NAME: _____ PERIOD: _____ DATE: _____

Homework Problem Set

Solve each system by graphing, and then check your answer.

1. $\begin{cases} y = 4x - 1 \\ y = -\frac{1}{2}x + 8 \end{cases}$ Solution: $(2, 7)$
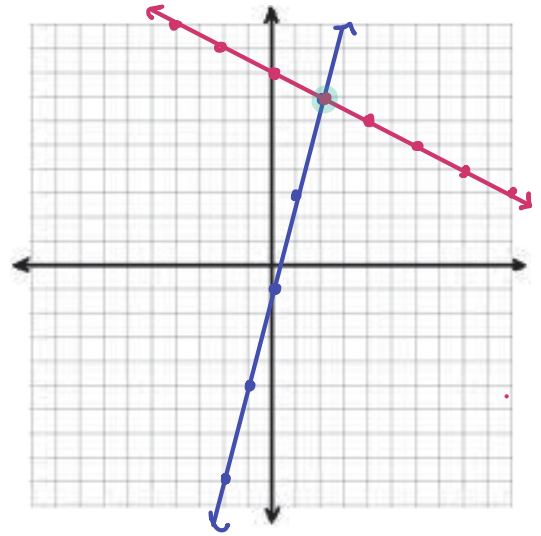
$y = 4x - 1$
$m = \frac{4}{1}$
$b = -1$

$y = -\frac{1}{2}x + 8$
$m = -\frac{1}{2}$
$b = 8$

2. $\begin{cases} 2x + y = 4 \\ 2x + y = 9 \end{cases}$ Solution: NO SOLUTION (parallel lines)

$2x + y = 4$
$y = -2x + 4$
$m = -2$
$b = 4$
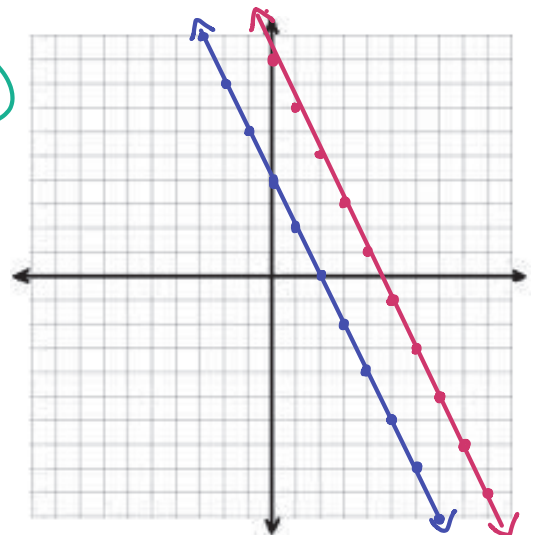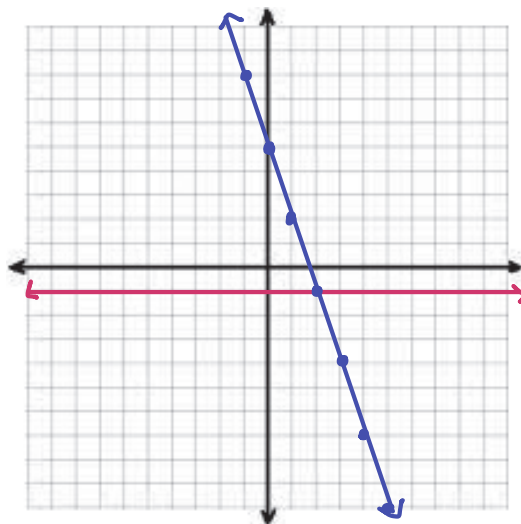
$2x + y = 9$
$y = -2x + 9$
$m = -2$
$b = 9$

3. $\begin{cases} 3x + y = 5 \\ y = -1 \end{cases}$ Solution: $(2, -1)$
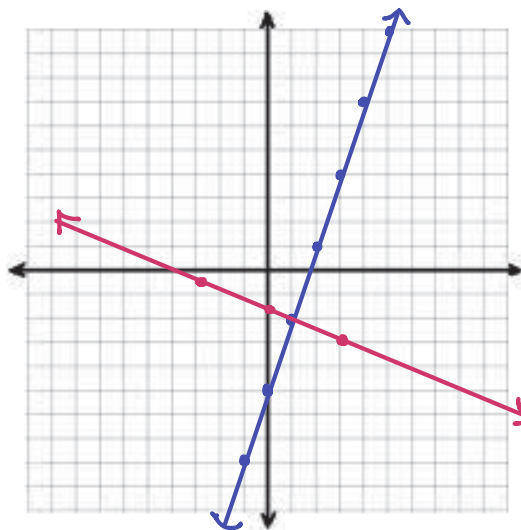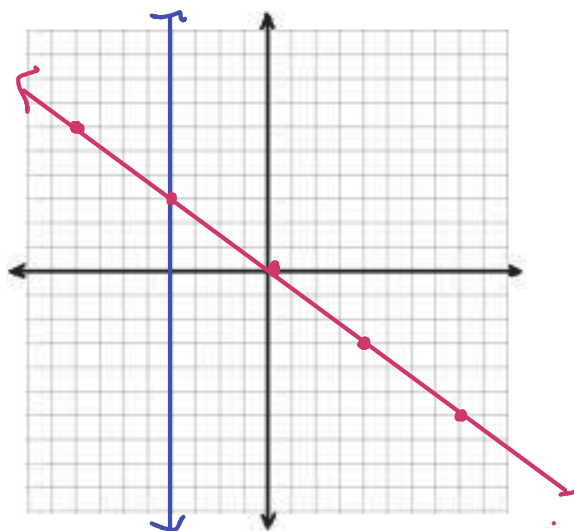
$3x + y = 5$
$y = -3x + 5$
$m = -3$
$b = 5$

