Mathematics Essentials 10

Earning, Paying Taxes, and Purchasing

Earning, Paying Taxes, and Purchasing

Outcomes

By the end of this course, students will be expected to

B1 provide the correct change for an amount offered and minimize the number of coins/bills

B2 select amounts to offer for a given charge to minimize the number of coins/bills received in the change

Elaboration—Instructional Strategies/Suggestions

Students should be able to

- Recognize amounts in dollars and cents.
- View which combination returns the fewest coins
- First be able to offer the minimum number of coins in a straight forward transaction. (I.e., the charge is $4.21 and they are offered $5.00, then change would be three quarters and four pennies.
- Then this could be extended to the situation where more coins are offered.
- Use "the teacher" to refer to teachers
- The teacher could make a set of cards showing articles with price tags.
- Students must understand the monetary unit values.
- Once students understand the coinage, students must understand monitoring place value and the connection to actual currencies. (e. g., $ 27.02 = 0 dimes, 2 pennies, 7 dollars and 2 tens)
  Extension: where are the nickels and $ 5 bills located?

Earning, Paying Taxes, and Purchasing

Worthwhile Tasks for Instruction and/or Assessment

1. Calculating change (handout, mental, calculator)
   simple→more complicated
   a) How much change would you get back from $10.00 if the change is $6.89?
   b) What coins would you expect to get?

2. Role play—play money: groups of 2 (customer & cashier: counting money as it comes from the till)
   a) You bought a gift that cost $ 17.61. The store clerk handed you a loonie, four quarters, nine pennies, and three dimes. Did you get the correct change?
   b) How could the clerk has given you fewer coins?

3. Questions 1–5, page 65 (make worksheet examples and answer sheet)
   a) Using Canadian Cash Kit show various/all ways to express $ 27.03, and $ 15.76 .
   b) Calculate the change from a $ 9.00 item when the amount tendered is $ 10.00, and $ 20.00. Recalculate the change when the item is $ 9.32

4. Using quarters, dimes, nickels and pennies, develop five different ways to express a dollar. (e.g., 4 quarters = 4 × $ 0.25 = $1.00)

5. Provide the correct change for a charge of $ 13.87 when the amount offered is $ 15.12

6. What payments might a person offer for a charge of $ 16.36 in order to reduce the number of coins received in the change?

7. Using coins that are less than $ 1.00 (quarters, dimes, nickles and pennies), draw five possible ways to show $ 0.95 change. (See worksheet 1at end of this section.)

Suggested Resources

- ▸ text
- ▸ Canadian Cash Kit
- ▸ Cash Overhead Kit
- ▸ money chart
- ▸ book bureau

Earning, Paying Taxes, and Purchasing

Outcomes

By the end of this course, students will be expected to

B3 solve problems involving the estimation and calculation of provincial and federal sales taxes

A1 explain indirect and direct forms of taxation (e.g., taxes included in the prices of gasoline and tobacco

B4 calculate other forms of taxation

Elaboration—Instructional Strategies/Suggestions

Students should be able to

‣ Explain - 10% + ½ of it
‣ Students will do problems (solve) for the amount of tax on an item.
‣ Students will do problems (estimate) for the amount of tax on an item.
‣ examples (flyers, sales, discounts)
‣ Other provinces taxes
  - Alberta has only GST, no PST
  - PEI has compound taxing compared to NS taxing (which is GST & PST)
‣ page 80, brainstorm idea
‣ other provinces?
‣ compound taxes
‣ shopping in other countries?
‣ What are taxes? Why do we pay taxes?
‣ Provincial and federal sales tax
  - explain what PST and GST are (any exemptions)
  - explain where HST came from
  - explain direct and indirect tax (any exemptions). Difference between indirect tax and exemption from tax.
‣ Estimate GST and PST on items. Problems with HST for NS specifically.
‣ Estimate total cost.
‣ Calculate GST and PST on items.
‣ Calculate total cost.
‣ Show that (GST + PST) = HST
          7% + 8% = 15%
‣ Compare to multiply by 1.15
‣ Explain the 1 represents 100% which is the price of the item. The 0.15 represents the tax.
‣ Compare NS taxing to other provinces (map of Canada, with taxes on it).
‣ Explain indirect and direct forms of taxation
‣ Explain why the need for direct and indirect taxes?
  - what is taxed directly?
  - what is taxed indirectly?
‣ Teachers should begin by generating a discussion concerning taxes. Ask students for their ideas on tax and why we pay tax. Also discuss the Nova Scotia tax rate. From this discussion, students should understand tax, reasons for paying taxes and have an awareness of GST, PST and HST.

Earning, Paying Taxes, and Purchasing

Worthwhile Tasks for Instruction and/or Assessment

Display a map of Canada at the front of the room. Have students select a item from a predetermined group of items. Determine the total cost after taxes for a given province. (i.e., shoes in Nova Scotia for $10.99)

Suggested Resources

Earning, Paying Taxes, and Purchasing

Outcomes

By the end of this course, students will be expected to

A2 explain the difference between gross pay and net pay, and describe possible payroll deductions (i.e., for a pension plan, savings plan, employment insurance, union dues)

B5 calculate gross pay and net pay for given situations

B6 estimate and calculate discounts, sale prices, and after costs

Elaboration—Instructional Strategies/Suggestions

Students should be able to

▸ understand and deduct EI, CPP, Income Tax
▸ recognize net/gross pay
▸ taxes - service providers
▸ other deductions(pension plan, life insurance, union dues, savings plans)
▸ To create your gross pay/net pay, formula:
  Net Pay = Gross Pay - deductions (page 29, #5–9)

Earning, Paying Taxes, and Purchasing

Worthwhile Tasks for Instruction and/or Assessment	Suggested Resources

Earning, Paying Taxes, and Purchasing

Outcomes

By the end of this course, students will be expected to

A2 explain the differences between gross pay and net pay, and describe possible payroll deductions (e.g., for a pension plan, a savings plan, employment insurance, union dues)

B5 calculate gross pay and net pay for given situations

F2 read and apply payroll deduction tables

C1 identify and compare the patterns in the payroll deduction tables

Elaboration—Instructional Strategies/Suggestions

Students should be able to

▸ Students should be able to calculate Nova Scotia tax (15%). As a mental math activity, explain that 15% is 10% + 5% or take 10% of your purchase and add half of that amount again. (i.e., In NS tax on $4.20 is 10% of $4.20 = $0.42 + half of $0.42 which is $0.21. Total tax $0.42 + $0.21 = $0.63) See worksheets 1, 2, 3 & 4 at the end of this section
▸ Teachers should introduce taxation in other provinces (Map of Canada - see resource). Investigate how the total price of the same claim can change from one province to another.
▸ Students should be able to distinguish between direct and indirect tax. (See definition in the text, page 54)
▸ Discuss tax exemptions. Students should be able to identify items exempt from tax within Nova Scotia.
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Earning, Paying Taxes, and Purchasing

Worthwhile Tasks for Instruction and/or Assessment

‣ Estimating and calculating NS sales tax (worksheets 1, 2, & 3).
‣ Create a table, using flyers from a local business, to develop a Christmas shopping list. Organize your table to online selling price, tax and total cost.
‣ Journal Entries:
  - Explain in words how to find the tax on an item.
  - List 3 products/services that have only PST
  - List 3 products/services that have only GST
‣ Extension: Redo the "shopping list" using another province.
‣ Get the cost of gasoline breakdown off a tank (garage by bridge):
  a) If a litre of gasoline costs $0.95 per litre, how much of the cost per litre goes to each tax?
  b) If Ms. Smith paid $46.50 for her last fill up, how much of the $46.50 went to each tax?

