WORKPLACE MATH PREP



Your Connection to Success! Campbellford, Cobourg & Peterborough

NAME:

EMAIL ADDRESS:

This Workplace Math Preparation material helps you get ready to successfully write the Gr. 9/10 Workplace Math Assessment. If you feel that you need to do more practice on a topic, your instructor has a lot more material for you. Just ask and they will be pleased to offer you more resources and instruction.

Canada Food Guide Practice Workplace Math

We use mathematics when making decisions about food purchases. In this exercise, you will read charts to determine number of servings required, combine amounts to determine number of servings eaten, calculate the percentage of required food eaten and make recommendations about diet based on those calculations.

MATH REFRESHER

First, let's do a quick refresher on Fractions, Decimals and Percentages. What do these 3 things have in common?

If you said that they all represent "parts" of a "whole", you are right.

FRACTIONS

are represented by a top number, (numerator) and bottom number (denominator). Bottom number represents how many pieces of the whole you started with.

Top number represents how many you have left.

A fraction or ratio must always be reduced to its lowest terms.

Eg. 3/6 could be reduced to $\frac{1}{2}$. 4/12 can be reduced to 1/3. (find a number that can be divided evenly into each top and bottom number.



Here's our pizza, bottom number is 8, top number is 5.

- Therefore: 5/8 means that the pizza was cut into 8 pieces, you have 5 pieces left. A good way to remember is saying to yourself: I have 5 **OUT OF** 8 pieces still left.
- DECIMALS are also parts of a whole but based on 10s, 100s, etc. Eg. .5 means you have 5 **OUT OF** 10 left or 5/10. (if the decimal has one place, it is over 10, 2 places, over 100 etc. - hey look we created a fraction) We can also see that 5 is half of 10.

Fractions to decimals: simply divide the bottom number into the top number 5/8 or 5 **OUT OF** 8 becomes $5 \div 8 = .625$. There's the decimal for fraction 5/8.

PERCENTAGES are always parts of a whole based on 100.

Therefore 40% means 40/100. (hey look, we created a fraction again!)
To find the percentage of a fraction, calculate the decimal first (see above)
5 ÷ 8 = .625 and then multiply by 100 = 62.5%. (a fast way to multiply by 100 is to move the decimal point bigger (to the right) by 2 places because 100 has 2 0's it.

Practice for Fractions, Decimals and Percentages.

Using your calculator, change the following fractions into decimals and percentages.

Fraction	Decimals	Percentages
3/4		
7/9		
1/4		
5/6		
2/5		

Using Canada's Food Guide can assist in making healthy choices in our meals and snacks.

1. From the chart identify the daily requirements for males and females 19 – 50 years old:

FOOD GROUP	MALES	FEMALES
Vegetables and Fruit		
Grain Products		
Milk and alternatives		
Meat alternatives		
Oils and fats		

		Children	1 9-13	Tee 14			Ad -50	ults 51	
Age in Years Sex	2-3 G	4-8 irls and Bo		Females	Males	Females	Males	Females	+ Males
Vegetables and Fruit	4	5	6	7	8	7-8	8-10	7	7
Grain Products	3	4	6	6	7	6-7	8	6	7
Milk and Iternatives	2	2	3-4	3-4	3-4	2	2	3	3
Meat and Iternatives	1	1	1-2	2	3	2	3	2	3
	nee Hav folk • Me	d from ring the owing t set your duce yo	each of t amoun he tips i needs f our risk o	ows how the four f t and typ n <i>Canad</i> or vitam of obesity incer and	food gro oe of foo a's Food ins, min 7, type 2	oups even od recon d Guide v ierals and diabete	ry day. nmende vill help d other	ed and : nutrient:	s.

Recommended Number of Food Guide Servings per Day

2. How would you consider your lifestyle? Active or less active or sedentary (inactive). Why do you think this and for your lifestyle would you consume a higher number or a lower number of calories?

3. Examples of Servings:

Vegetables and Fruit	
	125 mL (½ cup) fresh, frozen or canned vegetable or fruit or 100% juice 250 mL (1 cup) leafy raw vegetables or salad 1 piece of fruit
Grain Products	
	1 slice (35 g) bread or ½ bagel (45 g) ½ pita (35 g) or ½ tortilla (35 g) 125 mL (½ cup) cooked rice, pasta, or couscous 30 g cold cereal or 175 mL (¾ cup) hot cereal
Milk and Alternatives	
Meat and Alternatives	250 mL (1 cup) milk or fortified soy beverage 175 g (¾ cup) yogurt 50 g (1 ½ oz.) cheese
	75 g (2 ½ oz.)/125 mL (½ cup) cooked fish, shellfish, poultry or lean meat 175 mL (¾ cup) cooked beans 2 eggs 30 mL (2 Tbsp) peanut butter

Matt is a 30 year old man who tries to eat healthy but sometimes doesn't always make it!

