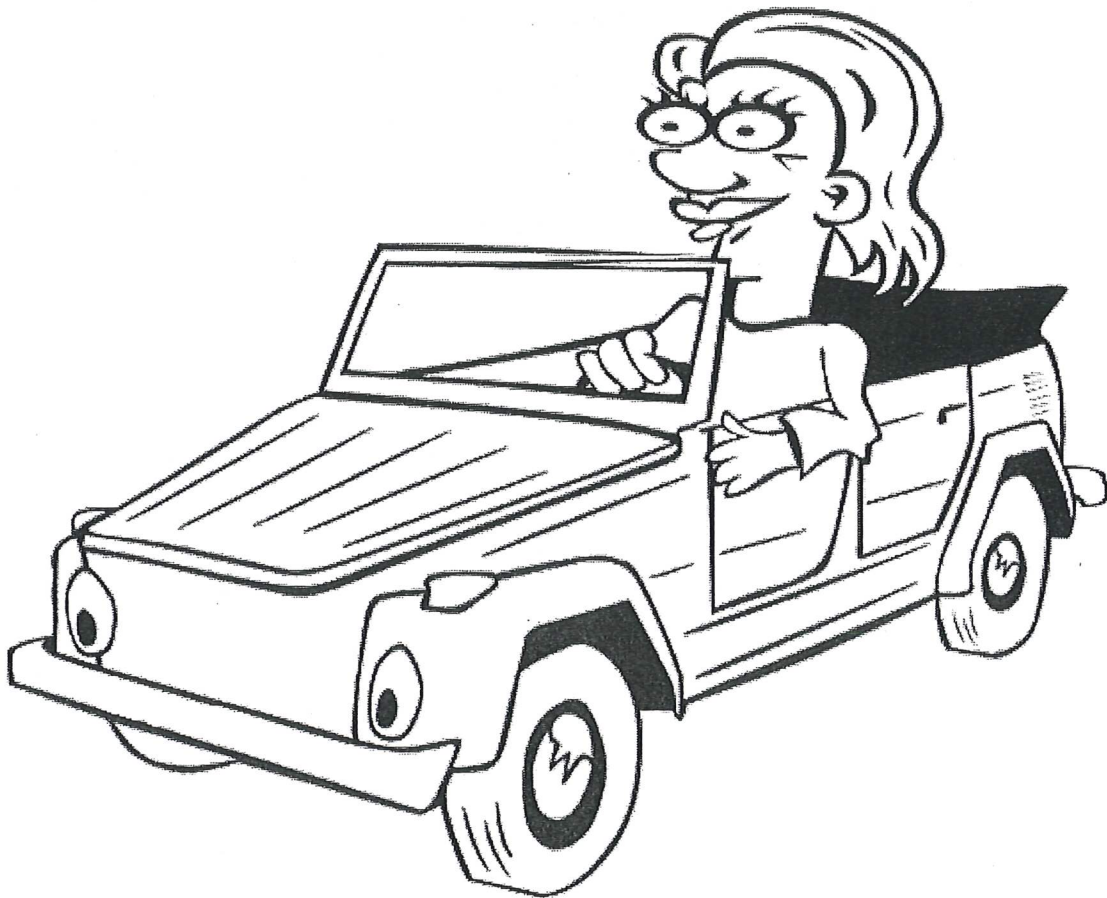


Grade 12 Essential Math

Key

Vehicle Finance

Practice Problems



Vehicle Finance Formulas and Taxes

Fuel Economy in L/100 km (FE)	$FE = \frac{\text{Fuel used in litres}}{\text{Distance in km}} \times 100$	
Taxes on Vehicle Purchases		
	PST	GST
Buying New	PST	GST
Buying Used from a Dealership	PST	GST
Buying Used Privately	PST calculated on greater of book value or purchase price	No GST
Safety	No PST	GST
Materials and Labour	PST	GST
Lien Search	No PST	No GST

Vehicle Loans

1. Maryann borrows \$12 500 from her bank to purchase a car. The bank offers her a rate of 6.75% per year for 5 years.

a) Use an Amortization Table to calculate the monthly payment.

$$\frac{12500}{1000} \times 19.68 = \underline{\$246}$$

b) Calculate the total amount of interest paid over the life of the car loan.
(Jan 2013)

$$\begin{array}{r} \$246 \times 60 = \$14760 \\ - 12500 \\ \hline \underline{\$2260} \end{array}$$

2. Drew has recently purchased a vehicle for \$17 100. He borrowed \$15 000 at 6.25% interest 120 for 5 years. Complete the amortization table below.

