
6	1
1	6
2	5
5	2

b)

x	y	(x, y)
4	3	(4, 3)
3	4	(3, 4)
2	5	(2, 5)
1	6	(1, 6)
0	7	(0, 7)
-1	8	(-1, 8)

$$\begin{aligned}
 4 + y &= 7 \\
 3 + y &= 7 \\
 2 + y &= 7 \\
 1 + y &= 7 \\
 0 + y &= 7 \\
 -1 + y &= 7
 \end{aligned}$$