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Department of Labour and Advanced Education.

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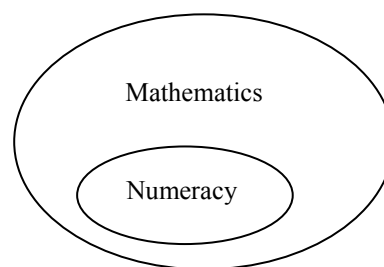
### **Acknowledgments**

piloting this resource and offering suggestions during its development.

## What is Numeracy?

Numeracy is not the same thing as mathematics. Numeracy refers to an individual’s ability to understand and use mathematical information at school, at work, and in everyday life.” (Human Resources and Skills Development Canada). Numeracy activities ask you to solve a variety of real world applications using very basic mathematical concepts (e.g. operations with whole numbers, simple fractions, decimals, percentages, and signed numbers, interpreting graphs, etc.). For example, when a person completes an expense claim at work where they have to summarize and total all of their expenses for a business trip on an expense claim form; this is considered a numeracy activity. There is obviously mathematics associated with this task (e.g. adding decimal numbers), but the ability to apply these basic mathematical concepts to this real world context is what makes it a numeracy activity.

Mathematics includes numeracy but is much broader than numeracy. Mathematics also requires people to think and work in greater levels of abstraction. For example, solving linear equations like  $3x - 14 = 6 - 2x$  using algebra would be considered a mathematics activity, but would not be considered a numeracy activity. The question is not supplied in a real world context, and even if it was, it is unlikely going to be a context that many people are going to experience in their daily lives.



Numeracy Activities	Mathematical Activities Beyond Numeracy Activities
<ul style="list-style-type: none"> <li>• Estimating your grocery bill.</li> <li>• Mentally calculating a 15% tip for a waiter/waitress.</li> <li>• Completing an expense claim form.</li> <li>• Examining the departure and arrival times on an airlines website and choosing the best option for you.</li> <li>• Calculating the total cost of a car rental.</li> <li>• Using the scale provided on a map to determine the actual distance between two locations.</li> <li>• Adjusting a recipe to prepare a greater number of food items.</li> </ul>	<ul style="list-style-type: none"> <li>• Solving a linear equation.</li> <li>• Calculating the missing side of a triangle using the Law of Cosines.</li> <li>• Solving a 2 by 2 system of equations using elimination.</li> <li>• Determining the equation of a linear function.</li> <li>• Calculating the standard deviation for a set of data.</li> <li>• Use the regression analysis features on a graphing calculator to determine the line of best fit.</li> </ul>

The challenging thing about true numeracy activities is that the contexts are so varied that it takes some time to figure out which mathematical concept or concepts apply. You cannot simply memorize a procedure; you have to think. Even when the mathematical concepts are obvious and fairly simple, there can be other challenges. For example, expense claims are largely the same in that you list your expenses (accommodations, meals, and mileage) and then total them. However, expense claims come in many different forms and you have to be able to figure out which columns and rows need to be filled with the appropriate information. The form itself is

often more challenging than the mathematics embedded within this form. Again, you have to think your way through each of these unique situations. This can make numeracy activities a little more frustrating. However, as you near the end of Graduate Math, you need to realize that you have all the necessary knowledge and skills to handle these types of questions. Believe in yourself and realize that the course of action for many of these questions will take a little time to figure out. Be patient.

## About this Unit

There are two fundamental differences between this unit and the other Graduate Math units you have used in this course.

1. There are no worked examples in this unit. The reason stems from the fact that true numeracy questions are so varied that they cannot be condensed into a handful of categories, each with set procedures for solving them. With all the varying contexts, you have to figure out which mathematical concepts apply. This cannot be taught by supplying a multitude of worked examples.
2. There is no answer key for this unit. Sometimes learners will use the strategy of "working backwards from the answer," to figure out how to complete a question. We did not want this to occur. In other cases, the mathematics behind the question is not that difficult but the challenge is interpreting the information supplied in a table and/or in a written description. Supplying a final answer sometimes discourages learners from thinking deeply about the information supplied. For these two reasons, the author of this resource chose not to include an answer key with the student resource.

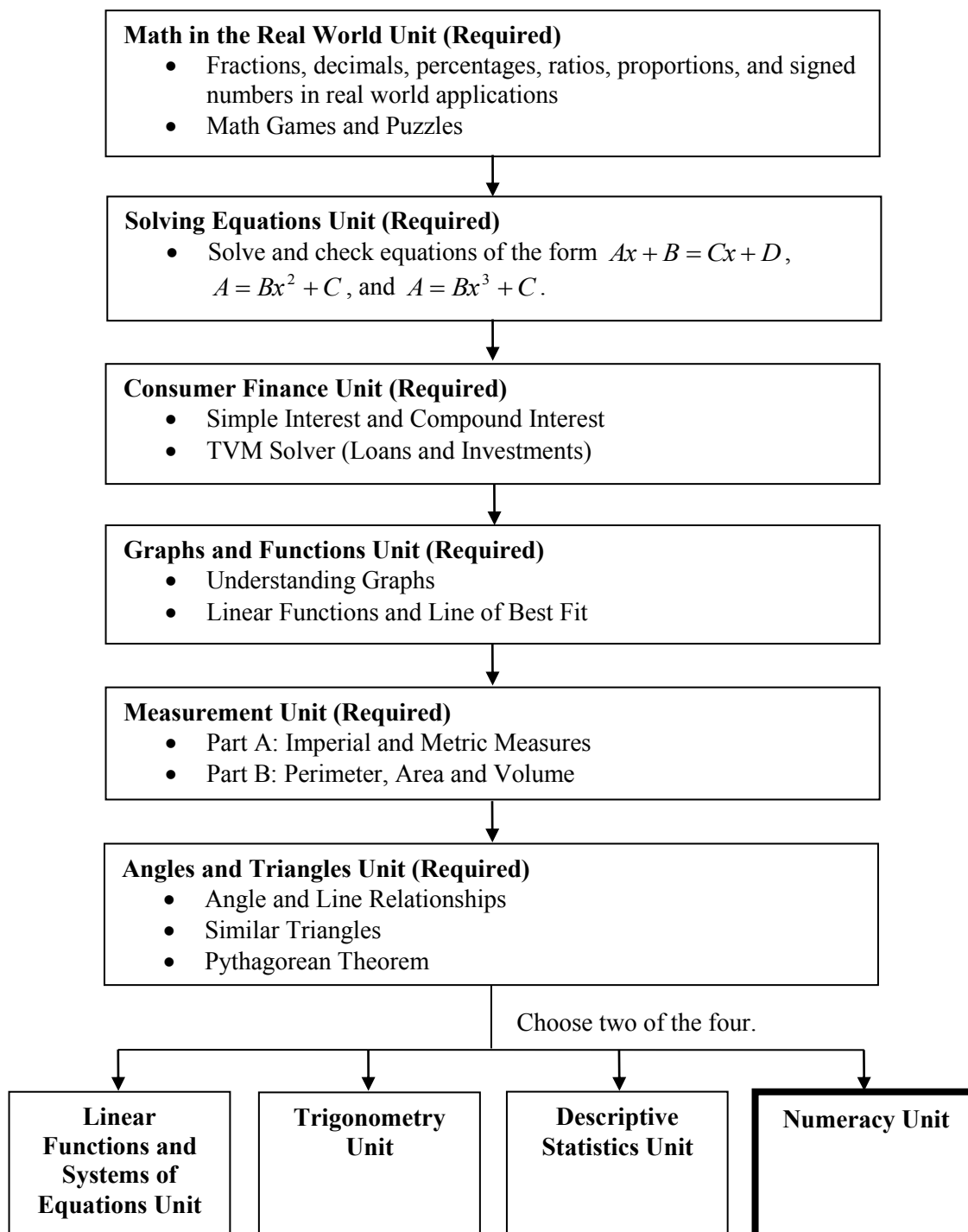
## Recommended Assessment Practice for the Numeracy Unit

The ALP curriculum consultant recommends that assessment for this unit is divided into two components. Fifty percent of the unit mark could be based on the completion of the unit where the instructor checks the final answer to each of the numeracy questions in this resource and assigns a mark based on the percentage that are correct. If the learner has fared poorly on the submitted work, instructors can allow learners to correct their mistakes and resubmit the material.

The remaining fifty percent of the unit mark could be based on an open-book test created by the LAE and available to instructors on the NSCC SharePoint site. Normally open book tests are not recommended in Level IV Math courses, but with the high variability of numeracy questions, coupled with the lack of worked examples in this resource, this makes this assessment practice perfectly acceptable for this unit.

## The Big Picture

The following flow chart shows the six required units and the four optional units (choose two of the four) in Level IV Graduate Math. These have been presented in a suggested order. Instructors and students may choose to alter this order to best serve the needs of the learner. Not all of the units take the same amount of time to complete. For example, the Consumer Finance Unit is quite short. By contrast, the Graphs and Function Unit and the Measurement Unit (A and B) tend to take the greatest amount of time.