Month	Monthly Payment	Interest	Principal	Unpaid Balance
				\$15 000.00
1	\$291.75	\$78.13	\$213.62	\$14 786.38
2	\$291.75	\$77.01	\$214.74	<u>\$14 571.64</u>
3	\$291.75	<u>\$75.89</u>	<u>\$215.86</u>	\$14 355.78

3. You are purchasing a vehicle. The bank will lend you \$16 500, repayable over 3 years at an interest rate of 4.25%. Calculate the monthly payment. Use an amortization table.
(June 2013)

$$\frac{\$16500}{1000} \times 29.64 = \underline{\$489.06}$$

Vehicle Loans

4. Mary borrows \$18 500 from her bank to purchase a car. The bank offers her an interest rate of 6.75% for 4 years.

a) Use an amortization table to calculate the monthly payment.

$$\frac{\$18500}{1000} \times 23.83 = \underline{\$440.86}$$

b) Calculate the total amount of interest paid over the life of the loan. (Jan 2014)

$$\begin{array}{r} 440.86 \times 48 = \$ 21161.28 \text{ paid} \\ - 18500 \text{ loan} \\ \hline \$ 22661.28 \text{ interest} \end{array}$$

5. Joe borrows \$16 750 at 7% over 5 years to purchase a car.

a) Calculate his monthly payment.

$$\frac{16750}{1000} \times 19.80 = \underline{\$ 331.65}$$

b) State the amount of interest paid in the first month. (June 2014)

$$\begin{aligned} I &= Prt \\ &= 16750 \times 0.07 \times (1/12) \\ &= \underline{\$ 97.71} \end{aligned}$$

Vehicle Loans

6. Carter is purchasing a new vehicle for \$27 800, after taxes. He makes a down payment of \$3000. The bank offers financing for 5 years at a rate of 6.25%.

a) Calculate the monthly payment. $27800 - 3000 = \$24800$
loan

$$\frac{24800}{1000} \times 19.45 = \$482.36$$

b) Calculate the total paid for the vehicle by the end of the 5-year term. (June 2015)

$$482.36 \times 60 = \$28941.60 \text{ paid}$$

$$+ 3000 \text{ cash}$$

$$\underline{\$31941.60 \text{ total.}}$$

7. State 1 way to decrease the total amount paid to finance the car you have decided to buy. (Jan 2016)

- shorter amortization period.
- larger down payment.

8. Nancy is purchasing a new vehicle for \$26 500 after taxes at 4.5% for 5 years.

a) Calculate Nancy's monthly payment.

$$\frac{\$26500}{1000} \times 18.64 = \$493.96$$

b) At another financial institution Nancy is offered a loan with a monthly payment of \$400 for 7 years. Justify which option Nancy should choose. (Jan 2016)

$\begin{array}{r} 493.96 \\ \times 60 \\ \hline \$29637.60 \\ \text{less interest}^4 \end{array}$	vs	$\begin{array}{r} 400 \\ \times 84 \\ \hline \$33600 \\ \text{lower monthly payment.} \end{array}$
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Vehicle Loans

9. Saar wants to buy a new car for \$23 500 after taxes. He gets a 4-year loan at an annual interest rate of 6.75%.

a) Calculate the amount of interest paid for the first month.

$$\begin{aligned} I &= Prt \\ &= \$23500 \times 0.0675 \times (1/12) \\ &= \underline{\$132.19} \end{aligned}$$

b) Saar's monthly car payment is \$560.01. Calculate the amount of interest paid over the life of the loan. (June 2017)

$$\begin{aligned} \$560.01 \times 48 &= \$26880.48 \text{ paid} \\ &\quad - 23500 \\ \hline &= \$3380.48 \text{ interest.} \end{aligned}$$

10. Gwen wants to borrow \$23 000 to purchase a car. A bank offers her an interest rate of 5.25% over 5 years.

a) Calculate the amount of interest Gwen would pay on her first month's payment.

$$\begin{aligned} 23000 \times 0.0525 \times (1/12) \\ = \$100.63 \end{aligned}$$

b) Explain how Gwen can reduce the total interest paid over the life of this loan if she is unable to make a larger down payment. (Jan 2019)

extend the term to 7 years.

