

AW 11

CHAPTER 8: Owning and Operating a Vehicle

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Canadian Sales Tax Rates:

Province	Type	PST (%)	GST (%)	HST (%)	Total Tax Rate (%)
Alberta	GST		5		5
British Columbia	GST + PST	7	5		12
Manitoba	GST + PST	8	5		13
New Brunswick	HST			13	13
Newfoundland and Labrador	HST			13	13
Northwest Territories	GST		5		5
Nova Scotia	HST			15	15
Nunavut	GST		5		5
Ontario	HST			13	13
Prince Edward Island	HST			14	14
Quebec	GST + *QST	*9.975	5		14.975
Saskatchewan	GST + PST	5	5		10
Yukon	GST		5		5

DAY 1: Choosing a Vehicle

When choosing a vehicle:

Considerations:

Example 1: When borrowing, banks advise that your total debt/ payments per month should be no more than 40% of net income. If Tyson's net income for the month is \$1200, what is his maximum monthly debt repayment?

Example 2: What is the minimum monthly net income for a loan with monthly payments of \$600?

Example 3: A \$45 000 SUV is purchased in Manitoba. What are the taxes and total paid?

Day 1: Assignment

1. What is the maximum debt repayment that is recommended for the following monthly net incomes?

a) \$1 250

b) \$2 050

c) \$3 250

d) \$4 500

e) \$980

2. What is the minimum income that is recommended for each of the following debts?

a) \$350 a month

b) \$520 a month

c) \$680 a month

d) \$850 a month

e) \$1 200 a month

3. A new motorcycle is bought from a BC dealer for \$27 480. What are the taxes on this purchase? What is the total cost of the vehicle?

4. A new snowmobile is bought from a dealer for \$8 500 in the Yukon. What are the taxes on the purchase? What is the total paid?

5. A used truck is bought privately in Manitoba for \$25 500. What are the taxes on this purchase? What is the total paid?

6. A used all-terrain vehicle is bought privately for \$8 300 in Nunavut. What are the taxes ? What is the total paid?

7. A new car is bought from a dealer in Manitoba for \$32 500. What are the taxes? What is the total paid?

8. If you bought a new vehicle for \$24 500 in the Northwest Territories, instead of in British Columbia, how much would you save on taxes? What disadvantages might there be in buying a vehicle from the Northwest Territories instead of BC?

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Example 4: A person travelled 350km in the city and 200km on the highway in a week. The car's fuel economy is as follows:

City: 10.5L/100 km

Highway: 7.4L/100 km

If gas costs \$1.32/L, calculate the number of liters needed and the total gas cost.

(A) City: $\frac{10.5 \text{ L}}{100 \text{ km}} \times 350 = 36.75 \text{ L}$

Hwy: $\frac{7.4 \text{ L}}{100 \text{ km}} \times 200 = 14.8 \text{ L}$

total: $36.75 + 14.8 = 51.55 \text{ L}$

(B) $\$1.32/\text{L} \times 51.55 \text{ L} = \68.05

Day 2: Assignment

1. Find the cost for each of the following:

Liters	Cost/Liter	Total Cost
a) 90	\$1.35	
b) 18	\$0.97	
c) 51.3	\$1.05	
d) 87.4	\$0.87	
e) 118	\$1.26	

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2. Determine the distance travelled using the odometer readings given below:

Initial Reading	Final Reading	Distance Travelled
039287.6	040324.3	
076543.2	076956.7	
001279.8	001454.3	
003883.3	007375.2	
123914.5	124721.3	

3. Determine the **fuel economy** for each of the following trips using the odometer readings given as well as the amount of fuel used.

a) Initial: 071416.0 Final: 071739.0 57.6 Liters of fuel used

b) Initial: 023165.2 Final: 023721.9 54.8 Liters of fuel used

c) Initial: 087158.1 Final: 088031.4 97.2 Liters of fuel used

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4. In the city, an SUV requires 29.8 L to travel a distance of 250 km. On the highway, it requires 31.8 L to travel a distance of 340 km.

a) Determine the fuel economy of the SUV in the city.

b) Determine the fuel economy of the SUV on the highway.