Suggested Resources

‣ Map of Canada with info on how taxes are broken up for each province.
‣ Practise sheets of estimating and calculating HST.
‣ Pie chart of where cost of gas, cigarettes comes from. Pie chart of where money goes.

Earning, Paying Taxes, and Purchasing

Outcomes

By the end of this course, students will be expected to

F1 identify the information and documents required for filing a personal income tax return, and explain why they are required

Elaboration–Instructional Strategies/Suggestions

Students should be able to

- ▸ Students will identify who files a tax return and the criteria that defines certain classifications (marital status, employment status or number of dependents).
- ▸ Gain an understanding of the purpose of the required information and documents. For example, the role of tax returns in relation to statistics, the economy and fraud/tax evasion.
- ▸ Complete a sample tax form and show students via a transparency, LCD or handout.
- ▸ Exam a pay stub and/or a T4 slip. At this time you may wish to discuss specific deductions and their purposes.

Earning, Paying Taxes, and Purchasing

Worthwhile Tasks for Instruction and/or Assessment

1. Have students compile all their personal information and fill in appropriate spaces on income tax form using information such as: who files the return, SIN, address, name, contact information, marital status, number of dependents, employment.
2. Develop a list of resources that would aid in filing an income tax return (required documents, pen, pencil, calculator).
3. Students should interpret the information from required documents and be able to apply them to the correct section of the tax form.
4. Methods of filing tax returns (e.g., phone, online, in person, mail, tax preparation firms).
5. Take one copy of your income tax form and complete the form with your personal information, <u>using a pencil</u>. Once you have completed the form, recopy the information in pen. This will be the version you submit, the pencil copy is for your records.
6. Your or a community tax leader addresses the importance of tax filing and the consequences of incorrect or illegal tax form preparations. Explain reasons why accurate tax filing is important:
▸ Why are they required?
   - fraud/tax evasion: guest speaker
   - voters list
   - Statistics Canada: marital status, number of dependents, population/economic growth
   - economical impact

Suggested Resources

▸ textbook
▸ Nova Scotia Career Options
▸ Internet
▸ Revenue Canada: income tax forms/kit with documents needed to file
▸ Community Leaders in Tax/Accounting
▸ Required Documents:
- - T4
  - proof of private insurance
  Optional Documents:
  - medical expenses
  - tuition expenses
  - business related expenses
  - childcare
  - receipts
  - proof of investments
  - return from previous year
  - appropriate form
  - Income Tax guides

Earning, Paying Taxes, and Purchasing

Outcomes

By the end of this course, students will be expected to

B6 solve problems involving various ways that an employee can be paid using calculators or appropriate software

F3 describe the effects on personal spending habits of the frequency of pay period

B7 determine the renumeration for chosen occupations, including salary and benefits, and evaluate it in terms of purchasing power and living standards

Elaboration—Instructional Strategies/Suggestions

Students should be able to

- Students should understand that a person who receives a salary receives this amount based on pay for one year (52 weeks). This is called an annual salary.
- Students should be shown the various ways of paying a salary.
- weekly earnings = $\dfrac{\text{annual salary}}{52}$
- bi-weekly earnings = $\dfrac{\text{annual salary}}{26}$
- monthly earnings = $\dfrac{\text{annual salary}}{12}$
- semi-monthly earnings = $\dfrac{\text{annual salary}}{24}$
- Students should be given various annual salaries and asked to calculate the different pay amounts.
- annual salary = \$36 000.00
- monthly salary = $\dfrac{\$36\ 000.00}{12}$ = \$3 000.00
- Students should be given various pay amounts and asked to calculate other salaries.
  weekly salary = \$625.00, (annual salary) =\$625.00 ×52 =\$32,500.00
  (Monthly salary) \$32,500.00 ÷ 12 = \$ 2,708.33
  Semi-monthly salary = \$820.00, monthly × 2 = \$1,640.00
  annual salary: \$1,640.00 × 12 = \$19,680.00
- Students should understand that there are various ways of earning an income:
  - Hourly rates are set by the employer and paid to the employee for the number of hours worked. Pay = hourly rate × number of hours worked
  - Overtime pay in Nova Scotia is earned by employees who work more than 48 hours per week. The hourly overtime rate is the hourly rate × 1.5. Therefore, pay = (regular earnings + overtime hours × overtime rate)
  - Piecework is pay earned by producing or selling units of product.
  - Commission is a form of pay that is paid by itself or along with a salary and is based on a percent of the value of the items sold.

Earning, Paying Taxes, and Purchasing

Worthwhile Tasks for Instruction and/or Assessment

Students should be able to

1. Joe earns $7.10 per hour working at the local theatre. If he works 21 hours, how much does he get paid every week? Pay = $7.10 × 21, $149.10

2. Jim earns $75.00 a week working at the local Ford Dealers. He also earns $4.25 for each car he washes and waxes. If he does 15 cars this week, how much money will he be paid?   Pay = $75.00 + (4.25 × 15), = $138.75

Suggested Resources

websites:
http://jobfutures.ca

NS Career Options

Choices (software)

Earning, Paying Taxes, and Purchasing

Outcomes	Elaboration—Instructional Strategies/Suggestions
By the end of this course, students will be expected to	*Students should be able to*
B6 solve problems involving various ways that an employee can be paid using calculators or appropriate software F3 describe the effects on personal spending habits of the frequency of pay period B7 determine the renumeration for chosen occupations, including salary and benefits, and evaluate it in terms of purchasing power and living standards	‣ Students should examine various occupations and consider the salary, benefits and pay periods of each one. ‣ Have students use the NS Career Options Book first and then use the computer to visit websites to compare the same occupations elsewhere. ‣ Students must understand that an hourly rate is set by the employer and is paid to the employee according to the number of hours worked. Computational problems can be given for students to do. Pay = hourly rate × number of hours ‣ Overtime will be discussed bringing in the various definitions of overtime. ‣ regular rate ‣ hourly overtime rates ‣ reasons for overtime rate (over hours, holidays, etc.) ‣ Students will be shown how to calculate the overtime rate and how to calculate a pay that consists of regular and overtime rates. Total Pay = (regular pay + overtime pay) Total Pay = (regular hours × regular hourly rate + overtime hours x overtime hourly rate) ‣ Students must be told that commission is a form of pay that is paid by itself or is paid along with a salary. Commission is paid in terms of percent of an amount. To determine "how much" commission, the percent must be changed to a decimal and then the amount multiplied by the decimal. ‣ e.g., total sales = $3000 commission rate = 10% salary from commission = $3000 × .10 = $300.00 ‣ The connection between pay periods and personal spending could be presented to the student by class discussions.

Earning, Paying Taxes, and Purchasing

Worthwhile Tasks for Instruction and/or Assessment

1. As an assessment students could be given a situation or various situations could be given to different groups:
    e.g., You are working at the local movie theatre and are being paid $7.10 per hour. For each month, you work 26 hours at the regular rate and eight hours at the overtime rate of time and a half for washing and waxing floors. Calculate monthly earnings and the annual salary. If you are paid bi-weekly, how much will you earn?

2. Overtime pays 1.5 (time and a half) of the hourly rate for every hour over and above 40 hours. Calculate earnings if you work 47 hrs/wk.

3. Assign each student in the class to research 3 different career options as a resource. The student will then chose one option to study. The study will include the annual salary, the benefits of this salary and the standards of living that equate to this career. Based on your salary, would you be able to rent an apartment, buy a home or live at home? Justify your answer. Allow students to present this in class.