## Course Timelines

Graduate Level IV Math is a two credit course within the Adult Learning Program. As a two credit course, learners are expected to complete 200 hours of course material. Since most ALP math classes meet for 6 hours each week, the course should be completed within 35 weeks. The curriculum developers have worked diligently to ensure that the course can be completed within this time span. Below you will find a chart containing the unit names and suggested completion times. The hours listed are classroom hours.

Unit Name	Minimum Completion Time in Hours	Maximum Completion Time in Hours
Math in the Real World Unit	24	34
Solving Equations Unit	20	28
Consumer Finance Unit	15	18
Graphs and Functions Unit	25	30
Measurement Unit (A & B)	22	30
Angles and Triangles Unit	14	16
<b>Selected Unit #1</b>	<b>18</b>	<b>22</b>
Selected Unit #2	18	22
	Total: 156 hours	Total: 200 hours

As one can see, this course covers numerous topics and for this reason may seem daunting. You can complete this course in a timely manner if you manage your time wisely, remain focused, and seek assistance from your instructor when needed.

## Numeracy Questions (Calculators are permitted.)

Your instructor will only be looking at your final answer for each of these questions and be assigning a mark accordingly. He/she will not be examining of your pencil-and-paper work. So should you show all your work? Our recommendation is that you do because, following the completion of this unit, you will be writing an open-book test where you are able to use your completed unit as a resource. Also feel free to jot down any notes that may help refresh your memory as how you completed each of the questions.

1. Based on the clock shown on the right, what time will it be in a half hour?



\_\_\_\_\_

2. You purchase an item for \$13.65 (after taxes) and pay with a \$20 bill. How much change should you get?

\$ \_\_\_\_\_

3. Below you have been provided with a written statement and three numbers. Fill the numbers such that the statement makes sense.

Normally \_\_\_\_\_ people attend the neighborhood watch meeting. That number decreased slightly by \_\_\_\_\_ such that \_\_\_\_\_ people attended.

2	16	18
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4. Match with the most suitable unit of measure.

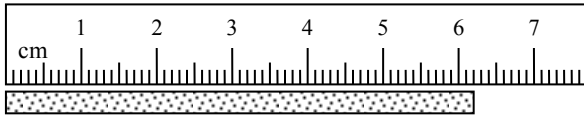
(a)	the length of an automobile
(b)	amount of fat in a serving of french fries
(c)	weight of large bag of potatoes
(d)	width of a computer screen
(e)	amount of gasoline in a vehicle's gas tank
(f)	distance covered in a one hour car ride
(g)	amount of medicine in a medical syringe

	kilograms (kg)
	metres (m)
	litres (L)
	kilometres (km)
	grams (g)
	millilitres (mL)
	centimetres (cm)

5. If Nashi earns \$12 an hour and works from 11:30 a.m. until 6:30 p.m. with paid breaks, how much does she earn before deductions?

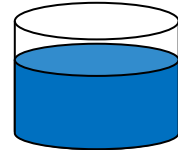
\$ \_\_\_\_\_

6. What is the length of the line segment? Include the units of measure.



\_\_\_\_\_

7. The container on the right has some water in it. Approximately how full is the container? Answer as a percent.



\_\_\_\_\_ %

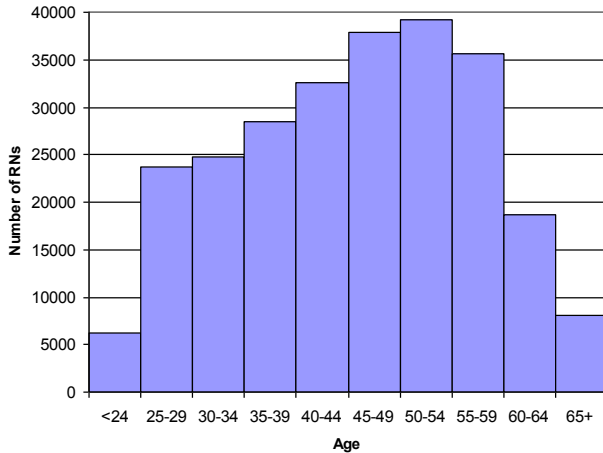
8. A single chocolate bar is selling for \$0.95. A four pack of the same chocolate bar is selling for \$2.99. How much is saved by buying the four pack, as opposed to buying four individual bars?

\$ \_\_\_\_\_

9. The graph on the right shows the age distribution of registered nurses (RNs) in Canada for the year 2009.

Approximately how many registered nurses in 2009 were between the ages 25 and 34?

\_\_\_\_\_ nurses



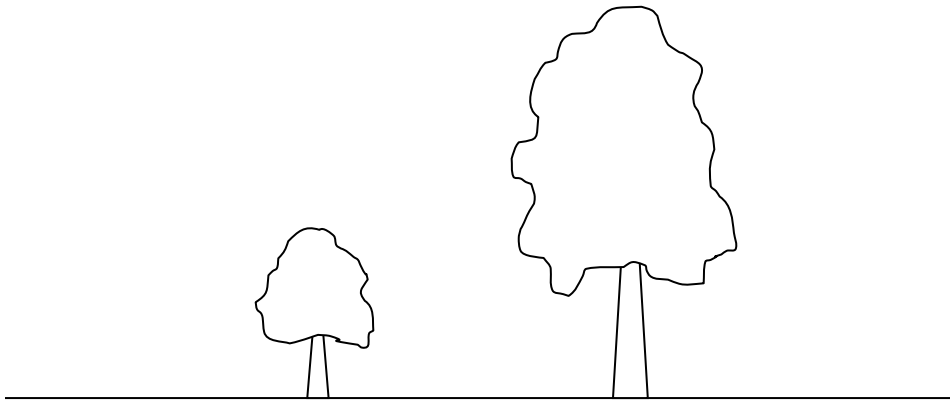
10. Out of 400 randomly selected adults, 124 said that they go out to dinner 4 or more times in a month. Based on these results, out of a population of 18 000 adults, how many would one predict dine out less than 4 times a month?

\_\_\_\_\_ adults

11. An item normally costing \$16.95 (before tax) is discounted by 20%. If tax is 15%, what the total price of the discounted item?

\$ \_\_\_\_\_

12. The following sketch shows the height of one tree compared to the height of another tree. If the trees are side by side and the larger tree is 40 feet high, estimate the height of the smaller tree.



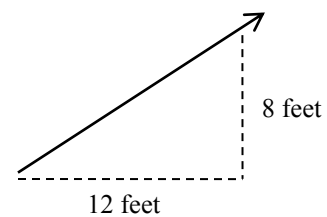
\_\_\_\_\_ feet

13. Three numbers and a written statement have been supplied below. Fill the numbers such that the statement makes sense.

Kadeer likes to use \_\_\_\_\_ grams of ground coffee to make \_\_\_\_\_ millilitres of coffee. He also likes the coffee to be served at \_\_\_\_\_ °C.

150	70	10
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14. Roof pitch is a way to describe the steepness of a roof. If a roof has an 8:12 pitch, it means that the roof rises 8 feet over a horizontal run of 12 feet. If a roof had an 8:12 pitch, what would be the height for a horizontal run of 21 feet?



\_\_\_\_\_ feet

15. Which one of these four measures is the largest? Circle the correct answer.

(a) 3000 metres      (b) 40 millimetres      (c) 9000 centimetres      (d) 2 kilometres

16. A car rental agency charges a flat rate of \$55 per day plus \$0.10 per kilometre. If Mary rents a car for 3 days and drives 400 kilometres, how much money will he owe for the rental?

\$ \_\_\_\_\_

17. Using the chart below, determine how many calories the average 140 pound person would use when he/she plays hockey for one hour?

Average Calories Used in **30 minutes**

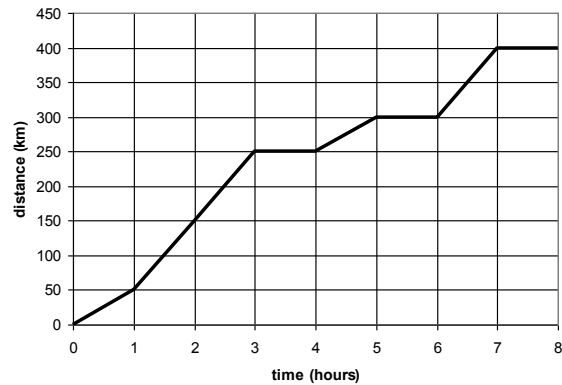
Activity	Calories Burned by 140 pound Individual	Calories Burned by 180 pound Individual
Walking	139	178
Swimming	192	248
Aerobics	223	286
Hockey	256	329
Bicycling	277	356

\_\_\_\_\_ calories

18. Rana is travelling in her car for 8 hours. The graph shows the distance she travelled during that trip.

What was Rana's average speed over the first 5 hours trip of the trip?