5. A van requires 46.1 L to drive 380 km.

a) Determine the fuel economy of the van

b) If the cost of gasoline is \$1.09 per liter, find the cost of driving the van 380 km.

6. Francis travelled a total of 500 km in the city and 1200 km on the highway. His car has a fuel economy of 11.9 L/100 km in the city and 7.5 L/100 km on the highway. Gas costs \$1.19. Calculate the number of liters used, and the cost of the fuel.

DAY 3: Vehicle Maintenance

Used Vehicles:

- more likely to break down
- cheaper cost

New Vehicles:

- Under warranty (3-5yrs)
 - Dealership pays for repairs within specified time
- more expensive

Repairs: Parts & Labour

- GST and PST apply to both unless otherwise mentioned.
- Labour is calculated using a decimal value for time in hours.

Example:

$$\$60/\text{hr} \times 0.33 = \$20$$

Would the parts for a domestic (local) car be cheaper or more expensive than the parts for a foreign car? Why?

foreign more expensive → shipping, tariffs etc

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Example 1: A car is taken in for servicing in Alberta. The following parts/materials were used:

4 Liters of oil @ \$2.05/ L

1 oil filter @\$5.60

2 wiper blades @ 14.95/pair

The time required to complete the work was 0.6 hours at \$80/hr.

Calculate the total cost (There is no PST charged in Alberta)

Parts :

$$\text{oil } \$2.05/\text{L} \times 4 = \$8.20$$

$$\text{Filter } \$5.60 \times 1 = \$5.60$$

$$\text{wiper } \$14.95 \times 1 = \$14.95$$

$$\text{Sub total: } 28.75$$

$$\text{GST (x0.05) } 1.44$$

$$\text{total parts: } \$30.19$$

$$\text{Labour: } \$80/\text{hr} \times 0.6 = \$48$$

$$\text{GST (x0.05) } 2.40$$

$$\text{total labour: } \$50.40$$

$$\text{total (Parts + labour): } \$80.59$$

Do all assignment day 3

AW 11**Day 3: Assignment:**

1. Complete the following chart and calculate the total cost of repairs if the labour costs are \$60 an hour. Remember to add the taxes that are applicable to British Columbia.

Item	Number Required	Unit Price	Parts Cost	GST	PST	Installation Time (h)	Labour Cost	GST	PST	Item Total
Oil	4 L	\$2.45/L				0.1				
Fuel filter	1	\$21.00				0.3				
Air filter	1	\$7.00				0.4				
Antifreeze	8 L	\$1.98/L				0.1				
Fan belts	2	\$29.00				0.2				
Total Cost: \$										

2. Complete the following chart and calculate the total cost of repairs for an ATV in Nunavut if the labour costs are \$85 an hour.

Item	Number Required	Unit Price	Parts Cost	GST	Installation Time (hrs)	Labour Cost	GST	Item Total
Oil	1 L	\$3.75/L			0.1			
Oil filter	1	\$16.75			0.2			
Muffler	1	\$250.00			0.6			
New tires (installed)	4	\$80.00			0.4			
Headlights	2	\$10.00			0.3			
Total Cost: \$								

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3. Find the total cost of servicing a vehicle in British Columbia that requires two headlights at \$28.50 each, an exhaust pipe at \$130, and a muffler at \$55.50. The time required for servicing the vehicle is 1.6 hours and the rate the service station charges \$55 an hour.

4. Find the total cost of servicing a vehicle in the Yukon that requires two liters of oil at \$4.10 per liter, 2 wiper blades at \$11.25 a pair, and 2 fan belts at \$35.50 each. The time required to service the vehicle is 0.8 hour and the rate the service station charges is \$70 an hour.

5. Use the information in question 2 above. Calculate what the total price, with taxes, would be if these repairs were completed in British Columbia.

DAY 4: Buying a New Vehicle

Base Price: Cost with standard equipment only

Options: Extras which are often grouped into packages (A/C, Heated/Leather Seats)

Charges include:

- a) Base Price
- b) Options
- c) Freight Charges
- d) Air Tax (A/C) called "Federal Excise Tax" $\rightarrow \$100 \text{ fee}$
- e) Documentation Fees

\rightarrow trade in old car

Note: A trade-in allowance will reduce the cost of the new vehicle.