4. Jim and Al both work at Canso Ford. Jim gets paid 15% commission on the profit from each vehicle he sells. Al received $150.00 for each extended warranty he sells. The profit on the five vehicles Jim sold last week was $10,000.00. Al sold 9 extended warranties last week. Who made the most money last week and how much more did he make?

5. Starting with a balance of $ 472.00. Rent is $ 350.00, paid at the beginning of each month. Cable bill comes out on the 8th of each month, which is $ 80.00. Steve earns $ 1,375.00 per month and is paid bi-monthly (middle and end of each month). When should Emma Mae pay her $ 300.00 Visa bill?

Suggested Resources

- ‣ website: http://jobfutures.ca
- ‣ website: Nova Scotia's Employment Standard's Act
- ‣ personnel from the community such as salesmen, real estate to present pros and cons for commission vs. salary based work
- ‣ NS Career Options
- ‣ Choices (software)

Earning, Paying Taxes, and Purchasing

Outcomes

By the end of this course, students will be expected to

B7 Estimate and calculate the unit prices of comparable items to determine the best buy

F4 make decisions regarding the purchase of costly items by identifying and ranking criteria for the comparison of possible choices

Elaboration–Instructional Strategies/Suggestions

Students should be able to

▸ Have students round off to nearest dollar, then estimate unit price by dividing by numbers of units.
Unit Price = total price
              number of units

▸ Warm Up: Round to nearest $, % by 1–10. The unit price is the cost of an item expressed per unit, such as per 100g, per L, etc.

▸ For example if 200g costs $2.00 then the unit price per 100g is $1.00

▸ Repeat similar examples where unit price is less than a dollar (e.g., $0.50 or $0.25)

▸ Change examples to dollars and cents (e.g., $8.00 to $7.99, $7.95)

▸ Before calculating students should develop the concept of unit price and difference between purchasing a larger economy size item or a individual item (i.e., 2L cola vs. 1-500 ml cola)

▸ In real world applications, it would be realistic for students to use calculators to determine the actual unit price of an item. Students should have experiences estimating and mentally predicting unit prices prior to the actual calculations of unit price.

▸ You could begin this topic with mental math activities in which students rounding amounts to the nearest dollar, quarter, dime and nickle.

▸ Unit price is calculated by dividing the total price by the number of units. Students should be introduced to this concept using whole numbers calculations, followed by examples using dollars and cents (e.g., $7.99 to $8.00).

▸ Students should be able to mentally round off and estimate the unit price and then check their prediction with an actual calculation.

▸ Give students examples of price calculations (with mistakes) and instruct them to find errors and calculate the correct price.

▸ Students should be reminded that there may be better strategies for determining what is the better buy. E.g., What is the better buy? 12 Fudgesticks for $2.50 or 18 Fudgesticks for $3.00. Did you use the unit price to compare? What strategy did you use?

Earning, Paying Taxes, and Purchasing

Worthwhile Tasks for Instruction and/or Assessment

Students should be able to

1. Students will be given a list of grocery items found in several of the stores. The students will then use the flyer to compare the unit prices. Each student will post their findings in the classroom.

2. The price of a 900 g can of baby formula is $20.58. A case of 12×250 ml cans of the same baby formula is $29.98. Calculate the unit price of each one.

3. Students should be introduced to this concept using whole numbers in contextual example such as, a package of 4 golf balls costs $8.00. How much does one ball cost? $2.00

4. A package of 4 batteries costs $1.99. Calculate the unit price. Work with a partner.

5. Which is the better deal?
   a) 5 apples for $1.35 or 2 apples for $0.39
   b) 600 ml of pop for $1.75 or 1L of pop for $2.29

6. Take grocery flyers from 2 different stores. Choose the same 10 items. Compare the unit prices for these comparable items. Post your findings in the classroom.

Suggested Resource

▸ chapter 5.1, page 82–85
▸ local Sunday flyers

Earning, Paying Taxes, and Purchasing

Outcomes

By the end of this course, students will be expected to

B8 identify, calculate, and compare the interest costs involved in making purchases under various plans (e.g., instalment, lay away, credit card, credit line), using technology (e.g., spreadsheets, money-management software)

F5 make decisions regarding the payment options for purchases

F6 identify various incentives to make purchases (e.g., AirMiles, coupons, stamps, interest-free loans) and explain their characters

A3 identify and explain the advantages and disadvantages of various plans to make purchases

Elaboration–Instructional Strategies/Suggestions

Students should be able to

▸ Brainstorm - formula: a list of different methods of payment (i.e., cash, debit, credit card, rent to own, installment, lay-away, no interest/no payment)
▸ Identify the following incentives to make purchase (i.e, discount coupons/stamps, Air Miles, interest-free loans, points card (i.e., HB card) discussing the advantages and disadvantages of each.

Earning, Paying Taxes, and Purchasing

Worthwhile Tasks for Instruction and/or Assessment

Performance
▸ Students will use the internet to research the currency of at least 5 other countries.
▸ Students will estimate and then determine the actual cost in Canadian dollars for items prices in the currency of another country.
▸ Ask students to bring in sample of another country's currency or use the Internet to research.
▸ Have students look at a chart of currency exchange rates—Canadian funds.
▸ Have students decide whether each country's currency is worth more or less than the Canadian dollar.

▸ Ask students to bring a sample of another currency. If there is no available currency, do an internet search. Research 5 currencies per student.
▸ Have students decide what each currency is worth, more or less than the Canadian dollar. Use currency comparison chart from moneyexchanger.com for classroom discussion. E. g., Peso - Less, US - more.
  - Estimate currencies from #1 - how many do I need to make a Canadian dollar)
  - Then calculate how many pesos for one Canadian dollar.
▸ Reverse procedure - How many Canadian dollars are required to equal one unit of another currency. How many Canadian dollars on one Peso.
▸ (page 101, #9) Using common items such as light bulbs, determine the cost of purchasing at Canadian Tire, a grocery store, and Zellers, and which is the better deal with incentives factoring in personal choice. (1 Air Mile = $ 20.00
  1 Club Z point = $ 1.00
  Canadian Tire = 10% in-store rebate)

Suggested Resources

▸ Chapter 5.3, page 88–89
▸ moneyexchanger.com
▸ newspaper

Earning, Paying Taxes, and Purchasing

Outcomes	Elaboration—Instructional Strategies/Suggestions
By the end of this course, students will be expected to	*Students should be able to*
B9 estimate and calculate the price in Canadian funds of items bought in or ordered from another country	▸ Students need to become familiar with the currency of other countries. Have students look at a chart of currency exchange rates—Canadian funds. ▸ Talk about currencies in terms of buying power. ▸ Students should make the connection between exchange rate and unit price. ▸ Working with exchange rates is an opportunity to develop students' proportional reasoning. ▸ Plan a trip to another country. Calculate the amount you would have to pay in Canadian dollars for the other country's currency. E.g., A trip to Ireland is 500 European. How much in Canadian dollars?

Earning, Paying Taxes, and Purchasing

Worthwhile Tasks for Instruction and/or Assessment

Students should be able to

▸ take currency that "Chronicle Herald" (shows Canadian purchase for other currencies) and use the calculator to write that in reverse. E.g., Other countries purchase in Canadian dollars.

