UNIT 1 – WORKING WITH MONEY

Assignment	Title	Work to complete	Complete
1	*Review – Simplifying Fractions*	*Review – Simplifying Fractions*	
2	*Proportional Reasoning*	Cross Multiply and Divide	
3	*Working with Ratio*	*Working with Ratio*	
4	*Working with Proportion*	*Working with Proportion*	
5	*More Working With Proportion*	*More Working With Proportion*	
6	*Calculating Unit Price*	*Calculating Unit Price*	
7	*Working with Unit Price*	*Working with Unit Price*	
8	*More Working with Unit Price*	*More Working with Unit Price*	
	Quiz		
9	*Working with Unit Rate*	*Working with Unit Rate*	
10	*Review – Decimals and Percents*	*Review – Decimals and Percents*	
11	*More Decimals and Percents*	*More Decimals and Percents*	
12	*Price Markups*	*Price Markups*	
13	*Taxes*	*Taxes*	
14	*Sale Prices*	*Sale Prices*	
15	*More Sale Prices*	*More Sale Prices*	
16	*Special Sale Prices*	*Special Sale Prices*	
17	*Currency Exchange Rates*	*Currency Exchange Rates*	
18	*More Currency Exchange Rates*	*More Currency Exchange Rates*	
Practice Test	**Practice Test** How are you doing?	Get this page from your teacher	
Self-Assessment	**Self-Assessment** *"Traffic Lights"*	On the next page, complete the self-assessment assignment.	
Chapter Test	**Chapter Test** Show me your stuff!		
Mental Math	**Mental Math** Non-calculator practice		

Self-Assessment

In the following chart, show how confident you feel about each statement by drawing one of the following: ☺, ☺, or ☹. Then discuss this with your teacher **_BEFORE_** you write the test!

Statement After completing this unit;	☺ ☺ ☹
• I can use proportions to solve different types of problems	
• I can calculate unit prices and unit rates	
• I can use unit prices to determine the best buy	
• I can calculate discounts and price mark-ups, and sale prices	
• I can calculate taxes on an article given the appropriate tax rates	
• I can calculate percent savings or discounts as a percentage of the original price	
• I can calculate final prices, both without taxes and with taxes	
• I understand how foreign currencies are exchanged for Canadian money and vice versa	

Vocabulary: Unit 1

buying rate (currency)
currency
exchange rate
markup
percent
promotions
proportion
rate
ratio
selling rate (currency)
unit price
unit rate

REVIEW – SIMPLIFYING FRACTIONS

To simplify a fraction, divide the numerator and denominator by a common factor. Easy common factors to start with are 2 for even numbers, 3, or 5. If the resulting fraction cannot be divided by any other common factor, then it is in **lowest terms**. If it can be divided again by another common factor, keep repeating the process until it is in lowest terms.

Example 1: Simplify $\dfrac{18}{27}$ ⟵ numerator
⟵ denominator

        Solution A: $\dfrac{18 \div 9 = 2}{27 \div 9 = 3}$ Simplify, using a factor of 9

        Solution B: $\dfrac{18 \div 3 = 6 \div 3 = 2}{27 \div 3 = 9 \div 3 = 3}$ Simplify, using a factor of 3, twice

ASSIGNMENT 1 – SIMPLIFYING FRACTIONS

1) Simplify these fractions to their lowest terms. Show your work!

a) $\dfrac{4}{16}$ b) $\dfrac{3}{12}$ c) $\dfrac{25}{75}$

d) $\dfrac{15}{21}$ e) $\dfrac{8}{18}$ f) $\dfrac{45}{100}$

g) $\dfrac{20}{50}$ h) $\dfrac{3}{21}$ i) $\dfrac{7}{56}$

PROPORTIONAL REASONING

A **ratio** is a comparison between two numbers measured in the same units.