The Sticker Price is the cost of everything except the documentation fees and trade-in allowance.

Example 1: Find the sticker price for a Mustang with a base price of \$25 880 with the following options: Equipment package: \$1260, automatic transmission: \$995, Satellite Radio \$200, Air tax: \$100, Freight: \$620

$$25\ 880 + 1260 + 995 + 200 + 100 + 620 = \$29\ 055$$

(Sticker price)

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Example 2: Find the Sticker Price AND the total price of a Camaro with a base price of \$20 798 and the following options:

Option package: \$1585, Automatic Transmission: \$695, Freight: \$655
Trade-in Allowance: \$5 000, Documentation fee: \$150

$$\begin{array}{r} \text{Base price} \quad 20\,798 \\ \text{option:} \quad 1585 \\ \text{Auto trans.} \quad 695 \\ \text{Freight} \quad + \quad 655 \\ \hline \$23\,733 \text{ (Sticker price)} \\ \\ \text{Documentation fee} \quad +150 \\ \text{Trade-in} \quad \underline{-5000} \\ 18\,883 \\ \hline (\text{PST} + \text{GST} \times 0.12) + 2265.96 \\ \hline \text{Day 4: Assignment: } \boxed{\text{total: } \$21\,148.96} \end{array}$$

1. Find the sticker price for the following vehicle. The base price is \$14 765. Its optional equipment package consists of a preferred equipment package costing \$765, a 15-inch steering wheel costing \$170, power mirrors costing \$150. In addition, there is an air tax of \$100 and a freight charge of \$760.

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2. Calculate the purchase price of each of the following vehicles if you live in British Columbia.

Vehicle	Base Price	Options & Freight	Sticker Price	Documentation	Cost of Vehicle	Trade-in	PST	GST	Total Price
1	\$19,400	\$2,230		\$150		\$5,700			
2	\$27,960	\$2,760		\$185		\$9,000			
3	\$15,275	\$975		\$125		\$7,200			
4	\$22,740	\$1,525		\$155		\$10,000			

3. Andy, who lives in BC, decides to buy a Silverado. He pays the base price of \$24 673 and takes an option package worth \$2 614. He adds on the automatic transmission for an extra \$695. There is a freight charge of \$795 and the options package he selects has air conditioning. Andy receives a trade-in allowance of \$4 500 for his old car. How much will he pay for the truck?

4. Sue, who lives in Nunavut, wants a Prius. The base price is \$19 796. She would like power windows and power locks for an extra \$300 and \$285 respectively. There is a freight charge of 10% of the base price. She does not require air conditioning. How much will she pay for the vehicle?

DAY 5: Vehicle Depreciation**Depreciation:**

*All vehicles lose value as they get older
most depreciate 20-30% in 1 year & then
by 15% each year after that.*

Example 1: A new car is sold for \$35 000. Calculate the depreciation and the car's resale value at the end of the first 3 years. The depreciation rate is 20% for the first year and 15% each year after that.

Year 1: Depreciation: $\$35000 \times 0.20 = \7000
 Resale Value: $35000 - 7000 = 28000$

Year 2: Depreciation: $28000 \times 0.15 = 4200$
 Resale Value: $28000 - 4200 = \$23800$

Year 3: Depreciation: $23800 \times 0.15 = 3570$
 Resale Value: $23800 - 3570 = 20230$

What is the total depreciation after all 3 years?

$35000 - 20230 = \$14770$ after 3 yrs

Example 2: John buys a 4 year old used truck for \$10 500. What will it be worth after 2 years if the depreciation rate is 10% per year?

