Perform the indicated operation and reduce your answer, if possible.

$\frac{4}{4}$ 1. $\frac{2}{3} + \frac{1}{4} \cdot \frac{3}{3}$

$\frac{8}{12} + \frac{3}{12} = \frac{11}{12}$

$\frac{2}{2}$ 2. $\frac{2}{5} - \frac{3}{10}$

$\frac{4}{10} - \frac{3}{10} = \frac{1}{10}$

3. $\frac{7}{8} \cdot \frac{4}{3} = \frac{2\cancel{8}}{24} \overset{\div 4}{=} \frac{7}{6}$

4. $\frac{5}{3} \div \frac{15}{2} = \frac{5}{3} \cdot \frac{2}{15} = \frac{10}{45}$

$= \frac{2}{9}$

$\frac{2}{2}$ 5. $\frac{1}{3} + \frac{5}{6} = \frac{2}{6} + \frac{5}{6}$

$= \frac{7}{6}$

6. $\frac{7}{8} - \frac{1}{2} \cdot \frac{4}{4} = \frac{7}{8} - \frac{4}{8} = \frac{3}{8}$

7. $\frac{2}{7} \cdot \frac{3}{4} = \frac{6}{28} = \frac{3}{14}$

8. $\frac{1}{6} \div \frac{2}{3} = \frac{1}{6} \cdot \frac{3}{2} = \frac{3}{12}$

$= \frac{1}{4}$

$\frac{6}{6}$ 9. $\frac{1}{2} + \frac{3}{4} - \frac{2}{3} \cdot \frac{4}{4}$

$\frac{6}{12} + \frac{9}{12} - \frac{8}{12} = \frac{7}{12}$

Find the slope of the line crossing through the two points. Slope formula: $\frac{y_2 - y_1}{x_2 - x_1}$ **given** (x_1, y_1) & (x_2, y_2)

$\overset{x_1 \ y_1 \quad x_2 \ y_2}{}$

10. $(8, -4)$ & $(3, 5)$

$\frac{5 - -4}{3 - 8} = \frac{9}{-5}$

11. $(4, -15)$ & $(-6, -11)$

$\frac{-11 - -15}{-6 - 4} = \frac{4}{-10} = -\frac{2}{5}$

12. $(12, 7)$ & $(12, -3)$

$\frac{-3 - 7}{12 - 12} = \frac{-10}{0}$

undefined. NOT 0!

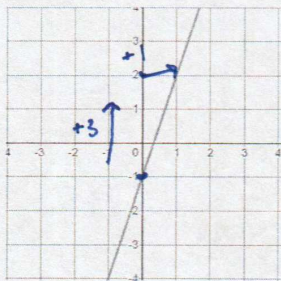**Given the equation of the line in slope-intercept form, state the slope.**

13. $y = \frac{1}{2}x - 4$

$m = \frac{1}{2}$

14. $y = -3x + \frac{4}{5}$
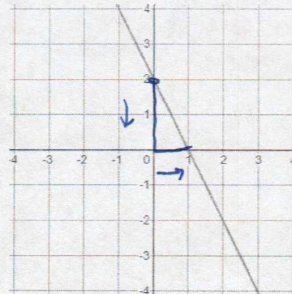
$m = -3$

15. $y = 0.01x + 34.85$

$m = 0.01$

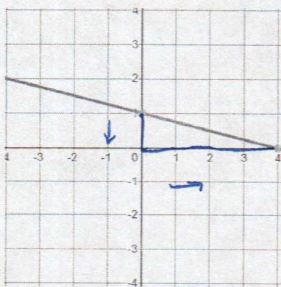**Look at the following graphs and determine the slopes of the lines.**
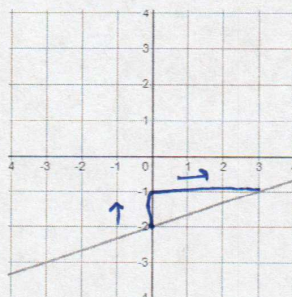
16.

$\frac{3}{1} = 3$

17.

$\frac{-2}{1} = -2$

18.

$\frac{-1}{4}$

19.
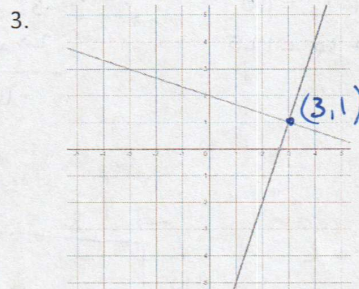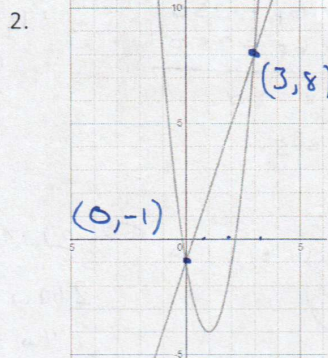

$\frac{1}{3}$

NAME___Key___

State the solution(s) to the systems of equations graphed below.

