

## Unit 3 – Consumer Decisions

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### **Overview**

Previously, we learned how to calculate both our gross and net earnings given our hours worked and deductions. However, in this unit we will shift our focus away from determining our pay cheques, and instead analyze how we can make better decisions about what we are buying. That is, we will consider how to pay the *best price* for what we need or may want to *consume* or purchase.

### **Key Term**

Consumer: a person who purchases (buys) goods or services for their own use.

### **Before We Begin...**

As a class, we will each complete the **Buyer Behaviour Self-Test** to determine how savvy we are finding the best deal.

By completing this self-test, we may begin to understand what kind of consumer we all are according to its rating scale. Over the course of this unit we may begin notice how we can make some changes to our buying decisions.

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### 3.1 – Proportional Reasoning

Before we begin comparing and analyzing prices to ensure we are making a wise decision; we must first understand how to set up ratios and proportions. As well, we will determine how to calculate specific rates.

#### Key Terms

Throughout this lesson, the following terms will be used...

Ratio: A comparison of 2 numbers within the same unit

ex: 3 parts water to 1 part fertilizer

$$3:1 \rightarrow \frac{3}{1}$$

Proportion:

A fractional statement of equality between 2 ratios and rates.

ex:  $\frac{3}{1} = \frac{75}{25}$  or  $\frac{1}{2} = \frac{2}{4}$

Rate:

A comparison between 2 numbers of different units

ex:  $\frac{\$1.89}{500g}$  or  $\frac{\$5.69}{12 \text{ apples}}$

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### Example 1

Engines that require you to mix oil with fuel to provide lubrication are called 2-stroke engines. After the tornado-like winds that hit Morden & Winkler in August, you need to refill your chainsaw's fuel can to help clean up the trees on your property. The ratio of gasoline to oil that is needed is 40 parts of gas to 1 part of oil. The chainsaw's fuel can holds 8 litres of the ~~gasoline~~ <sup>gas</sup>. How much oil should be added to the gas to obtain the correct ratio?

Ratio:  $\frac{40 \text{ gas}}{1 \text{ oil}}$  or  $\frac{40 \text{ gas}}{1 \text{ oil}}$

Proportion:

$$\frac{40 \text{ gas}}{1 \text{ oil}} = \frac{8 \text{ gas}}{? \text{ oil}}$$

*x cross multiply and divide*

①  $8 \times 1 = 8$   
 ②  $8 \div 40 = 0.2$

$0.2 \text{ L of oil}$

  

$$\frac{40 \text{ gas}}{1 \text{ oil}} \xrightarrow{\div 5} \frac{8 \text{ L gas}}{? \text{ oil}}$$

$1 \div 5 = 0.2 \text{ L of oil}$

### Example 2

You find that the best way to make a pitcher of orange juice from concentrate is to add 3 cups of frozen concentrate to 7 cups of water. However, while attempting to open the container, you drop the can on your toe and 1 cup of the concentrate spills on the floor. As a result, you are left with 2 cups of concentrate to work with. How many cups of water should you add to ensure you are making the tastiest orange juice?

Ratio:  $\frac{3 \text{ cups conc.}}{7 \text{ cups}}$  or  $3:7$

Proportion:

$$\frac{3 \text{ cups conc.}}{7 \text{ cups water}} = \frac{2 \text{ cups conc.}}{? \text{ water}}$$

①  $2 \times 7 = 14$   
 ②  $14 \div 3 = 4 \frac{2}{3}$

$4 \frac{2}{3} \text{ cups of water}$

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### Example 3

If sliced ham costs \$1.90 per 100 grams, how much will it cost to buy 250 grams of ham?

~~Ratio:~~  
Rate:  $\frac{\$1.90}{100g}$

Proportion:

$$\frac{\$1.90}{100g} = \frac{?}{250g}$$

$$\textcircled{1} 1.90 \times 250 = 475$$

$$\textcircled{2} 475 \div 100 = \$4.75$$

250g will cost \$4.75

### Example 4

A local plumbing store sells 100 copper-plated pipe straps for \$4.97. You have estimated that you require 75 straps. How much will you pay if you only buy 75 straps?