Year 1: Depreciation: $10500 \times 0.10 = \$1050$
Resale Value: $10500 - 1050 = \$9450$

Year 2: Depreciation: $9450 \times 0.10 = 945$
Resale Value: $9450 - 945 = \$8505$

Total Depreciation after 2 years:

$$10500 - 8505 = \$1995.00$$

Day 5: Assignment:

1. Determine the resale value of the following new vehicles for the years and depreciation given.

a) \$17 000 Pontiac Vibe at the end of 3 years (first year 20%, 15% after)

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b) \$16 408 Cavalier at the end of 2 years (first 25%, 15% after)

c) \$26 433 Chevy S10 Extended Cab at the end of 4 years (first 20%,
10% after)

d) \$38 699 Windstar at the end of 3 years (first 30%, 10% after)

2. Determine the total depreciation for each of the vehicles in question 1.

3. Determine the **resale value** of the following used vehicles.

a) \$6 000 Nissan truck three years after purchase (10% each year)

b) \$3 500 Honda Civic 2 years after purchase (15% each year)

c) \$ 9 800 Dodge Grand Caravan four years after purchase
(10% each year)

DAY 6: Buying a Used Vehicle

Pros and Cons to Buying a Used Vehicle:

- ⊗ Save on depreciation
- might be issues that you find out after

Lien Search: See if there is a claim by another person where the owner owes money

Steps for Purchasing a Car **PRIVATELY**:

1. Start with the purchase price.
2. Find the cost for diagnostic test and repairs (PST & GST)
3. Find the PST on the purchase price of the vehicle (book value as a guide). PST is paid when you license the vehicle.
4. Safety check / Aircare (\$50 plus GST) Vancouver only!!
5. Lien Search (approx.. \$30)
6. Add together steps 1-5

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↗ dealership (GST + PST)

Example 1: Doug goes to Galaxy Motors here in Courtenay to buy a used car. The sticker price on the car is \$5500. How much will it cost him? The dealership has already done a lien search but Doug wants to take it to his own mechanic to check it over. (\$80 including tax)

5500
 + PST (x.07) 385
 + GST (x.05) 275
 + mech 89.60

 \$ 6249.60

↳ 80 x 0.12 = 9.60
 → 89.60

↗ Private

Example 2: Sarah has found a car for sale by its owner for \$1995. Before she buys the car she needs to do a lien search and get a diagnostic test done (\$50). The mechanic tells Sarah that she needs \$650 worth of engine work done. When she gets the car licensed the book value of the car is \$2400. She needs to get a safety inspection as well. Calculate the total cost of the vehicle.

① Vehicle cost	1995	④ Safety check	50	} \$52.50
		GST (x.05)	2.50	
② Diag. + rep		⑤ lien search	30	
50 + 650	700			
GST + PST (0.12)	84			
③ PST on book value	168			
2400 x 0.07				
⊗ PST on book sale, not price.				
No GST on private sales				
				total: \$3029.50

Day 6: Assignment:

1. Calculate the total purchase price of a used truck listed at \$7450 from a licensed automotive dealer in Port Moody, BC.

2. Emile found a car in Churchill, MB that he likes and wants to buy through a private sale. The price is \$2495. His friend examines the car and recommends a new battery for \$139 and a tune up for \$85 (taxes not included). The safety check will cost \$40 plus GST. The book value for this car is \$2200. How much will the car cost Emile?

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3. Linda buys a car for university. The car itself costs \$4500, a diagnostic test costs \$65 and she needs to do a lien search. The book value for this car is \$5000. If it is purchased privately, what is the total cost?

4. Michael found a private sale on Autotrader.ca for a Dodge Grand Caravan. The price was \$9 600 The diagnostic check and repairs came to \$385 plus tax. He paid for the lien search and the book value for the vehicle was \$9350. Calculate the total cost of the vehicle.

DAY 7: Loans to Purchase Vehicles

Ways to finance a vehicle purchase:

X Can finance from bank, dealership, etc

➤ You will need to refer to the loan payment calculator on the next page to complete some of the following questions.

