Worksheet 5-7: Expenses of Operating a Vehicle

Once you obtain a car of your own, the expenses really start to mount! Expenses or costs of operating a car can be divided into two main categories: **fixed and variable**.

Fixed costs are expenses that remain the same from one month to the next, and they are not related to how often you use your car.

Variable costs are expenses that vary in their amount or their frequency, and they differ from one month to the next depending on how you operate your car.

1. Categorize each automobile expense as either a fixed expense or a variable expense.

(a) lease payment   _____   (b) parking fines   _____

(c) insurance   _____   (d) gasoline   _____

(e) depreciation   _____   (f) loan payment   _____

(g) licence plate sticker   _____   (h) oil changes   _____

(i) highway tolls   _____   (j) monthly parking permits _____

(k) maintenance/repair   _____   (l) car wash   _____

Insure a Vehicle:
2. Rahim is 19 and single, and he owns a seven-year-old mid-sized car. He called several insurance agents and the lowest quote he received was $2620/year. There are two payment options: he can pay the insurance premium in full once a year, or he can make monthly payments of $230.

(a) Calculate the annual cost if he chooses the monthly instalments.

(b) Calculate the difference between the two payment methods.

(c) Suggest reasons why Rahim might choose each option.

Assigned Work: WS 5-7; p. 493 #9, #11

Calculate Fuel Costs:

Fuel Efficiency is a measure of how far a vehicle travels per unit of fuel. Common units of fuel efficiency are litres per 100 km (L/100 km) and miles per gallon (mpg). A vehicle that uses less fuel to travel 100 km is more fuel-efficient.

3. Mr. Tychie's truck has a 76-L fuel tank and a fuel efficiency rating of 11.8L/100 km.

(a) Explain what the fuel efficiency rating on Mr. Tychie's truck means.

(b) How far, to the nearest kilometre, can Mr. Tychie's truck travel on one tank of fuel?

(c) How much fuel, to the nearest litre, would his truck use on a 450-km trip?

(d) Explain how to determine the cost of the fuel for the trip in part (c).

(e) What is the cost of the fuel for the trip at the current price of one litre of gas?

Depreciation:
Depreciation is the amount that the value of an item decreases over time. For a vehicle, depreciation is the amount by which the vehicle loses value over time.

4. A new mid-sized vehicle sells for **$21 135**. Maria researched used cars of the same model and found the following information.

Age of Vehicle (years)	Average Selling Price ($)
1	16 000
2	12 750
3	11 000
4	9 800

(a) Calculate the depreciation of the vehicle during the first year, in dollars.

(b) Calculate the depreciation after one year, as a percent of the new vehicle price.

(c) Calculate the depreciation after four year, as a percent of the new vehicle price.

5. A new car worth $14 595 sells for $12 259 one year later. Calculate its depreciation, in dollars.

6. A one-year-old minivan can be bought for $18 500. When new, it sold for $22 950. Calculate its depreciation, as a percent of its original selling price. Round your answer to the nearest percent.

7. Calculate the difference between the annual fee and the total cost of the instalments in each case.

(a) Victor's insurance company quotes him an annual insurance cost of $1948 or a payment plan of $169 per month.

(b) Faith receives an annual insurance quote of $466. The company offers her an option of quarterly instalments of $118.

8. A minivan has a fuel tank size of 75 L and a fuel efficiency of 10.2 L/100 km. Use the current price of 1 L regular gasoline to calculate the cost to fill the tank and the distance, to the nearest kilometre, that the motorcycle can travel on one full tank of gas.

9. A motorcycle has a fuel tank size of 14 L and can travel 1000 km with a full tank of gas. Calculate the fuel efficiency rating of the motorcycle.

10. Rather than measuring their vehicles' fuel efficiency in litres per 100 km, some drivers choose to use kilometres per litre − the distance the vehicle will travel using 1 L of fuel. Calculate the fuel consumption, in kilometres per litre in each case. Round your answers to one decimal place.

(a) On a weekend, Sharon used 32.8 L to travel 385 km.

(b) Steven's diesel sedan travelled 1070 km on a 54.6 L of diesel.

11. The value of an new SUV worth $48 000 depreciates by 18% each year. Determine the depreciated value of the SUV after five year. (Hint: This is an exponential relationship.)

Answers: 2. (a) $2760, (b) $140, (c) Annual payment is less expensive, but monthly payments is more affordable with smaller amounts; **3.** (a) how much gas in litres a vehicle needs to travel 100 km, (b) 644 km, (c) 53 L, (d) Multiply 53 L by the current price of a litre of gas, (e) $65.40 (123.4 ÷ 100 × 53); **4.** (a) $5135, (b) 24% (24.3), (c) 54% (53.63); **5.** $2336; **6.** 19%; **7.** (a) $80, (b) $6; **8.** $90.83, 735 km; **9.** 1.4 L/100 km; **10.** (a) 12 km/L, (b) 20 km/L; **11.** $17 795.51.