Buying a New Vehicle

1. Tom wishes to buy a new car in Manitoba for \$18 000. The car dealership has agreed to accept Tom's old car with a trade-in value of \$2000. Calculate the total cost including taxes to buy the new car. (June 2013)

$$\begin{array}{r} \$18000 - 2000 = 16000 \\ \times 1.12 \\ \hline \$17920 \end{array}$$

2. Describe one (1) advantage and one (1) disadvantage of purchasing a new car instead of leasing one. (June 2013)

Adv - equity (own something with value at end)
 disadvantage - higher monthly payment.

3. Tom decides to buy a new car in Manitoba for \$32 400. He adds a tow package to the car for \$3000. The freight is \$650. The dealership gives him \$12 000 for his old car. Calculate the cost, including taxes, of purchasing the new vehicle. (Jan 2014)

$$\begin{array}{r} 32400 \\ + 3000 \\ + 650 \\ \hline \$36050 \end{array} \quad \begin{array}{r} 36050 \\ - 12000 \\ \hline \$24050 \times 1.12 = \$26936 \end{array}$$

4. Describe one (1) benefit of buying a new vehicle and one (1) benefit of buying a used vehicle. (June 2014)

New - warranty
 Used - lower cost.

5. Bonnie wishes to buy a new vehicle from a Manitoba dealership for \$16 200 before taxes. She has \$5000 saved for a down payment. Calculate the amount Bonnie needs to borrow to purchase the vehicle. (Jan 2015)

$$\begin{array}{r} \$16200 \\ - 5000 \\ \hline \$11200 \text{ loan} \end{array}$$

Buying a New Vehicle

6. Omar buys a new car with a base price of \$21 800 and purchases the following options: Navigation system: \$1000 Sound system: \$800. Calculate the cost, after taxes, of purchasing the new vehicle if he receives \$3000 for his trade-in. (June 2016)

$$\begin{array}{r} 21800 + 1000 + 800 = \$23600 \\ - 3000 \text{ trade} \\ \hline \$20600 \times 1.12 = \underline{\$23072} \end{array}$$

7. Shania wants to know how much tax she will pay on a new vehicle if she buys a \$17 000 vehicle and trades in her current vehicle valued at \$4000. Calculate the amount of tax she will pay for this new vehicle. (Jan 2018)

$$\begin{array}{r} \$17000 \\ - 4000 \\ \hline \$13000 \times 0.12 = \underline{\$1560 \text{ tax}} \end{array}$$

8. Darwin is buying a new BMW in Manitoba. The base price is \$36 500 and he adds a performance package worth \$3500. The freight is \$650 and the dealership gives him \$13 000 as a trade-in value on his old vehicle. Calculate the total cost of the new vehicle, after taxes. (Jan 2019)

$$\begin{array}{r} 36500 \\ + 3500 \\ + 650 \\ \hline \$40650 \\ - 13000 \\ \hline \$27650 \times 1.12 = \underline{\$30968} \end{array}$$

Buying a New Vehicle

9. Jean is financing the purchase of a new vehicle. She has saved money for the down payment. The table below shows the details of the purchase.