Example 1: You want to take out a loan of \$15 500 to purchase a used truck. Your monthly payment is \$364 for a 4-year loan

a) What is the total amount paid?

$$4 \times 12 \text{ months} = 48 \text{ months}$$

$$48 \times 364 = 17\,472$$

↗ "Interest"

b) What is the finance charge?

$$17\,472 - 15\,500 = \$1\,972$$

Example 2: Moira makes a down payment of \$5 000 on a new vehicle worth \$20 703.54. To finance the remaining amount she takes out a 3-year loan at a fixed rate of 7.25%. Calculate the following;

a) The Principal amount of the loan.

$$20\,703.54 - 5000 = \$15\,703.54$$

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b) The monthly payment (use the table on the next page)

$$\frac{30.99}{1000} = \frac{X}{15703.54}$$

$$30.99 \times 15703.54 \div 1000$$

$$X = \$486.65 / \text{month}$$

c) The total amount paid for the loan.

$$3 \times 12 \text{ months} = 36 \text{ months}$$

$$36 \times 486.65 = \$17519.40$$

d) The finance charge.
 ↗ "Interest"

$$17519.40 - 15703.54 = \$1815.86$$

e) The total cost of the car.

$$\$17519.40 + 5000 = \$22519.40$$

**PERSONAL LOAN PAYMENT CALCULATOR:
MONTHLY PAYMENT PER \$1000.00 BORROWED (INTEREST COMPOUNDED MONTHLY)**

Interest Rate (%)	Time in years				
	1	2	3	4	5
3.00	84.69	42.98	29.08	22.13	17.97
3.25	84.81	43.09	29.19	22.24	18.08
3.50	84.92	43.20	29.30	22.36	18.19
3.75	85.04	43.31	29.41	22.47	18.30
4.00	85.15	43.42	29.52	22.58	18.42
4.25	85.26	43.54	29.64	22.69	18.53
4.50	85.38	43.65	29.75	22.80	18.64
4.75	85.49	43.76	29.86	22.92	18.76
5.00	85.61	43.87	29.97	23.03	18.87
5.25	85.72	43.98	30.08	23.14	18.99
5.50	85.84	44.10	30.20	23.26	19.10
5.75	85.95	44.21	30.31	23.37	19.22
6.00	86.07	44.32	30.42	23.49	19.33
6.25	86.18	44.43	30.54	23.60	19.45
6.50	86.30	44.55	30.65	23.71	19.57
6.75	86.41	44.66	30.76	23.83	19.68
7.00	86.53	44.77	30.88	23.95	19.80
7.25	86.64	44.89	30.99	24.06	19.92
7.50	86.76	45.00	31.11	24.18	20.04
7.75	86.87	45.11	31.22	24.29	20.16
8.00	86.99	45.23	31.34	24.41	20.28
8.25	87.10	45.34	31.45	24.53	20.40
8.50	87.22	45.46	31.57	24.65	20.52
8.75	87.34	45.57	31.68	24.77	20.64
9.00	87.45	45.68	31.80	25.89	20.76
9.25	87.57	45.80	31.92	25.00	20.88
9.50	87.68	45.91	32.03	25.12	21.00
9.75	87.80	46.03	32.15	25.24	21.12
10.00	87.92	46.14	32.27	25.36	21.25

Day 7: Assignment:

1. You wish to take out a loan for \$8500 to purchase a used car. Your monthly payment is \$379 for a 2-year loan. Calculate the total amount paid and the finance charge.

2. Emily wishes to take out a loan for \$25 535.88 to purchase a new car. Her monthly payment is \$800 for a 3-year loan. Calculate the total paid and the finance charge.

3. Desmond is able to make a down payment of \$3000 on a new snowmobile he purchases for \$14 500. In order to finance the remaining amount, she takes out a 4-year vehicle loan from the dealership at a fixed interest rate of 4% annually.

a) Calculate the principal (amount borrowed) for the loan she requires

b) Calculate her monthly payment for the loan.





DAY 8: Vehicle Leasing

Leasing:

Residual Value:

Advantages to Leasing:

- 1.
- 2.
- 3.
- 4.

Disadvantages to Leasing:

Example 1: An SUV in Nanaimo costs \$34 000 plus taxes. The monthly lease payment is \$349 plus taxes for a lease term of 36 months. There is a required down payment of \$4 850. There is a refundable security deposit of \$500 as well as the first month's lease payment due at the time the lease is signed. The residual value of the vehicle is 75% after the 3 year lease term.

- a) Calculate the monthly lease payment.

b) Calculate how much the total lease will cost you.

c) What is the amount that must be paid at the signing of the lease?

