Name: _____ Date: _____ Block: ____

Algebra 2 Honors- Week 4 Homework

Monday-
Systems of Equations Word problems: for all problems, define variables, write the system of equations, and solve for all variables.
1. Kristin spent $131 on shirts. Fancy shirts cost $28 and plain shirts cost $15. If she bought a total of 7 shirts then how many of each kind did she buy?
2. Matt and Ming are selling fruit for a school fundraiser. Customers can buy small boxes of oranges and large boxes of oranges. Matt sold 3 small boxes and 14 large boxes of oranges for a total of $203. Ming sold 11 small boxes and 11 large boxes of oranges for a total of $220. Find the cost of one small box of oranges and one large box of oranges.
3. The senior classes at Sumter High School and Crestwood High School planned separate trips to New York City. The senior class at Crestwood High School rented and filled 1 van and 6 buses with 372 students. Sumter High School rented and filled 4 vans and 12 buses with 780 students. Each van and each bus carry the same number of students. How many students can a van carry? How many students can a bus carry?
4. At a college bookstore, Carla purchased a math textbook and a novel that cost a total of $54, not including tax. If the price of the math textbook is $8 more than 3 times the price of the novel. What is the price of the math textbook? What is the price of the novel?

Tuesday- Study for quiz on Wednesday! (Answers are under announcements for algebra 2 honors).

Practice Test for Functions Unit Quiz
Learning Objectives:
A. Model two variable situations.
B. Identify the domain, range, and intercepts of a modeled function.
C. Given one form of a function, equation, graph, or table, find another form.
D. Evaluate a function using function notation.
E. Model a linear function given two points.
F. Identify the rate of change (slope), in a linear function given the equations, graph or table.
G. Find the equation of a line parallel or perpendicular to a given line.
H. Find the inverse of a function.
I. Solve a system of equations.
J. Find the solution to a problem using a system.

Question #	Learning Objective	Know It	Feel Unsure		Right	Wrong	Simple Mistake	Need to Study
1	A							
2	B							
3	C							
4	D							
5	E							
6	F							
7	G							
8	H							
9	I							
10	J							

Name: _____ Date: _____ Block: ____

1. I am 400 miles from my home. I am traveling at an average 60 miles per hour towards my home. Graph this situation.
2. Find the domain, range, and intercepts for the scenario in problem #1. Describe how they relate to the scenario.
3. Write a function based on the scenario in problem #1.
4. A rare species of insect was discovered in the rain forest of Costa Rica. Environmentalists transplant the insect into a protected area. The population of the insects t months after being transplanted is:

   $P(t) = \frac{45(1+0.6t)}{(3+0.02t)}$
   a)What is the population when t = 0?
   b) What will the population be after 10 years?
5. Taking a taxi 3 miles costs $7.75 while going 8 miles costs $10. Write a function to model this situation.
6. Identify the rate of change, slope, of the situation in problem #5. What does this represent to the scenario?
7. Write equations for the remaining sides of a rectangle if one side goes through the line $f(x) = 3x + 10$.
8. The function, $f(x) = 7x + 45$, represents the cost of holding a party at Roaring Springs Water Park given that there is a $45 flat fee and $7 per person. Find the inverse of this function. Describe what the inverse tells us in relationship to the scenario.
9. Solve this system: $\begin{cases} 3x - 5y = 20 \\ 4x + y = 19 \end{cases}$
10. A grain-storage warehouse has a total of 30 bins. Some hold 20 tons of grain each and the rest hold 15 tons each. How many of each type of bin are there if the capacity of the warehouse is 510 tons?

Wednesday-
Quiz Day (No Homework)

Thursday -
Make sure the tortoise and the hare worksheet and graph are finished (provided in class).

🐢 THE TORTOISE AND THE HARE 🐰

THE SCENARIO
The Tortoise and the Hare finally have their long awaited rematch. The Tortoise gets a 1,000 foot lead and runs at 9 inches per second. The Hare begins at the starting line and runs at a rate of 6 feet per second. There is also a rat in this race. The Rat starts 1,200 feet ahead of the Hare and runs back towards the starting line at a rate of 2 feet per second.

THE ASSIGNMENT
Write a story about the race. The story should contain the following events and information in chronological order:

1. When will the Tortoise and Hare pass each other and how far will they be from the starting line?
2. When will the Tortoise and Rat pass each other and how far will they be from the starting line?
3. When will the Rat and Hare pass each other and how far will they be from the starting line?
4. After one minute into the race, how far will each runner be?
5. When will the rat cross the starting line?
6. If the race is a quarter-mile long, who will win and what will be the margin of victory (both time and distance)?

Accompanying your story will be the following:

I. Equations for each of the runners, relating time t to distance from the starting line d.
II. A graph of all three equations on the same coordinate plane, with a domain of $0 \leq t \leq 650$ seconds, and a range of $0 \leq d \leq 1500$ feet. Be sure the graph shows all significant data points.
III. An equation and graph for both the one-minute mark and the finish line.

THE CALCULATIONS
Attach your story and graph. Make sure the story is in chronological order.

Write equations for each of the runners, relating time t to distance from the starting line d. Also, include an equation for both the one minute mark and the finish line.

Tortoise: _____

Hare: _____

Rat: _____

One Minute Mark: _____

Finish Line: _____

1. When will the Tortoise and Hare pass each other and how far will they be from the starting line?

Time: _____ seconds

Distance From Start: _____ feet

🐢 THE TORTOISE AND THE HARE 🐇

2. When will the Tortoise and Rat pass each other and how far will they be from the starting line?

Time: _____ seconds

Distance From Start: _____ feet

3. When will the Rat and Hare pass each other and how far will they be from the starting line?

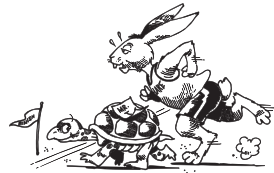Time: _____ seconds

Distance From Start: _____ feet

4. After one minute into the race, how far will each runner be?

Tortoise: _____ feet

Hare: _____ feet

Rat: _____ feet

5. When will the rat cross the starting line?

Time: _____ seconds

6. If the race is a quarter-mile long, who will win, and what will be the margin of victory (both time and distance)?

Winner: _____

Margin of Victory: _____ seconds

_____ feet

Friday- Make sure the tortoise and the hare worksheet and graph are finished (provided in class), along with your story!