Suggested Resources

Earning, Paying Taxes, and Purchasing

Work Sheet 1: Calculating Change

Charge	Cash Tendered	Change
a) $ 18.38	$ 20.00	
b) $ 5.66	$ 10.00	
c) $ 28.34	$ 40.00	
d) $ 31.29	$ 50.00	
e) $ 14.05	$ 20.25	
f) $ 3.12	$ 20.00	

Change Chart

	$ 20.00	$ 10.00	$ 5.00	$ 2.00	$ 1.00	$ 0.25	$ 0.10	$ 0.05	$ 0.01
a)									
b)									
c)									
d)									
e)									
f)									

Work Sheet 2: Find the Nova Scotia tax on each of the following purchases:

Purchase Amount	10 %	5 %	Total Tax (15 %)
a) $ 4.00			
b) $ 20.00			
c) $12.00			
d) $ 6.00			
e) $ 8.00			
f) $ 16.00			
g) $ 14.00			
h) $ 11.00			
I) $ 15.00			
j) $ 17.00			

Earning, Paying Taxes, and Purchasing

Work Sheet 3: Estimating Tax

Purchase Amount	10 %	5 % (½ of 10 %)	Total Tax
a) $ 89.99			
b) $ 30.16			
c) $ 3.92			
d) $ 5.55			
e) $ 9.99			
f) $ 21.80			
g) $ 127.99			
h) $ 482.41			
I) $ 75.24			
j) $ 0.89			

Earning, Paying Taxes, and Purchasing

Work Sheet 4: Estimating Final Price

Item & Amount	10 % + ½ of 10 %	Estimated Total Tax	Estimated Final Price (tax incl.)
a) car $ 14 000.00			
b) DVD player $ 163.23			
c) 2 concert tickets $ 71.50			
d) digital camera $ 299.95			
e) cell phone mo. pmt. $ 20.00			
f) Nintendo Game Cube $ 139.97			
g) MP3 Player $ 159.97			
h) jeans $ 43.50			
I) CD $ 17.99			
j) Nintendo Game $ 63.99			

Measurement

Measurement

Outcomes

By the end of this course, students will be expected to

D1 demonstrate a working knowledge of the metric system and imperial system

D2 measure lengths accurately, using metric system and the imperial system

D3 estimate distances in metric units and in imperial units by applying personal referents (e.g., the width of a finger is approximately 1 cm; the length of a piece of standard loose-leaf paper is about 1 foot)

D5 estimate, with reasonable accuracy, large numbers that are illustrated visually, (e.g., books on a wall in a library, pictures of crowds, populations of high-rise buildings), and explain the strategies used.

Elaboration–Instructional Strategies/Suggestions

Students should be able to

▸ Ask students to relate their knowledge of everyday objects that they know the exact measurements of. For example, a small juice = 300 ml, and a medium pop bottle = 500 ml. You may then wish to create a list of words (brainstorm) with the class that represents measurements.
▸ mm, cm, m, km, ml, L, mg, g, kg, ∘C
▸ m = $\frac{1}{1000}$ k = 1000 (see p. 124–126)
▸ (see p. 149–151) Discuss about buying things where measurements are used.
▸ Have table with conversion of metric to imperial.
▸ Make their own measuring tape (with both metric and imperial measurements)
▸ Take measurements of objects around the classroom in both measurements.
▸ Have the students measure the windows at home for blinds. Figure out what blinds they would buy from a catalog.
▸ Start with how to measure, use a ruler in metric. Show fractions in an inch (1/8, 1/4, ½)
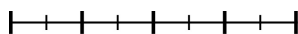
(lable fractions in different colours)

▸ measuring height (feet/inches and metres/cm)
▸ body art measurements/comparing arm length to height
▸ perimeter of odd shaped figures
  - adding boarder to something
  - measuring nails, screws, bolts
▸ Do you cover perimeter? Or as straight measuring?
▸ (see p. 159)
▸ Present the students with a familiar reference from the school to _____ is one kilometre. The ask them to estimate the distance from the school to _____. (make these points ones known by students)
▸ Divide the students into two groups. Allow group one to measure the length of their gate. These students will then walk around the perimeter of the room to determine the dimensions of the room. The students in group two will estimate the length of their gate and follow the same procedure to determine the dimensions of the room. Students will then compare the results.
▸ Students should be able to convert between kilo, hecto, deka, deci, centi and milli.
▸ Students should be able to compare numbers with different units.
▸ Estimation is done without a calculator. Show emphasis on doing things mentally and efficiently. If a student takes too much time, try to determine what, if any, strategies they are using.

Measurement

Worthwhile Tasks for Instruction and/or Assessment

Performance

1. Form groups of 3 students and have them circulate around the room
    and find five objects that are approximately
    a) 1 cm
    b) 10 cm
    c) 30 cm (length of most rulers)
    d) 1 m

2. When Beth measured Victoria yesterday she was just under 2 m tall.
    About how many cm's tall do you think Victoria is?

3. How many 500 ml containers of Ben and Jerry's *TM Ice Cream
    can fit into an empty 2 L container.

4. Jill is working on her car and measures a bolt to be 0.5 cm width. If
    her socket set is in millimetres, what size socket will she need to
    remove the bolt?

5. Measure the span of your hand in imperial units. Use this to
    estimate:
    a) the inseam of your pants
    b) the height of your classmate sitting behind you
    c) the measurement of the desktop

6. Compare the measurement of inches and centimetres of
    a) your textbook
    b) your desktop

7. Do the questions in the book, Section 8.3, p. 152–153

8. Aerial photo of a Xmas tree lot
    a) Estimate the number of Christmas trees in the tree lot.
    b) If 10% of the trees are cut each year, mentally determine how
    many trees will be cut this year.

9. Fill jars with various items such as jelly beans, pennies or buttons,
    and have students estimate how many are in each jar. Go over the
    estimates and strategies used as a class discussion.

10. Picture of dandelions on lawn next to East Bay church.
    a) Estimate how many dandelions on this lawn.

Suggested Resources

▸ Dept. of Lands and Forrest
▸ lot owner

Measurement

Outcomes

By the end of this course, students will be expected to

D2 measure lengths accurately, using metric system and the imperial system

D4 estimate capacities in metric units by applying personal referents (e.g., a can of pop is about 350 ml)

D5 estimate, with reasonable accuracy, large numbers that are illustrated visually, (e.g., books on a wall in a library, pictures of crowds, populations of high-rise buildings), and explain the strategies used.

A recognize and find equivalencies among common fractions, decimals, and percents

A compare and order common fractions, decimals, and percents

A rename common fractions

A round rational nos. and percents in contexts

C recognize and apply the patterns in the metric system

C recognize and apply the common fraction patterns found on an Imperial ruler

Elaboration–Instructional Strategies/Suggestions

Students should be able to

- Using appropriate units measure examples of floor plans, head size, of screws/bolts/nails (use sub floor (imp.), carpet (m), tile (in./cm), screws/nails (mm)
- Collect different capacity tin cans (e.g., juice, tuna, soup, etc.)
- Use one size can as a non-standard unit to estimate and measure the capacity of other size cans.
- Use cans to make a mobile wind chimes.
- Sell for profit, fund-raising.
- Students must understand that estimation involves a process.
- Students must understand that the concept of estimation is a completely mental process.
- Students must understand that efficiency and notes are an important factor in estimation.
- (see p. 154–155)
- Use appropriate units of measure to
- Students should work with common fractions relevant to linear measure in the imperial system (i.e., denominations, halves, quarters, eighths, and sixteenths).
- They should compare these fractions and mixed numbers with these fractions, with emphasis on a number line. They should rename these fractions and find equivalents among these fractions. They should add and subtract fractions and mixed numbers with these denominators. Estimation activities should focus on rounding to the nearest whole number and/or half.

