Mathematics 10 Workplace

Page 1	General Information
Page 2	Record Chart
Page 3 - 4	Composition, Costs, and Ordering
Page 5 - 11	Outline Examples from Workbook and Textbook
Page 12 - 15	Test Samples

Textbook and Workbooks

This course uses a combination of Workbooks and a Textbook "MathWorks 10"   ISBN 978-1-89576-651-6
by Pacific Educational Press at 1-877-864-8477. Price is about $ 85.

Curriculum Outline

Unit 1	Graphs –	Workbook 26 Pages
Unit 2	Financial Literacy -	Textbook
Unit 3	Conversions -	Textbook
Unit 4	Surface Area & Volume -	Workbook 33 Pages
Unit 5	Central Tendency -	Workbook 16 Pages
Unit 6	Probability -	Workbook 15 Pages
Unit 7	Trigonometry -	Textbook

Structure

This course is generally designed with the self-paced student in mind. It is based on a mastery system in which the student must obtain an 80% on the tests. Each unit has two versions in which the student has a chance to reach and or exceed the 80% mastery level.

Evaluation

There are 7 unit tests which account for 70% of the final mark. There are 3 cumulative tests which account for 30% of the final mark.

Mathematics 10 Workplace

Record Chart

Name: **Start Date:**

Unit	Topic	Test A	Test B	Average	Date
1	Graphs				
2	Financial Literacy				
Cumulative Test 1					
3	Conversions				
4	Surface Area and Volume				
Cumulative Test 2					
5	Measures of Central Tendency				
6	Probability				
Cumulative Test 3					
7	Trigonometry				

Course Evaluation

Course Evaluation	Total Marks	Out of	Percent	Value	Result
Tests (7)				70%	
Cumulative Tests (3)				30%	
Final Mark					

Composition

The course is made up of:
7 Unit Outlines,
7 Unit Tests each with an A and a B version (14 tests), Plus (14 tests) Answer Keys
3 Cumulative Tests, Plus (3 Cumulative Tests) Answer Keys,
All Answer Keys have a suggested marking scheme,
All files are put on disk in pdf and MS Word,
A perpetual license for your school.
The entire paper course is placed in a binder along with the disk and shipped as one unit.

Costs

This course costs $ 495.00.
The Order Form at the top of the website lists all costs. Below it is reproduced.

Ordering

Order Form

Cost Calculation

Please calculate the total cost as follows:

Name and Cost of course. See prices in course general information	$
GST at 5% unless exempt	
Shipping cost	$ 20.00
PST/GST on shipping (12%)	$ 2.40
Total Cost	

Shipping information

Contact Person	
Email Address	
School Name	
Department Name	
Street Address	
City, Province	
Postal Code	

Invoice Information

Purchase Order #	
District Name	
Street Address	
City, Province	
Postal Code	
Phone Number	
Fax Number	
Accounts Payable Email	

Email this Order Form to <u>matheducurriculum@gmail.com</u> as an attachment. Or mail it to MathEducCurriculum at Unit 107C – 45595 Tahimi Way, Chilliwack, BC V2R 0G3. Print this page for your records.

Circle Graphs

The circle graph is in the shape of a circle with different angles, which represent a percentage of a total. These angles often look like pieces of pie, which is why the circle graph is sometimes referred to as a pie chart. Each angle of the circle graph is proportional to the quantity it represents.

Trina set up a chart to track of her daily activities using 6 steps over a 24 hour time period

1. She listed the activities.
2. She wrote in the hours for each activity.
3. She set up a ratio by dividing each activity by the total hours of the activities.
4. She set a percentage by multiplying the ratio product by 100.
5. She made a decimal out of the percentage by dividing by 100.
6. She set up the degrees by multiplying the decimal by 360.
 Here are her results.

| 1.	Activity	Rest	Food	School	Job	Homework	Sleep	Travel	TOTAL
2.	Hours	1.75	2	6	3	1.25	9	1	24
3.	Ratio	1.75/24	2/24	6/24	3/24	1.25/24	9/24	1/24	24/24
4.	Percent	7.3%	8.3%	25%	12.5%	5.2%	37.5%	4.1%	100
5.	Decimal	0.073	0.083	0.25	0.125	0.052	0.375	0.041	1.00
6.	Degrees	26.3	29.9	90.0	45.0	18.7	135.0	14.8	359.7

