End-of-Unit Test **Name:** ____KEY_____

1. Find the equation of the line parallel to $7x-6y=13$ that passes through the point (-42, -51). Express your answer in Slope-Intercept Form. Show your work!

$$-6y = 13 - 7x$$
$$y = \frac{7}{6}x - \frac{13}{6}$$
$$If\ lines\ are\ parallel, then\ they\ have\ the\ same\ slope, which\ is\ m = \frac{7}{6}$$
$$y + 51 = \frac{7}{6}(x + 42)$$
$$y + 51 = \frac{7}{6}x + 49$$
$$\boldsymbol{y = \frac{7}{6}x - 2}$$

2. Find the equation of the line perpendicular to $3x+8y=-15$ that passes through (-9, 14). Express your answer in Point-Slope Form. Show your work!

$$8y = -15 - 3x$$
$$y = -\frac{3}{8}x - \frac{15}{8}$$
$$If\ two\ lines\ are\ perpindicular, their\ slopes\ are\ negative\ reciporcals\ of\ one\ another.$$
$$m = \frac{8}{3}$$
$$\boldsymbol{y - 14 = \frac{8}{3}(x + 9)}$$

3. Find the equation of the line parallel to the line $y=6$ that passes through (-5, 2).

$$The\ line\ y = 6\ has\ a\ slope\ of\ zero.$$
$$So, y = 0x + (y - inercept)$$
$$The\ y - inertcept = 2\ based\ on\ the\ point\ (-5,2)$$
$$Therefore\ the\ parallel\ line\ to\ y = 6\ is\ \boldsymbol{y = 2}.$$

4. Find the equation of the line perpendicular to the line $y = -1$ that passes though (7, 3).

The line $y = -1$ *has a slope of zero and is horizontal.*
Therefore, a line which is perpindicular to a horizontal line is a vertical line, which has an undefined slope.
Because the vertical line passes through (7,3),
The equation for the line is $\boldsymbol{x = 7}$

5. Determine whether each of the relations below is a function and then, using proper set notation, state its domain and range.

(A) {(1, 7), (2, 5), (4, 5), (6, 6)}
Function

Domain: {1,2,4,6}

Range: {7,5,6}

(B) {(,), (,), (,)}
Not a Funciton

Domain: {}

Range: {}

(C) {(2, 8), (3, 10), (2, 5), (6, 17)}
Not a Function

Domain: {2,3,6}

Range: {8,10,5,17}

6. *y* varies directly as *x*. If *y* is 30 when *x* is 0.6, ...

(A) find the constant of direct variation, *k*. Show some work!	(B) write an equation of direct variation in the form *y* = *kx*.	(C) find *y* when *x* is 20. Show your work!
$y = kx$ $30 = k(0.6)$ $k = \frac{30}{0.6}$ $\boldsymbol{k = 50}$	$\boldsymbol{y = 50x}$	$y = 50(20)$ $\boldsymbol{y = 100}$

7. Show your work as you find the slope of the line that passes through the following points:

(A) (8, -13) and (2, -6)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-6 + 13}{2 - 8} = -\frac{\mathbf{7}}{\mathbf{4}}$$

(B) (9, 6) and (-5, 3)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3 - 6}{-5 - 9} = -\frac{3}{-14} = \frac{\mathbf{3}}{\mathbf{14}}$$

8. Determine whether each statement is true or false. Write the entire word, not simply "T" or "F".

_____F_____When read from left to right, a line with a positive slope will be decreasing.

_____T_____ The slope of any horizontal line is zero.

_____F_____ It is impossible for the slope of a line to be undefined.

_____F_____ When read from left to right, the line $y = \frac{1}{3}x$ increases more quickly than the line $y = \frac{1}{2}x$.

5. Match each term with its correct formula.

__(D)__ Slope-Intercept Form	(A) $y = b$
__(C)___ Vertical Line	(B) $y - y_0 = m(x - x_0)$
__(E)___ Standard Form	(C) $x = a$
__(B)___ Point-Slope Form	(D) $y = mx + b$
__(A)___ Horizontal Line	(E) $Ax + By = C$

6. Write the equation of the line (in Slope-Intercept Form) that passes through the points (8, -3) and (16, 4). Show your work!

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4 + 3}{16 - 8} = \frac{7}{8}$$
$$y - 4 = \frac{7}{8}(x - 16)$$
$$y - 4 = \frac{7}{8}x - 14$$
$$\boldsymbol{y = \frac{7}{8}x - 10}$$

7. Write the equation of the line (in Point-Slope Form) that passes through the points (-4, -3) and (-8, -9). Show your work!

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-9 + 3}{-8 + 4} = -\frac{6}{-4} = \frac{3}{2}$$
$$\boldsymbol{y + 3 = \frac{3}{2}(x + 4)}$$

8. Find the *x* and *y* intercepts of the line $-3x + 5y = -60$. Show your work! You can express your final answer as either a single number or an ordered pair.

$$For\ the\ equation\ above, when\ x = 0, y = -12\ and\ when\ y = 0, x = 20.$$
$$5y = 3x - 60$$
$$y = \frac{3}{5}x - 12$$
$$So, m = \frac{3}{5}, and\ if\ x = 5, then\ y = -9\ so\ the\ point\ (5, -9) is\ on\ the\ line.$$

$$\boldsymbol{y + 9 = \frac{3}{5}(x - 5}$$

x – intercept: 20 y – intercept: -12

9. Convert the equation $y-8=-3(x+5)$ from Point-Slope Form to Slope-Intercept Form. Show your work!

$$y - 8 = -3x - 15$$
$$\boldsymbol{y = -3x - 7}$$

10. Using the rectangular coordinate system below, graph each of the linear equations. Write each equation beside its corresponding graph.

$y=-5x+7$ $2x-4y=16$ $y=-5$ $y-5=\frac{1}{6}(x+4)$ $x=8$