Linear Quiz 2 Review Homework   Name **Key**

Be able to know and interpret the three types of Linear Equations.

1) What is slope intercept form? How do you graph from slope intercept form?

$$y = mx + b$$ find the slope (m)
find the y-intercept (b)

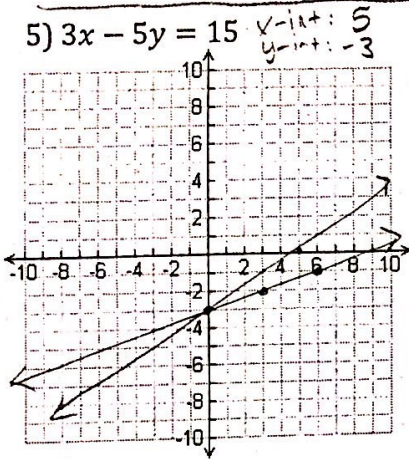2) What is standard form? How do you graph from standard form?

$$Ax + By = C$$ find the x + y intercepts

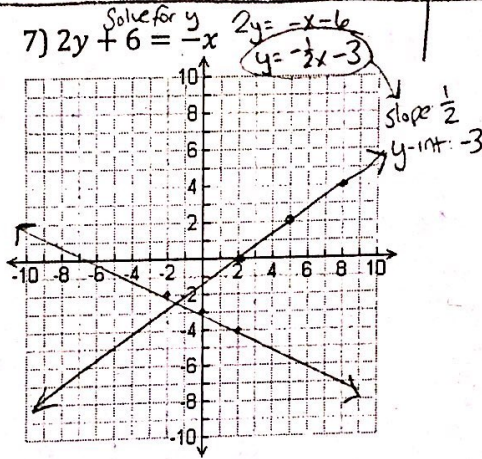3) What is point slope form? How do you graph from point slope form?

$$y - y_1 = m(x - x_1)$$ Use the point (x_1, y_1)
use the slope (m)
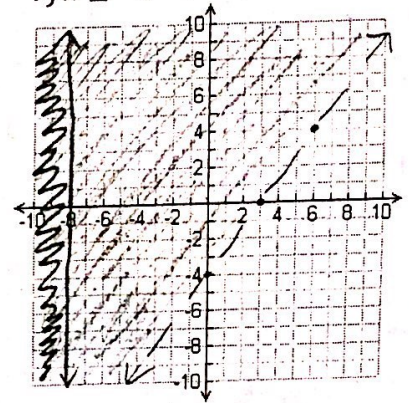
Be able to graph linear equations and inequalities.

4) $y = \frac{1}{3}x - 3$ slope: $\frac{1}{3}$ y-intercept: -3

6) $y - 2 = \frac{2}{3}(x - 5)$ Point: (5,2) Slope: $\frac{2}{3}$
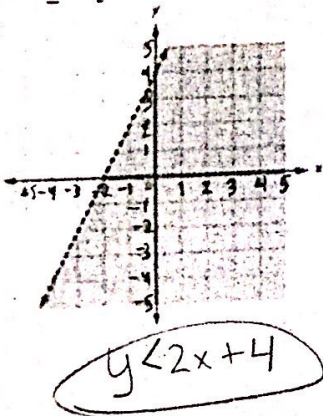
8) $y > \frac{4}{3}x - 4$

5) $3x - 5y = 15$ x-int: 5   y-int: -3

7) $2y + 6 = -x$ Solve for y $2y = -x - 6$ $y = -\frac{1}{2}x - 3$ slope $\frac{1}{2}$ y-int: -3

9) $x \le -8$

Write the linear inequality for each.

10)

$y < 2x + 4$

11)

$y \ge x - 2$
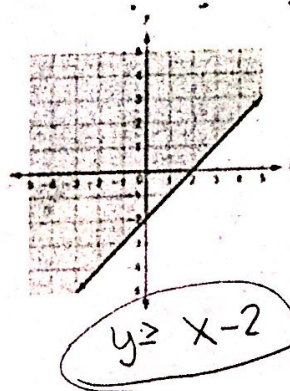
Be able to solve for y to put each in slope intercept form.

12) $5x - 3y = 15$

$$-3y = -5x + 15$$
$$\frac{-3y}{-3} = \frac{-5x + 15}{-3}$$
$$y = \frac{5}{3}x - 5$$

13) $6y - x = 10$

$$\frac{6y = x + 10}{6}$$
$$y = \frac{1}{6}x + \frac{10}{6}$$
$$y = \frac{1}{6}x + \frac{5}{3}$$

14) $7y = -14x + 28$

$$y = -2x + 4$$

Be able to find x and y intercepts from an equation.

15) Jaime bought a jar of 50 vitamins. His two children each take one vitamin each day. The number of vitamins left in the jar after x days is represented by the function $y = 50 - 2x$.

    a. Find the x intercept. What does it mean in terms of the situation?

$$0 = 50 - 2x \qquad -50 = -2x \quad \boxed{25 = x \text{ int}} \qquad \text{After 25 days there will be no more vitamins}$$

    b. Find the y intercept. What does it mean in terms of the situation?

$$50 \text{ is the } y\text{-intercept} \quad \text{At the beginning there were } 50 \text{ vitamins in the jar.}$$

Be able to write an equation in point-slope form.

16) A roller skating rink offers a special rate for birthday parties. On the same day, a party for 10 skaters costs $107 and a party for 15 skaters costs $137.

    a. Write an equation in point-slope form.

$$\boxed{(10, 107) \quad (15, 137)} \qquad \frac{137 - 107}{15 - 10} = \frac{30}{5} = 6$$

$$\boxed{y - 107 = 6(x - 10)} \quad \text{or} \quad \boxed{y - 137 = 6(x - 15)}$$

    b. How much would a party for 12 skaters cost?

$$y - 107 = 6(12 - 10) \rightarrow y = 119$$
$$y - 107 = 6(2)$$
$$y - 107 = 12 \qquad \boxed{\$119}$$

17)   a. Write the equation in point-slope form for the line that passes through $(4, 7)$ and $(5, 1)$

$$\frac{7 - 1}{4 - 5} = \frac{6}{-1} = -6 \qquad \boxed{y - 7 = -6(x - 4)}$$
$$\text{OR}$$
$$y - 1 = -6(x - 5)$$

    b. Solve for y to put this equation in slope-intercept form

$$y - 7 = -6(x - 4)$$
$$y - 7 = -6x + 24$$
$$\boxed{y = -6x + 31}$$

$$100 \overline{)16000} \quad 160 \overline{)16000}$$

Be able to graph a linear inequality and interpret solutions.

18) A local Apple store wants to sell more than $16,000 worth of Airpods (x) and Apple Watches (y). Airpods cost $160 and Apple watches cost $800.

    a. Write a linear inequality for this situation. $\underline{160x + 800y > 16{,}000}$ + Graph the solution.

    b. Find a solution from the graph. What does it mean in the context of the situation? $(100, 18)$

$$\text{If they sell 100 airpods + 18 watches they will make more than \$16,000.}$$

# of Apple Watches (y-axis) vs # of Airpods (x-axis) graph