\_\_\_\_\_ km/h



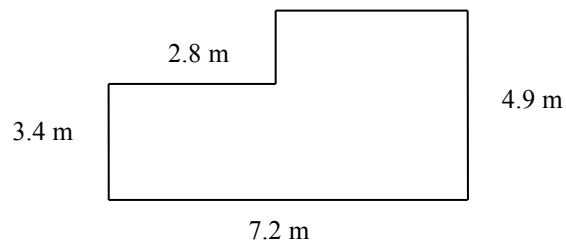
19. Below you have been provided with a written statement and four numbers. Fill three of the four numbers such that the statement makes sense. One of the numbers does not belong.

Margaret is \_\_\_\_\_ times heavier than her young daughter Angela. If Angela weighs \_\_\_\_\_ pounds, then Margaret weighs \_\_\_\_\_ pounds.

126	37	2.8	45
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20. A fence needs to be built around the following property. How much fencing is needed?

\_\_\_\_\_ metres



21. A family needs to catch their 8:45 a.m. flight to Florida. They must arrive at the airport 2 hours before departure in order to clear security. If the car trip from home to the airport takes 35 minutes, what is the latest time they can leave home?

\_\_\_\_\_ a.m.

22. 2.05 kilograms is the same as:

- (a) 2 kilograms 50 grams
- (b) 2 kilograms 5 grams
- (c) 2 kilograms 5000 grams
- (d) 2 kilograms 500 grams

23. A particular swimming pool is the shape of a rectangular solid. Its length is 10 metres, its width is 8 metres, and its depth is 2 metres. If the pool is  $\frac{3}{4}$  full with water, how many cubic metres of water are in the pool? Include the units of measure.

\_\_\_\_\_

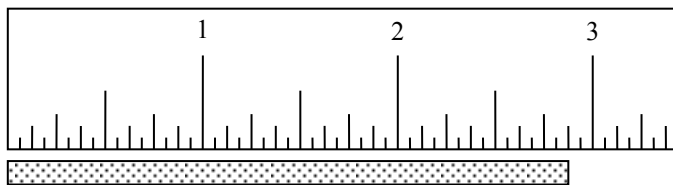
24. A gift shop had the following hours of operation posted.

<b>Store Hours:</b>		
Nov-Apr	Mon-Fri	10 a.m. to 6 p.m.
	Sat-Sun	11 a.m. to 5 p.m.
May-Oct	Mon-Fri	10 a.m. to 8 p.m.
	Sat-Sun	10 a.m. to 6 p.m.

How many hours per week is the store open in July?

\_\_\_\_\_ hours

25. Using the ruler drawn on the page, determine the length of the line segment in inches.



\_\_\_\_\_ inches

26. A fuel gauge is shown on the right. When full, the gas tank for this particular car can hold 65 litres of fuel. Based on the fuel gauge reading shown, about how much fuel is in the tank?



\_\_\_\_\_ litres

27. The total bill for your dinner at a restaurant is \$38.69 (after taxes). If you wish to leave a 15% tip for great service, about how much money should you leave for the tip?

\$ \_\_\_\_\_

28. When the store opens, there was \$200 in the cash register. At the end of the day, the employee records the following money in the cash register.

	Number
\$50 Bills	4
\$20 Bills	15
\$10 Bills	7
\$5 Bills	4
\$2 Coins	10
\$1 Coins	8
25¢ coins	14
10¢ coins	12
5¢ coins	18

How much more money is there in the cash register at the end of the day than when the store opened?

\$ \_\_\_\_\_

29. There are 100 centimetres in a metre. What fraction of a metre is 40 centimetres?

(a)  $\frac{4}{7}$       (b)  $\frac{3}{4}$       (c)  $\frac{3}{5}$       (d)  $\frac{2}{5}$

30. The membership at the ski club went from 2345 members to 2531 between December 2012 and December 2013. What was the percentage increase in ski members during that period of time?

\_\_\_\_\_ %

31. Below you will find the rainfall data for a particular community for five years.

	Total Rainfall for the Month (mm)	
	May	September
2008	42	34
2009	65	70
2010	71	128
2011	102	30
2012	30	38

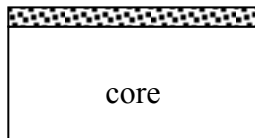
What is the difference in mean rainfall in May and mean rainfall in September?

\_\_\_\_\_ mm

32. Below you have been provided with a written statement and four numbers. Fill three of the four numbers such that the statement makes sense. One of the numbers does not belong. You are also supplied with a diagram showing the cross-section of the countertop that is talked about in the statement.

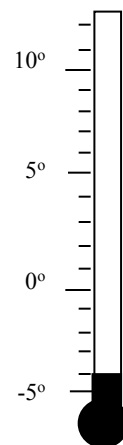
A particular \_\_\_\_\_ inch counter top is comprised of a \_\_\_\_\_ inch particle board core with thin layer of laminate measuring \_\_\_\_\_ of an inch thick glued on top.

$\frac{1}{16}$	$\frac{3}{8}$	$\frac{11}{16}$	$\frac{3}{4}$
----------------	---------------	-----------------	---------------



33. The outdoor temperature reading at 5:00 a.m. is shown on the thermometer on the right. If the temperature rises at a rate of  $2^{\circ}\text{C}$  per hour, what will be the temperature at 10:00 a.m.?

\_\_\_\_\_  $^{\circ}\text{C}$



34. One litre of cleaner is mixed in a ratio of 1 part cleaner to 8 parts water (i.e. 1:8). How much cleaning solution does this make altogether? Include the units of measure.

\_\_\_\_\_

35. The following chart looks at times taken by runners to complete last month's road race.

Time taken in hours:minutes:seconds	Number of Runners
Under 2:30:00	12
Between 2:30:00 and 2:59:59	45
Between 3:00:00 and 3:29:59	78
Between 3:30:00 and 3:59:59	63
Between 4:00:00 and 4:29:59	42
4:30:00 and over	32

How many runners completed the race in less than 3 hours and 30 minutes?

\_\_\_\_\_ runners

36. The mid-day temperatures of five Canadian cities on a particular day in January are listed below.

City	Mid-day Temperature
Halifax	-6°C
Montreal	-9°C
Toronto	-3°C
Winnipeg	-14°C
Victoria	6°C

The following day, the mid-day temperature in Halifax increased by 3°C, and the mid-day temperature in Winnipeg decreased by 2°C. How many degrees warmer at mid-day is Halifax than Winnipeg on this day?

\_\_\_\_\_ °C

37. The scale on the map is 1 : 20 000 (i.e. 1 unit of length on the map is equal to 20 000 units of length in the real world). On the map, the distance between two towns is 14.2 cm. What is the actual distance between these two towns in kilometres?

\_\_\_\_\_ kilometres

38. A typist takes 4 minutes to type 120 words. How long (in minutes) will it take the typist to type 2520 words?

\_\_\_\_\_ minutes

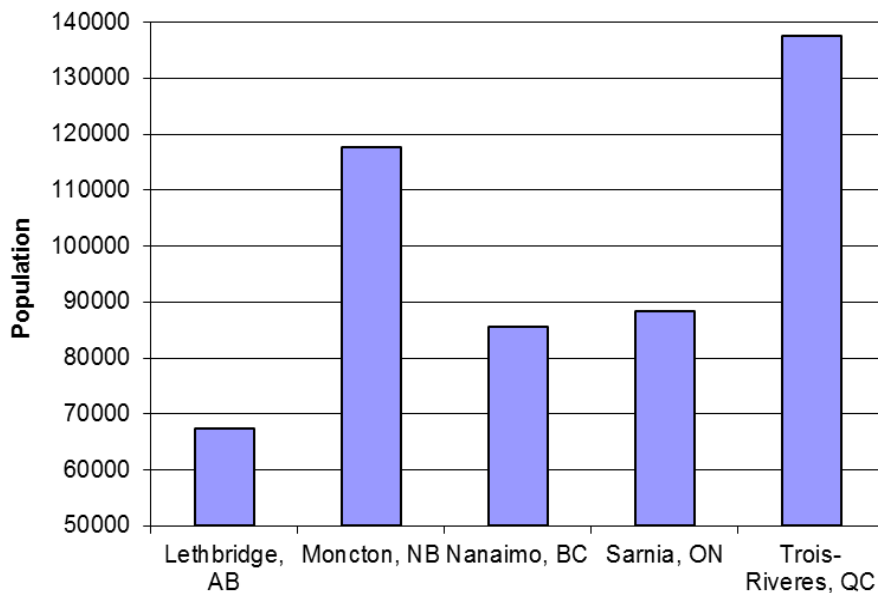
39. The instructions for an orange drink state that you must mix one part orange concentrate to three parts water. If so, how many millilitres of orange concentrate are needed to make 3 litres of orange drink?