Matt's food choices for one day are included below.

Breakfast

- Coffee with 25 ml of milk
- 125 ml orange juice
- 2 slices white bread toasted with a tablespoon of butter
- 2 eggs scrambled

Lunch

- 1 banana
- 1 toasted bagel with cheese
- 1 apple fritter donut
- 1 cup coffee with 25 ml milk

Supper

- Small mixed greens garden salad
- 2 tablespoons salad dressing
- 1 steak 179 grams (6 ounces)
- 2 cups French fried potatoes
- 1 slice chocolate cake
- 1 cup of tea with milk

Snacks

- 1 can coke
- 1 granola bar with nuts
- 1 blueberry muffin

Use the chart below to count up the number of servings that Matt is eating in each food group daily. Refer to the Canada's Food Guide (ask your instructor) for more information.

	Food Guide Servings per day	Male aged 19 - 50	Eat at least one dark green and one orange vegetable each day. Choose vegetables and fruit prepared with little or no added fat, sugar or salt. Have vegetables and fruit more
	©8-10 00 00 00 00	Vegetables and Fruit 1 Food Guide Serving = 125 mL (½ cup) fresh, frozen or canned vegetable or fruit or 100% juice or 250 mL (1 cup) leafy raw vegetables or salad or 1 piece of fruit Grain Products 1 Food Guide Serving =	often than juice. Make at least half of your grain products whole grain each day. Choose grain products that are lower in fat, sugar or salt. Drink skim, 1% or 2% milk each day. Select lower fat alternatives. Have meat alternatives such as beans, lentils and tofu often. Eat at least two Food Guide Servings of fish each week.
AC		1 slice (35 g) of bread or ½ pita or tortilla (35 g) or 125 mL (½ cup) cooked rice, pasta or couscous or 30 g cold cereal or 175 mL (¾cup) hot cereal	alternatives prepared with little or no added fat or salt. Satisfy your thirst with water. Limit foods and beverages high in calories, fat, sugar or salt. Accumulate at least 2 ½ hours
	©2 □□	Milk and Alternatives 1 Food Guide Serving = 250 mL (1 cup) milk or fortified soy beverage or 175 g (¾ cup) yogurt or 50 g (1 ½ oz) cheese	of moderate to vigorous physical activity each week For more information and to order copies of Canada's Food Guide visit
	○ 3 □□ □	Meat and Alternatives 1 Food Guide Serving = 75 g (2 ½ oz) / 125 mL (½ cup) cooked fish, shellfish, poultry or lean meat or 175 mL (¾ cup) cooked legumes or tofu or 60 mL (¼ cup) shelled nuts and	<u>Canada's Food Guide on line</u> .
	30 to 45 mL (2 to 3 Tbsp) each day	seeds. Oils and Fats Include a small amount of unsaturated fat each day. This includes oil used for cooking, salad dressings, margarine and mayonnaise.	

4. Using this Food Guide Servings Tracker, track Matt's food intake by checking off his servings below.

5. Record the number of servings Matt had from each food group.

FOOD GROUP	Matt's Servings
Vegetables and Fruit	
Grain Products	
Milk and alternatives	
Meat alternatives	
Oils and fats	

6. Based on his food choices for the day, calculate the percentage of Matt's daily requirement for each food group. (see Math Refresher above.)

First create a fraction of Matt's intake as his # of servings **OUT OF** recommended servings from the Canada's Food Guide; then follow the Refresher on changing fractions to percentages.

FOOD GROUP	Fraction of Daily Requirement	Percentage of Daily Requirement
Vegetables and Fruit		
Grain Products		
Milk and alternatives		
Meat alternatives		
Oils and fats		

7. What recommendations would you make for healthier choices? Create a list of point-form suggestions. Explain why you would make these suggestions.

Jobs, Wages and Measuring Units Workplace Math

To determine how much a worker makes, multiply their hourly wage rate by the number of hours they work. When answering these questions, always be aware of the unit of time that is noted. Weekly pay will include how many hours per week were worked, annual means per year, a year has 12 months and 52 weeks. Read carefully and look for key words that give you the information you need.