A ratio can be expressed in three ways as shown below:

as a fraction $\dfrac{9}{16}$

in words by using the word "**to**" **9 to 16**

a notation using colon **: 9 : 16**

Ratios, like fractions, can be simplified. For example, the ratio **150 : 15** can also be expressed

$$\frac{150}{15}$$

which can be simplified $\dfrac{150 \div 15 = 10}{15 \div 15 = 1}$

Notice that the numerator of the fraction is larger than the denominator. This can be common with ratios.

If two ratios are equivalent (equal), the first (top) term of each ratio compares to the second (bottom) term in an identical manner. You can represent this equivalence in the two ratios here:

$$\frac{150}{15} = \frac{10}{1}$$

An equation showing equivalent ratios is called a **proportion**.

Cross Multiply and Divide
When two fractions are equal to each other, any unknown numerator or denominator can be found. The following example shows the process.

Example 1: Find x when $\dfrac{x}{3} = \dfrac{2.1}{4}$

Solution: Cross multiply means multiply the numbers across the equals sign (the arrow). The divide part means divide that result by the number opposite the unknown (x) as shown below.

$$\frac{x}{3} \nearrow \frac{2.1}{4}$$

This gives the result $x = 3 \times 2.1 \div 4$

In other words, if $\dfrac{x}{3} = \dfrac{2.1}{4}$, then $x = 3 \times 2.1 \div 4 = 1.575$

It does not matter where the unknown (x) is in the proportion, This process works for all situations.

4

This process can also be used when one side of the equal sign is not in fraction form.

Example 2: Find x when $27 = \dfrac{x}{3}$

Solution:

Step 1. The number 27 is the same as $\dfrac{27}{1}$. So, place a 1 under the 27 to get:

$$\dfrac{27}{1} = \dfrac{x}{3}$$

Step 2. Cross multiply and divide as above $\dfrac{27}{1} \diagdown \dfrac{x}{3}$ to solve.

So: $x = 27 \times 3 \div 1$
$x = 81$

ASSIGNMENT 2 – CROSS MULTIPLY AND DIVIDE

Find the missing term by using cross multiply and divide. If necessary, round answers to one decimal place. SHOW YOUR WORK.

1. $\dfrac{x}{7} = \dfrac{4}{35}$

2. $\dfrac{2}{9} = \dfrac{x}{27}$

3. $\dfrac{3}{18} = \dfrac{25}{x}$

4. $\dfrac{3.2}{x} = \dfrac{16}{4}$

5. $\dfrac{x}{6} = \dfrac{0.5}{17}$

6. $\dfrac{25}{x} = \dfrac{40}{200}$

WORKING WITH RATIO

Ratios can be used in word problems to express the relationship between parts.

Example:

Charlie works as a cook in a restaurant. His chicken soup recipe contains:
- 11 cups of seasoned broth
- 5 cups of diced vegetables
- 3 cups of rice
- 3 cups of chopped chicken

Write the ratios for each of the following relationships.
   a) vegetables to chicken
   b) broth to vegetables
   c) chicken to rice
   d) chicken to the total ingredients in the recipe

Solution:
   a) vegetables to chicken is 5:3
   b) broth to vegetables is 11:5
   c) chicken to rice is 3:3 or 1:1
   d) chicken to the total ingredients in the recipe is 3:22 (11 + 5 + 3 + 3)

ASSIGNMENT 3 - WORKING WITH RATIO

1) A conveyor belt has 2 pulleys. One pulley has a diameter of 45 cm and the other has a diameter of 20 cm. What is the ratio of the smaller diameter to the larger diameter?

2) On a bicycle with more than one gear, the ratio between the number of teeth on the front gear and the number of teeth on the back gear determines how easy it is to pedal. If the front gear has 30 teeth and the back gear has 10 teeth, what is the ratio of front teeth to back teeth?

3) What is the ratio of 250 mL of grape juice concentrate to 1 L of water?
   (Hint: 1000 mL = 1L)

WORKING WITH PROPORTION

When given a ratio and one of the parts, write a proportion to solve using cross multiply and divide. Use a letter or word to represent the parts to put the numbers in the correct location.