\_\_\_\_\_ millilitres

40. A bundle of roof shingles covers 33 square feet of roof. How many bundles are needed to cover a rectangular roof measuring 20 feet by 8 feet?

\_\_\_\_\_ bundles

41. The following bar graph shows the populations of five Canadian communities. Marcus looks at the graph and states that the population Sarnia, Ontario is less than half of the population of Trois-Riveres, Quebec. Marcus is wrong.



Why can this bar graph be misleading?

- (a) The numbers on the vertical axis do not increase evenly.
- (b) The communities should be listed based on their geographic position, specifically from west to east.
- (c) The bars are the wrong width.
- (d) The vertical axis does not start at 0.

42. The pressure gauge on the right measures air pressure. The outer scale measures pressure in pounds per square inch (psi). The inner scale measures pressure in kilograms per square centimetre ( $\text{kg}/\text{cm}^2$ ).

How many kilograms per square centimetres are equal to 44 pounds per square inch?

\_\_\_\_\_ kilograms per square centimetres



43. Charu has to paint the ceilings in her house. The ceilings total 3500 square feet (325 square metres). The label on the paint container supplies the following information regarding coverage. How many cans of ceiling paint should she purchase to complete the ceilings knowing that a can holds 3.78 litres of paint?

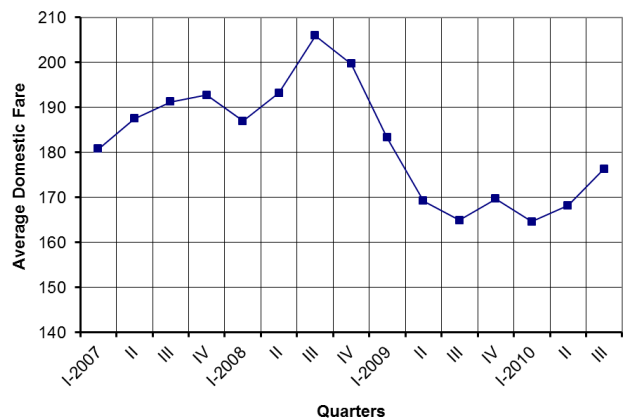
**Coverage:**  
Up to 1 L /110  $\text{ft}^2$  (10.5  $\text{m}^2$ )

\_\_\_\_\_ cans of ceiling paint

44. The following line graph shows how the average price of a domestic flight from Halifax changed between the first quarter of 2007 until the third quarter of 2010.

Between what two quarters was the greatest increase in the average price of a domestic flight from Halifax?

\_\_\_\_\_ and \_\_\_\_\_



45. The following chart shows the different temperature ranges for different grades of motor oils.

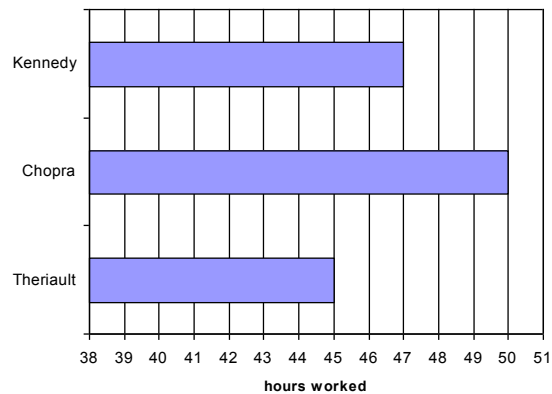
Grade	Temperature Range
SAE 5W-30	-25°C to 20°C
SAE 5W-40	-25°C to 35°C
SAE 10W-30	-20°C to 30°C
SAE 10W-40	-20°C to 35°C
SAE 15W-40	-15°C to 45°C
SAE 20W-40	-10°C to 45°C

Which grade of motor oil has the smallest temperature range?

\_\_\_\_\_

46. The table below shows the pay rates of three employees. The employees get paid overtime for the number of hours over the regular 40 hour work week. There is also a bar graph showing the number of hours worked by each employee on a specific week.

Employee	regular	overtime
Kennedy	\$16/hour	\$24/hour
Chopra	\$18/hour	\$27/hour
Therriault	\$14/hour	\$21/hour



How much less did Therriault earn than Kennedy earn on this specific week?

\$ \_\_\_\_\_

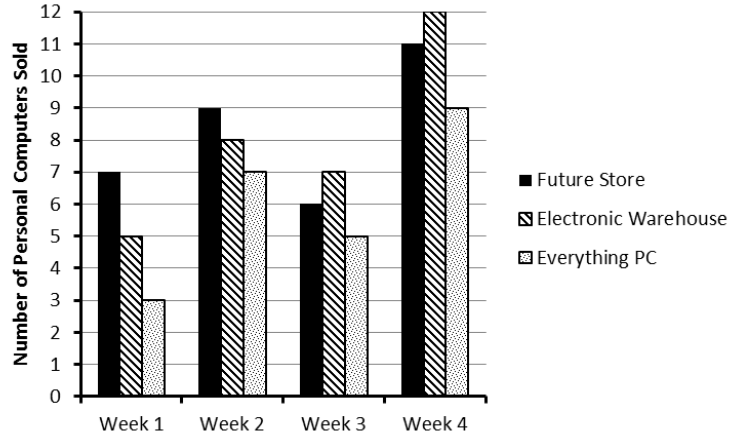
47. You are returning to Canada and have to exchange your US dollars to Canadian dollars. On that day, the conversion rate is one Canadian dollar is worth \$0.92 US dollars. If you have \$640 US to exchange, you much will you receive in Canadian currency?

\$ \_\_\_\_\_

48. The sales of personal computers from three stores over four weeks are shown in the graph.

For each personal computer sold, Everything PC makes \$85 profit. How much profit does Everything PC made on the sales of personal computers over this four week period?

\$ \_\_\_\_\_



49. There are 30.48 centimetres in 1 foot. There are 5280 feet in 1 mile. How many centimetres are in 0.5 miles?

\_\_\_\_\_ centimetres

50. The following recipe makes one loaf of banana bread.

- 250 grams of all-purpose flour
- 5 grams of baking soda
- 110 grams of brown sugar
- 2 grams of salt
- 115 grams of butter
- 2 eggs (beaten)
- 525 grams of mashed overripe bananas

(a) If you have to make 4 loaves of banana bread for your community center's fund raiser, how many grams of butter would you need?

\_\_\_\_\_ grams

(b) If you only have 1.3 kilograms of all purpose flour, what is the maximum number of loaves of banana bread you can make?

\_\_\_\_\_ loaves

(c) What is the ratio of baking soda to salt in this recipe?

\_\_\_\_\_

51. The following chart shows the Canadian population based on age at three different periods of time (1991, 2001, 2011). Please note that all population numbers are supplied in millions.

	1991	2001	2011
	(million)		
0-4	1.91	1.70	1.64
5-12	3.04	3.23	2.77
13-24	4.57	4.81	4.98
25-34	4.87	3.99	4.17
35-44	4.37	5.10	4.51
45-64	5.37	7.29	9.47
65-69	1.07	1.13	1.49
70-79	1.44	1.82	1.99
80+	0.66	0.93	1.33
<b>Total</b>	<b>27.30</b>	<b>30.01</b>	<b>32.36</b>

(a) By how much did the population of 35 to 44 years olds change between 1991 and 2011?

\_\_\_\_\_ people

(b) What percentage of the population was between 45 and 64 years old in 2001? Round your answer to the nearest whole number.

\_\_\_\_\_ %

(c) Which one of these statements is **false** regarding people 80 years of age or older in 1991 and 2011?

- (i) The population of 80+ year olds approximately doubled between 1991 and 2011.
- (ii) The proportion of 80+ year olds in 1991 to 80+ year olds in 2011 is approximately two to one.
- (iii) The population of 80+ year olds increased by 0.67 million between 1991 and 2011.
- (iv) The population of 80+ year olds in 1991 is approximately one half that of the same age group in the year 2011.

52. Below is a portion of a furniture store inventory table. Use this table to answer the questions below.

Product ID	Description	Department	Price	Retail Cost	Count
639382000393	Leather Armchair (brown)	Family	\$575.00	\$385.00	6
397336007325	Wingback Chair	Family	\$420.00	\$280.00	8
639382001472	Leather Love Seat (brown)	Family	\$800.00	\$615.00	5
397336000678	Sectional Sofa (microfiber)	Family	\$1450.00	\$925.00	3
639382002595	Leather Sofa (brown)	Family	\$1050.00	\$760.00	6
639382001671	Leather Sofa (beige)	Family	\$1100.00	\$875.00	2
745364000541	6pc. Dining (oak)	Dining	\$780.00	\$490.00	3
745364000462	6pc. Dining (maple)	Dining	\$680.00	\$415.00	2
745364000479	8pc. Dining (maple)	Dining	\$790.00	\$540.00	2
532891003492	Childs Bedroom Set (maple)	Bedroom	\$725.00	\$475.00	3
479102001896	Twin Mattress	Bedroom	\$230.00	\$120.00	5

(a) What is the retail cost of an oak six piece dining set?

