1) Try solving the following linear systems by graphing, and by using algebra. Is it possible to find the solution using both methods?

a) $y = x + 9$
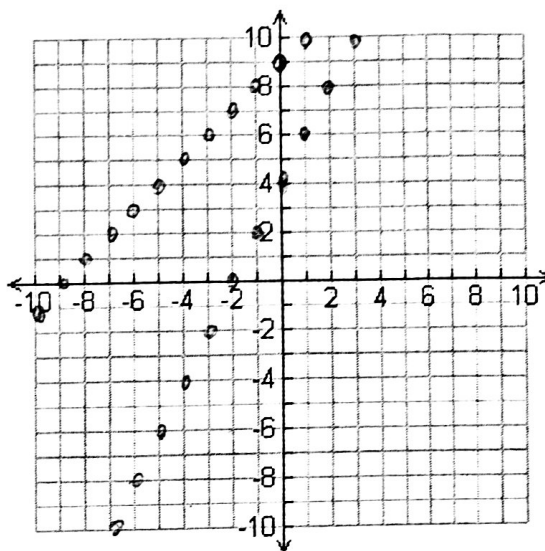
slope = $1/1$ y-intercept = 9

$y = 2x + 4$

slope = $2/1$ y-intercept = 4

| $y = x + 9$ ① |
| $y = 2x + 4$ ② |

1) Set the equations equal, and solve for "x"	2) Sub your value for "x" into either equation
$x + 9 = 2x + 4$ $-2x \qquad -2x$ _____ $-1x + 9 = 4$ $\qquad -9 \quad -9$ _____ $-1x = -5$ $\boxed{x = 5}$	$y = 5 + 9$ $\boxed{y = 14}$

Point of Intersection = (5 , 14)

2) Consider the following relation. Complete the table of values by determining x and y values that add to 7, and then plot each point. What do you notice? Mr. Smith will do the key idea with you later.

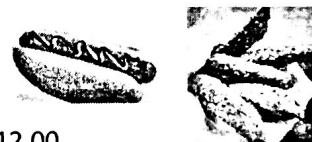| Relation: $x + y = 7$	
Rule:	
"x and y add to 7"	
x	y
3	4
1	6
2	5
0	7
4	3
6	1
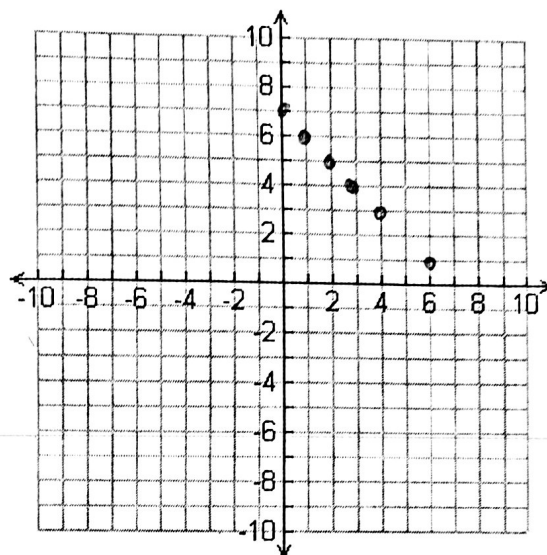
KEY IDEA: Graphs of Relations of the form $\#x + \#y = \#$ produce lines too.

3) Motivation for today's lesson:

At a hockey game, two of your friends come back with some food:

- Asher has 1 hotdog, and 2 orders of deep fried pickles. It cost him $12.00.
- Bryden has 1 hotdog, and 1 order of deep fried pickles. It cost him $8.50.

This situation can be modeled with two linear relations:

$$d + 2p = 12.00$$

$$d + p = 8.50$$

You are hungry, but you want to figure out how much these things cost individually.

What is the price of one hotdog? What is the price of one order of deep fried pickles? Try and figure it out... Mr. Smith will show you an algebraic way to do it later!