Example: For a painting, Greg mixes inks to get the tint he wants. He uses a ratio of yellow ink to white ink of 3:1 and red ink to yellow in of 2:3.
a) How many mL of yellow ink would he use if he used 500 mL of white ink?

Solution: set up a proportion using the known ratio and English letters/words to represent the colours.

$$\frac{yellow}{white} \qquad \frac{3}{1} = \frac{x}{500}$$

$$x = 3 \times 500 \div 1 = 1500 \text{ mL of yellow ink}$$

b) How many mL of red ink would he need if he used 750 mL of yellow ink?

Solution: set up a proportion using the known ratio and English letters/words to represent the colours.

$$\frac{red}{yellow} \qquad \frac{2}{3} = \frac{x}{750}$$

$$x = 2 \times 750 \div 3 = 500 \text{ mL of red ink}$$

ASSIGNMENT 4 - WORKING WITH PROPORTION

1) If a secretary types 55 words in one minute, how long will it take the secretary to type a 2000 word report?

2) The ratio between Siu's height and Tai's height is 5:6. If Tai is 145 cm tall, how tall is Siu, to the nearest whole centimetre?

3) A mechanic can rotate the 4 tires on a truck in 15 minutes. How many minutes would it take the mechanic to rotate the tires on 5 trucks? Hint: what are you comparing??

MORE WORKING WITH PROPORTION

Sometimes, the information given in a proportion question requires you to take a different approach to solving. This occurs when a part of the whole is being found.

Example: Tom and Susan made $180 from their garage sale. Tom contributed fewer items do the money was divided between Tom and Susan in a ratio of 1:2. How much money did each person receive?

Solution: Since the ratio is 1:2, this means the money is divided into 3 parts of which Tom get one and Susan gets 2. When solving this problem, one proportion for each person is needed, with the comparison to the total money earned.

Susan: $\dfrac{\text{part}}{\text{whole}}$ $\dfrac{2}{3} = \dfrac{x}{\$180}$

So $x = 2 \times \$180 \div 3 = \$120$

Tom : $\dfrac{\text{part}}{\text{whole}}$ $\dfrac{1}{3} = \dfrac{x}{\$180}$

So $x = 1 \times \$180 \div 3 = \$60$

ASSIGNMENT 5 – MORE WORKING WITH PROPORTION

1) The ratio of flour to butter in a recipe for pie crust is 2:1. If a baker makes 30 cups of piecrust, how many cups of flour and how many cups of butter does he need?

2) A compound of two chemicals is mixed in a ratio of 3:12. If there are 45 L of the compound, how much of each chemical is in the mixture?

CALCULATING UNIT PRICE

The unit price of an item is the cost of one unit. It could be the cost of one can of pop in a 6-pack, it could be the cost of one egg in a dozen, it could be the cost of one kg in 10 kg of potatoes. Whatever the items, it is always the cost of one.

To calculate the unit price, ALWAYS take the money and divide it by the amount of the items you have. If difficulties are encountered, a proportion can always be used.

Example: If a carton of one dozen eggs costs $3.29, how much does one egg cost?

Solution: $3.24 ÷ 12 eggs = $0.27 per egg

ASSIGNMENT 6 – CALCULATING UNIT PRICE

1) Calculate each unit price.

a) $3.99 for 2 kg of bananas

   $ _____ per kg

b) 18 eggs for $5.94

   $ _____ per egg

c) $23.90 for 1.5 kg of pecans

   $ _____ per kg

d) $35.16 for 40L of gas

   $ _____ per L

2) Lindsay orders a case of 1000 paper coffee cups for her restaurant. If it costs her $94.83 for the case, how much does one cup cost?

3) Frank is a locksmith. He buys a case of 144 padlocks for $244.97. He sells each lock for $5.50.
a) How much does each lock cost Frank to buy?

b) How much profit does Frank make when he sells one lock?

WORKING WITH UNIT PRICE

Often unit price is used to compare costs and fins which choice is the better buy. This is done by comparing the unit price of each item.

Example: A 48-oz can of tomatoes costs $2.99. An 18-oz can costs $1.19. Which is the better buy?