\$ \_\_\_\_\_

(b) What is the price of a brown leather loveseat?

\$ \_\_\_\_\_

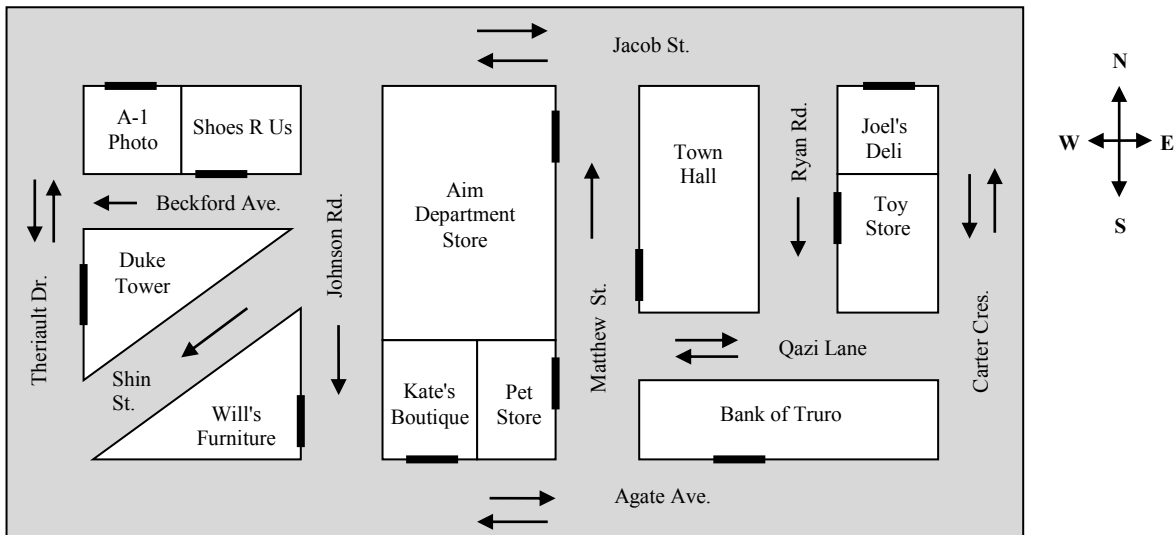
(c) How much profit is made on the sales of a maple eight piece dining set?

\$ \_\_\_\_\_

(d) How much profit in total is made if they sell every brown leather armchair they have in stock?

\$ \_\_\_\_\_

53. Refer to the map below. Notice that it includes the compass bearings, identifies the directions one can travel down a street (i.e. one-way vs. two-way), and identifies the entry points of the building using a thick line along the edge of the building.



With each of these questions assume that you are driving from the entrance of one building to the entrance of another building along the most direct route.

(a) You start out on Ryan Rod. You turn right onto Qazi Lane, then right onto Matthew Street, then left onto Jacob Street, and then left onto Theriault Drive. What direction (north, south, east or west) are you now facing?

\_\_\_\_\_

- (b) Which of the following is the most direct driving route from Shoes R Us to the Town Hall?
- (i) East on Beckford, then north on Johnson, then east on Jacob, and then south on Matthew
  - (ii) West on Beckford. then north on Theriault, then east on Jacob, and then so south on Matthew
  - (iii) West on Beckford, then south on Theriault, then east on Agate, and then north on Matthew
  - (iv) East on Beckford, then south on Johnson, then east on Agate, and then north on Matthew

54. Candice needs to purchase season passes to the local ski hill for her and her small family. Her family is made up of herself (age 42), her partner (age 39), her son (age 11), and her daughter (age 4). The ski hill's website provides the following table listing the various season pass options.

Category	Rate	Total
Senior (age 60+)	\$219 + tax	\$251.85
Adult (ages 18 to 59)	\$279 + tax	\$320.85
Student (ages 12 to 17)	\$249 + tax	\$286.35
Child (ages 6 to 11)	\$199 + tax	\$228.85
Infant (ages 5 and under)	\$49 + tax	\$56.35
Family *	\$899 + tax	\$1033.85

\* - Family is defined as parents and their children (under the age of 18 years) within the same household

- (a) How much should she be spending in total (after taxes) to purchase season passes for all family members?

\$ \_\_\_\_\_

- (b) Two years later, the season pass rates remain the same. What is the cheapest price (after taxes) for Candice's family?

\$ \_\_\_\_\_

55. The nutrition facts for an instant macaroni and cheese dinner are supplied on the right.

- (a) How many grams of cholesterol are in a 70 gram serving of this macaroni and cheese dinner?

\_\_\_\_\_ grams

- (b) What percentage of the daily amount of carbohydrates would be found in a 210 gram serving of this meal?

\_\_\_\_\_ %

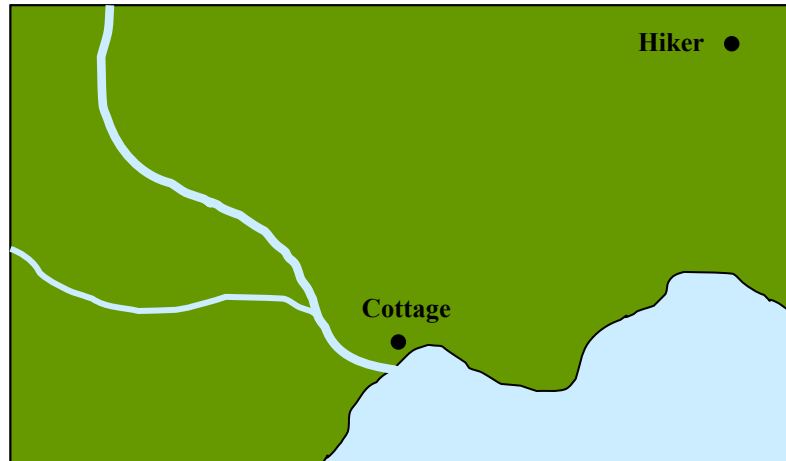
- (c) How many calories would be in a 180 gram serving of this meal?

\_\_\_\_\_ grams

Nutrition Facts			
Serving Size 70 g			
Amount Per Serving	% Daily Value*		
<b>Calories</b> 259			
<b>Total Fat</b> 3 g	4%		
Saturated Fat 1 g	6%		
Trans Fat			
<b>Cholesterol</b> 10 g	3%		
<b>Sodium</b> 561 g	23%		
<b>Carbohydrates</b> 48 g	16%		
Fibre 1 g	6%		
Sugars 7 g			
<b>Protein</b> 11 g			
Vitamin A	1%	Vitamin C	1%
Calcium	9%	Iron	14%

\* Percent Daily Values are based on a 2000 calorie diet.  
Your daily values may be higher or lower depending on your calorie needs.

56. The following map shows the position of a hiker (dot in upper right-hand corner) in relation to his cottage (dot near the lake's edge). A scale is provided on the map.



**Scale 1 centimetre equals 350 metres**

- (a) How far is the hiker from his cottage in kilometres?

\_\_\_\_\_ kilometres

- (b) Assuming that he walks at a rate of 3 kilometres per hour and travels in a straight line towards his cottage, how long will it take him to reach the cottage?

\_\_\_\_\_ minutes

57. A local sports team needs to buy promotional T-shirts. The company that can make these promotional T-shirts gives the following costs.

	Cost (before tax)
Basic set-up charge	\$50
First 40 T-shirts	\$12 per shirt
Extra T-shirts above the 40	\$9 per shirt

- (a) If the team needs 200 T-shirts, what is the cost?

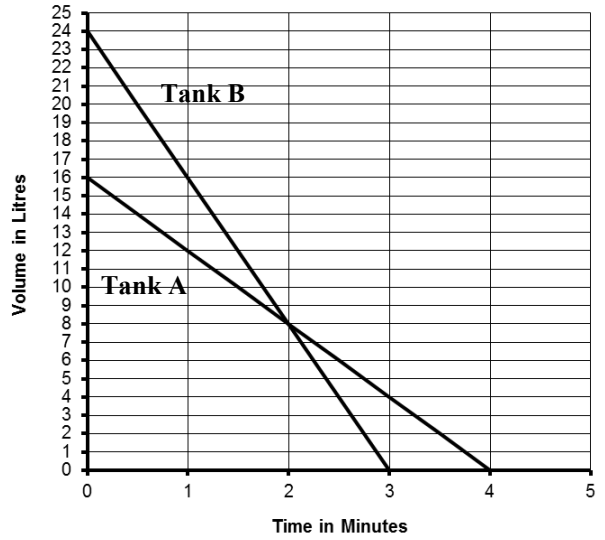
\$ \_\_\_\_\_

- (b) If the team only wants to spend \$1500 on T-shirts, how many T-shirts can the team buy?