 Betsy recently graduated from St. Lawrence College Personal Support Worker Program. She is trying to decide what environment she would enjoy working in. Betsy's annual income will vary depending on where she decides to work.

Location	Wage (\$/hr)
Home/Residential Care	15
Independent/ Private long term care homes (Nursing homes)	19
Hospitals	23

A) How much would Betsy earn in one week if she works with homes/residential care? (Assume that she will work 40 hours per week.)

B) How much would Betsy earn in one week if she works in an independent/private long term care home? (Assume that she will work 40 hours per week.)

C) How much would Betsy earn in one week if she works in the hospital? (Assume she will work 40 hours.)

D) How much would Betsy make in one year (**52 weeks**), in the home/residential, nursing home/private long term care homes and in a hospital?

E) How much more would Betsy earn per year in the hospital instead of a nursing home?

2. On occasion, when working in a nursing home, PSWs will be responsible for making orders of essential supplies.

The following items are **needed** for the nursing home:

- 500 adult diapers
- 12 bottles of powder
- 6 antibiotic ointments
- 5 boxes of gloves
- 125 syringes

To make the order, the following chart will to be completed. Keep in your mind what is NEEDED, and then make sure that amount is covered by the order. You cannot order small parts of anything listed, just one or more.

Supplies	Cost per package \$	Number of units	Cost \$
Adult diapers 100 per box	65.62		
Powder 6 bottles per package	42.20		
Antibiotic ointment 2 per package	22.50		
Gloves 120 per box	34.79		
Syringes 75 per box	52.85		
		Total Cost:	

Data Management Practice Workplace Math

1. Please read the chart below and find the required information.

DISTRIBUTION OF OCCUPATIONS OF 200 ADULT MALES IN THE BAIDYA CASTE, MADARIPUR VILLAGE, BENGAL, 1914		
OCCUPATION	NUMBER	
farmers	02	
government service, clerks	44	
lawyers	06	
newspapers and presses	05	
no occupation	25	
not recorded	08	
students	68	
teachers	11	
trade and commerce	23	
other	08	

(i) The *largest* number of men in the Baidya caste of Madaripur is involved in which field? Education

Agriculture

- Government
- Publishing

(ii) The *smallest* number of men in the Baidya caste of Madaripur is involved in which field? Education

Agriculture Government Publishing

(iii) What is the percentage of men in the Baidya caste of Madaripur, for having No Occupation and Government Service, Clerks? (both groups combined.) Total group is of 200 adult males. (check out your Math Refresher to create a fraction **# OUT OF** the total, then find your decimal and percentage.) 2. What is the **ratio** of Lawyers to Government Service, Clerks in lowest terms? Use the information from the Occupations of adult males in the Baidya Caste, Madaripur village. Total group is of 200 adult males.

Finding Ratios is like creating a fraction. Let's Practice before answering this question:

Quinn has a large family. She has 4 cousins who live in Ontario, 3 cousins who live in Alberta, and 8 cousins who live in British Columbia.

(i) What is the ratio of Quinn's cousins who live in Alberta to her cousins who live in Ontario?

First we must use the number for Alberta as it is named first.	3
Then we use the number for Ontario as it is named second.	4
Therefore the ratio of Alberta cousins to Ontario cousins is	3:4 or 3/4

(ii) What is the ratio of Quinn's cousins who live in British Columbia to her cousins who live in Ontario?

First we must use the number for British Columbia as it is named first	8
Then we use the number for Ontario as it is named second	4
Therefore the ratio of British Columbia cousins to Ontario cousins is	8:4 or 8/4
BUT (see below)	

Remember that like a fraction, a ratio must be reduced to its **lowest terms**. (find a number that can be divided evenly into both numbers. In this case, it is 4.

Ratio 8:4 can be reduced to 2:1.

Therefore, the ratio of British Columbia cousins to Ontario cousins is 2:1.

Now go back to question #4 above and find the ratio between Lawyers and Government Service, Clerks. Reduce to its lowest terms if possible.