4. $\begin{cases} 3x - y = 5 \\ x + 3y = -5 \end{cases}$ Solution: $(1, -2)$

$3x - y = 5$
$-3x \qquad -3x$
$\overline{}$
$-y = -3x + 5$
$\dfrac{-y}{-1} = \dfrac{-3x}{-1} \dfrac{+5}{-1}$
$y = 3x - 5$
$m = 3$
$b = -5$

$x + 3y = -5$
$-x \qquad\qquad -x$
$\overline{}$
$\dfrac{3y}{3} = \dfrac{-x}{3} \dfrac{-5}{3}$
$y = -\dfrac{1}{3}x - \dfrac{5}{3}$
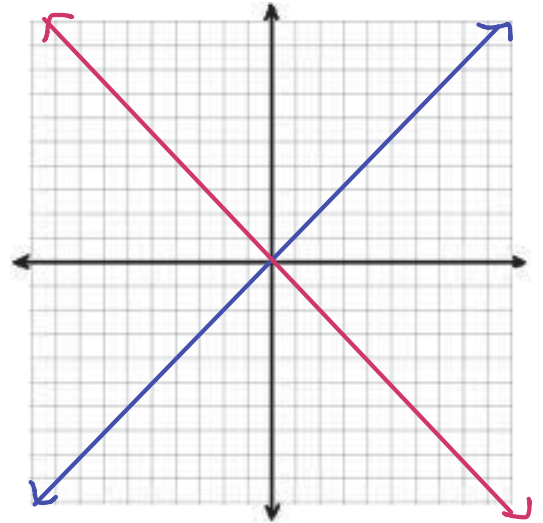$m = \dfrac{1}{3}$
$b = -\dfrac{5}{3}$

5. $\begin{cases} x = -4 \\ y = -\dfrac{3}{4}x \end{cases}$ Solution: $(-4, 3)$

6. $\begin{cases} y = x \\ y = -x \end{cases}$ Solution: _(0, 0)_

7. For each question below, provide an explanation or an example to support your claim.

   A. Is it possible to have a system of linear equations that has no solution?

   yes, the equations have the same slope and different y-intercepts. Lines are parallel

   B. Is it possible to have a system of linear equations that has more than one solution?

   yes, infinite solutions. Equations have same slope & y-intercept. Lines overlap

8. Construct a system of two linear equations where (0, 6) is a solution to the first equation but is not a solution to the second equation, and (−2, 1) is a solution to the system.

possible answer:

$(0, 6) \rightarrow y = 6$

$(-2, 1) \rightarrow 2x - 4y = -4$

9. For the situation below, determine which system of equations fits the scenario.

> At Melissa's Printing Company there are two kinds of printing presses. Model A can print 70 books per day and Model B can print 55 books per day. The company owns 14 total printing presses and this allows them to print 905 books per day. How many of each type of press do they have?
>
> Let x = the number of presses that can print 70 books per day
>
> Let y = the number of presses that can print 55 books per day

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A. $x + y = 905$
    $70x + 55y = 14$

B. $x + y = 905$
    $70x + 55y = 905$

C. $x + y = 14$
    $70x + 55y = 905$

REVIEW—Evaluate Expressions

Evaluate each expression by substituting the given values for the variables.

$$a = 3, b = -2, c = 0, d = \frac{1}{2}$$

10. $-a + b - c \cdot d$

$-3 + (-2) - (0) \cdot \frac{1}{2}$

$-3 + -2 - 0$

$\boxed{-5}$

11. $5b + 2a - 4d + c$

$5(-2) + 2(3) - 4\left(\frac{1}{2}\right) + 0$

$-10 + 6 - 2$

$\boxed{-6}$

12. $15c \cdot d - a \cdot b$

$15(0) \cdot \frac{1}{2} - 3 \cdot (-2)$

$0 + 6$

$\boxed{6}$

13. $a \cdot b \cdot d + 5a$

$3 \cdot (-2)\left(\frac{1}{2}\right) + 5(3)$

$-3 + 15$

$\boxed{12}$