\_\_\_\_\_ T-shirts



60. Two different pumps are used to empty two different storage tanks. They are switched on at the same time. The graph shows how much fluid remains in each tank over time.



(a) How fast, in litres per minute, is fluid being drained from Tank B?

\_\_\_\_\_ litres per minute

(b) How much longer did it take to drain Tank A than Tank B?

\_\_\_\_\_ minute(s)

(c) Between what times does Tank B have more fluid than Tank A?

Between \_\_\_\_\_ minutes and \_\_\_\_\_ minutes

(d) How much more fluid is in Tank A compared to Tank B at 2.5 minutes? Include the units of measure.

\_\_\_\_\_

(e) The situation is changed slightly such that Tank B initially contains 20 litres of fluid. When will be the first time that the two tanks have the same amount of fluid?

\_\_\_\_\_ minute(s)

61. The following diagrams show the start time and finish time for an employee on a particular day.

Start Time in the Morning



Finish Time in the Evening



(a) At what time did the employee start work?

\_\_\_\_\_

(b) If this employee is given a 45 minute unpaid lunch break, how long is his/her paid work day? Include the appropriate units of measure.

\_\_\_\_\_

(c) The employee earns \$16 per hour for the first eight hours and \$24 per hour for every hour after the eight hours. How much will he/she make this day before deductions (e.g. taxes, employment insurance, etc.)?

\_\_\_\_\_

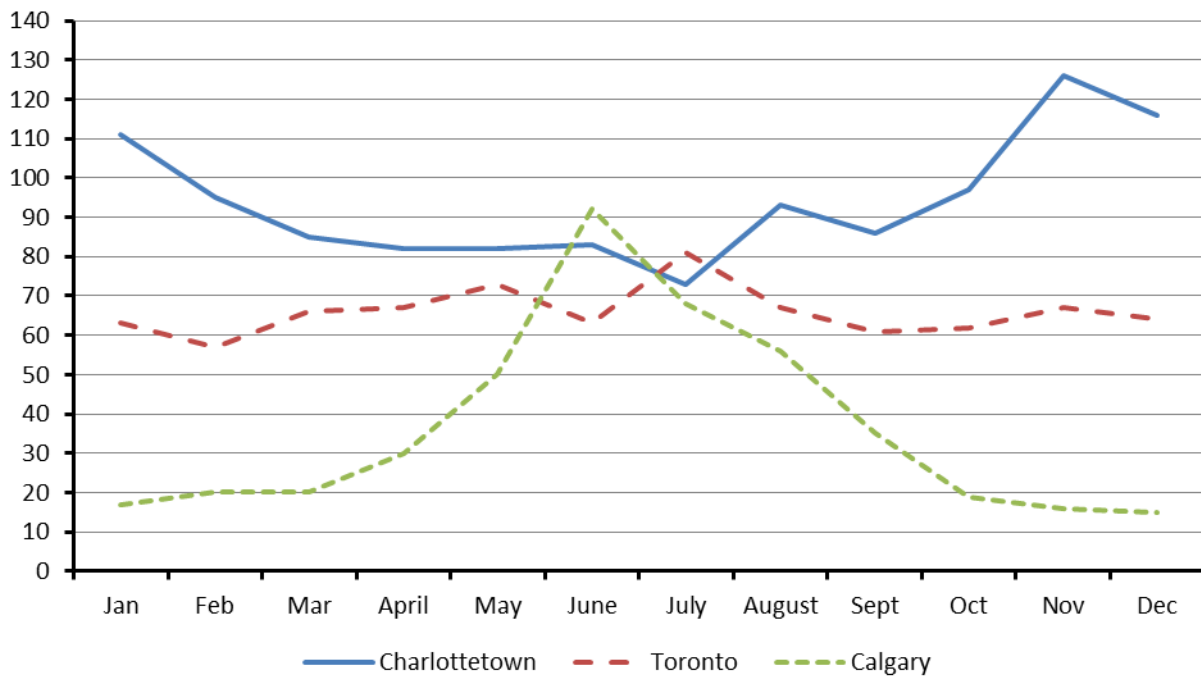
(d) If the employee only wished to earn \$120 (before deductions) that day, at what time would the work day have ended? Do not forget to factor in the 45 minute unpaid lunch break.

\_\_\_\_\_



63. The precipitation over a one year period for three Canadian cities (Charlottetown, Toronto, and Calgary) has been supplied in the table and graph below. All measurements provided are in millimetres (mm). Use this information to answer the questions below.

	Char.	Toronto	Calgary
Jan	111	63	17
Feb	95	57	20
Mar	85	66	20
April	82	67	30
May	82	73	50
June	83	63	92
July	73	81	68
Aug	93	67	56
Sept	86	61	35
Oct	97	62	19
Nov	126	67	16
Dec	116	64	15



(a) By how much did the highest monthly amount of precipitation for Charlottetown differ by the highest monthly amount of precipitation for Calgary?

\_\_\_\_\_ millimetres

(b) In Calgary, there was a large increase in the amount of precipitation from one month to another. How large was the increase?

\_\_\_\_\_ millimetres

(c) What was the average monthly amount of precipitation for Toronto in this particular year?

\_\_\_\_\_ millimetres

(d) What was the average daily amount of precipitation for Charlottetown in September? There are 30 days in September.

\_\_\_\_\_ millimetres

(e) There are 10 millimetres in one centimeter. There are 2.54 centimetres in one inch. How many inches of precipitation fell in July in Toronto?

\_\_\_\_\_ inches

(f) In what month were the amounts of precipitation in these three cities the closest to each other?

\_\_\_\_\_

64. A company has four different offices in four different communities. The company offers optional life insurance to each of its employees. Not all of the employees chose to take this insurance even though it is at a discounted rate.

Office	Number of Employees	Number of Employees Taking the Optional Life Insurance
Truro Office	10	4
Halifax Office	28	9
Amherst Office	8	3
Sydney Office	16	7

What percentage of employees chose to take the optional life insurance?

\_\_\_\_\_ %

65. NS Electrical Controls sells electrical equipment to other businesses. The following sales order is from NS Controls to one of its customers, Hammond Controls Company. The sales order is incomplete.

<b>NS Electrical Controls</b> <b>163 Harbourview Road</b> <b>Halifax, NS</b> <b>B2H 1P7</b>		<b>Sales Order</b>  <b>Date: Sept 23, 2014</b> <b>Invoice Number: 5649</b>		
Sold To: Hammond Controls Company	528 Water Street	Shipped To: (same)		
	Antigonish, NS			
	B2G 1R2			
Item #	Description	Quantity	Unit Price	Amount
31132	Switch, DPDT 240v 100a	????	\$17.26	\$690.40
31068	Switch, DPDT 240v 50a	30	\$11.54	\$346.20
34345	Circuit Breaker, SP 120v 30a	60	\$18.91	\$1134.60
31283	Switch, SPDT 240v 100a	50	\$12.66	\$633.00
34361	Circuit Breaker, DP 120v, 15a	25	????	\$548.00
			Subtotal	????
			Tax (15%)	????
			Total	????

(a) The items on the sale order were not listed in any specific order. Some businesses prefer that the items be listed in order, based to their item number. Order the five item numbers from smallest to largest.

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

(b) Determine the quantity of DPDT 240v 100a switches that were sold to Hammond Controls Company.

\_\_\_\_\_

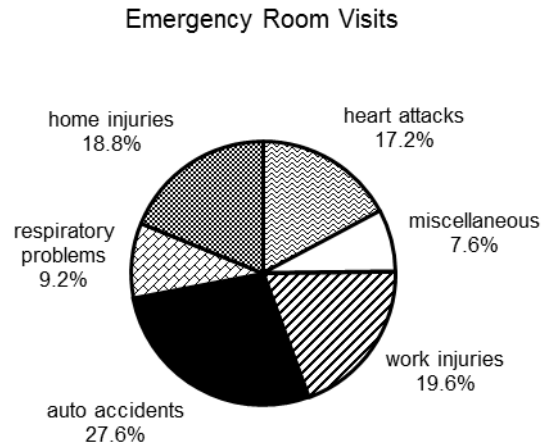
(c) What was the unit price of a DP 120v 15a circuit breaker?

\$ \_\_\_\_\_

(d) What should be the total at the end of the sales order?

\$ \_\_\_\_\_

66. There were 1250 emergency room visits last month at a particular hospital. From those visits a circle graph describing the different types of visits was created.



(a) What percentage of the visits were for work related injuries?

\_\_\_\_\_ %

(b) How many visits were for respiratory problems?

\_\_\_\_\_ visits

(c) Which type of injury or medical condition was responsible for 345 visits?

\_\_\_\_\_

(d) How many more visits were home injuries compared to heart attacks?

\_\_\_\_\_ visits

(e) What is the ratio of visits for respiratory problems to visits for automobile injuries?

