Small Business Project

The skills learned in *Lessons 1*, *2*, and *3* are required to complete this project.

The *Math 30-3 Finance Formula Sheet* is included on the last page. For full marks, show all calculations, steps, and/or explain your answers. State all necessary formulas.

Total marks: 38

Daniel graduated from SAIT with a diploma in Information Technology. He worked at a private company for five years in the computer department troubleshooting as well as setting up databases and computer systems. Daniel plans to open a computer repair business in his home.

Daniel owns a house with a finished basement on the main street in his neighbourhood. The house is on the bus route and has easy access to the major roads in his town. He is willing to drive to different parts of town to make computer repairs, install software, and set up computer systems. He plans to renovate his basement to include a home office.

Daniel lives next door to a seniors' complex. There is a business park across the street. Daniel plans to arrange a meeting with the administrator at the seniors' complex and contact some businesses in the business park. He is making signs to display on his lawn and around the neighbourhood. He is also planning to advertise in the local community newsletter.

Daniel determined that there were no computer repair stores in his neighbourhood. He researched and discovered three computer repair companies in his town that have employees who travel to homes and businesses to fix computers. There are also two stores that sell computers and offer in-store repairs. The closest computer repair company or store that offers computer repairs is five kilometres from Daniel's home.

1. Discuss whether Daniel has proven his business is feasible based on the following factors.

(1) a. location

(1) b. market (number of customers)

(1) c. competition

2. Daniel has been using public transit to go to work. Daniel requires a vehicle to operate his business and is considering two options.

   Option 1: Buying a used car for $\$11\ 995.00$ including taxes with payments for 4 years at an annual interest rate of 4.9%.

   Option 2: Leasing a car for $\$210.00$ per month for 4 years.

(2) a. Use the *Monthly Payment Calculator* to calculate the monthly payment for Option 1.

   Payment calculators are linked to the Assignment Submission Page in your Moodle course.

principal	
annual interest rate	
number of monthly payments	
monthly payment	

(2) b. Calculate the total amount that Daniel pays for the car in Option 1.

(2) c. Calculate the amount of interest that Daniel pays in Option 1.

(2) d. Calculate the total amount that Daniel pays for the lease in Option 2.

(2) e. In four years, the used car will have a value of $\$6\ 000.00$. How much value did the car lose due to depreciation?

(2) f. Calculate the depreciation per year for the used car that costs $\$11\ 995.00$.

(2) g. Should Daniel buy the used car or lease the car? Support your answer using the values calculated in *part a* to *part e* above.

(2) 3. To prepare for the opening of the business, Daniel plans to renovate one of the rooms in his basement, which will cost $\$1\ 500.00$. He needs to buy tools and equipment to help him work efficiently and this will cost $\$2\ 000.00$. Daniel wants to buy a desk and some chairs for his office at a cost of $\$275.00$. He requires a sign for his lawn as well as several small signs to put up around the community. These signs cost a total of $\$100.00$. Instead of buying or leasing a car from a dealership, Daniel plans to buy a used car that is in good condition for $\$5\ 500.00$. Calculate the start-up costs for Daniel's business.

Expense	**Estimated Monthly Cost Including Tax**
Total	

4. Daniel has saved $\$3\ 000.00$ that he will put towards the start-up costs of his business that were calculated in *question 3*. The down payment will decrease the loan that he requires. The bank Daniel contacted gives him a loan at an annual rate of 5.3% if he makes monthly payments of $\$110.00$.

(2) a. What is the amount of the loan that Daniel borrows from the bank, after the down payment is applied?

(2) b. Using the *Number of Monthly Payments Calculator,* determine the number of monthly payments Daniel will make to pay off the loan.

Payment calculators are linked to the Assignment Submission Page in your Moodle course.

principal	
annual interest rate	
monthly payment	
number of monthly payments	

(1) c. How long will it take for Daniel to pay off the loan? Express the answer in years.

5. Daniel pays $\$1\ 600.00$ monthly for his mortgage and utilities. He estimates that he will use 10% of his living space for the business.

(2) a. Calculate the monthly cost of the mortgage payment and utilities required for the business.

(4) b. The monthly expenses that Daniel identified are

- loan payment of $\$110.00$
- the cost of his mortgage and utilities for the business (calculated in *Part a*)
- the maintenance for the company vehicle is $\$250.00$
- fuel for the company vehicle is $\$200.00$
- registration for the vehicle is $\$7.00$
- car insurance is $\$80.00$
- business insurance is $\$20.00$

Complete the table by identifying each monthly expense as a fixed cost or variable cost.

Daniel's Operational Expenses			
Monthly Fixed Costs		**Monthly Variable Costs**	
Total		Total	

(2) c. Calculate Daniel's monthly operating expenses.

(2) 6. Daniel's hourly rate will be $\$45.00$. He estimates that he will initially work 25 hours per month and gradually increase his hours as his clientele increases. Calculate Daniel's projected sales revenue.

(2) 7. Calculate Daniel's projected monthly net income.

(2) 8. Daniel's monthly living expenses are $\$3\,000.00$. Is he earning enough income from his business to quit his job and support himself? If not, suggest ways he can either reduce his expenses or increase his revenue.

Mathematics 30-3 Finance Formula Sheet

- total cost of a loan = monthly payment × number of monthly payments
- total amount paid = down payment + total cost of loan
- interest = total cost of loan − inital cost of loan
- total cost of a lease = monthly payment × number of monthly payments
- depreciation = initial cost of vehicle – present value of vehicle
- penalty = cost/km × extra km driven
- cost = fuel price × fuel consumption × distance
- total cost = fixed costs + variable costs
- net income = revenue − expenses