

9.5 Operate a Vehicle

A Operating Expenses

Operating expenses may be fixed (same over time) or variable (more or less frequently, more or less expensive).

Example 1. Classify the following operating expenses as fixed or variable.

a) oil change

variable if you charge it every 10,000 km

b) tire replacement

variable

c) gas

variable

d) insurance

fixed

e) license plate

fixed

B Insurance

Although \$1,500 to \$1,900 represents the average car insurance in Ontario, there are many factors that can influence your own rates. Some people will actually pay substantially more every year to insure a vehicle.

Here are some things that can impact your rates:

- ✓ Where you live in the province.
- ✓ Age and gender.
- ✓ Coverage type.
- ✓ Deductible.
- ✓ Driving record and years of experience.
- ✓ The vehicle you buy.
- ✓ Vehicle usage (such as commute versus pleasure).
- ✓ Marital status.
- ✓ Distance driven in a year.
- ✓ Claims history.

Example 2. Ralf 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.

$$(12) \cdot (\$230) = \$2,760$$

$$\textcircled{1} \Rightarrow \$2,620$$

b) Calculate the difference between the two payment methods.

$$\text{Difference} = 2760 - 2620 = \$140$$

c) Suggest reasons why Ralf might choose each option.

Option #1: Pay once \$2620 per year if you have that money

Option #2 is good if you do not have \$2620

The vehicle's fuel efficiency may be measured either in kilometres per litre or in litres per 100 km.

Example 3. When Rado filled his car's tank last week, it took 47.6 L. His trip odometer read 622 km.

a) Calculate the fuel consumption, in kilometres per litre.

$$\frac{622 \text{ km}}{47.6 \text{ L}} = 13 \text{ km/L}$$

∴ Rado may drive his car for 13 km with one litre.

b) Calculate the fuel consumption, in litres per 100 km.

$$\frac{47.6 \text{ L}}{622 \text{ km}} = \frac{47.6 \text{ L}}{6.22 (100 \text{ km})} = 7.7 \frac{\text{L}}{100 \text{ km}}$$

→ Nissan Rogue ⇒ 11 L/100km

→ Toyota Corolla ⇒ 6 L / 100 km

Example 4. DeVaughan's truck has a 76-L fuel tank and a fuel efficiency rating of 11.8 L/100 km.

a) Explain what the fuel efficiency rating on DeVaughan's truck means.

We may drive the truck for 100 km with 11.8 litres of gasoline.

b) How far can DeVaughan's truck travel on one tank of fuel?

$$\text{Distance} = \frac{76 \cancel{\text{L}}}{11.8 \frac{\cancel{\text{L}}}{100 \text{ km}}} = \frac{76}{11.8} (100 \text{ km}) = 644.07 \text{ km}$$

c) How much fuel would his truck use on a 450-km trip?

$$\text{Fuel} = 11.8 \frac{\text{L}}{100 \text{ km}} \cdot 450 \text{ km} = \frac{(11.8)(450)}{100} \text{ L} \approx 53.1 \text{ L}$$

∴ We need 53.1 L to drive the truck for 450 km

d) Explain how to determine the cost of the fuel for the trip in part c) if one litre of gas is \$1.23.

$$\text{Cost} = (\$1.23/\cancel{\text{L}}) \cdot (53.1 \cancel{\text{L}}) =$$

D Depreciation

Car depreciation is the difference between how much your car was worth when you bought it and what it's worth when you sell it.

Example 5. The depreciate rate for a BMW car is 10% per year. For a new car of \$55,000 find its value:

a) after one year

b) after two years