Linear Systems

Key Ideas:

1. **Types of Systems**

    - **independent (different slopes, one solution – a point)**
    - **inconsistent (same slope, different y-intercept - no solution)**
    - **dependent (same slope and y-intercept - infinite solutions)**

2. **Solving Systems**

    - **graphing**
    - **substitution strategy (isolate a variable)**
    - **elimination strategy (cancel out one of the variables)**

3. **Word Problems**

    - **write 2 equations (system) and solve**

*Note: Watch your positive and negative signs!!

1. State the **_type of system_**:

    a) $x + y = 3$ b) $3x + y = 9$
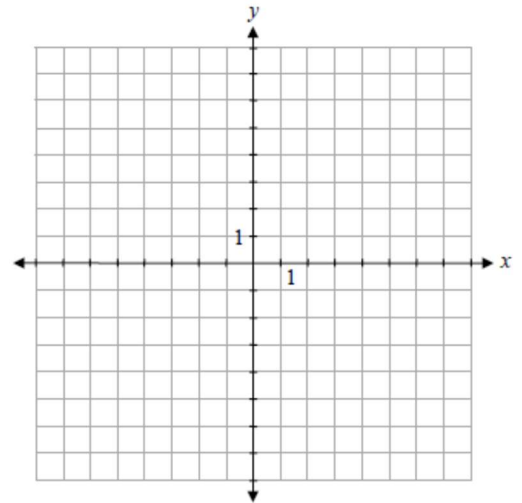 $-2x - y = 2$ $6x + 2y = 12$

2. Determine whether the point is a solution to the system.

a) $-3x + 2y = 8;\ (-4, -2)$
   $x + 2y = -8$

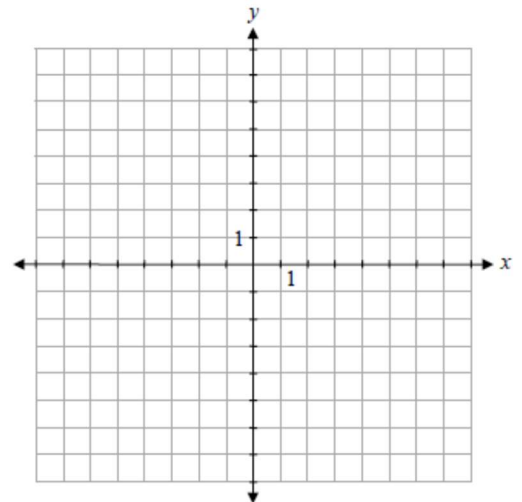b) $x - 2y = 4;\ (-2, 1)$
   $3x + y = 5$

3. Solve by **graphing**. What type of system is it?

$x - y = 3$
$4x + 5y = 30$

4. Solve by graphing. What type of system is it?

$2y + x - 4 = 0$
$2y = -x + 4$

5. Solve by **substitution**:

   $2x + 3y = 11$
   $4x - y = -13$

6. Solve by **substitution**:

   $-7x - 2y = -13$
   $x - 2y = 11$

7. Solve by **elimination**:

   $5x + 4y = -30$
   $3x - 9y = -18$

8. Solve by **elimination**:

$2x + 3y = 6$
$5x + 10y = 20$

9. Edward has a jar containing **nickels** and **dimes**. The **total number** of coins is 300, and their **value** is $23.25. How many of each coin is in the jar?

10. Castel and Gabriella are selling pies for a school fundraiser. Customers can buy apple pies and lemon meringue pies. Castel sold 6 apple pies and 4 lemon meringue pies for a total of $80. Gabriella sold 6 apple pies and 5 lemon meringue pies for a total of $94. What is the cost each of one apple pie and one lemon meringue pie?