Price of new vehicle	\$26 000
Trade-in value of current vehicle	\$2000
Tax	\$3120
Down payment	\$3000
Monthly payment	\$544.39
Term	48 months

- a) Calculate the total amount borrowed.

$$\begin{array}{r}
 \text{sticker } 26000 \\
 - 2000 \text{ trade in} \\
 \hline
 24000 + 3120 \text{ tax} = \$27120 \\
 - 3000 \text{ down payment} \\
 \hline
 = \$24120 \text{ borrowed.}
 \end{array}$$

- b) Calculate the total monthly payments paid over the term of the loan. (Jan 2018)

$$\$544.39 \times 48 = \underline{\underline{\$26130.72}}$$

10. Juanita buys a new compact car. She is responsible for the following operating costs.

Operating Costs	
Cost per kilometre	\$0.126/km
Monthly car payment	\$350

Juanita drives 15 000 km per year. Calculate the annual operating costs of the car, before taxes. (June 2019)

$$\begin{array}{r}
 350 \times 12 = 4200 \\
 15000 \times 0.126 = 1890 \\
 \hline
 \underline{\underline{\$6090 / year.}}
 \end{array}$$

Leasing a New Vehicle

1. Sally recently graduated from college and has started working at her first job. She has decided to lease a car. State one reason why leasing may be a good choice for Sally. Justify your reason. (Jan 2013)

lower monthly payment

2. You are leasing a vehicle. The monthly lease payment is \$299 plus taxes for 36 months. The lease requires a \$4500 down payment.

- a) Calculate the total amount paid over 36 months.

$$4500 + (299 \times 1.12) \times 36$$

334.88

$$4500 + 12055.68 = \underline{\underline{\$16055.68}}$$

- b) You choose to purchase the vehicle at the end of the lease for the residual value (75% of the original value). The original cost of the vehicle was \$34 000 plus taxes. Calculate the total amount paid for the vehicle. (June 2013)

$$34000 \times 0.75 = \$25500$$

$$\times 1.12$$

$$\begin{array}{r} \$28560 \text{ residual.} \\ + 16055.68 \text{ lease pay.} \\ \hline \end{array}$$

$$\underline{\underline{\$44615.68 \text{ total.}}}$$

- *3. Frank has been leasing his pickup truck for the last 3 years. He has made a total of \$16 028 in payments; which included a down payment of \$3500. Calculate Frank's monthly lease payments. (Jan 2015)

$$\$16028 - 3500 = \$12528$$

$$\div 36$$

$$\underline{\underline{\$348/\text{month.}}}$$

Leasing a New Vehicle

4. A previously leased vehicle with an original value of \$18 300 is for sale at a Manitoba dealership. The residual value is 58%. Calculate the total cost to buy the vehicle, after taxes. (June 2015)

$$\begin{array}{r} 18300 \times 0.58 = \$10614 \\ \times 1.12 \\ \hline \underline{\$11887.68} \end{array}$$

5. Manhattan is considering leasing a vehicle for her courier company. State 2 reasons why she should not lease a vehicle. (June 2016)

- probably go over the mileage limit.
- might be damages she has to pay for when it is returned.

6. Describe 2 advantages of leasing a car rather than financing the purchase of a similar new car. Place one response per line. (Jan 2018)

- lower monthly payment
- can be used as a business expense.

7. Hugo is going to lease a car. He will pay \$384.20 per month, after taxes, for 36 months. He will make a down payment of \$1500. Calculate the total cost paid by Hugo at the end of the 36-month lease. (Jan 2018)

$$\begin{array}{r} 1500 + (384.20 \times 36) \\ \$13831.20 \\ = \underline{\underline{\$15331.20}} \end{array}$$

Leasing a New Vehicle

8. Henry is a long-distance delivery driver in Manitoba who needs a new vehicle. He often drives on gravel roads that damage his car. Explain one reason why Henry should purchase a new vehicle instead of leasing one. (June 2018)

*delivery = higher kms.
penalty if you go over the 20000 km
per year.*

9. Choose the letter that best completes the statement below. Alia will either finance the purchase of a vehicle or lease the vehicle long term. She decides to lease because:

- a) the insurance is less expensive
- b) there is no cost for additional kilometers
- c) the leased vehicle can be used as equity for additional financing
- d) the monthly payments are lower (Jan 2019)

10. You decide to buy the car you have been leasing for the past 3 years. The car had a sticker price of \$32 000, before taxes. The residual value is 40% of the sticker price. Calculate the residual value of the car, after taxes. (June 2019)

$$\begin{array}{r} \$32000 \\ \times 0.40 \\ \hline \$12800 \\ \times 1.12 \\ \hline \underline{\underline{\$14336}} \end{array}$$

Buying a Used Vehicle

1. Shannon lives in Manitoba and is going to buy her neighbour's car for \$6500. The neighbour is paying for the safety inspection and the lien search. The book value for the car is \$8000. Calculate the total cost to purchase the car after taxes. (Jan 2015)

$$\$6500 + (\$8000 \times 0.07) = \underline{\underline{\$7060}}$$

\$ 560

2. State 2 advantages and 2 disadvantages of buying a used car rather than buying a similar new car. (June 2016)

Adv - more affordable.
 - lower monthly loan payment

Dis - could have high km
 - hidden damage.