Acivities by Percentage
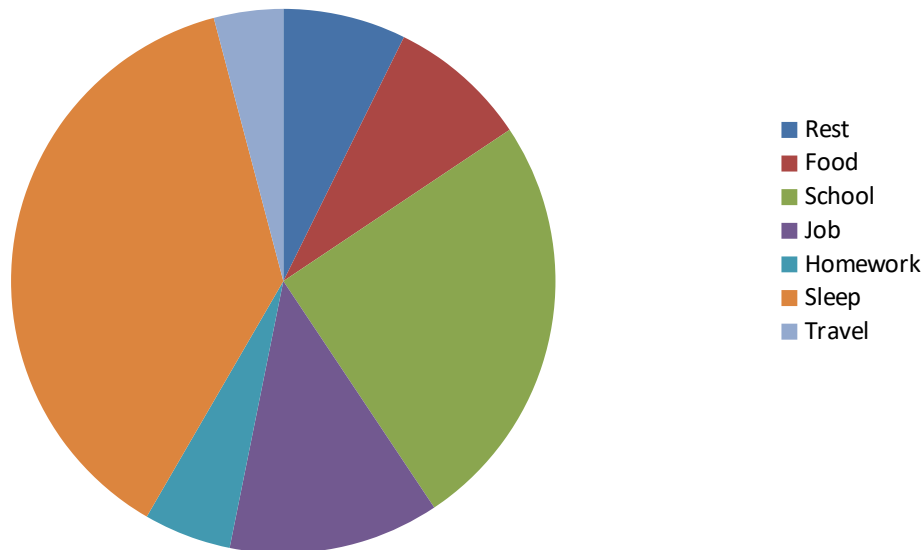
Watch the following video on how to make a circle graph "How to make a Pie Chart" (3:00). It includes information on how to use a protractor.

https://www.youtube.com/watch?v=-nLg7oJ8Tzw

6. Try the following problem:

A school survey was conducted to determine the preference of lunch meals. Here are the results. Burgers received 75 votes, Fish and Chips 45, Chilli 125, Pizza 170, Chinese 95, Spaghetti 105, and Stew 85. Place your results in the chart and display them on the following circle.

1.	Meals							TOTAL
2.	Numbers							
3.	Ratio							
4.	Percent							
5.	Decimal							
6.	Degrees							
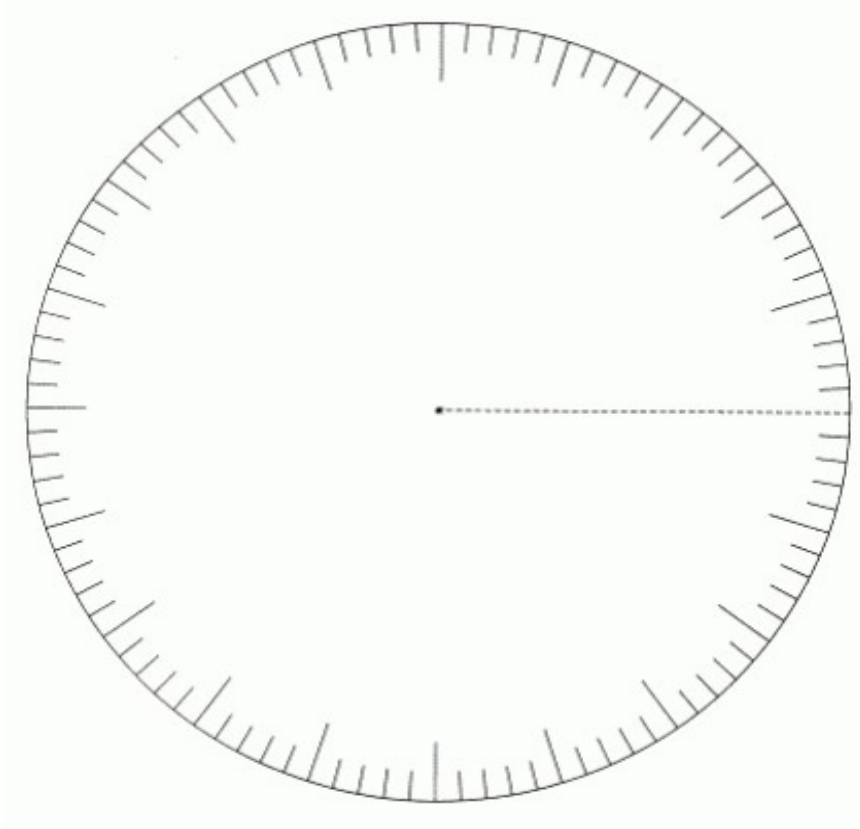
Math 10 Workplace

Textbook: MathWorks 10 by Pacific Educational Press

Unit 2   Financial Literacy

Goal: The goal of this chapter is to familiarize you with different ways that income and deductions are calculated.

