

Grade 11 College Math**Day: Lesson 6 - 6****Unit: Personal Finance****Topic: Operating a Vehicle****# homework check: Lesson 6 - 5****# note: Operating a Vehicle**

There are fixed and variable costs to owning and operating a vehicle. For example, insurance is a fixed cost per month while gas is a variable cost per month. Other variable costs might involve fixing or replacing parts. Of course, vehicles are thought to depreciate in value once owned, so this loss in value might also be considered a variable cost (or percentage loss).

- a) Carl owns a 2002 Toyota Camry. Because he is only 18 years old, the insurance he must pay is \$2265 a year even though he only paid \$2300 for the car. The options on payment of insurance are:
- i) one-time payment \$2265
 - ii) triple-pay of \$800, \$745, \$745
 - iii) 12 monthly payments of \$195

Which payment schedule is the best choice for Carl who makes \$10.15/hour at his job where he usually works 25 hours a week.

Depending on his work schedule and whether Carl is able to save the first payment of \$800 for the triple-pay option, he will pay an extra

$$\$800 + 745 + 745 = \$2290$$

$$\$2290 - 2265 = \$25$$

If he likes the monthly option better, he will pay an extra

$$(12)195 = \$2340$$

$$2340 - 2265 = \$75$$

Because neither of these options are grossly over the yearly cost of insurance, either is a good choice.

- b) Carl bought the Camry because it is supposed to be good on gas. One week, Carl finds that he uses 32 L to go 350 km while his friend uses 60L to go 475 km. Whose vehicle is more fuel efficient?

*use proportions to find any unknown quantity

$$\frac{32L}{350km} = \frac{x}{100km}$$

$$350x = 3200$$

$$x = \frac{3200}{350}$$

$$x = 9.14$$

$$\frac{60L}{475km} = \frac{x}{100}$$

$$475x = 6000$$

$$x = \frac{6000}{475}$$

$$x = 12.63$$

Carl's car uses less gas per 100 km than his friend's and therefore, Carl's car is more fuel efficient.

*Note: Any fuel efficiency rating is how far a vehicle travels per unit of fuel. Common units of fuel consumption are L/100km or mpg (miles per gallon).

✚ **homework assignment: Lesson 6 - 6**

*use 1.099 per litre as price of gas today

5. Given the conversion 1 U.S gallon is 3.785 L, determine the number of U.S. gallons to fill the tank of each vehicle. (10 marks)

- a) b) c) d) e)

6. Calculate the depreciation on each vehicle. (4 marks)

- a) A new car worth \$14 595 sells for \$12 259 b) An SUV worth \$52 999 is purchased for \$43 000

7. Maurice spent \$1200 on vehicle maintenance last year. This year he expects to spend 15% more on maintenance. What should Maurice budget for maintenance? (3 marks)

8. A new pickup truck costs \$24 500. On average, the truck depreciates 21% per year. What will the cost of the truck be in 3 years? (4 marks)

9. An SUV worth \$48 000 depreciates 18% each year. Determine how old the vehicle will be if Anna can only afford to pay \$18 000. Show your work. (6 marks)