Skill check

Solve:

$4x - 2(3x + 1) = 16$

chapter 5-1
Solving system of linear Equations:

Vocab:

1.) Systems of linear equations:

is a set of two or more linear equations in the same variable

$y = x + 1$
$y = 2x - 7$

2.) Solution of a system of linear equations

in two variables is an ordered pair that is a solution of each equation in the system.

Example 1:
Solving a System on linear Equations by graphing:

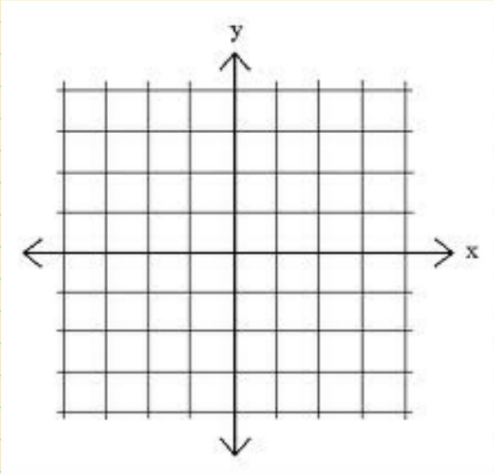
$y = 2x + 5$
$y = -4x - 1$

**1.) rewrite in slope intercept form.**

**2.) Graph the lines**

**3.) Estimate the point of intersection**

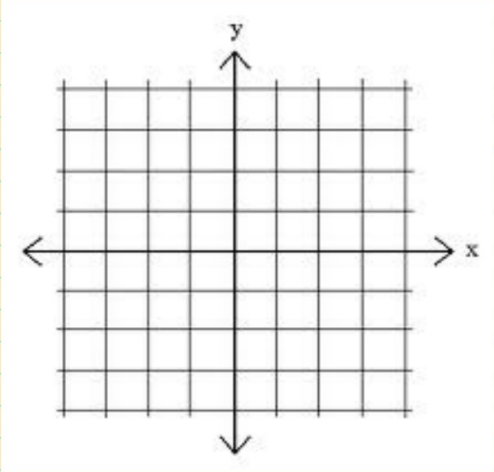
**4.) Check by substituting for x and y in the original system.**




Practice

1.) $y = x - 1$
$y = -x + 3$

2.) $y = -5x + 14$
$y = x - 10$

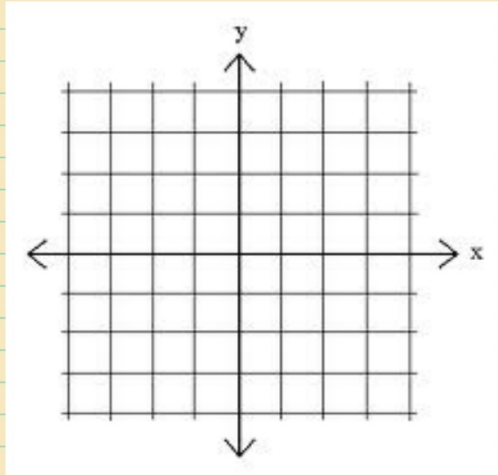


## Practice:

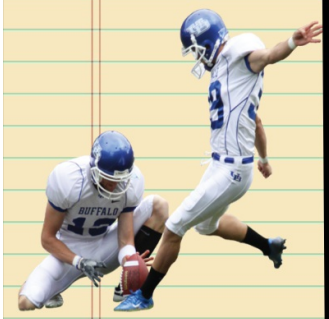
1.) $y = -4x - 7$
$x + y = 2$

2.) $x - y = 5$
$-3x + y = -1$

3.) $\frac{1}{2}x + y = -6$
$6x + 2y = 8$




## Example 2



**A kicker on a football team scores 1 point for making an extra point and 3 points for making a field goal. The kicker makes a total of 8 extra points and field goals in a game and scores 12 points. Write and solve a system of linear equations to find the number $x$ of extra points and the number $y$ of field goals.**

Use a verbal model to write a system of linear equations.

| Number of extra points, $x$ | + | Number of field goals, $y$ | = | Total number of kicks |
|---|---|---|---|---|

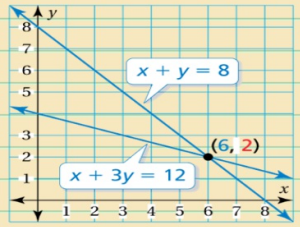
| Points per extra point | • | Number of extra points, $x$ | + | Points per field goal | • | Number of field goals, $y$ | = | Total number of points |
|---|---|---|---|---|---|---|---|---|

The system is: $x + y = 8$ Equation 1
$x + 3y = 12$ Equation 2

**Step 1:** Graph each equation.

**Step 2:** Estimate the point of intersection. The graphs appear to intersect at (6, 2).

**Step 3:** Check your point from Step 2.

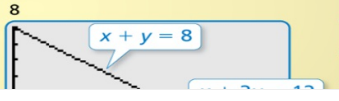



Equation 1: $x + y = 8$
$6 + 2 \stackrel{?}{=} 8$
$8 = 8$ ✓

Equation 2: $x + 3y = 12$
$6 + 3(2) \stackrel{?}{=} 12$
$12 = 12$ ✓

∴ The solution is (6, 2). So, the kicker made 6 extra points and

**Check**



**16. CARRIAGE RIDES** The cost $C$ (in dollars) for the care and maintenance of a horse and carriage is $C = 15x + 2000$, where $x$ is the number of rides.

**a.** Write an equation for the revenue $R$ in terms of the number of rides.

**b.** How many rides are needed to break even?


| Today, how did you learn to solve a system of linear equations? | EQ:<br>Answer |
| --- | --- |
| Example | Solve: |

**Phone call:** Write a brief script for a phone conversation with a friend who was not in class today. Explain what a system of linear equations is and how you solve a system of linear equations.