3. Jersey wants to buy a used car from her friend, Jack. The price of the car is \$7000. She needs to fix a few things on the car.

Repairs	Total Cost
New Tires	\$500
Engine Tune-Up	\$110

The book value of the car is \$5000. She needs to get a lien search worth \$18 and a \$40 safety inspection before taxes. Calculate the total tax she will pay for this car. (June 2017)

$$\begin{array}{r}
 7000 \times 0.07 = \$490 \\
 500 \times 0.12 = 60 \\
 110 \times 0.12 = 13.20 \\
 40 \times 0.05 = 2.00 \\
 \hline
 \underline{\underline{\$565.20 \text{ in taxes}}}
 \end{array}$$

Buying a Used Vehicle

4. Jonas is purchasing a car. The following table shows the various details of his purchase.

Value of Car	\$23 000	Number of Payments	48
Tax	\$2990	Amount Borrowed	\$22 990
Down Payment	\$3000	Cost of Financing	\$1840

- a) Calculate the total cost of the car after taxes and financing.

$$\begin{aligned} & \$3000 + 22990 + 1840 \\ & = \underline{\$27830} \end{aligned}$$

- b) Jonas paid a total of \$24 830 in monthly car payments. State the amount he paid each month. (June 2017)

$$24830 \div 48 = \underline{\$517.29}$$

5. Choose the letter that best completes the statement below. One cost Akaps would pay when purchasing a new car that he would not have to pay when purchasing a used car privately is:

- a) book value
 b) GST
 c) PST
 d) insurance (June 2018)

*only PST
 on used
 private sale.*

6. Odette is purchasing a used vehicle privately. She has some additional costs to pay: \$40 for a safety inspection and \$15 for a lien search. Calculate the total for these additional costs, after taxes. (June 2018)

$$\begin{aligned} & 40 + \$2 \text{ GST} \\ & + 15 + \text{no tax} \quad = \underline{\$57.00} \end{aligned}$$

Buying a Used Vehicle

7. Valentina wants to buy a used vehicle through a private sale. The vehicle is priced at \$23 200 and has a book value of \$21 900.

a) Calculate the total amount Valentina will pay for her vehicle, after taxes.

$$\$23200 \times 1.07 = \underline{\$24824}$$

b) Valentina will need to get a safety inspection for \$55. Calculate the cost of the safety inspection, after taxes. (Jan 2019)

$$\$55 \times 1.05^{\text{GST}} = \underline{\$57.75}$$

8. Luc purchases a used vehicle privately. The vehicle costs \$12 000 and has a book value of \$10 000. He also pays \$50 for a safety inspection. Calculate the total amount Luc will pay for the vehicle, after taxes. (June 2019)

$$\begin{array}{l} \text{Price of car} \\ 12000 + \left(\begin{array}{l} \text{pst on} \\ \text{higher of price or book} \end{array} 12000 \times 0.07 \right) + 50 + \left(\begin{array}{l} \text{safety} \\ \text{GST} \end{array} 50 \times 0.05 \right) \\ \qquad \qquad \qquad 840 \qquad \qquad \qquad 2.50 \\ = \underline{\$12892.50} \end{array}$$

Vehicle Insurance

- Choose the letter that best completes the statement below. When purchasing car insurance, a deductible is:
 - the amount you pay every year for the insurance.
 - a one-time lump sum you pay the insurance company when you first buy the car.
 - the amount of the insurance claim you must pay when at fault for an accident.
 - the amount you pay for extra coverage against damage to another person or their property. (Jan 2013)

- State and explain two (2) factors that may increase a car insurance premium in Manitoba. (Jan 2013)

Factors	Explanations
1. deductible	1. lower = more \$ for premium
2. location	2. WPS more costly than rural.