3. Please use the chart below to answer the following questions.

MEN'S AND WOMEN'S TABLE TENNIS, SUMMER OLYMPICS 2004					
COUNTRY	GOLD	SILVER	BRONZE	TOTAL	
China	3	1	2	6	
Korea	1	1	1	3	
Denmark	0	0	1	1	

	WOMEN'S TABLE TENNIS, Summer Olympics 2004				
COUNTRY	GOLD	SILVER	BRONZE	TOTAL	
China	2	0	1	3	
Korea	0	1	1	2	
Hong Kong	0	0	0	0	

MEN'S TABLE TENNIS, SUMMER OLYMPICS 2004					
COUNTRY	GOLD	SILVER	BRONZE	TOTAL	
China	1	1	1	3	
Demark	0	0	1	1	
Hong Kong	0	1	0	1	

(i) According to the Men's and Women's Table Tennis chart, which country received the most medals for both men and women in table tennis?

- China
- Korea
- Denmark
- Hong Kong

(ii) In the Men's Table Tennis competition, which country only won a bronze medal?

- □ China
- □ Hong Kong
- Denmark
- Korea

(iii) In which competition did Korea win an equal number of gold, silver, and bronze medals?

- □ The Men's competition
- □ The Women's competition
- No equal amounts
- □ The combined Men's and Women's competition

4. Below is a fictional table that could represent a publication from the CRA. The Income Tax column and the CPP, Canada Pension Plan column are both noted in %.

INCOME RANGE (x \$1,000)	INCOME TAX (%)	СРР	
015	0	0	
15-20	10	5	
20-25	12	7	
25-40	13	9	
40-70	15	7	
70–100	18	5	
100+	20	3	

Please read the chart carefully and answer the following questions. No calculations are required in these questions.

(i) How much tax will you pay if you earn \$28,000?

- □ 7%
- □ \$13
- □ \$13,000
- □ 13%

(ii) How much CPP will you pay if you earn \$75,000?

- □ 5%
- □ \$12,000
- □ 18%
- none

(iii) What is the highest salary you can earn and still pay no taxes?

- □ \$21,999
- □ \$20,000
- \$18,000
- \$15,000

(iv) What salary range pays 15 percent total, including tax and CPP?

- □ \$25,000 \$40,000
- □ \$20,000 \$25,000
- □ \$15,000 \$20,000
- □ 0 − \$15,000

Percentages

In the following chart, you will be asked to use percentages to find the amount required by workers to pay income tax and CPP, Canada Pension Plan.

Using your calculator, key in the **amount X the percentage** rate and push the % key. The calculator will do this calculation automatically. If you do NOT have a % key, convert the percentage to a decimal (divide by 100 or move the decimal point smaller (to the left) by 2 spaces.)

Eg. 3459 X 80% = 2767.20 OR 3459 X .80 = 2767.20 (Look, they are the same)

Practice Questions - Percentages

Remember: a percentage OF a number is the same as a number X the percentage rate.					
1. 5% of 120 =	2. 20% of 36 =	3. 780 X 58% =	4. 390 X 2.6%		
5.940 X 85%	6. 35% of 480	7.7% of 965	8. 75% of 680		

Now do the same, using your calculator, for the question #5 below.

CPP INCOME RANGE (x \$1,000) INCOME TAX (%) 0-15 0 0 10 15-20 5 20-25 7 12 25-40 13 9 40-70 15 7 70-100 18 5 100+ 20 3

The chart has been copied again for your convenience.

5. Complete the following table, using the chart from above.

Income \$	Income Tax % Rate	Income tax Total \$ amount	CPP % Rate	CPP Total \$ amount
15 <i>,</i> 600				
22, 440				
35, 200				
77, 660				

(i) John has an annual income of \$35, 200. What is the **total** dollar amount he will be paying in Income Tax and CPP?

(ii) What is the **difference** in the total dollar amount being paid by a person who makes an annual income of \$35, 200 and a person who makes an annual income of \$77, 660 for income tax?

Comparing Prices

To compare the price of more than one product, we must make sure we are comparing the same sized unit. Apples to apples if you will.

a) A case containing a dozen litres of motor oil costs \$11.88. What is the price of 1 litres of motor oil?

b) The store that sells the motor oil in the last problem charges \$1.29 for each litre of oil that it sells separately. How much more does it cost to buy a dozen litres of motor oil separately than to buy a full case?

Answer

Find out the price of one litre of motor oil in question (a). To do this:

\$11.88 ÷ 12 litres = \$.99 per litres

Then, If sold separately as in (b), a case of 12 would cost \$1.29 X 12 = \$15.48.

Therefore, to find out how much MORE the 12 bought separately will cost is: 15.48 – 11.88 = \$3.60 more if you bought 12 litres separately. Cheaper to buy the case!

Let's try a few more.