- (see Worksheet 5) Teachers should show the relationship between
  km→m→cm→mm
  1 km→1000m
  1 m→100 cm
  1 cm→10 mm

  L→ml   kg→g
  1 L→1000 ml   1 kg→1000 g

Teachers should show the patterns and relationships between ½, 1/4, 1/8, 1/16. Teachers can use number lines to compare the fractions. (See Worksheet 6) Show students the meaning of division markers on an imperial ruler/measuring tape.
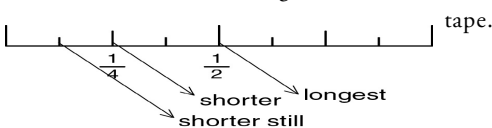
Relate the fraction to the length of the division line on the rule. (Longest line being the biggest fraction, shortest line being the smallest fraction)

Measurement

Worthwhile Tasks for Instruction and/or Assessment	**Suggested Resources**

1. visualize a 2 L milk carton. Estimate the capacity of your
   - kitchen sink
   - filled bathtub
2. Which of the following has a capacity of approximately 2 L?
   - large Tim Horton's coffee cup
   - 3 cans of tomato soup
   - a 4 c Tupperware container
   - empty tuna fish can
3. You want to fill a punch bowl that serves 20 people.
   - If you are going to fill it completely with large cans of pineapple juice, how many cans would you use?
   - If you are going to fill it completely with small cans of pop, how many cans would you use?
   - If you are going to mix equal amounts of juice and pop, how many can's of each would you use?
4. You want to renovate a bedroom but haven't decided whether to use carpet or tile: How many metres of carpet needed? How many square feet of tiles would be required? If screws were placed 6 inches apart, how many would be needed to secure the subfloor? Using nails the spacing would be 12 cm apart, calculate the number of nails required?

Performance
- ▸ Have students measure objects in terms of metres. Measure the same object in terms of cm. Compare answers to discover relationship.
- ▸ Estimate capacities in metric units by personal references.
- ▸ Teachers should measure bench marks:
  1 L of milk
  500 ml or ½ L chocolate milk
  250 ml is 1 cup
  15 ml is 1 tsp.
  30 ml→medicine cup
  4 L→water jug
- ▸ Have students actually measure different objects. Bench mark objects: floor tile (1 foot), loonie (1 inch), door knob (≈yard≈metre). Exact measurements to nearest 1/16: health card, penny, dime, etc., lines/object on handout sheet.
- ▸ Measure different objects: bench marks - finger nail (1 cm) - width of dime (1 mm)
- ▸ Do actual measurements in metric to nearest mm.

Measurement

Outcomes	Elaboration–Instructional Strategies/Suggestions
By the end of this course, students will be expected to	*Students should be able to*
C recognize and apply the common fraction patterns found on an Imperial ruler	‣ Metric System: Teachers should show the patterns and relationships between 1, 1/10, 1/100. Show students the meaning of division markers on metric ruler/metre stick.
B2 select amounts to offer for a given charge to minimize the number of coins/bills received in the change	
D4 estimate capacities in metric units by applying personal referents (e.g., a can of pop is about 350 ml)	
D5 estimate, with reasonable accuracy, large numbers that are illustrated visually, (e.g., books on a wall in a library, pictures of crowds, populations of high-rise buildings), and explain the strategies used.	
A4	
A5	
A6	
A7	
C2	
C3	

Measurement

Worthwhile Tasks for Instruction and/or Assessment	**Suggested Resources**

Students should be able to

Fraction Strip Activity

Purpose: Students will learn what different fractions look like and compare to other fractions (common fractions to be focussed on: $\dfrac{1}{2}, \dfrac{1}{4}, \dfrac{1}{8}, \dfrac{1}{16}$

Materials:
- equal length paper strips (5 different colors)
- number line sheet

Procedure:
1. label strip as 1 to represent one whole

2. fold second strip into two equal parts, label each as $\dfrac{1}{2}$

3. fold third strip into four equal parts, label each as $\dfrac{1}{4}$

4. continue procedure for $\dfrac{1}{8}$ a $\dfrac{1}{16}$

5. compare each of the fraction strips to each other
6. answer the following questions:

   - How many $\dfrac{1}{8}$ are $\dfrac{1}{16}$?

   - How many $\dfrac{1}{16}$ ar $\dfrac{1}{4}$?

   - How many ways can you rename $\dfrac{1}{2}$?

   - draw a number line using the strips

Measurement

Outcomes	Elaboration–Instructional Strategies/Suggestions
By the end of this course, students will be expected to	*Students should be able to*

Measurement

Worthwhile Tasks for Instruction and/or Assessment	Suggested Resources

Students should be able to

1. On the number lines below show where ½ and 3/8 are located?
2. Show that 3/4 and 6/8 are equivalent on the following number lines.
3. Rename the following fractions with smaller denominators.

a) i $\dfrac{2}{8}$ ii $\dfrac{6}{16}$ iii $\dfrac{2}{4}$ iv $\dfrac{12}{16}$

b) Rename the following fractions with larger denominators.

i $\dfrac{1}{2}$ ii $\dfrac{3}{4}$ iii $\dfrac{3}{8}$ iv $\dfrac{1}{4}$
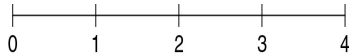
4. Order these numbers on a number line:

$$1\dfrac{1}{8}; \ \dfrac{3}{4}; \ \dfrac{3}{2}; \ \dfrac{15}{16}; \ 2\dfrac{1}{4}$$

5. Round these numbers to the nearest whole number and/or half:
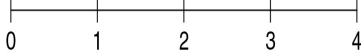
a) $1\dfrac{3}{8}$ b) $2\dfrac{1}{4}$ c) $1\dfrac{15}{16}$ d) $\dfrac{7}{8}$

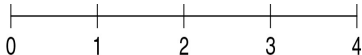6. On each number line show the sum or difference:
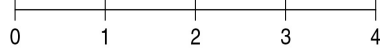
a)

$1\dfrac{1}{2}+\dfrac{3}{4}$

b)

$2\dfrac{1}{4}-\dfrac{1}{2}$

c)

$\dfrac{7}{8}+\dfrac{1}{4}$

d)
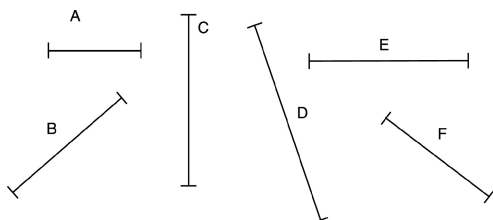
$1\dfrac{1}{2}+\dfrac{7}{8}$

Measurement

Worksheet 5: Length Recording Sheet

Put the line segments in the order from shortest to longest.

Activity 1: by inspection

Activity 2: by indirect comparison

Activity 3: using nonstandard units

Activity 4: using standard units

Activity 5: using a ruler (cm)

Questions:
1. Discuss common units heard/used in the outside world. (i.e., cm, inches, foot, etc.)
2. Where do they come in contact with each of these units and where do they differ (i.e., fabric store if metre, lumber yard is feet)
3. Creating benchmarks both personal and universal for these common units.
    mm   inch   mile
    cm   foot   km
    m   yard
4. Activities where the students must estimate the length of the room, shoe, here to there, etc., then measure later on and compare previous answers.
5. Given line segments, mark/draw/divide into cm segments or inch segments.
    For example:
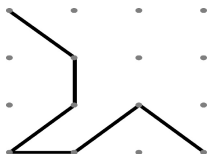
6. Use a string on a geoboard in a zigzag pattern and estimate it's length by chuking then straightening it out on the geoboard to find the real length.