Solution: Find the unit price of 1-oz for each can and compare those costs.

Can A – 48-oz can $2.99 ÷ 48 = $0.062 (approximately)

Can B – 18-oz can $1.19 ÷ 18 = $0.066 (approximately)

Therefore, the 48-oz can has a lower unit price and is the better buy.

ASSIGNMENT 7 – WORKING WITH UNIT PRICE

1) A bookstore sells notebooks in packages of 12 for $15.48. Another bookstore sells the same notebooks on packages of 15 for $19.65. Which has the better unit price?

2) Which is the better buy: 6 muffins for $7.59 or one dozen muffins for $14.99?

3) Judd can buy three 8-foot pieces of lumber for $2.60 each, or four 6-foot pieces for $1.92 each. Which is the better buy?

MORE WORKING WITH UNIT PRICE

Often it is necessary to use the unit price to make a further calculation. This can be done in two ways: finding the unit price and using it in further calculations, or using a proportion and one calculation. Both can be done correctly.

Example: If 1.5 m of fabric costs $12.63, how much will 2.75 m cost?

Solution A: Find the unit price of the fabric and then multiply to find the cost of 2.75 m

> Unit Price = $12.63 ÷ 1.5 m = $8.42 per metre
> Cost of 2.75 m = $8.42 × 2.75 m = $23.16

Solution B: Use a proportion to find the cost of 2.75 m

$$\frac{fabric}{cost} \qquad \frac{1.5\text{ m}}{2.75\text{ m}} = \frac{\$12.63}{x}$$

$$x = \$12.63 \times 2.75 \div 1.5 = \$23.16$$

ASSIGNMENT 8 – MORE WORKING WITH UNIT PRICE

1) If 2.5 kg of potatoes cost $8.25, how much will you pay for 7 kg?

2) If it cost Wayne $5.45 to buy 5 L of gas for his lawnmower, how much would he have to pay to fill his car with 48 L of gas?

3) Sash is a landscape gardener. He found a 200-foot roll of string trimmer line for $18.75. At this ratio, what would a 150-foot roll of cost?

ASK YOUR TEACHER FOR THE UNIT QUIZ.

WORKING WITH UNIT RATE

A **rate** is a ratio comparing two numbers measured in different units. This type of questions is dealt with in exactly the same way as unit price but paying attention to the units.

Some examples of rates include

- $1.69 / 100 g for the cost of ham at the deli
- 80 km/h for how fast a car travels
- $38.00/4 for how much you earn at work

Example: If you earn $150.00 in 12 hours, how much will you earn if you work 40 hours?

Solution A: Find the unit (hourly) rate and then multiply to find the earnings in 40 hours

Unit Rate = $150.00 ÷ 12 h = $12.50 per hour
Earnings = $12.50 × 40 h = $500.00

Solution B: Use a proportion to find the earnings in 40 hours

$$\frac{hours}{earnings} \qquad \frac{12\ h}{\$150.00} = \frac{40}{x}$$

$$x = \$150.00 \times 40 \div 12 = \$500.00$$

ASSIGNMENT 9 – WORKING WITH UNIT RATE

1) A janitor makes a cleaning solution by mixing 30 g of concentrated powdered cleanser with 2 L of water. How much powder will she need for 5L of water?

2) If photocopy paper weighs 4.9 kg for every 500 sheets, how much will 700 sheets weigh?

3) If 5 cm on a map represents 2.5 km of actual ground, how many centimeters would 15 km of actual ground be on the map?

REVIEW – DECIMALS AND PERCENT

A **percent** is a fraction out of 100. So if you got a mark of 86% on a test that means you got the equivalent of 86 out if 100.

A) To change a percent into a decimal, simply divide the percent number by 100.

Example: What is 67% as a decimal?

Solution: 67% ÷ 100 = 0.67

B) To change a decimal to a percent, simply multiply the decimal by 100.

Example: Write the decimal 0.76 as a percent.

Solution: 0.76 × 100 = 76%

C) To change a fraction to a decimal, divide the numerator (top number) byt the denominator (bottom number).