Objectives: During this unit you will consider mathematics in the form of fractions, percent, and rates. You will be exposed to different terms such as: Benefits, Bonus, Commission, Contract, Deductions, Gross pay, Minimum wage, Net pay, Overtime, Pay statement, Piecework, Salary, Self-employment, Shift premium, Taxable income, Tip, and

Wage.

What Needs to be Done:

Unit two has 4 sections: 2.1, 2.2, 2.3, and 2.4. Each section in unit two has an accompanied video to enhance your understanding of the section material. There may be more than one video for a section.

Use the section-numbered videos below as they correspond in the **Unit Practice Guide** below to help you with your understanding.

Video Selections:

2.1 http://www.youtube.com/watch?v=f_Te6q_06iU
   Gross Earnings: Wages and Salaries - www.atcmathprof.com (8:15)

2.2 http://www.youtube.com/watch?v=JlVp6UOSGFw
   Gross Earning: Piecework and Commissions - www.atcmathprof.com (8:18).

2.3 http://www.youtube.com/watch?v=tc2GgW7xhQg
   Hourly Wage Shift Premiums (3:33).

2.4 http://www.youtube.com/watch?v=dQhTGMX5eg0
   WAM 10 2 4 Deductions and Net Pay (3:56).
2.4 http://www.youtube.com/watch?v=eMexD36nV8I
WAM 10 2 4 Deductions and Net Pay #2 (1:00).

Unit 2 Practice Guide: (Check Mark as You Complete)

✓ Page
   52   Read over "Goals" and "Key Terms".
   54-55   Read over "Math On The Job" and "Explore The Math". Define the 3 new terms.
   56-57   Go over Example 1- 2. **Watch video "Gross Earnings: Wages and Salaries -
                 (8:15)** www.atcmathprof.com**.**
   57-59   Go over Example 3- 4
   60   Try "Mental Math and Estimation". The answer is found at the end of the
   Practice Guide.

60-62   Under "Practice Your New Skills", do # 1-10.

63   Read over "The Roots of Math".

64-65   Read over "Math On The Job" and "Explore The Math". Define the 4 new terms.
        Watch video "Gross Earning: Piecework and Commissions"(8:18).
        www.atcmathprof.com.

66-69   Go over Examples 1–3. Try "Mental Math and Estimation". The answer is found
        at the end of the Practice Guide.

69-70   Under "Build Your Skills" do # 1-8.

71   Try "Puzzle It Out". The answer is found at the end of the Practice Guide.

71   Read "Mental Math and Estimation" and then calculate the cost. The
                answer is found at the end of the Practice Guide.

72   Read over "Math On The Job" and "Explore The Math". Define the 2 new terms.
        Watch video "Hourly Wage Shift Premiums" (3:33).

74-76   Go over Example 1 and 2.

76-77   Under "Build Your Skills" do # 1-8.

79-80   Read over "Math On The Job" and "Explore the Math". Define the new 2 terms.

81   Go over Examples 1. **Watch video "Deductions and Net Pay" (3:56).**

82   Go over Example 2. **Watch video "Deductions and Net Pay #2" (1:00).**

82-83   Go over Example 3.

84   Read "Mental Math and Estimation" and then calculate the cost. The
                answer is found at the end of the Practice Guide.

84-85   Go over Example 4. Define the new term.

<u>Surface Area of 3D Geometric Shapes</u>

Surface area refers to the area of all the sides of an object. The following solid object has three visible sides and three that are hidden. The area of each one will add up to the surface area.
Watch Video " Surface Area of a Rectangular Prism" https://www.youtube.com/watch?v=XYlqJpKcgfc
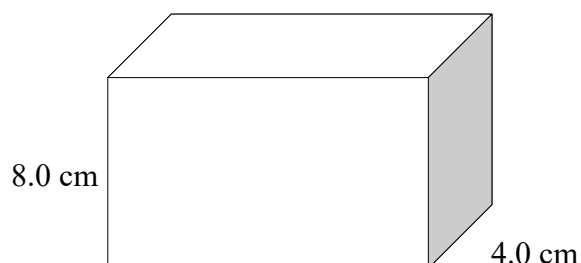
8.0 cm