\_\_\_\_\_

67. In a large retail store employing 276 people, approximately 58% of them are female. Of the female employees, 35% are 45 years of age or older? How many employees are female and less than 45 years of age?

\_\_\_\_\_ employees

68. Which one of these four options is likely the next figure for the sequence shown on the left? Circle your selection.

	(a)	(b)	(c)	(d)
↻, ↻, ↻, ↻, ↻, ↻, ↻, ↻, ↻, ...	↻	↻	↻	↻

69. Anne Theriault spent two days inspecting a project site. Below you will find Anne's partially completed expense claim form. Anne claims a flat rate for meals (\$7.83 for breakfast, \$10.43 for lunch, and \$17.39 for supper).

<b>Statement of Expenses</b>						
Name: <i>Anne Theriault</i>			SIN: <i>987 654 321</i>			
Address: <i>37 Forrest Ave</i>			Position: <i>Senior Project Manager</i>			
City: <i>Dartmouth</i>			Office Phone #: <i>902-555-4981</i>			
Purpose of Trip: <i>Inspection of Amherst Site</i>						
<b>Expenses</b>						
Date:	Details of Expense					Total
	Meals: (no receipts required): Breakfast - \$7.83, Lunch - \$10.43, Supper - \$17.39					
<i>Feb 24</i>	<i>Meals: Lunch and Supper</i>					<i>????</i>
<i>Feb 24</i>	<i>Accommodations (Amherst Gamma Hotel)</i>					<i>\$139.00</i>
<i>Feb 25</i>	<i>Meals: Breakfast and Lunch</i>					<i>\$18.26</i>
	Tax (15%)					<i>????</i>
	Subtotal Expenses					<i>????</i>
<b>Travel Information</b>						
Date:	Travel Details	From:	To:	Total km	Travel Rate	Total
<i>Feb 24</i>	<i>Toll Highway</i>				$\times 0.43$	<i>\$4.00</i>
<i>Feb 24</i>	<i>Own Vehicle</i>	<i>Dartmouth</i>	<i>Amherst</i>	<i>????</i>	$\times 0.43$	<i>\$82.99</i>
<i>Feb 25</i>	<i>Toll Highway</i>				$\times 0.43$	<i>\$4.00</i>
<i>Feb 25</i>	<i>Own Vehicle</i>	<i>Amherst</i>	<i>Elmsdale</i>	<i>154</i>	$\times 0.43$	<i>????</i>
					$\times 0.43$	
	Subtotal Travel					<i>????</i>
	<b>Total Claim</b>					<i>????</i>
Claimant's Signature: <i>Anne Theriault</i>					Date: <i>Feb 27, 2014</i>	
Approval Signature:					Date:	

(a) How many kilometres did Anne claim for travel for February 25?

\_\_\_\_\_ km

(b) How much, before taxes, should Anne claim for meals on February 24?

\$ \_\_\_\_\_

(c) Tax must be paid on all expenses. How much tax will she pay in total?

\$ \_\_\_\_\_

(d) How much should Anne be reimbursed for travelling from Amherst to Elmsdale in her own vehicle?

\$ \_\_\_\_\_

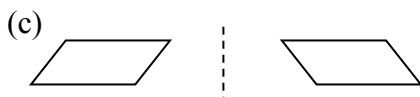
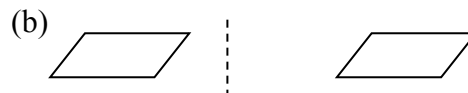
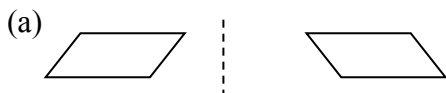
(e) How far did Anne travel in her own vehicle on February 24?

\_\_\_\_\_ km

(f) How much should Anne claim in total for her two day site inspection?

\$ \_\_\_\_\_

70. A parallelogram (i.e. a special type of four-sided figure) is reflected in a mirror. Which one of the following would represent the resulting image in relation to the original figure? The original parallelogram is on the left and the dotted line represents the mirror plane. Circle your selection.



71. Candice is traveling from Halifax to Regina on Wednesday, October 22, and returning on Wednesday, October 29. She went to a national airline’s website and entered her departure and return dates, and the website generated the following possible flights and prices. The prices do not include fees and taxes.

**Selecting Departing Flight**

**Halifax (YHZ) – Regina (YQR) – Wednesday Oct 22, 2014**

Flight	Departs	Arrives	Duration	Econo	Flex	Plus
WS 175	6:40 AM Halifax (YHZ)	8:00 AM Toronto (YYZ)	2h 20m	\$514.11	\$547.46	\$622.21
WS 603	10:15 AM Toronto (YYZ)	11:30 PM Regina (YQR)	3h 15m			
WS 229	7:25 AM Halifax (YHZ)	9:52 AM Calgary (YYC)	5h 27 m	\$509.59	\$542.94	\$617.69
WS 314	12:00 PM Calgary (YYC)	1:14 PM Regina (YQR)	1h 14m			
WS 257	12:40 PM Halifax (YHZ)	1:59 PM Toronto (YYZ)	2h 19m	\$710.49	\$759.94	\$899.09
WS 369	7:20 PM Toronto (YYZ)	8:35 PM Regina (YQR)	3h 15m			

**Selecting Return Flight**

**Regina (YQR) – Halifax (YHZ) - Wednesday Oct 29, 2014**

Flight	Departs	Arrives	Duration	Econo	Flex	Plus
WS 156	6:15 AM Regina (YQR)	10:18 AM Toronto (YYZ)	3h 3m	\$404.89	\$702.74	\$891.34
WS 700	3:15 PM Toronto (YYZ)	6:16 PM Halifax (YHZ)	2h 1m			
WS 3273	7:00 PM Regina (YQR)	7:49 PM Calgary (YYC)	1h 49m	\$348.89	\$501.84	\$609.94
WS 228	10:35 PM Calgary (YYC)	6:23 AM+1 Halifax (YHZ)	4h 48m			
WS 3273	7:00 PM Regina (YQR)	7:49 PM Calgary (YYC)	1h 49m	\$686.36	\$901.41	\$1047.46
WS 648	1:00 AM+1 Calgary (YYC)	6:43 AM Toronto (YYZ)	3h 43m			
WS 246	7:20 AM+1 Toronto (YYZ)	10:21 AM Halifax (YHZ)	2h 1m			

- (a) There is one option for flying from Regina to Halifax with one stopover, specifically in Calgary. What are the flight numbers associated with this option?

\_\_\_\_\_

- (b) If Candice leaves Halifax at 7:25 a.m. and arrives in Regina at 1:14 p.m. flying “Flex” class, how much will she pay before taxes and fees?

\$ \_\_\_\_\_

(c) What is the total time in the air travelling from Regina to Halifax using flights WS 3273, WS 648, and WS 246? Include the appropriate units of measure.

\_\_\_\_\_

(d) How much, before fees and taxes, is the most economical trip from Halifax to Regina and return?

\$ \_\_\_\_\_

(e) How much does Candice save, before fees and taxes, using “Econo” class as compared to “Plus” class when traveling from Halifax to Regina using flights WS 257 and WS 369?

\_\_\_\_\_

(f) There is only one option that allows Candice to land in Halifax on Wednesday, Oct 29. What are the flight numbers associated with this option?

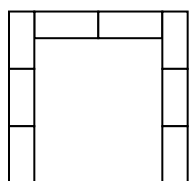
\_\_\_\_\_

72. A hotel and convention center has three rooms that they rent out for major events. Tables and chairs can be placed in five different arrangements. The following table provides the dimensions of rectangular rooms in feet and the number of tables and chairs based on each of the arrangements for each of the rooms. The diagrams below the table illustrate the different arrangements.

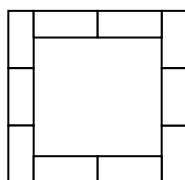
	Dimen. in feet	U-Shaped		Hollow Rectangle		Boardroom		Classroom		Brainstorm	
		tables	chairs	tables	chairs	tables	chairs	tables	chairs	tables	chairs
Forrester Room	46 by 40	10	32	12	40	8	28	8	24	10	40
Garnett Room	40 by 36	9	29	10	34	6	22	6	18	8	32
Thompson Room	28 by 24	5	17	6	22	4	16	4	12	4	16

Diagrams:

U-Shaped



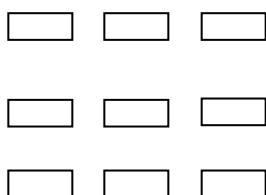
Hollow Rectangle



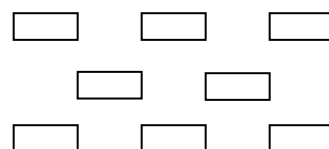
Boardroom



Classroom



Brainstorm



(a) How many more tables can you use in the Forrester Room in the hollow rectangle arrangement as compared to the boardroom arrangement?