1.

$(3,2)$

2.

$(3,8)$

$(0,-1)$

3.

$(3,1)$
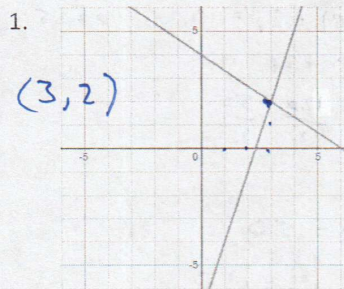
Solve the following systems of equations. Use whichever method you would like, though I will put them in groups based on which way I recommend you solve them.

Recommended Method: Substitution

4. $4x - y = 8$; $y = 4x + 3$

$4x - (4x+3) = 8$

$4x - 4x - 13 = 8$

$-3 = 8$ NOT True

No Solutions

5. $5x + y = 10$; $y = 5$

$5x + 5 = 10$
$ -5 \quad -5$

$\dfrac{5x}{5} = \dfrac{5}{5}$

$x = 1$

$(1, 5)$

Recommended Method: Elimination

6. $\left(x + 6y = 1\right) \cdot 2$

$-2x - 11y = -4$
$2x + 12y = 2$
_____
$y = -2$

$x + 6(-2) = 1$
$ x - 12 = 1 \quad x = 13$

$(13, -2)$

7. $\left(2x - 3y = -3\right) \cdot 3$

$-6x + 10y = 8$
$6x - 9y = -9$
_____
$y = -1$

$(-3, -1)$

$2x - 3(-1) = -3$
$2x + 3 = -3$
$ -3 \quad -3$
$\dfrac{2x}{2} = \dfrac{-6}{2}$
$x = -3$

8. $x + 3y = -2$

$-x - 2y = 4$
_____
$y = 2$

$x + 3(2) = -2$
$x + 6 = -2$
$ -6 \quad -6$

$x = -8$

$(-8, 2)$

Set up a system of equations for the following word problems and solve using any method.

9. A karate school offers a package of 12 group lessons and 2 private lessons for $110. It also offers a package of 10 group lessons and 3 private lessons for $125. How much does a single group lesson and a single private lesson cost?
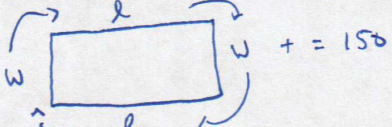
$-3(12g + 2p = 110)$ → $-36g - 6p = -330$ $12(5) + 2p = 110$ $p = 25$
$2(10g + 3p = 125)$ $20g + 6p = 250$ $60 + 2p = 110$
                                      $-16g = -80$ $\frac{2p}{2} = \frac{50}{2}$
                                         $g = 5$

10. A swimming pool is twice as long as it is wide. Its perimeter is 150 feet. Find the length and width of the pool.

$2w = l$

width: 25

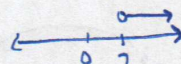length: 50

$2l + 2w = 150$
$2(2w) + 2w = 150$
$4w + 2w = 150$
$6w = 150$
$w = 25$
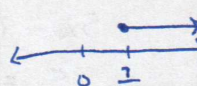
Solving Linear Inequalities. Graph the solution set on a number line.

11. $2x > 14$ $x > 7$
    $\frac{2x}{2}$ $\frac{14}{2}$
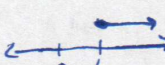
12. $4(2x - 1) \geq 3(2x + 1)$ $2x \geq 7$
    $8x - 4 \geq 6x + 3$
    $-6x + 4$ $-6x + 4$ $x \geq 7/2$
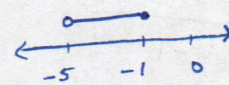
13. $10 - 3x \leq -8$
    -10 -10 $x \geq 6$
       $-3x \leq -18$

Compound Inequalities. Graph the solution set on a number line.
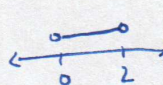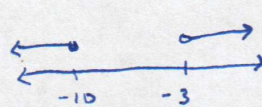
14. $8 \leq 3 - 5x < 28$
    -3 -3 -3 $-1 \geq x > -5$
    $\frac{5}{-5} \leq \frac{-5x}{-5} < \frac{25}{-5}$

15. $0 < 2x < 4$
    $\frac{0}{2}$ $\frac{2x}{2}$ $\frac{4}{2}$
    $0 < x < 2$

16. $2x - 7 > -13$ or $x + 15 \leq 5$
    $+7$ $+7$ -15 -15
    $2x > -6$ $x \leq -10$
    $x > -3$ or

17. $x + 7 \geq -29$ or $16 - x > 2$
    -7 -7 -16 -16
    $x \geq -36$ $-x > -14$ $x \geq -36$ or $x < 14$
                    $\frac{-x}{-1} > \frac{-14}{-1}$