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

***Lesson 6.2: Car Loans***

**Be prepared to share your excel spreadsheets with the class in the form of a presentation, explaining the formulas you used and why you chose to organize your sheet the way you did.**

When buying a car, unless you pay the entire amount at the time of delivery, you make a **down-payment** and **borrow** the rest from a bank. This is called a **loan**. Typically, the money is paid back in equal monthly installments over a number of years. The amount of the loan you owe the bank each month is equal to how much you owed the bank the previous month times the monthly interest rate minus the payment.

The sequence can be described recursively by:



where Ln is the amount you owe the bank at the end of each month, n (assuming you make your payment at the end of the month), r is the interest rate (4% interest means r = 0.04)

The most common number of months to pay back a loan (called the **term or life of the loan**) is 60 months (5 years).

1.) If you want to borrow $20,000 and the annual interest rate is 6.5%, what is the monthly payment (to the nearest penny) if you pay the loan back in 60 months?

a) How much total interest do you pay for the loan?

2.) If you can afford $250 per month and the annual interest rate is 6.5%, how much of a loan will you get if you pay the loan back in 60 months? \*This question is probably more realistic than part (a). When you buy your first car, it is probably at a time when you do not have that much money. You would see how much money you can afford for a car each month after paying all your bills and THEN you would see how expensive a car loan you can afford, given the monthly payment you can afford.

We will use the same spreadsheet we created in part (a) to solve this problem by using solver again. Just copy it over ☺

a) How much total interest do you pay for the loan?