Example: Write the fraction $\frac{3}{5}$ as a decimal.

Solution: 3 ÷ 5 = 0.6

This decimal can then be changed to a percent as described in part B.

ASSIGNMENT 10 – DECIMALS AND PERCENTS

1) Write each percent as a decimal.

a) 25% = _____   b) 7% = _____   c) 15% = _____

d) 1.5% = _____   e) 47% = _____   f) 12.5% = _____

2) Write each decimal as a percent.

a) 0.65 = _____   b) 0.04 = _____   c) 0.12 = _____

d) 0.055 = _____   e) 0.1 = _____   f) 0.002 = _____

3) Write each Fraction as a decimal. Round to one decimal place if needed.

a) $\frac{2}{5}$ = _____   b) $\frac{5}{8}$ = _____   c) $\frac{1}{3}$ = _____

d) $\frac{4}{3}$ = _____   e) $\frac{5}{7}$ = _____   f) $\frac{3}{9}$ = _____

MORE DECIMALS AND PERCENT

Often we are asked to find a percent of a number. This can be done with a proportion, remembering that a percent is a number always out of 100. It can also be done by converting the percent to a decimal and multiplying. When the percentage is placed over 100, the % sign is dropped.

<u>Example</u>: Calculate 20% of 45

<u>Solution A</u>: Set up the proportion and solve.

$$\frac{\text{part}}{\text{whole}} \qquad \frac{20}{100} = \frac{x}{45}$$

$x = 20 \times 45 \div 100 = 9$ So, 20% of 45 is 9.

<u>Solution B:</u> Convert 20% to a decimal and multiply to solve.

$20\% \div 100 = 0.20$

$0.20 \times 45 = 9$

NOTE: If the percentage is greater than 100 – and it can be – your answer will be larger than the number you started with.

It is also possible to find the percentage given two numbers. To calculate what percent one number is of another means you need to determine what number out of 100 is equal to your ratio. Using a proportion of simplifying a fraction are the tow ways to solve this type of question.

<u>Example</u>: What percent is 5 of 20?

<u>Solution A</u>: Set up the proportion and solve.

$$\frac{\text{part}}{\text{whole}} \qquad \frac{x}{100} = \frac{5}{20}$$

$x = 5 \times 100 \div 20 = 25\%$ So, 5 of 20 is 25%

<u>Solution B:</u> Convert 5 of 20 to a fraction $\frac{5}{20}$, divide the numerator by the denominator, and multiply by 100 to solve.

$5 \div 20 = 0.25$

$0.20 \times 100 = 25\%$

ASSIGNMENT 11 – MORE DECIMALS AND PERCENTS

1) Calculate the following percentages.

a) 15% of 300

b) 45% of 1500

c) 140% of 70

d) 175% of 24

e) 7.8% of 50

f) 0.3% of 175

g) 200% of 50

h) 135% of 25

2) Calculate what percentage the first number is of the second number.

a) 65 of 325

b) 135 of 405

c) 68 of 42

d) 13 of 65

e) 1 of 12

f) 625 of 50

PRICE MARKUPS

When a person owns a business, the merchandise is bought at a wholesale cost – what the business owner pays for the goods – and is sold at a higher price, called the retail price. The difference between these two prices is called the **markup**, and it is usually a percentage of the wholesale price.

Example: Melanie owns a clothing store. She marks up the price of her goods by 85% of the wholesale price.

a) What is the markup, in dollars, on a coat that has a wholesale price of $125?

Solution: First, change 85% to a decimal.

$$85\% \div 100 = 0.85$$

Second, multiply the wholesale price by the markup as a decimal.

$$\$125 \times 0.85 = \$106.25 \qquad \text{The markup is } \$106.25$$

b) What is the retail price? (The price Melanie charges her customers.)

Solution: Add the wholesale price and the markup together.

$$\$125 + \$106.25 = \$231.25 \qquad \text{The retail cost is } \$231.25$$

ASSIGNMENT 12 – PRICE MARKUPS

1) The markup on a bicycle at a sporting goods store is 125%. The wholesale price of the bicycle is $450.00. What is the markup in dollars?

