**MATH - 092 Supplemental HW – Functions & Linear Functions**

**Due by Friday, February 21**

**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. An airplane cruising at an altitude of 5000 meters begins to descend at a constant rate of 250 meters per minute.
2. Build a table and graph to show the altitude, A, of the airplane as a function of m, the number of minutes it has been descending. Be sure to LABEL your graph correctly and completely.

**TABLE GRAPH**

**m, # of minutes A, altitude (m)**

**0**

**5**

**10**

**15**

**20**

1. Why did I only give you the first quadrant of the coordinate axes with which to show your graph?
2. State each intercept of your graph. (Be sure to state which is which.) Then interpret the practical meaning of each.
3. State and interpret the practical meaning of the slope of your line.
4. Give a point-slope equation for this line.
5. A submarine, cruising 160 meters beneath the surface of the ocean, begins to rise toward the surface at a rate of 12 meters per second.
6. The height of the submarine above the ocean surface, h, is a function of time, t. Write this fact using function notation.
7. Based solely on the statement of this situation, how do you know that this function is linear?
8. Write the slope-intercept form of the equation which models this real-life situation.
9. WITHOUT USING A GRAPH, find the horizontal and vertical intercepts of your function, and interpret the real-life meaning of each.
10. Sketch a graph of this function. Again, be sure to label your axes correctly and completely. (Also, be sure to think about what quadrants “make since” in the context of this real-life problem.)
11. A person in New Hampshire had invited friends over to watch the Maryland-Indiana NCAA Championship Game. She had $24 to spend on soda and chips for the get-together. Suppose a six-pack of soda costs $4 and a bag of chips cost $2. The number of six-packs she can afford, S, is a function of the number of bags of chips, C, she buys. (NOTE: There is no sales tax on the purchase of food items in the state of New Hampshire.)
12. If she purchases six bags of chips, how many six-packs can she afford?
13. If she purchases five bags of chips, how many six-packs can she afford?
14. Find a formula relating C and S.
15. State and interpret the practical meaning of the slope of both intercepts of the function found in part (a).
16. A tour boat operator found that when the price charged for a scenic boat tour was $25, then 500 customers where willing to pay. When the price was reduced to $20, the number of customers went up to $650.
17. If the number of customers, C, is a linear function of the price, $p, write a formula for C = f(p).
18. Find and interpret the meanings of the slope and both intercepts of the function found in part (a).
19. Sketch a graph of this function based on the real-life scenario.