~~Ratio:~~ Rate:  $\frac{\$4.97}{100 \text{ straps}}$

Proportion:

$$\frac{\$4.97}{100 \text{ straps}} = \frac{?}{75 \text{ straps}}$$

$$\textcircled{1} 4.97 \times 75 = 372.75$$

$$\textcircled{2} 372.75 \div 100 = 3.7275$$

75 straps will cost \$3.73

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### 3.1 – Proportional Reasoning Practice

1. A computer repair technician fixes 8 printers for every 2 computers she repairs. What is the simplest form of this ratio?

$$\frac{8}{2} \xrightarrow{\div 2} \frac{4}{1}$$

2. If a secretary types 55 words per minute, how long will it take them to type a 2000-word report?

$$\begin{array}{l} 55 \text{ words} \div \\ \hline 1 \text{ minute} \end{array} \quad \begin{array}{l} 2000 \text{ words} \\ \hline \boxed{36.36 \text{ min}} \end{array} \quad \begin{array}{l} \textcircled{1} 2000 \times 1 = 2000 \\ \textcircled{2} 2000 \div 55 = 36.36 \end{array}$$

3. An apprentice mechanic rotates the 4 tires on a truck in 15 minutes.  
a.) How long will it take him to rotate the tires on 5 trucks?

$$\begin{array}{l} 4 \text{ tires} \\ \hline 15 \text{ min.} \end{array} \xrightarrow{\times 5} \begin{array}{l} 20 \text{ tires} \\ \hline ? \text{ min} \end{array} \quad \begin{array}{l} 5 \times 4 = 20 \text{ tires} \\ \textcircled{1} 20 \times 15 = 300 \\ \textcircled{2} 300 \div 4 = 75 \end{array}$$

It will take 75 min.

- b.) How long will it take him to rotate 2 tires on one vehicle?

$$\begin{array}{l} 4 \text{ tires} \\ \hline 15 \text{ min} \end{array} \xrightarrow{\div 2} \begin{array}{l} 2 \text{ tires} \\ \hline \text{min} \end{array} \quad \boxed{7.5 \text{ min}}$$

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4. A Winnipeg car salesman sells 4 cars on Thursday, 6 and an equal number each on Saturday and Sunday, for a total of 36 cars sold over the 4 days. How many cars were sold each day on Saturday and Sunday? What proportion of the total sales took place on the weekend?

$$\rightarrow 13$$

$$\rightarrow 26:36$$

5. The ratio between Sue's height and the height of her brother Tye is 5:6. If Tye is 145cm tall, how tall is Sue to the nearest centimetre?

$$\begin{aligned} \text{Height} &= 120.83\text{cm} \\ &= 121\text{cm (nearest cm)} \end{aligned}$$

6. If a music store makes \$2550.00 on the sale of 200 CDs, how much profit would the same store make on the sale of 50 CDs? What about on the sale of 900 CDs?

$$\begin{array}{l} \underline{50 \text{ CDs}} \\ \text{profit} = \$637.50 \end{array}$$

$$\begin{array}{l} \underline{900 \text{ CDs}} \\ \text{profit} = \$11475 \end{array}$$

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7. If a 5kg jar of olives costs a restaurant \$15.00 through a wholesaler, how many kilograms would it get for \$75.00? How much would it cost to buy 20kg?

\$75  
gets you  
25kg

20kg  
costs \$60.00

8. A carpenter wants to mix a shade of stain for a set of kitchen cabinets he is building. The ratio for the shade he wants is 3 parts of Spanish Oak to 4 parts of Red Mahogany. If he needs 12 litres in all, how many litres of each stain does he need?

$$\frac{3 \text{ parts S.O.}}{\text{Total of } 7 \text{ parts}} = \frac{5.14 \text{ L S.O.}}{12 \text{ L.}}$$

$$\rightarrow 12 \text{ L Total} - 5.14 \text{ L S.O.} = 6.86 \text{ R.M.}$$