Geometry

Geometry

Outcomes

By the end of this course, students will be expected to

E1 identify the first 5 regular polygons and understand basic properties (# of sides, lines of symmetry, definitions of geometric terms)

Elaborations—Instructional Strategies/Suggestions

Students should be able to

▸ Introduce the section using regular polygon templates. Students will use these templates to investigate/discover basic properties of the polygons. For example, regular means all sides are equal, versus different length (irregular) sides. This is also an opportunity to introduce lines of symmetry through a template-holding activity.

Geometry

Worthwhile Tasks for Instruction and/or Assessment	Suggested Resources

Worthwhile Tasks for Instruction and/or Assessment

1. Students should be exposed to a shape-sorting activity where they distinguish between regular vs. irregular polygons and classify polygons based on the number of sides.
2. Have students find at least two examples of the regular polygons in their daily life and surrounding environment.

Suggested Resources

▸ Chapter 5.3, page 88–89

Geometry

| Outcomes	Elaboration–Instructional Strategies/Suggestions
By the end of this course, students will be expected to E2 describe and apply translations, reflections, rotations, and dilations as they relate to symmetry and design, with the aid of technology	*Students should be able to* ▸ Search for instances of symmetry. ▸ Conduct explorations with translations, reflections, rotations, and dilations. ▸ Students should be able to find the line symmetry (reflectional) and/or turn symmetry (rotational) of a figure. Given a number of logos or pictures, students should be able to find all lines of symmetry, and find if the figure has turn symmetry. ▸ Students should be able to distinguish between the terms translation, rotation, reflection and dilation. Teachers should use a variety of strategies such as a VVWA (visual and verbal, words association), tessellation exploration software, geometers sketchpad to help students visualize the difference between the terms. (i.e., VVWA (translation)
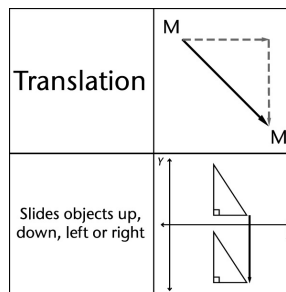
Geometry

Worthwhile Tasks for Instruction and/or Assessment

Students should be able to

a) Find logos in local communities.
b) Pick a letter from your name.
c) Using this letter apply translations, reflections, rotations, dilations.
d) Show on graph paper.
e) Use overhead transparency "moves" required for each.
f) Use paper rotation method (rotations).
g) Shapes with cube-a-links, rotate on paper.
h) Use VVWA for each term.
i) Activity II Student work sheet
j) Tessellation Software

1. Find a person's name with reflective symmetry. Using a checkmark, complete the following chart for each letter of the alphabet.

Letter of the Alphabet	Has reflective symmetry	Has rotational symmetry	Has no symmetry
A			
B			
C			
⋮			
Z			

2. a)

    b) If a letter has a reflective line of symmetry, determine how many lines of symmetry it has.

3. Complete a VVWA for:
    a) reflections
    b) rotations
    c) dialations

4. Select 3–5 logos from magazines and cut them out. For each logo you selected:
    a) Glue it on the top of a sheet of loose leaf.
    b) Explain what stands out for you in this logo.
    c) Discuss with a partner the features of these logos you sketched. Be prepared to share with the class.

Suggested Resources

▸ Cube-a-Link
▸ Tessellation Software
▸ Georgia Tech Website
▸ textbook, page 178 #2
▸ NCTM Grade 6–8

Geometry

Outcomes

By the end of this course, students will be expected to

E3 determine (through investigations, using concrete materials and technology) the characteristics of shapes that will tile the plane with a reflecting pattern

E4 Create designs involving tiling patterns (e.g., Escher-type designs, wallpaper or fabric designs), using technology (e.g., dynamic geometry software, design or drawing software)

Elaboration–Instructional Strategies/Suggestions

Students should be able to

1. Have students look at and observe what is happening in different wallpaper designs. They should write in their own words what they see. In a class discussion introduce the terms that represent these different transformations.

2. Discussion on "regular" (all sides and angles) polygons and other polygons □ ? △ etc. Experiment with these shapes. Students should observe that only the regular polygons allowed them to tile a plane. Use the slide show tessellation fun. Simple instruction for a manual creation.
   ‣ Discuss with students that a regular polygon has all sides equal and all angles equal. For example a stop sign is a regular octagon and the Chrysler logo is a regular pentagon. An equilateral triangle is also a regular polygon as is a square.
   ‣ Provide students with cardboard cutouts of a triangle, square, regular pentagon, hexagon and octagon. Experiment by move and trace on paper to investigate which ones can tile a plane.
   ‣ Use the slide show tessellation fun. Simple instruction for a manual creation.

3. Introduce students to the software packages available at your school. Have students' experiment and create their own tessellation's.
   ‣ If software is unavailable, you may wish to create tessellations using the manual method of the cut, move and trace activity. In addition you may be able to find a tessellating applet online.
   ‣ define polygons
   ‣ characteristics of regular polygons
   ‣ Students will understand through observation, continuity within various patterns.
   ‣ Students will understand how to design their own tessellation.
   ‣ Students will understand the relationship between tessellation and regular polygons.
   ‣ Students will be introduced to the software package Tessellation Exploration.

Geometry

Worthwhile Tasks for Instruction and/or Assessment	**Suggested Resources**

Worthwhile Tasks for Instruction and/or Assessment

Performance
- Students have a worksheet with several shapes, some regular, and some not. Ask students to choose the shapes that they could use for a tessellation. Using various examples of wallpaper, students analyze and record any/all evident patterns.
- Create on an 8" × 11" piece of paper "swatch" to represent a wallpaper or boarder pattern on a computer.Using the simple tessellation exploration guide, students will create their own tessellation swatch.
- Create a panel of "designs" for your bedroom door at home on a computer. Repeat above with irregular polygons.
- Create a design and tile with it using pattern blocks. Using tessellation exploration students will create a design and tile it using pattern blocks.
- Anne and Zack are planning to tile a plane with triangles. Zack has chosen a variety of triangle shapes and Anne has picked all the regular triangles. Using your triangle templates will they both be able to tile a plane with no gaps between the tile.
- Nouv and Jane are working with a variety of regular polygons. They are interested in finding which polygons will fit together to tile a plane. Use your templates of regular polygons to determine which polygons will tile a plane with no gaps.

- Use cutouts of equilateral, isosceles and scalene triangles to investigate which triangle will tile a plane.
- Will all triangles tile a plane?
- Have students discover which shapes can tessellate by exploring the different shapes on the worksheet.
- On the computer using tessellation programs, an online applet or a nord document program, have students create an 8 ½" × 11" piece of paper "swatch" to represent wallpaper or a boarder pattern.
- In an additional class, have students create a panel of designs for your classroom or door.
- Have students create a design and tile it with pattern blocks.
- Students should observe that only the regular polygons allowed them to tile a plane. Use the slide show tessellation fun. Simple instruction for a manual creation.
- Discuss with students that a regular polygon has all sides equal and all angles equal. For example, a stop sign is a regular octagon and the Chrysler logo is a regular pentagon. An equilateral triangle is also a regular polygon as well.

Suggested Resources

- Several software programs
- pattern blocks
- wallpaper books
- Escher Sketch - Desktop Science

Geometry

Outcomes

By the end of this course, students will be expected to

E5 analyse the geometric aspects of logos and designs (e.g., logos found in advertising, designs found in fabric or wallpaper)

- Gives examples of logos, commercial logos, flags, traffic signs, etc.

Elaboration—Instructional Strategies/Suggestions

Students should be able to

- Give students examples of wallpaper, necktie, etc., explore as a group the different geometric aspects and discuss as a group.
- As students to find different geometric aspects within the classroom as a group, then a class discussion.