2) The wholesale price for a bottle of shampoo is $7.25. What is the markup in dollars if the shampoo is marked up by 25%?

3) A jacket and skirt outfit is marked up by 60%. If the wholesale price of the outfit is $117.45, what would the markup be in dollars and the retail price?

4) What should Max charge for a package of paper plates in his store if he bought them for $9.00 and he wants to make a 75% profit?

5) The markup on a hamburger at McDonalds is 200%. A hamburger costs $2.25 to make. What is the markup and how much will a customer be charged for the hamburger?

TAXES

Taxes are added to the price of most articles and services purchased. Taxes are a percentage of the cost of the item. The higher the cost, the more taxes are paid. Tax rates are different in each province and territory across Canada. Some charge GST, PST, either, both, or HST. Tax rates will always be supplied in order to solve the problems.

Example: Marie needs a pair of safety boots that cost $179.99.

a) How much will the taxes be if GST is 5% and PST is 6%?

Solution: These taxes can be calculated separately or combined in one calculation.

Separate taxes: 5% = 0.05
                    6% = 0.06

    $179.99 × 0.05 = $9.00   The GST is $9.00
    $179.99 × 0.06 = $10.80   The PST is $10.80

    The total taxes paid will be $9.00 + $10.80 = $19.80

Combined taxes: 5% + 6% = 11%

    $179.99 × 0.11 = $19.80   The taxes are $19.80

b) What is the final price of the boots?

Solution: The final price is calculated by adding the tax amounts to the retail price.

    $179.99 + $19.80 = $199.75

ASSIGNMENT 13 – TAXES

1) What would the taxes be for a jacket that is listed at $99.95 in Nunavut, where the only tax is 5% GST?

2) Tara is buying a new car in Winnipeg, Manitoba for $22 599. How much will each of the taxes be if the PST is 7% and the GST is 5%?

3) A return flight from Cranbrook, B.C. to Vancouver, B.C. costs $372.00. How much will the taxes be if the HST is 12%? What will the total cost of the ticket, including these taxes?

4) Find the total cost of a washing machine that is sold for $944.98 in Saskatchewan, where the PST is 6% and the GST is 5%.

5) A pair of jeans has a wholesale cost of $30. The jeans are marked up by 125%.
a) What is the dollar amount of the markup?

b) What is the retail cost of these jeans?

c) The tax rates are 5% GST and 6% PST. What are the taxes on the pair of jeans?

d) What is the final cost, including taxes?

5) The markup on a restaurant meal is 250%. A meal costs $7.25 to produce. How much will the customer be charged, after the markup, and then 5% GST are applied?

SALE PRICES

When you go shopping, you have seen signs that say things like "Up to 50% Off" and "Discounted Prices." These are **promotions**, activities that increase the awareness of a product or attract customers.

When working with sales or promotions, it is possible to find the discount – the amount saved – as well as the final price.

Example: Samantha is buying a new TV. She sees one marked $675.95, on sale for 20% off. How much will Samantha save on her new TV?

Solution: The saving is 20% so find 20% of $675.95.

$20\% \div 100 = 0.20$

$0.20 \times \$675.95 = \$135.19$

Samantha will save $135.19 on the TV.

ASSIGNMENT 14 – SALE PRICES

1) Jordan is buying a computer listed at $989.98. The computer is marked 30% off. What is the discount Jordan will receive?

2) Day-old goods at a bakery are sold at a discount of 60%. If the original price of a loaf of sweet bread was $2.98, how much would you save by buying the day-old loaf?

3) If the sale price is 24% off, what will you save if you buy a sofa regularly priced at $1999.97?

MORE SALE PRICES

Once the discount is found for an item, the final price paid can be found easily by subtracting the discount from the original price.

Example: Samantha is buying a new TV. She sees one marked $675.95, on sale for 20% off. What is the sale price of the TV?

Solution: The saving is 20% so find 20% of $675.95. Then subtract this amount from the original price.