4.0 cm

Side 1: 8.0 cm x 10 cm $= 80 \ cm^2$

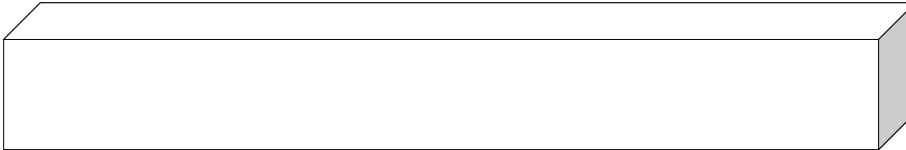Side 2: 8.0 cm x 4.0 cm $= 32 \ cm^2$

Side 3: 10 cm x 4.0 cm $= 40 \ cm^2$

TOTAL for 3 sides $= 152 \ cm^2$

10 cm

Since the hidden 3 sides are the same as the visible ones, you can multiply the total for three sides above by two. The surface area of the object is 304 cm^2

Try the following Surface Area Problems:

12. Length is 18 m. Width is 2.0 m and height is 4.0 m. Answer to the nearest whole number.

13. Length is 4 in. Width is 3.5 in and height is 23 in. Answer to the nearest whole number.
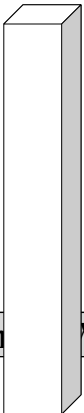
Math   Workplace   Unit 5 Workbook   Measures of Central Tendency

The mean, the median, and the mode of a set of numbers are referred to as measures of central tendency. Measures of central tendency can be thought of as measures of central location.

Watch video "Central Tendency Mean Median Mode Range"
https://www.youtube.com/watch?v=hX-BsyXGyb8

The mean of a set of numbers is the average of these numbers. In order to determine the mean, you add up all the numbers and then divide the result by the number of numbers.

Example: Find the mean of the following numbers. 22, 24, 26, 28, 30, 32. 34

Solution: Add the numbers 22+24+26+28+30+32+34 = 196.

There are 7 numbers. Divide 7 into 196. $\dfrac{196}{7} = 28$. The mean is 28.

Try the following Mean problems.

1. Determine the mean of the following: 36, 38, 40, 42, 44, 46, 48, 50, 52.

2. Find the class average from the following test results. 55%, 65%, 70%, 75%, 80%, 85%, 90%, 95%.

3. Calculate the mean of the height of students in the PE class. 160cm, 170cm, 180cm, 185cm, 190cm, 192, 198cm, 200cm.

4. The mean of four numbers is 90. If three of the numbers are 88, 86, and 80, what is the value of the fourth number?

Math 10 Workplace   Unit 6 Workbook   Probability

Probability

Probability is the chance that something will happen and it can be expressed as a fraction, ratio, percentage, or as a statement. For example,

(a) There is a $\dfrac{1}{30}$ chance that a home run will be hit in the baseball game.

(b) The Toronto Raptors' winning statistic is 0.615

(c) There is a 60% of rain today.

(d) Four out of five doctors recommend exercise before eating.

Probability in a Coin Toss

When tossing a coin, there are two possible outcomes. The probability of landing a heads is $\frac{1}{2}$

and the same is true for landing a tails. This $\frac{1}{2}$ can be written as a ratio 1:2 or 0.50, as a

percentage 50%, and as a statement such as there is a one out of two chances for landing a heads.

Problem: Try the followings.
1. What is the probability in a deck of 52 cards of pulling out an ace? State your answer as a fraction, a ratio, a percentage, and as a statement.

2. What is the probability in a deck of 52 cards of pulling out a king of spades? State your answer as a fraction, a ratio, a percentage, and as a statement.

Math 10 Workplace   **Unit 4 Test B: Surface Area and Volume**

Name _____ **Date** _____   _____

Marks   **50**

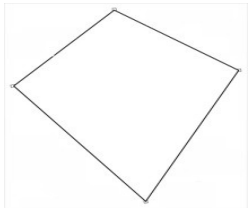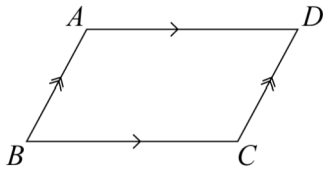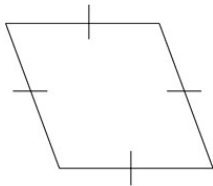1. Match the descriptions on the bottom with the corresponding letter to the terms just below.