- Explain why a car insurance policy with a \$200 deductible will cost more than a similar policy with a \$500 deductible. (Jan 2013)

insurance (mpi) will pay more in a claim situation
 - better coverage = more \$

- State two (2) factors that determine the cost of vehicle insurance in Manitoba. (Jan 2014)

use - all purpose vs pleasure
 third-party liability amount.
 \$500,000 vs \$10,000,000

Vehicle Insurance

5. Choose the letter that best completes the statement below. When insuring a vehicle in Manitoba, the factor that affects your premium is:

- a) your education
- b) where you live
- c) your gender
- d) the insurance agent you purchase from
- e) your age (June 2014)

6. State 2 factors that affect the cost of vehicle insurance premiums other than driving record, traffic tickets, and at-fault accidents. (Jan 2015)

*territory (location)
deductible
make + model.*

7. Julie is moving from rural Manitoba to Winnipeg for her job. Her insurance broker told her that it will now be more expensive to insure her car.

a) State why Julie's premiums will increase.

*higher risk in Wpg.
rural premiums are lower*

b) Julie retires from her job and wants to continue driving her car. State what she can do to decrease her premiums. (June 2016)

*change from all purpose to
pleasure.*

Vehicle Insurance

8. Tammy drives her car 20 kilometres to work each day. State the type of insurance policy Tammy will need for proper coverage. (Jan 2014)

All purpose.

9. Choose the letter that best completes the sentence below. When purchasing car insurance, third party liability is the

- a) amount you pay every year for insurance.
- b) amount you pay for extra coverage against damage to another person or their property.
- c) one-time lump sum payment you pay to the insurance company when you first buy the car.
- d) amount of the insurance claim you must pay when you are at fault for causing an accident. (Jan 2017)

10. A retired couple drives 500 km each month to go to the dog park, the grocery store, and the mall. State the type of car insurance policy their agent would recommend. (June 2017)

pleasure - not using it for work.

11. Shawna is at an insurance agency to renew her car insurance policy. Describe two changes she could make to lower the total cost of her insurance. Place one response per line. (June 2018)

*- change deductible to \$500
- pay entire premium at once instead of monthly - no finance charge*

Fuel Economy or Consumption (How much fuel is used)

1. Nancy is going on a 1300 km car trip. Her car's fuel efficiency is 8 L/100 km. The average price for fuel on her trip is estimated to be \$1.20 per litre. Calculate the cost of fuel for her trip. (June 2013)

$$\frac{1300}{100} \times 8 = 104 \text{ Litres}$$
$$\begin{array}{r} 104 \\ \times \$1.20 \\ \hline \$124.80 \end{array}$$

2. Tom's vehicle uses 12.8 L of fuel for every 100 km driven. The cost of fuel is \$1.20/Litre. Calculate the cost of fuel for Tom to drive 3000 km. (Jan 2014)

$$\frac{3000}{100} \times 12.8 = 384 \text{ L}$$
$$\begin{array}{r} 384 \\ \times \$1.20 \\ \hline \$460.80 \end{array}$$

3. A car travels 2400 km and consumes 200 L of fuel. Calculate the fuel economy in L/100 km for the car. (Jan 2015)

$$FE = \frac{200}{2400} \times 100 = \underline{8.33 \text{ L/100 km}}$$

4. Paige is planning to go on a 3000 km road trip. She owns a truck and a car. The truck uses 8.5 L of fuel per 100 km. The car uses 6 L of fuel per 100 km.

- a) State which vehicle Paige should use if she wants to get the best fuel economy.

car.