$20\% \div 100 = 0.20$

$0.20 \times \$675.95 = \$135.19$

The discount is $135.19.

The sale price of the TV is $675.95 – $135.19 = $540.76

ASSIGNMENT 15 – MORE SALE PRICES

1) Sarbijt charges $24.95 for a haircut but gives students a discount of 30%. How much would a student have to pay for a haircut in this salon?

2) A can of paint costs $59.95. There is a 20% reduction for contractors. How much money will a contractor save if she buys 5 cans of paint?

3) Chiu charges $75.00 to paint a room, but if he paints 3 or more rooms, he gives a 15% discount on the whole job. How much will he charge if he paints 4 rooms in a house?

SPECIAL SALE PRICES

Often, consumers wish to know the discount rate as a percent. To calculate this, take the discount (in dollars) and divide it by the original cost (in dollars) and multiply by 100 to make the answer a percent.

Example: Bamboo baskets are regularly priced at $19.98. They are on sale, advertised as "Buy one, get one at half price." What is the discount rate, as a percent (or percentage markdown)?

Solution: First, calculate the regular cost of 2 baskets.

$19.98 × 2 = $39.96

Next, calculate the savings on the second basket (half price).

$19.98 ÷ 2 = $9.99

Divide the savings by the regular price, and multiply by 100.

$9.99 ÷ 39.96 × 100 = 25%   The discount rate/percentage markdown is 25%.

Notice that this is the <u>part</u> (discount) divided by the <u>original</u> amount, times 100.

Up until this point, taxes have been ignored. But taxes usually must be added to the sale price to calculate the final cost.

NOTE: Remember that taxes are added only to the selling price, not the original price.

Example: Samantha is buying a new TV. She sees one marked $675.95, on sale for 20% off. What is the final price of the TV if she is charged 12% HST?

Solution: The saving is 20% so find 20% of $675.95. Then subtract this amount from the original price.

20% ÷ 100 = 0.20

0.20 × $675.95 = $135.19

The discount is $135.19.

The sale price of the TV is $675.95 – $135.19 = $540.76

The taxes are calculated on the sale price.

12% ÷ 100 = 0.12

$540.76 × 0.12 = $64.89

The final price, including taxes, is $540.76 + $64.89 = $605.65

ASSIGNMENT 16 – SPECIAL SALE PRICES

1) What is the percentage markdown if a $175 item sells for $150?

2) A store promotion advertises T-shirts as "Buy 4, Get 1 free." If one T-shirt costs $15.97, what is the discount rate, as a percent?

3) Cameron needs to buy 6 computers. Each computer costs $789.00. He is told that if he buys 5 computers, he will get the 6th one free. What will be his percent saving compared to buying all 6 computers at the regular price?

4) Nicole wants to buy a coat that was originally priced at $249.95. It is on sale at 25% off. How much will she pay in total if 5% GST and 6% PST are also charged?

5) Shelley is selling last year's frames for eye glasses in Whitehorse YT. The frames are on sale for 30% off. What will a customer pay for frames that were originally priced at $149.00 if 5% GST is also charged?

6) Yasmin owns a kitchen and bathroom store. She is selling a kitchen sink at a reduction of 40% because it has a scratch. The original price was $249.95.

a) What is the discount on the sink?

b) What is the total saving to the customer including 5% GST and 8% PST?

c) Calculate the percentage of total savings.

CURRENCY EXCHANGE RATES

Different countries use different currencies and/or monetary units. For example, both Canada and the United States use a currency called the dollar, but they are different dollars. It is important to consider exchange rates when travelling to different countries. An exchange rate is simply the price of one country's currency in terms of another country's currency. The exchange rate will always be given to you, either in a chart or as a value.

Example 1: Lucas needs to convert $500 Canadian dollars (CAD) into American dollars (USD). If one Canadian dollar is worth 0.94192 of an American dollar, how many American dollars will Lucas receive?