• AT&T charges \$76.00 for 500 minutes or Sprint charges \$54.00 for 450 minutes.

The Better Deals is _____

• 1.5 pounds of Fiji apples for \$29.85/lb. or 1.2 pounds of Granny Smith apples for \$20.28/lb.

The Better Deals is _____

• 17 ounce box of Special K for \$4.89 or a 21 ounce box of Cheerios for \$5.69

The Better Deals is _____

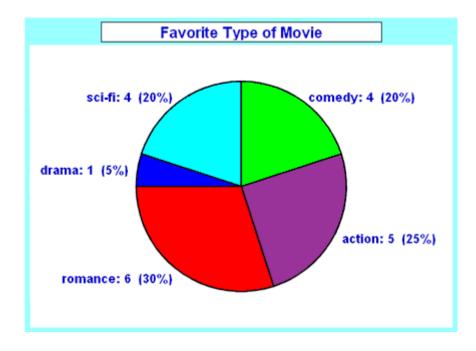
Pie Charts and Graphs

Pie Chart: a special chart that uses "pie slices" to show relative sizes of data.

Imagine you survey your friends to find the kind of movie they like best:

Table: Favourite Type of Movie					
Comedy	Action	Romance	Drama	SciFi	
4	5	6	1	4	

You can show the data by this Pie Chart:

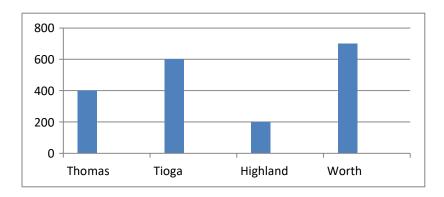


You can see that each slice of the pie shows the relative size of the movie types chosen.

How did they figure out these percentages? Try it yourself to see if your answers agree with the chart.

Hint: Use your Math Refresher to firstly create a fraction, **# OUT OF** the **total**, calculate your decimal and then percentage. (X 100)

Graphs and Charts Practice Questions



A The bar graph below shows the enrollment totals for each of four middle schools.

Middle School Enrollment Total (number of students in each school)

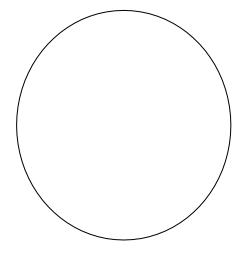
1. How many students are enrolled in all four schools combined?

Middle School Enrollment Total (percent of students in each school)

- 2. What percent of the total is enrolled in each middle school? (Remember your refresher on calculating fractions, then decimals, then percentages.)
 - a) Thomas:
 b) Tioga:

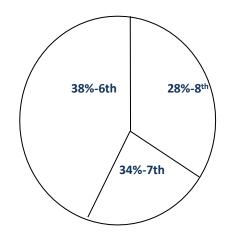
 c) Highland:
 d) Worth:

3. Complete the circle graph below to show the approximate percent of students enrolled in each school. Be sure to include a school name, next to each percent.



Middle School Enrollment (percent by grade level)

4. The circle graph below shows the percent of students in each grade.



Total Enrollment: 1,900 Students

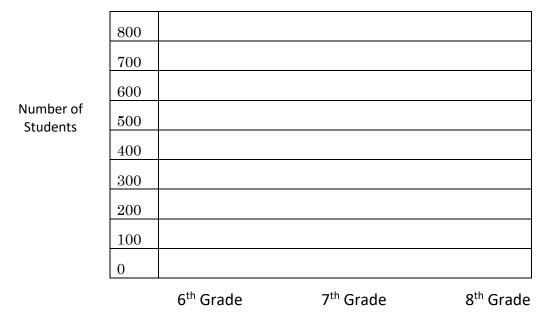
(i) Determine the total number of students enrolled at each grade level.

6th grade:

7th grade:

8th grade:

(ii) Complete the bar graph to show the number of students enrolled in each grade. Draw a vertical bar above each grade level on the horizontal axis.



Middle School Enrollment

Exchange Rate

If the USD/CAD exchange rate is \$.78, this means it costs \$.78 Canadian dollars for 1 U.S. dollar. (Nov. 2017) The first currency listed (USD) always stands for one unit of that currency; the exchange rate shows how much of the second currency (CAD) is needed to purchase that one unit of the first (USD).

USD = CAD X R

So if you were exchanging \$350 Canadian dollars into American dollars, how much American money would you receive? Using the above formula, fill in the information you have to calculate:

Practice Question

USD = 350 X .78 USD = \$273.00

What is a "Subsidy"?