- b) State the number of litres used during the trip by the vehicle selected in Part a). (June 2015)

$$\frac{3000}{100} \times 6 = \underline{180 \text{ Litres}}$$

Fuel Economy or Consumption (How much fuel is used)

5. On average, the fuel economy of Jasmine's vehicle is 8.5 L/100 km. In the past month, Jasmine has travelled a total of 2800 km.

a) Calculate the total litres of gas Jasmine's vehicle used for the month based on the average fuel economy.

$$\frac{2800}{100} \times 8.5 = 238 \text{ L}$$

b) State the total cost of fuel used if it costs \$1.23 per litre. (Jan 2016)

$$238 \text{ L} \times \$1.23 = \underline{\underline{\$292.74}}$$

6. The fuel economy of Gina's vehicle is 7 L/100 km. She is planning to drive her vehicle from Winnipeg to Toronto, a distance of 2230 kilometres.

a) Determine the total amount of fuel in litres required for the trip.

$$\frac{2230}{100} \times 7 = \underline{\underline{156.1 \text{ L}}}$$

b) Determine the cost of the trip if the fuel price is \$1.30/L. (June 2016)

$$156.1 \times \$1.30 = \underline{\underline{\$202.93}}$$

Fuel Economy or Consumption (How much fuel is used)

7. Mabon was told by a dealership that his new car would use 5.5 L of fuel for every 100 km driven. In reality, the car is using 8 L of fuel for every 100 km he drives. Calculate how much more fuel is used than expected if he drives 1500 km. (June 2017)

$$8 - 5.5 = 2.5 \text{ L difference}$$
$$\frac{1500}{100} \times 2.5 = \underline{37.5 \text{ L more fuel}}$$

8. A car's trip meter shows that it has travelled 636 km. The car used 60 L of fuel for this trip. Calculate the fuel economy in L/100 km. (Jan 2019)

$$FE = \frac{60}{636} \times 100 = \underline{9.43 \text{ L/100 km}}$$

9. Jafar owns a truck and a hybrid car. The fuel economy of the truck is 9.4 L/100 km. The fuel economy of the car is 3.5 L/100 km. Jafar drove his truck 17 000 km last year. Calculate how much less fuel he would have used if he had driven his hybrid car instead of his truck. (June 2019)

$$9.4 - 3.5 = 5.9 \text{ L/100 km less fuel.}$$
$$\frac{17000}{100} \times 5.9 = \underline{1003 \text{ L less fuel}}$$

Vehicle Servicing (Maintenance and Repairs)

1. Lindsay takes her car to a Manitoba car dealership for servicing. The dealership charges \$95 per hour for labour. The following items were replaced: four (4) spark plugs for \$2.25 each, one (1) air filter for \$12.50 and one (1) headlight for \$30. The job took 1.25 hours to complete. Calculate the total cost of repairs including taxes. (Jan 2013)

$$\begin{array}{r} 4 \times 2.25 = 9.00 \\ 1 \times 12.50 = 12.50 \\ 1 \times 30 = 30.00 \\ 1.25 \times 95 = 118.75 \\ \hline 170.25 \\ \times 1.12 \\ \hline = \underline{\underline{\$ 190.68}} \end{array}$$

2. Robert took his vehicle in for servicing at a Manitoba dealership. The dealership charged \$90 per hour for labour. The servicing took 1.5 hours to complete. Two (2) windshield wipers were replaced at a cost of \$12 each. Four (4) winter tires were put on at a cost of \$120 each. Calculate the total cost, including tax, of the servicing. (Jan 2014)

$$\begin{array}{r} 1.5 \times 90 = 135.00 \\ 2 \times 12 = 24.00 \\ 4 \times 120 = 480.00 \\ \hline 639.00 \times 1.12 \\ = \underline{\underline{\$ 715.68}} \end{array}$$

3. Bill had his vehicle's exhaust system repaired at a Manitoba dealership. Labour charges were \$110 per hour. The cost of the exhaust system parts were: converter \$350, muffler \$120, and exhaust pipe \$80. The job required 1.5 hours of labour to complete. Calculate the total cost of the repairs, after taxes. (June 2015)

$$\begin{array}{r} 350 + 120 + 80 + (1.5 \times 110) \\ 165 \\ = 715 \\ \times 1.12 \\ \hline \underline{\underline{\$ 800.80}} \end{array}$$

