**MATH125: Unit 3 Individual Project**

**Logic and Decision Making**

Be sure to show ALL of your work details. Submit your **ANSWER FORM** in the Unit 3 IP Submissions area.

Being well-informed, at least knowing the right questions to ask, can save you from being taken advantage of. The purchase of a car involves so many variables that it is best to have some understanding before you attempt to purchase a car. There are even more variables to consider when you lease a car. For the purpose of this example, you will ignore such things as tax and dealer rebates. Research the difference between buying and leasing a car.

1. Choose a car that you wish to own, and find the price of this car. For this example, only consider new cars to purchase from a dealership. This will be your principle value, *P*.
2. Research available interest rates on this particular car. This will be the rate, *r*.
3. Decide how long you would like to take to pay off this car. Choose between 3–7 years. This will be the time, *t*.
4. The simple interest formula,$I=Prt$can tell you how much interest will be added to the principle amount of this loan. Calculate the interest on your loan.
5. How much will you be repaying over the life of your loan?
6. How much are your monthly payments?
7. Assume that you have 5% to put as a down payment based on the original purchase price of the car. How much will you be putting down?
8. With the down payment, what will the new monthly payments be?

**Now, consider the option to lease this same car.**

1. Most leases require a down payment. Assume that the dealership is requiring a 5% down payment based on the original purchase price of the car. What is the new value of *P* on your lease?
2. The appeal of a lease is a lower interest rate. Subtract 2% from the original interest rate (from Step 2). If your answer is less than 0.5%, use the minimum rate of 0.5%.
3. The length of a lease is typically 2–5 years. Choose how long you wish to lease this car.
4. The monthly payment on a lease accounts for the depreciation of the car’s value. Assume at the end of your lease, the car has only retained **50% of its original value** (**50% of your answer in Step 1**). What is your car’s value at the end of the loan? Use this for your new value of *P*.
5. How much is the amount of interest (*I*=*Prt*) you will be paying over the course of this lease?
6. What is your total cost, in other words principle plus interest?
7. How much is your monthly payments?
8. At the end of the lease, you do not own the car. If you wish to purchase the car, you would still owe the value of *P* from step 12. At this point, you could turn in the keys and walk away, assuming the car is in perfect condition and ignoring mileage fees. What are the benefits and disadvantages to walking away from this car?
9. Instead of walking away, you could also purchase the car for what it is now worth. Using *P* from step 12, *r* from step *2* and *t* from step 3, calculate how much you would repay over the course of this new loan.
10. How much did you pay in total for this car?
11. Would you consider leasing a car? Discuss the advantages and disadvantages for buying versus leasing a car.