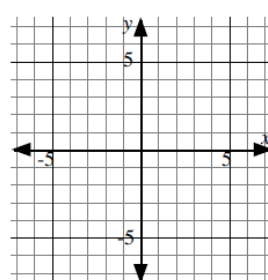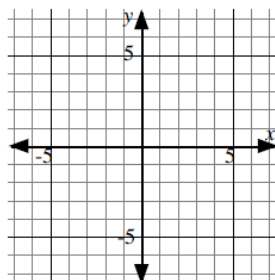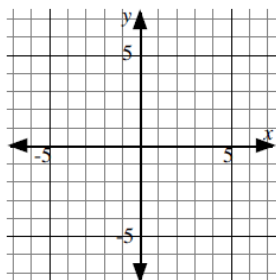# Lesson 7.5 – Properties of Linear Systems

So far we have only worked with linear systems that have one solution (one point of intersection).

Work in groups of 2 or 3. Graph each of the following linear systems.

a) $-2x + y = 2$
$2x + y = 2$

b)) $-2x + y = 2$
$-2x + y = 4$

c)) $-2x + y = 2$
$-4x + 2y = 4$

How many solutions does each linear system have?

Graphs of Lines	Slopes	Intercepts	Number of Solutions
Intersecting	Different	Different	**ONE**
Parallel	Same	Different	**NONE**
Coincident	Same	Same	**INIFINITELY MANY**

Practice:
1. Use the table to determine the number of solutions of each linear system.

a) $x + y = -2$
$-2x - 2y = 4$

b) $4x + 6y = -10$
$-2x - y = -1$

c) $3x + y = -1$
$-6x - 2y = 12$

d) $x + y = 3$
$-2x - y = -2$

e) $4x + 6y = -10$
$-2x - 3y = 5$

f) $2x - 4y = -1$
$3x - 6y = 2$

2. Given the equation $-2x + y = 4$, write another linear equation that will form a linear system with:
   a) exactly 1 solution
   b) no solution
   c) infinite solutions

Problem Solving: Determine how many solutions each linear system has.
1. Nadine has a cup of nickels and a cup of dimes. The total number of coins is 300 and their value is $23.25. How many coins are in each cup?

2. Prana has a savings account and a chequing account with a total balance of $85. His parents doubled the amount in each account and the new total balance is $170. How much money does Prana have in each account?