4. Bryan's 20-year-old vehicle has broken down. He therefore pushes it into a repair shop in Manitoba. His car needs to have the radiator (\$500) and timing belt (\$450) replaced. The labour cost is \$120 per hour and it takes 4 hours to repair his vehicle. Calculate how much it costs to have his vehicle repaired after taxes. (Jan 2016)

$$500 + 450 + (4 \times 120)$$

480

$$\$1430$$

$$\times 1.12$$

$$\underline{\$1601.60}$$

5. Wilma needs to get one of her car's headlights replaced. The headlight will cost \$200. It will take 1.5 hours of labour to replace the headlight at a rate of \$90 an hour. Calculate the total cost, after taxes, of replacing the headlight. (June 2017)

$$200 + (1.5 \times 90) = 335$$

135

$$\times 1.12$$

$$\underline{\$375.20}$$

6. Alise is taking her car in for servicing. She needs the oil changed and an air filter replaced. The cost of labour is \$95 per hour. The following table shows the details of the servicing.

Parts	Cost of Parts	Labour Hours Required
Oil and filters	\$50	0.5

Calculate the total cost Alise will pay after taxes. (Jan 2018)

$$50 + (0.5 \times 95) =$$

47.50

$$97.50$$

$$\times 1.12$$

$$\underline{\$109.20}$$

7. Serge needs to pay for the following repairs on his vehicle:

Item	Cost of Parts	Labour Time Required
Muffler	\$207	0.5 hour
Transmission	\$600	2.5 hours

a) Calculate the total labour cost, before taxes, if the service center charges \$110/hour.

$$207 + 600 + (3 \times 110) = \underline{\$1137.00}$$

3.30

c) Calculate the total amount Serge will pay to the service centre, after taxes. (June 2018)

$$1137 \times 1.12 = \underline{\$1273.44}$$

8. Da-eun takes her motorcycle to the repair shop to have the oil changed and suspension repaired. The repair shop charges \$125 per hour for labour. The service details are shown in the table below:

Service	Cost of Parts/Supplies	Hours of Labour Required
Oil change	\$18	0.5
Suspension repair	\$227	1.75

Calculate the total amount Da-eun will pay, after taxes. (Jan 2019)

$$18 + 227 + (2.25 \times 125) = 526.25$$

281.25

$$526.25 \times 1.12 = \underline{\$589.40}$$

Depreciation (Loss in \$ Value)

1. Brian bought a car valued at \$28 600. It depreciates at 20% per year. Complete the table to find the value of the vehicle after 2 years. (June 2014)

Year	Vehicle Value	Depreciation Amount	Year-end Value of Vehicle
1	\$28 600	28600×0.20 $= \$ 5720$	\$ 22 880
2	22880	22880×0.20 $= \$ 4576$	\$ 18 304.

2. A brand new car costs \$26 800 after taxes. It will depreciate 15% in the first year. Calculate the value of the car after the first year. (Jan 2015) *85% remains*

$$26800 \times 0.85 = \underline{\underline{\$ 22780}}$$

3. A car worth \$29 000 depreciates 30% in the first year.

- a) State the depreciation amount after the first year.

$$29000 \times 0.30 = \underline{\underline{\$ 8700 \text{ depreciation}}}$$

- b) The same car depreciates 20% in the second year. State the amount the car depreciated in the second year. (Jan 2017)

$$\begin{array}{r}
 29000 \\
 - 8700 \\
 \hline
 20300
 \end{array}
 \times 0.20 = \underline{\underline{\$ 4060 \text{ depreciation}}}$$

4. A car has a value of \$23 000. It depreciates at a rate of 20% per year. Calculate the value of the car at the end of 2 years. (June 2017)

short way.

$$23000 \times 0.80 = \$18400$$
$$18400 \times 0.80 = \underline{\$14720}$$

5. Chris purchases a snowmobile for \$11 500. The snowmobile depreciates at a rate of 15% per year.

- a) Calculate the amount of depreciation in the first year.

$$11500 \times 0.15 = \underline{\$1725}$$

- b) Calculate the value of the snowmobile at the end of the first year. (June 2018)

$$11500 - 1725 = \underline{\$9775}$$

6. A new truck is worth \$30 000. The truck's value depreciates at a rate of 25% per year. Calculate the value of the truck at the end of the first year. (Jan 2019)

short way.

$$30000 \times 0.75 = \underline{\$22500}$$