1. a direct financial aid furnished by a government, as to a private commercial enterprise, an individual, or another government.

2. any grant or contribution of money.

Therefore, a subsidy is a payment that someone else makes for you. You would pay the remainder if any.

Practice Question

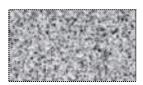
If you were receiving a subsidy, for your \$4,000 college tuition, of 30%, what dollar amount would you have to pay. Remember, you are paying the portion the subsidy does NOT cover.

\$_____

Calculations Involving Perimeter and Area

Let's Review Area and Perimeter.

Area is the square measurement of an entire surface, such as flooring, grass, painting a wall, etc.



The formula for Area is: Length X Width

A = L X W

Perimeter is a linear measurement around the outside of an area, such as fencing, baseboard, and perimeter tape around a crime scene!



The formula for Perimeter is either:

P = L + L + W + W Or P = (L X 2) + (W X 2)

Area Assignment

(please show your work and/or record your answers in sentence form where appropriate)

During the construction of their new home, Scott and Eva try to decide which flooring choice is the best option for the home's two washrooms. Their total budget for bathroom flooring materials can be no more than \$500.

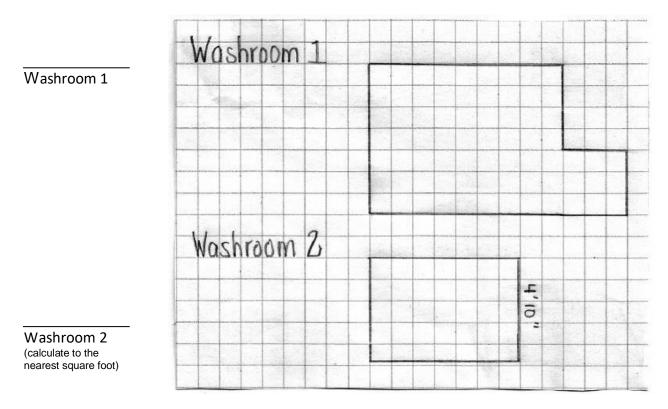
Tile is their first choice, but for any tile they select they will also run into the additional cost of laying down a tiling membrane first. The costs per square foot are as follows:

- Ceramic tile = \$1.75 /sq. ft.
- Stone tile = \$4.00 /sq. ft.
- Linoleum = \$1.50 /sq. ft.
- + additional cost for ceramic or stone tile: Tiling membrane = \$2.00 /sq. ft.

1. What is the total cost, then, for:

- Ceramic tile with tiling membrane = ____/sq. ft.
- Stone tile with tiling membrane = ____/sq. ft.

Below are the layouts for Scott and Eva's two bathrooms. If every square on the grid paper represents 1 square foot, calculate the total square footage for each bathroom. (calculate to the **nearest** square foot) For Washroom 1, it is best to draw a line to separate the attached shapes.



2. What is the combined amount of flooring required for both bathrooms in square feet?

3. Now that you have the total square footage calculated for both washrooms, record the total cost of each flooring option: (remember that ceramic and stone tile have the extra tiling membrane cost as above.)

- I. Ceramic tile
- II. Stone tile
- III. Linoleum

- 4. Which flooring option(s) are within Scott and Eva's budget?
- 5. Which flooring option(s) are not within budget?
- 6. Can Scott and Eva put stone tiles in one washroom and another flooring type in the other? If so, explain an option that would work and why you recommend it. Show your work.

When Eva is placing her flooring order the salesperson suggest ordering 10% more flooring than the rooms require so that waste and breakage can be factored in.

7. What is the total amount of flooring material that Scott and Eva should order if they follow the salesperson's advice? (Calculate your answer to the nearest square foot.)

Perimeter Assignment

1. After the flooring has been installed, baseboards will have to be installed along the perimeter of each bathroom. What is the length of baseboard material required for each washroom? Refer back to your diagram for this measurement.

Washroom 1

Washroom 2

2. If the baseboard material that Scott and Eva select is \$1.89 per foot, what is the total cost (before taxes) of the baseboards for both bathrooms?

3. This cost will have HST (13%) added to it. What is the new total for the cost of the baseboards? (Record your answer to the nearest hundredth.)

Congratulations, you're finished the Workplace Math Prep Materials!

Speak to your instructor to review your prep work and decide when you feel ready to write the Assessment.

Good Luck!