Solution: To calculate this value, a proportion can be set up.

$$\frac{CAD}{USD} \qquad \frac{1}{0.94192} = \frac{500}{x}$$

$$x = 500 \times 0.94192 \div 1 = \$470.96 \text{ USD}$$

Example 2: One Thai baht is worth 0.023541 of a Canadian dollar. How many baths would a tourist in Thailand receive for $200 CAD?

Solution: To calculate this value, a proportion can be set up.

$$\frac{baht}{CAD} \qquad \frac{1}{0.023541} = \frac{x}{\$200}$$

$$x = 200 \times 1 \div 0.023541 = 8495.92 \text{ bahts}$$

23

ASSIGNMENT 17 – CURRENCY EXCHANGE RATES

1) Using the exchange rates given, calculate what each foreign currency is worth in Canadian dollars.

a) 4000 Danish kroner when 1 kr = 0.221778 CAD

b) 2200 Euros when 1 €= 1.644814 CAD

c) 25 000 Chinese yuan when 1 ¥ = 0.133451 CAD

2) If one Canadian dollar (CAD) is worth 0.5911 British pounds sterling (£), calculate how many pounds sterling you would get for $200 CAD.

3) Ray purchased some auto parts from Hungary. If the exchange rate is 1 CAD to 180.0779 Hungarian forints (Ft), how many forints will he receive for his $500 CAD?

4) Using the exchange rates given, calculate how much foreign currency you would receive for $200 CAD.

a) $1 CAD = 1.72904 Brazilian reals

b) $1 CAD = 8.71137 Moroccan dirhams

c) $1 CAD = 3.19889 Polish zloty

5) On a particular day, the exchange rate for converting a Canadian dollar to Euros is 0.7180. How many Euros would you get for $300 CAD?

MORE CURRENCY EXCHANGE RATES

Exchange rates change from day to day and from one currency to another. Exchanges set a **buying rate** and a **selling rate** for each currency, and these rates are different from each other. The buying rate is the rate that a bank will buy a currency from you while the selling rate is the rate at which the bank will sell a currency to you. It is important to always think about what the bank is doing in currency exchanges, not what the customer is doing!

Example: On a given day, the bank selling rate of the Swiss franc compared to the Canadian dollar is 1.0501, and the buying rate is 1.0213.

a) How many Swiss francs would Anne receive for $400 CAD?
b) If Anne sold the Swiss francs back to the bank on the same day, how much would she receive?
c) Why is there a difference, and how much is the difference?

Solutions: a) The bank is selling Swiss francs to Anne so use the selling rate of 1 Swiss franc costs 1.0501 CAD dollar.

$$\frac{SFr}{CAD} \quad \frac{1}{1.0501} = \frac{x}{\$400}$$

$x = 400 \times 1 \div 1.0501 = 380.92$ francs

b) The bank buys the Swiss francs back at a buying rate of 1 Swiss franc paying out $1.0213 CAD dollar.

$$\frac{SFr}{CAD} \quad \frac{1}{1.0213} = \frac{380.92 \ SFr}{x}$$

$x = 380.92 \times 1.0213 \div 1 = 389.03$ CAD

c) There is a difference because the selling rate is always higher than the buying rate in order for the bank to make a profit!

The difference is $400 - $389.03 = $10.97
It cost Anne $10.97 to make these transactions.

ASSIGNMENT 18 – MORE CURRENCY EXCHANGE RATES

1) Dianne works in a bank. A customer wishes to buy 250 British pounds at a rate of 1.5379 CAD. How many Canadian dollars would the British pounds cost?

2) If the exchange rate is 0.1736 Canadian for every Norwegian krone, what would the price be in Canadian dollars of an item that cost 275 krone?

3) If a 1L bottle of pure maple syrup costs $18.99 in Canada, what would the cost be for a tourist with Japanese yen when the exchange rate is 0.009855 Canadian to every yen?

4) On a particular day, the selling rate of 1 Euro (€) is 1.4768 Canadian and the buying rate is 1.4287 Canadian to every Euro. How much would a transaction cost if you exchanged $1000 CAD for Euros and then converted them back to CAD$ on the same day? Show all steps.