Writing Equations and Inequalities from Context Problems - Notes

First, identify the starting value (b).

Second, identify the *rate of change* (m). The rate of change always involves two units. For example, the rate of change might be 32 miles per hour or 6 pounds per month, etc.

Third, write your equation in y = b + mx OR y = mx + b form.

NOTE: The *starting value* may be negative if you are starting under water, below ground level, or if you are modeling profit with an initial debit. The *rate of change* may be negative if, after the start, the value is decreasing (look for words like "going down", "descending", "depreciating", or "receding".

1) A long-distance telephone carrier charges a $1.38 connection fee for international calls plus $0.36 per minute. Write an equation that represents this situation, where y is the total cost of the call after x minutes.

Equation: _____

2) A used car is worth $1,300 but is depreciating by $250 each year. Write an equation that represents this situation, where y is the value of the car after x years.

Equation:_____

3) A diver is 200 feet below the surface of the ocean and is rising at a rate of 10 feet per second. Write an equation that represents this situation, where y is the diver's position relative the surface after x seconds.

Equation: _____

For inequalities, the work is similar to that of equations, except it will involve works like "less than", "at most", "at least", "no more than", etc. and we will need to determine what type of inequality symbol would fit the situation.

4) Bob the squirrel is 24 feet up in a tree, and is climbing down at a rate of 2 feet per second. He wants to stay at least y feet above the ground. Write an inequality that represents the situation, where x is the number of seconds.

Inequality:_____

5) It costs $2 to get into a taxi, then $1.50 per mile. You can spend no more than the y dollars you have in your pocket. Write an inequality that represents the situation, where x is the number of miles.

Inequality:_____

6) Jerome has $2,400 in savings and is saving $35 per week. He knows he will save at most y dollars before he withdraws that money to buy something. Write an inequality that represents the situation, where x is the number of weeks.

Inequality:_____