

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Block: \_\_\_\_\_

Algebra 2 Honors- Week 3 Homework

**Monday-**

Daniel is playing his favorite video game and noticed that the points he earned every minute follow a linear pattern. Here is a table showing his total points for the first several minutes of play.

Minutes: $x$	Points: $f(x)$
0	1550
1	1900
2	2250
3	2600
4	2950

1. Write a function that represents this scenario.
2. After 10 minutes, how many points will he have?
3. If Daniel has 12,050 points, how many minutes has he been playing?

**Tuesday-**

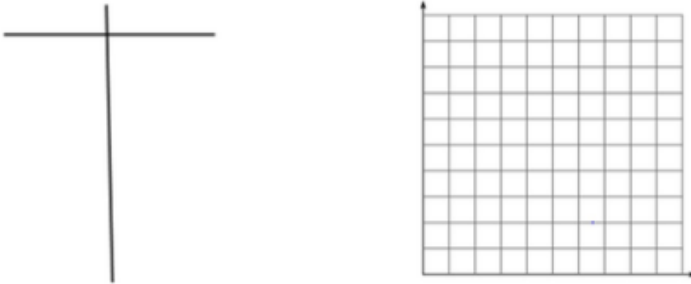
Each of these scenarios represent a linear situation. Find the equation of each in slope-intercept form. For each problem, identify what the slope and the y-intercept mean to the scenario.

1. The length of a person's femur and height are linearly related. One person has a 40 cm femur and is 162 cm tall. Another person has a 45 cm femur and is 173 cm tall.
2. Steven sells vacuums on commission. He made \$235 selling 5 vacuums and \$376 selling 8 vacuums.
3. The Smiths had to have a plumber come out twice this year. The first time he was there for 3 hours and charged them \$196. The second time he was there for 5 hours and charged them \$280.
4. Using a certain calling card, a 5-minute overseas call costs \$5.91 and a 10-minute call costs \$10.86.

**Wednesday-**

Amazon is selling some of its DVDs for \$3. Leah has \$30 that she can spend. Here is a function that models this situation:  $f(x) = 30 - 3x$

1. What does  $x$  represent? What about  $f(x)$ ?
2. Make a table of five values for this function and graph it on the coordinate plane. Include all relevant labels.



3. What is the domain of this function? What does this interval mean to the scenario?
4. What is the range of this function? What does this interval mean to the scenario?
5. What are the x-intercept and the y-intercept? What does each mean to the scenario?

**Thursday-**

**Find the inverse of each function.**

- |                               |                              |
|-------------------------------|------------------------------|
| 1) $g(x) = \frac{x}{3}$       | 2) $f(x) = \frac{-5 + x}{5}$ |
| 3) $g(x) = -5 - \frac{1}{2}x$ | 4) $f(x) = 6x - 3$           |
| 5) $f(x) = 3 + (x - 2)^2$     | 6) $g(x) = -x^3 - 2$         |

**For each situation: a) Write an equation to model the situation, b) Write a function for both variables, c) Explain how the two functions relate to each other and to the scenario.**

- 7) I withdrew \$240 from the bank. I recieved \$20 and \$50 bills.
- 8) John has some ducks and cows. Together, the ducks and cows have 72 legs (no missing or extra legs).

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### Friday-

Here are several systems of equations choose:

- One that is best solved (in your opinion) by graphing.
- One that is best solved (in your opinion) by substitution.
- One that is best solved by elimination (combination).
- One that will have no solution.
- One that will have an infinite number of solutions.

1.  $\begin{cases} x - 5y = 5 \\ x = 6y \end{cases}$

2.  $\begin{cases} 3x + 4y = 4 \\ x - y = 13 \end{cases}$

3.  $\begin{cases} y = 2x - 3 \\ 4x - 2y = 6 \end{cases}$

4.  $\begin{cases} 4x + 3y = -1 \\ 2x + 5y = 12 \end{cases}$

5.  $\begin{cases} x + 5y = 7 \\ 2x + 10y = 12 \end{cases}$

6.  $\begin{cases} 3x + 7y = 15 \\ 2x + 3y = 5 \end{cases}$

Systems of equations are not limited to linear equations. How might you go about solving these systems? Choose one of the three examples below and compare and contrast with the methods for solving linear systems.

7.  $\begin{cases} x^2 + 3y = 13 \\ x^2 - 2y = -2 \end{cases}$

8.  $\begin{cases} |x| + 2y = 4 \\ 2|x| + 4y = -6 \end{cases}$

9.  $\begin{cases} x^2 + y^2 = 20 \\ x = 2y \end{cases}$