2

_____ Prism

_____ Cube surface area

_____ Pythagorean Theorem

_____ Area

   A. A measure of the product of the length times the width.
   B. The measure of the product of six times the area of one side.
   C. A 3D object without any curved sides.
   D. $s^2 = ¿\, a^2 + b^2$

2. Identify the following 2D shapes by writing the name into the shape.

2

Math 10 Workplace   Unit 6 Test A: Probability

Name_____ **Date** _____   _____

Marks   **50**

3. Match the descriptions on the bottom with the corresponding letter to the terms just below.

4

_____ Mean

_____ Mode

_____ Median

_____ Range

_____ Experimental Probability

_____ Theoretical Probability

_____ Random Sample

_____ Outlier

E. This sample is taken from a batch of numbers that were placed in a hat.
F. The average weight of the students in a class.
G. The results of tossing a die showed that a six appeared only once in twenty tries.
H. What measure of central tendency best describes this list 2, 17, 24, 49, 76, 347?
I. What measure of central tendency best describes this list 23, 34, 23, 45, 23, 57, 23?
J. The difference between the highest and lowest numbers in a list.
K. A number that stands out from the rest of the numbers.
L. It is estimated that tossing a coin1000 times will give you 500 tails.
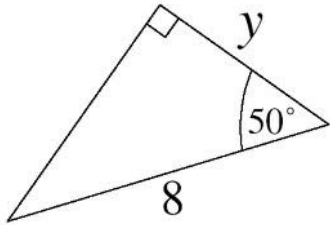
Multiple Choice Questions:

5

1. A die is rolled 100 times, and on 50 rolls the sum of the numbers turned up a 6. What is the experimental probability of this outcome?
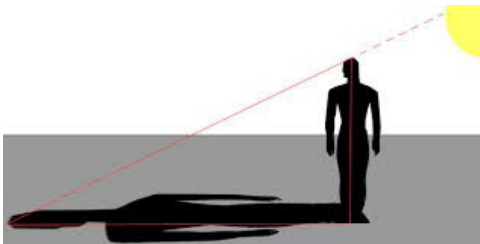(a) 0.6
(b) 0.1
(c) 1.0
(d) 0.5

5. Solve the value of Y to two decimal places if the other side is 8 metres in the diagram.

2

6. In the following diagram the person casts a shadow that forms an angle of 30° at the pavement. The distance from the head of the person to the head of the shadow is 13 feet. What is the length of the shadow to two decimal places?

2

7. At an angle of elevation of 38.7° a person is looking at the top of the building. The building is 100 metres away. What is the height of the building to one decimal place?

2
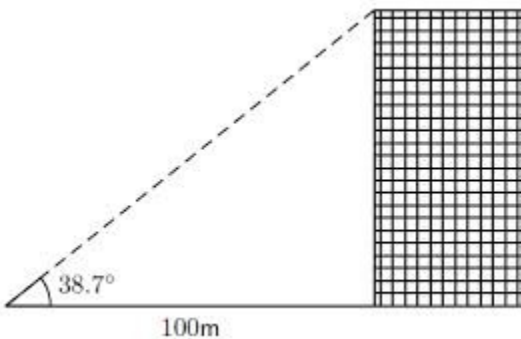
5. The ten fastest Olympic run times for the 100 metres are ordered according to name, time, and date and country in the list below. Determine the mean, median, and mode.

5

Name	Time in seconds	Date	Country
Usain Bolt	9.63	2012	Jamaica
Usain Bolt	9.69	2008	Jamaica
Yohan Blake	9.75	2012	Jamaica
Justin Gaitlin	9.79	2012	USA
Tyson Gay	9.80	2012	USA
Usain Bolt	9.81	2016	Jamaica
Donovan Bailey	9.84	1996	Canada
Justin Gaitlin	9.85	2004	USA
Usain Bolt	9.85	2008	Jamaica
Yohan Blake	9.85	2012	Jamaica

6. A high school basketball team records the numbers of shots taken per game.

80, 100, 156, 98, 88, 135, 125, 128, 120, 92, 144, 120, 100, 134

(a) What was the mean, median, and mode for shots taken per game?

(b) What measures of central tendency best represents the number of shots taken? Why?

5