- At this time teachers may choose to conduct various activities where students use the regular polygon templates to create designs. They should create a design by reflecting, rotating, translating, dilating or any combination thereof. This may also be an opportunity for students to present and explain their work to the class. It is hoped that teachers will expose students and involve them in finding real life examples (stencils, design, quilts, scrap booking , etc.) of shapes in their environment (wall paper, carpets, logo's).

Geometry

Worthwhile Tasks for Instruction and/or Assessment

Performance

Ask students to bring in a corporate and commercial logo.

Get students to analyse their own logo and record information.

Pair with another student and trade logos to analyse.

Practice questions within textbook on pages 179–180

Have students look at and observe what is happening in different wallpaper designs. They should write in their own words what they see. In a class discussion introduce the terms that represent these different transformations.

Suggested Resources

▸ everyday objects (wallpaper samples, ties, rugs, flooring, signs)
▸ commercial and corporate logos
▸ textbook
▸ internet search engines
▸ Geometer's Sketchpad

Geometry

Outcomes

By the end of this course, students will be expected to

E6 create a personal logo, using the mathematics of symmetry, translations, reflections, rotations, or dilations, with the aid of technology (e.g., dynamic geometry software, design or drawing software)

Elaboration–Instructional Strategies/Suggestions

Students should be able to

▸ The students should review the definitions of symmetry, translations, reflections, rotations and dilations.
▸ Symmetry – the property of a figure or expression that allows for parts of it to be interchanged without forcing a change in the whole.
▸ Translation – A transformation that "slides" each point of a figure the same distance in the same direction.
▸ Reflection – A transformation that "flips" a figure over a mirror of a reflection line.
▸ Rotation – A transformation that turns a figure about a fixed point at a given angle and a given direction.
▸ Dilation – A transformation that changes the size of an object but not the shape.
▸ The students will be given an opportunity to explore various on-line websites.
▸ The students will be provided with the appropriate software to draw or design their logo.
▸ Students will present their logo to the class and explain how they created their design.

Geometry

Worthwhile Tasks for Instruction and/or Assessment	**Suggested Resources**

Performance
- Students will be given the opportunity to complete the activities associated with "Tessellation Exploration".
- Students will be given the opportunity to discuss their logo in class (Business logo, Business Card), etc.
- Students will be given sufficient time to create, complete and produce their logo.
- Select 3–5 logos from magazines and cut them out. For each logo you selected:
  - glue it on top of a sheet of loose leaf
  - explain what stands out for you in this logo
  - discuss with partner the features of these logos you sketched. Be prepared to share with the class.
- Within your class, hold a competition where students can create and submit their idea for a class logo.

Suggested Resources
- Websites online
http://www.intermath-uga.gatech.edu/dictnary/homepg.asp
- "Tessellation Exploration" software
- previously made "card" packs can be used by the students for completing their design
- http//:www.aaa-logo.com
- Mathematics for Everyday Life "Transformations and Design"

Transportation and Travel

Transportation and Travel

Outcomes

By the end of this course, students will be expected to

A8 describe the costs if failing to operate a vehicle responsibly (e.g., fines, legal costs)

B10 calculate the fixed and variable costs involved in owning and operating a vehicle

A9 describe the procedures and costs involved in obtaining a driver's license

Elaboration–Instructional Strategies/Suggestions

Students should be able to

- speeding ticket
- parking ticket
- open liquor (DUI)
- no registration
- no insurance
- no safety inspection
- failing to stop at signs, for school busses, pedestrians, etc.
- Are fines the only thing you lose?
- taxi/bus - 25 km away
- Insurance: 1800 ÷ 12 = $ 150.00
  Driver's License: (12 months ×5 years) 60 ÷ 60 = $ 1.00
  Inspection: 15.00 × 1.15 = 17.25 ÷ 12 = $ 1.44
  Registration: (12 months × 2 years) 144 ÷ 24 = $ 6.00
  Answer: 468.00 + 150.00 + 1.00 + 1.44 + 6.00 = $ 626.44
  The fixed expenses for Jim to keep his truck is $ 626.44
- individual thoughts - small group brainstorm
- create a flow chart using inspiration if available (whole class)
- go to DMV website to compare information found on flow charrt. Edit chart and create additions where necessary.
- Teacher's should discuss the following requirements:
  Drivers License (Graduated License)
  - talk about proof of age
  - handbook to prepare for beginners test (fee)
  - written test and visual test to obtain beginner's license (discuss fees and the limitations of a beginners license)
  - driver training (cost, advantages, disadvantages, options for driver training)
  - road test (appointment, cost)
  - pass or fail (options)
  - license (cost, limitations, duration of limitations)
- Driving a car
  - fixed costs (insurance - discuss the options and the legal requirements, registration, safety inspection)
  - variable costs - fuel, maintenance (regular repairs - windshield washer, fluids, tires)
- Discuss the violations associated with operating a motor vehicle
- Discuss the consequences of each: no registration - fine, no insurance - fine, no license - fine, no safety inspection - fine (charges under MV Act, may tow vehicle) Discuss costs of these actions.
- Speeding ticket - cost, loss of license, accumulation of points, new driver consequences.
- Parking ticket - cost
- No seat belt - fine, accumulation of points

Transportation and Travel

Worthwhile Tasks for Instruction and/or Assessment	Suggested Resources

Worthwhile Tasks for Instruction and/or Assessment

Performance
1. List 5–10 violations and range of fines, points lost, privileges.

2. What legal cost would you incur if you decide to fight any of the above charges in court?

3. If you lose your license for 1 week, determine transportation costs to and from work. Determine the cost by taxi, bus.
   a) If you are caught going 65 km/h in a 40 km/h zone, what are the consequences? Fines? Points lost?
   b) You also ran a red light. What additional fines would you face?
   c) Assuming you've lost your license for 1 week. Determine the transportation cost to get back and fourth to work (25 km away). Is there any increase in cost of your car insurance premiums as a result of these violations?

4. List the fixed costs involved in owning and operating a vehicle
   - insurance
   - drivers license
   - MV inspection
   - registration

5. List the variable costs in owning and operating a vehicle
   - gas and oil
   - maintenance, repair and warranty
   - parking
   - tolls

6. Gas costs $ 0.839 per litre. Joe's car requires 45 litres to fill his tank. He is travelling to Halifax so he has decided to get an oil change that costs $ 23.95 + HST. If one tank of fuel takes hom to the city, how much will it cost?
   83.9 × 45 = $ 37.76
   23.95 × 1.15 = $ 27.54
   TOTAL: $ 65.30

7. Jim's truck payment is $468.00 per month. The insurance for the year is $1800.00, his driver's license is $60.00 for 5 years, the M.V. inspection is $15.00 + GST for the year and the registration is $144 for two years. What is the total of the fixed costs for one month?