Example 2: For the vehicle in example 1, calculate the residual value at the end of 3 years.

Example 3: What is the total cost of the car if you decide to buy it after the leasing term?

Day 8: Assignment:

1. A vehicle in Steinbach, MB has the following lease agreement:

Down Payment	\$3 000
Lease Payment	\$250 per month
Lease Term	24 months
Security Deposit	\$500

- a) Calculate the total monthly lease payment including taxes.

- b) Calculate the total amount paid for the lease.

- c) Calculate the amount that must be paid at the start of the lease.

2. A vehicle in Whitehorse, YT has the following lease agreement:

Down Payment	\$2 500
Lease Payment	\$195 per month
Lease Term	36 months
Security Deposit	\$500

- a) Calculate the total monthly lease payment including taxes.

b) Calculate the total amount paid for the lease.

c) Calculate the amount that must be paid at the start of the lease.

3. A lease vehicle in Flin Flon, MB, is priced at \$35 500. The residual value rate is 70% after 4 years. What is the residual value including taxes?

4. A lease vehicle is priced at \$28 800 in Salmon Arm, BC. The residual value rate is 75% after 2 years. What is the residual value including taxes?

5. A government-leased vehicle in Victoria has a residual value of \$29 552 (taxes included) and total lease payments of \$16 545 (taxes included). What will be the total cost of purchasing this leased vehicle after the lease term ends?

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6. An SUV in Iquluit sells for \$34 200 and leases for \$348 per month plus tax for a 48-month lease. A down payment of \$3 500 is required. The guaranteed residual value at the end of the lease is \$16 526. Determine the total lease payment and the total cost of the SUV if it is purchased at the end of the lease.

7. A Dodge Ram truck in Campbell River leases for \$329 a month plus taxes for a lease term of 30 months. A down payment of \$3 500 is required. The sale price is \$30 050 and the guaranteed residual value rate is 75%

a) Calculate the total lease monthly payment.

b) Calculate the total lease payment over the term of the lease.

c) Calculate the guaranteed residual value.

d) Calculate the total cost of the vehicle if it is purchased outright at the end of the lease.

e) Calculate the difference between the total cost of the vehicle if it is purchased outright at the end of the lease and the cost if it is bought at the time of purchase.

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- The filter cost was \$9.75
- It took 1.75 hours to complete the work at \$110 per hour for labour.

Calculate the total repair bill including taxes that Toby had to pay.

5. Mr. Weiss would like to buy a new Dodge Ram here in Courtenay with a base price of \$38 000. He also wants to add an options package with a price of \$5 500. There is an air charge of \$130, a freight charge of \$750 and a documentation fee of \$240.

a) Calculate the sticker price of the truck.

b) Calculate the total price after taxes.

6. A new car worth \$31 400 depreciates by 20% in its first year, and then by 15% every year after that. What is the value of the car after 4 years? What is the total depreciation over the 4 years?

7. You have the choice of 2 cars in Victoria, BC:

- A private sale for \$4 465. A diagnostic check would cost \$65 and a lien search for \$32. It needs 2 new tires at \$145 each and a safety check will cost \$55 plus GST. The book value for the car is \$ 5 000.
- A used car purchased at a dealership in Nanaimo for \$4 900.

Which car is the better buy and by how much?

8. Catherine wants to buy a car and she has 2 options:

- A new Subaru Outback through a dealership for a total of \$31 450. The dealership offers financing for 3 years at 3%. There is a 5-year warranty on the vehicle and she has saved up a down payment of \$3 000.
- A 2-year old used Subaru Outback for a total of \$24 800. She has the \$3 000 down payment but will have to borrow the rest from the bank at 5.5% for 3 years. There is 3 years left on the warranty for this vehicle.

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Calculate the total paid for each option. What option would you choose and why?

9. The monthly lease payment on a Dodge Grand Caravan in Courtenay is \$203.79 a month plus taxes for a term of 60 months. A down payment of \$2 175 is required. The sale price if you were to buy it outright is \$25 000 with a guaranteed residual value of 58%.

a) Calculate the total lease payment over the term of the lease.

b) Calculate the total cost of the van if it is purchased outright at the end of the lease period.