Algebra I - 6-1 VIDEO NOTES   Name_____

6.1 Solving Systems by Graphing

Objectives: To solve systems by graphing
           To analyze special types of systems
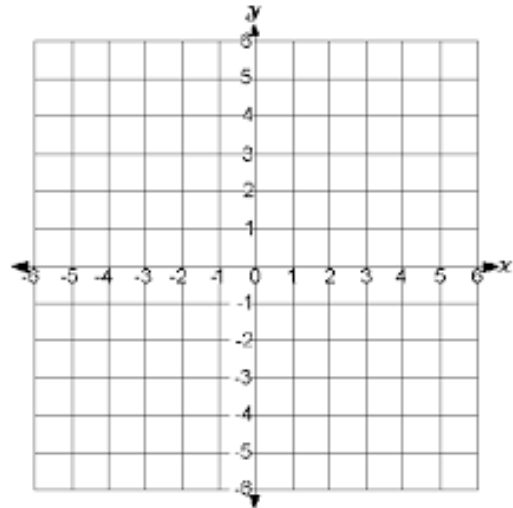   Apply a system to find the solution to a problem and interpret the solution

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DEFINITIONS:

System of Linear Equations: _____

Solution of a system of linear equations:_____

Problem 1: What is a solution of the system? Use a graph.

$$\begin{cases} y = x + 2 \\ y = 3x - 2 \end{cases}$$

Problem 2: Writing a System of Equations

Scientists studied the weights of two alligators over a period of 12 months. The initial weight and growth rate of each alligator are shown below. After how many months did the alligators weigh the same amount?

ALLIGATOR 1
Initial Weight: 4 lb
Rate of Growth: 1.5 lb per month

ALLIGATOR 2
Initial Weight: 6 lb
Rate of Growth: 1lb per month

a. Define the variables.

Let t = _____

w = _____

b. Write a system of two equations.

c. Graph the system and solve.
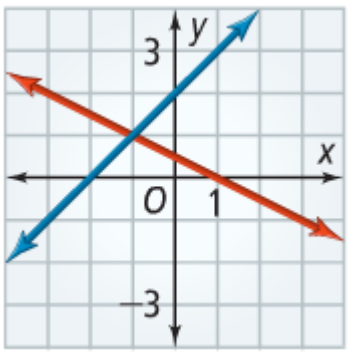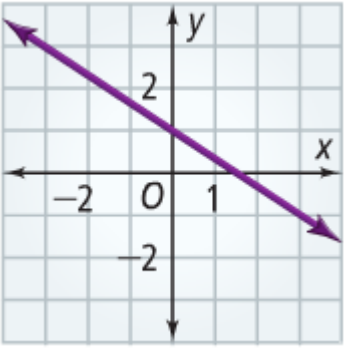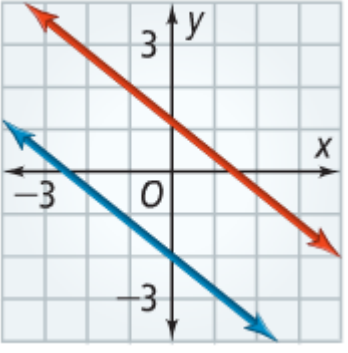
Alligator Weights

MORE DEFINITIONS

A system can either be consistent (has an answer) or inconsistent (doesn't have an answer).
If a system is consistent it will be either independent (only 1 answer) or dependent (infinite
answers).

1. **CONSISTENT** – the system has a solution

      a) **INDEPENDENT** – the system has *ONE* solution
        or
      b) **DEPENDENT** – the system has *INFINITE* solutions

2. **INCONSISTENT** – the system has *NO* solutions

3 Possible Solutions to a LINEAR system:

Graphic Solution			
Number of Solutions	1 solution	Infinite solutions	No solutions
Algebraic Solution	The solution is where the lines cross **(x, y).** In the example above, the solution is (-1, 1)	These lines are the same line so they have every point in common, so there are **infinite solutions**.	These lines are parallel and don't have any points in common, so there is **no solution**.
Type of Solution	**CONSISTENT** - **INDEPENDENT**	**CONSISTENT** - **DEPENDENT**	**INCONSISTENT**

Problem 3: What is the solution of each system? Use a graph.

a. $\begin{cases} 2y - x = 2 \\ y = \dfrac{1}{2}x + 1 \end{cases}$
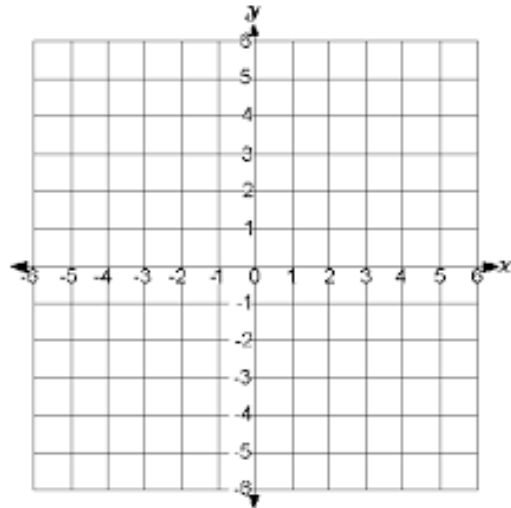
b. $\begin{cases} y = 2x + 2 \\ y = 2x - 1 \end{cases}$
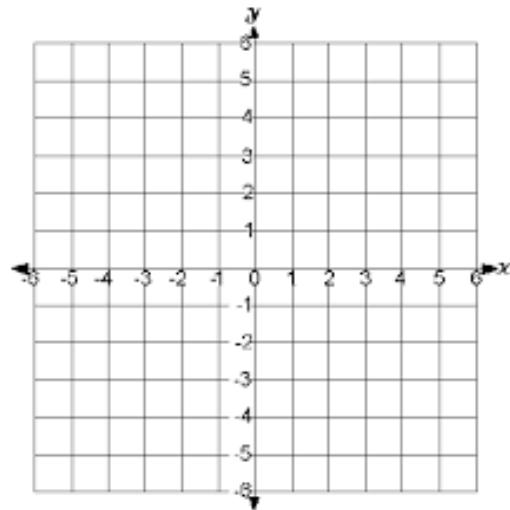
<u>DON'T DO THE LESSON CHECK AT THE VERY END OF THE VIDEO</u>