\_\_\_\_\_ tables

(b) Which arrangement minimizes the seating in the Garnett Room?

\_\_\_\_\_

(c) What is the area of the smallest room? Include the appropriate units of measure.

\_\_\_\_\_

(d) How many 8 foot long tables can be placed end-to-end along the longest wall of the Thompson Room?

\_\_\_\_\_ tables

(e) Knowing that room rental is more for larger rooms, which room and which arrangement would be most economical for a client who wishes to have 33 people attend his/her meeting?

Room: \_\_\_\_\_ Arrangement: \_\_\_\_\_

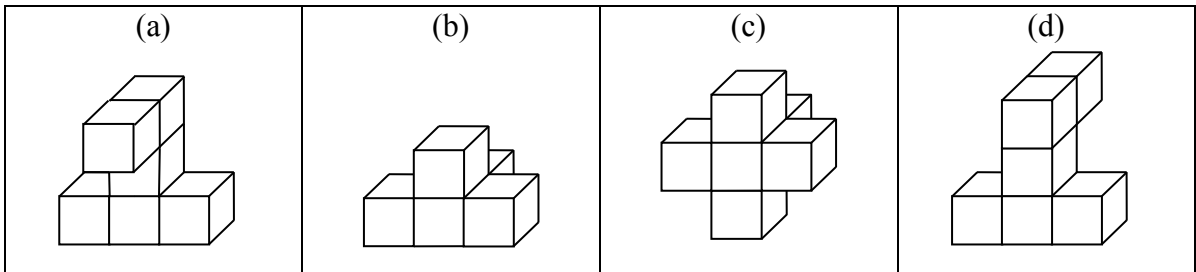
(f) How many chairs are there for each table when the tables are placed in the brainstorm arrangement?

\_\_\_\_\_

73. The six different views of an object constructed using interlocking cubes is shown below.

<p>Front View</p>	<p>Back View</p>	<p>Right View</p>
<p>Left View</p>	<p>Top View</p>	<p>Bottom View</p>

Which one of the objects below would have produced the six views above? Circle your selection.



74. A phone survey asked 90 households to report the number of electronic devices that connected to the internet (e.g. smartphones, tablets, game consoles, computers, etc.). They were also asked to state how many people lived in the household.

		Number of People in the Household					
		1	2	3	4	5	6 or more
Number of Electronic Devices that Connect to the Internet in the Household	1	1	2	3	1	0	0
	2	1	1	3	2	0	0
	3	0	2	5	8	3	1
	4	1	3	7	7	6	2
	5	0	1	3	5	6	4
	6 or more	0	0	2	4	3	2

- (a) How many households that were surveyed have four electronic devices connected to the internet and have five people in the household?

\_\_\_\_\_ households

- (b) How many households that were surveyed have three electronic devices connected to the internet?

\_\_\_\_\_ households

- (c) What percentage of the households surveyed have 6 or more electronic devices that connect to the internet?

\_\_\_\_\_ %

- (d) The results from this survey are used to predict the number of electronic devices connected to the internet in a community made up of 3600 households. How many household would one expect to have 2 or fewer electronic devices connected to the internet?

\_\_\_\_\_ households

75. A house is being built. Part of the project schedule is shown below.

Activity	June										July									
	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	
Excavation	■																			
Foundation				■																
Framing									■						■					
Septic Field									■											
Well Drilling												■								
Siding															■					
Rough-In Electrical																■				

(a) Over what dates is the sliding of the house scheduled to occur?

Between \_\_\_\_\_ to \_\_\_\_\_

(b) The framing of the house was delayed because the roof trusses arrived late. How many days was the framing stopped until the roof trusses arrived?

\_\_\_\_\_ day(s)

(c) On what date(s) are the framing crew and septic field crew going to be on the project site together?

\_\_\_\_\_

(d) How many days are scheduled from the point they start the excavation to the point where they complete the well drilling?

\_\_\_\_\_ days

76. Below is an incomplete monthly bank statement for Jane Doe. Use this statement to answer the questions below.

FIRST BANK OF CANADA			CHEQUING ACCOUNT STATEMENT		
1472 Martin ST, PO BOX 2358 HALIFAX NS B2T 4M8			Page: 1 of 1		
JANE DOE 1459 PARKHURST DR DARTMOUTH NS B2T 1A6			Statement Period		Account No.
			2014-10-09 to 2014-11-08		00008-123-456-7
Date	Description	Ref.	Withdrawals	Deposits	Balance
2014-10-04	Previous Balance				869.52
2014-10-06	Interac Purchase – Petro Canada	2365	54.60		814.92
2014-10-09	Payroll Deposit - IWK			985.64	1800.56
2014-10-10	Interac Purchase – Tim Hortons	1584	7.85		1792.71
2014-10-11	Bill Payment - VISA	9672	140.00		1652.71
2014-10-15	ATM Withdrawal - INTERAC	3990	81.25		1571.46
2014-10-15	Fees - Interac		1.50		1569.96
2014-10-20	Interac Purchase - Superstore	1325	168.45		1401.51
2014-10-20	Cheque	154	67.40		1334.11
2014-10-21	Cash Deposit			260.00	1594.11
2014-10-22	Interac Purchase - Winners	2374	87.40		1506.71
2014-10-23	Payroll Deposit - IWK			985.64	????
2014-10-27	Interac Purchase – Canadian Tire	1748	34.85		2457.50
2014-10-31	Loan Payment	1348	????		2027.50
2014-10-31	Cheque	155	230.00		1797.50
2014-10-31	Cheque	156	835.00		962.50
2014-10-31	Cheque	157	115.40		847.10
2014-10-31	Fees - Monthly		5.00		842.10
*** Totals***			2258.70	2231.28	

(a) How much money did Jane spend at Superstore on October 20 using her INTERAC card?

\$ \_\_\_\_\_

(b) How much money was withdrawn from the account over this one month period?

\$ \_\_\_\_\_

(c) What should be the balance on the account on October 23?

\$ \_\_\_\_\_

(d) How much was Jane’s loan payment on October 31?

\$ \_\_\_\_\_

77. The following inventory list is used by a grocery store.

Homestead Grocery Inventory List			Date: Tuesday, January 13, 2015			
Product Name	Row Position Identifier	Product Category	Present Quantity	Maximum Quantity	Reorder Quantity	Reorder Time in Days
Koca-Kola (2 L)	A1	Beverage	27	50	20	2
Diet Koke (2 L)	A1	Beverage	21	40	15	2
Betsie Kola (2L)	A1	Beverage	16	50	20	2
A&M Root Beer (2 L)	A2	Beverage	14	25	10	3
NS Dry Ginger Ale (2L)	A3	Beverage	16	20	10	4
Bay's Potato Chips (255 g)	B1	Snack	15	35	20	2
Morito's Taco Chips (220 g)	B2	Snack	24	35	15	3
Willie's Carmel Corn (220 g)	B2	Snack	7	15	10	6
Triple Mint Gum	C1	Chewing Gum	13	30	15	1
Moosey Fruit Gum	C1	Chewing Gum	8	25	10	2
Excite Gum	C1	Chewing Gum	18	20	10	3

(a) What is the maximum number of Excite Gums the store wishes to have in stock?

\_\_\_\_\_ Excite Gums

(b) How many more Diet Kokes does the store need to sell before it has to reorder this item?

\_\_\_\_\_ Diet Kokes

(c) When the clerk receives the inventory list, he notices that one of the beverages needs to be reordered. If he reorders it immediately, on what date should it arrive?

\_\_\_\_\_

(d) If the store has to reorder Bay's Potato Chips every three days, how many bags of this product are they selling each day?

\_\_\_\_\_ bags of Bay's Potato Chips per day

78. The men’s clothing store had a sale on dress pants. They advertised the following.

**Men’s Dress Pant Sale!**  
 Buy one pair – get the second (of equal or lesser value) for half price.

If you wish to buy two pairs of pants regularly priced at \$54.95 and \$69.95, how much in total will you pay during the sale (before taxes)?

79. The local home décor store can make customized window blinds. The following chart shows the different options and prices.

Width of Blinds	Type	Price per Item	Price per Item when 2 or more of the same item are purchased
24 inches to 35 inches	Vinyl Blinds	\$49.95	\$39.95
	Aluminum Blinds	\$54.95	\$44.95
	Wood Blinds	\$59.95	\$49.95
36 inches to 47 inches	Vinyl Blinds	\$69.95	\$59.95
	Aluminum Blinds	\$74.95	\$64.95
	Wood Blinds	\$79.95	\$69.95
48 inches to 59 inches	Vinyl Blinds	\$89.95	\$79.95
	Aluminum Blinds	\$94.95	\$84.95
	Wood Blinds	\$99.95	\$89.95

How much would you pay (before taxes) for five 30 inch wood blinds and one 46 inch aluminum blind?

80. Find or create a unique multi-step multi-concept numeracy question. Write out the question and solve it. Show all your work.