HOMEWORK: MATH INTERLUDES IX SLOPE-INTERCEPT FORM OF A LINE

Directions: Remember – as always, neatness and completeness count. Also, you must show your work. The correct result without a sufficient amount of correct and appropriate work is worth zero points. Finally, please remember that you will have a cumulative Math Interludes Quiz covering Math Interludes I through X on the day this assignment is due, so be sure to bring your calculator to class (unfortunately, you may not use your phone or any other multi-use device as a calculator on any quiz or exam).

1) For each of the following liner equations, write the equation in slope-intercept from, and then use the slope and y-intercept to graph each equation.





2) Write each equation in slope-intercept form. Identify the slope and y-intercept and then (without actually graphing) determine whether the graphs of the equations would be parallel, perpendicular, or neither.

a) 5y + 7x = 2 and -10x + 14y - 38 = 18

b) -2x + 3y = 27 and 6y = 4x + 24

c) 20 + 5y = 12x and -9.6x + 4y - 6 = 0

3) Find the equation of the line with a slope of -2 and passing through the point (5, -3).

4) Find the equation of the line passing through the points (-5, -8) and (2, 13).

5) Find the equation of the line that passes through the point (8, 9) and is parallel to the line 4y = 5x - 12.

6) Find the equation of the line that passes through the point (-2, 5) and is perpendicular to the line 3y - 2x - 7 = 8.

- 7) For each of the following, identify the slope and y-intercept (including units) and interpret each within the context of the problem. Next find the linear equation relating the variables. Finally use the linear equation to answer the question(s).
 - a) A local gym charges an initial fee of \$150 and \$16 per month. Express the cost of gym membership, y, in terms of the number of months, x.

m =b =

Linear equation:

How much would it cost to be a gym member for 6 months?

b) For your birthday, a friend gave you a \$30 Java Hut card. Java Hut charges \$3.75 per drink for your favorite beverage. If you only buy your favorite beverage, express the amount of money remaining on the card, y, in terms of the number of drinks, x, you purchase with the card.

m =

b =

Linear equation:

If \$18.75 is left on the card, how many drinks have you purchased with the card?

What is the maximum number of drinks you can buy with the card?

- 8) For each of the following, identify a pair of points and then use them to find a linear equation relating the variables. Identify the slope and y-intercept (including units) and interpret each. Finally use the linear equation to answer the question.
 - a) It costs a local skateboard manufacturer \$1500 to make 25 skateboards in the first month of operation, and it costs \$1720 to make 30 boards in the second month of operation. Expresses the local manufacturer's production costs, y, in terms of the number, x, of skateboards made.

Two points:

m =

$$b =$$

Linear equation:

In the third month of operation, the skateboard manufacturer spent \$2,688 in production costs. How many skateboards did the local manufacturer produce?

b) Private dance lessons cost \$405 for a 10-hour course and \$677 for an 18-hour course. Both prices include a fixed insurance fee. Expresses the cost, y, of dance lessons in terms of the length, x (in hours), of the course.

Two points:

m =

b =

Linear equation:

Assuming the same hourly rate, how much would a 12-hour course cost?

Math Interludes VII Homework:

- **2a)** $y = -\frac{7}{5}x + \frac{2}{5}$ $y = \frac{5}{7}x + 4$ perpendicular **2b)** $y = \frac{2}{3}x + 9$ $y = \frac{2}{3}x + 4$ parallel
- **3)** y = -2x + 7 **4)** y = 3x + 7
- 6) $y = -\frac{3}{2}x + 2$

7a)
$$m = \frac{\$16}{\text{month}}, b = \$150$$

 $y = 16x + 150$
\$246 for 6 months

2c) y = 2.4x - 4y = 2.4x + 1.5parallel

5)
$$y = \frac{5}{4}x - 1$$

- **7b)** $m = \frac{-\$3.75}{\text{drink}}, b = \30 y = -3.75x + 303 drinks \$18.75 remains Max # drinks = 8
- 8a)(25, 1500) and (30, 1720)8b)(10, 405) and (18, 677) $m = \frac{$44}{board}, b = 400 $m = \frac{$34}{hr}, b = 65 y = 44x + 400y = 34x + 6552 boards\$473