Suggested Resources

‣ Access NS website http://www.gov.ns.ca/snsmr/contact/service_locations.asp?service=Access

Transportation and Travel

Outcomes	Elaboration–Instructional Strategies/Suggestions
By the end of this course, students will be expected to	*Students should be able to*
A10 compare the procedures, costs, advantages, and disadvantages involved in buying a new versus a used vehicle	‣ Liquor (open/DUI) - fine, charges, other consequences ‣ Failing to obey "rules" of the road - fines ‣ Provide students with figured for the cost of the hand book, road test and license to determine the cost of the actual license. ‣ Have students do a web search from the DMV website to compare costs from various parts of the province and then do a comparison with one other province.
B11 compare the costs involved in buying versus leasing the same new vehicle	
A11 explain the factors and costs involved in insuring a vehicle	‣ Teachers should discuss the advantages and disadvantages of buying a new vehicle - costs, warranty, fixed costs, etc., buying a used vehicle - costs, warranty, fixed costs, etc., Leasing a vehicle - costs, warranty, fixed costs, etc. ‣ Discuss options for vehicles and their cost.
F7 make personal decisions regarding the best form of transportation	‣ Provide newspaper, Auto Trader, internet or car dealerships for the purpose of price comparison. ‣ Have students refer to their career choice to determine if they have the salary requires to make monthly payments. ‣ Some students may not have the necessary salary for vehicle payments. It is time to discuss other means of transportation (bus, taxi, car pool).
B12 compare the costs of owning or leasing and maintaining vehicle with the costs of other forms of transportation	
B13 complete a project involving the purchase or lease of a new vehicle or the purchase of a used vehicle, including the cost of insurance	‣ Elaborate on the types of insurance and the necessity. ‣ Invite a guest speaker from an insurance company to discuss age, sex, rates and various coverages. ‣ Invite an agent from a second company to discuss the same. This will show students the difference in prices.

Transportation and Travel

| **Worthwhile Tasks for Instruction and/or Assessment** | **Suggested Resources** |

Performance

1. Use a Venn Diagram to compare new and used cars.
    - how does it run? appearance? safety features? rust? tires? overall condition? exhaust? fuel tank? radiator?

2. a) Check newspaper ads for pricing on a new vehicle.
    b) Compare pricing to same model from a used car lot (newspaper, Auto Trader, internet)

3. Gather information from car dealerships or the internet, regarding leasing and purchasing the same vehicle. Work through the math in small groups. Share the results through classroom discussion.

4. Which would you choose and why:
    a) Peter can ride the bus for one hour to school which costs $1.75 each way or he can drive his car which takes 15 minutes each way and costs a total of $ 5.00 per day.
    b) Dave can drive to school for $ 50.00 per week or he can carpool for the same amount.
    c) Jennifer needs to fill her car on the way home from work. She can fuel up at the "Maple Leaf" gas bar which sells gas for $ 0.87/L and is self-serve or the "Red Wing" gas bar which is $ 0.89/L and is full-serve.

5. Examine the pro's and con's of owning a vehicle in rural Nova Scotia versus downtown Toronto.

6. You are a 16 year old newly licensed male driver. Your grandparents have given you a 1997 Ford Tempo car. What will your cost be for one year of coverage if you purchase PL/PD only? One million versus two million dollar liability? What are two additional packages offered?

7. You rear-end the driver in front of you. You cause $ 2,500.00 damage to the persons vehicle. You cause $ 1,500.00 to your own ehicle. You carry only PL/PD. How will the insurance company handle this situation? Include the process in your explanation.

Suggested Resources

DMV website
https://acol-prod1.acol.ca/servlet/
ECEServlet?SP=UA&region=bcs
PROD&locale=en_CA&OP=AU
TOLAUNCH&autoLogin=anon
Login&autoApp=RMV&autoBsf
n=VehiclePlateRenewalBFImpl&
returnURL=http%3A%2F%2Fw
ww.gov.ns.ca%2Fsnsmr&returnL
abel=Return+to+Service+Nova+S
cotia+and+Municipal+Relations
&lookAndFeel=BCSISD

Insurance agents from 2 companies

Newspapers, Auto Trader

Websites: dealerships, auto trader, consumer report

Probability

Probability

Outcomes

By the end of this course, students will be expected to

G1 express probabilities of simple events as the number of favourable outcomes divided by the total number of outcomes

G2 express probabilities as fractions, decimals, and percents, and interpret probabilities expressed in each of these forms

G3 predict and describe the results obtained in carrying out probability experiments related to familiar situations involving change (e.g., rolling dice, spinning spinners, flipping coins)

G4 compare predicted and experimental results for familiar situations involving chance, using technology to extend the number of experimental trials (e.g., using a random number generator on a spreadsheet or on a graphing calculator

G6 interpret information about probabilities to assist in making informed decisions in a variety of situations (e.g., evaluating risk versus reward in the purchase of lottery tickets)

G7 interpret and assess probabilistic information used in the media and in common conversation (e.g., vague statements such as "four out of five dentists recommend", statements about odds; scales on graphs)

Elaboration–Instructional Strategies/Suggestions

Students should be able to

▸ lottery $\dfrac{1}{13\,000\,000}$ 1–49

▸ locker PIN number (3 tries): $\dfrac{1}{9}\times\dfrac{1}{9}\times\dfrac{1}{9}\times\dfrac{1}{9}=$

▸ How many number sets are possible?
  Super 7 = 2 for \$3
  Lotto 649 = 2 for \$1 $\dfrac{1}{10\,000\,000}$

▸ Which is the winning combination? $\dfrac{1}{500\,000\,000}$

▸ 49×48×47×46×45×44 Lotto 649
  What is the probability of choosing the winning 6 digit number if you buy 1 ticket? 50 tickets?

▸ PIN: 4 digit pin # _ _ _ _
  What is the probability of a thief guessing the 1st #, X _ _ _? 2 digits X X _ _ ? 3 digits X X X _? 4 digits X X X X?

▸ Bring in examples from newspapers, magazine ads of use of probability statements.

▸ Check the Department of Health Teaching Gambling Kits.

▸ Weather POP-what does it mean?

▸ Students should understand probability.

▸ The teacher will inquire the number of students born in a particular month. (Class size 24) (e.g., 6 students were born in September; $\dfrac{6}{24}$; .25; 25%)

▸ How many were born in the first half of the month of September? (e.g., 2) ($\dfrac{2}{6}$; $\dfrac{1}{3}$; 33.3%) the first half of any month? This will vary depending on results?

▸ How many were born on 1st, 2nd, etc. of September?

  Sept. 8 $\dfrac{1}{6}$, .166, 16.6%; Sept. $\dfrac{1}{6}$, .166, 16.6%;

  Sept 18 $\dfrac{3}{6}$, .5, 50%; Sept. $\dfrac{1}{6}$, .166, 16.6%

▸ For each response have the students express the probability as fractions, decimals, and percents.

Probability

Worthwhile Tasks for Instruction and/or Assessment	Suggested Resources

Performance
1. Which is a better situation? Lotto 649-odds are 11 million different numbers. $2 per ticket. Super 7-500 million different combinations. 3 tickets for $1
2. If you are planning to have an outdoor event on Saturday, what POP would cause you to consider cancelling your event? Discuss?
3. If there are 52 cards in a deck, what is the probability of picking a
   a) a heart
   b) an ace
   c) the queen of hearts
4. If there are 3 tickets in a book of tickets and 50 books are sold, and you bought 2 books of the tickets, what is the probability of you winning?
5. If the letters C A P E B R E T O N were in a bag, what would the probability of
   a) choosing a vowel
   b) choosing a consonant
   c) choosing an E
   d) choosing a B
   Express your answers as a fraction.
6. Four friends are going to the movies and each friend wants to see a different movie. How could you use a deck of cards to decide which movie they will see together? (For example, each friend could be assigned a suit and whichever suit is drawn first, the assigned friend chooses the movie).
7. We know that half of all Canadians get the flu each winter. Lat year 14 students out of a class of 30 got the flu. Are these results close to what you expect? Why?
8. On the game show "The Price is Right" contestants play the 'Roll the Dice" game. If you don't roll the correct number you have to guess whether the number is higher or lower. Discuss with the class which numbers are the best and worst to roll. (You can reproduce this game).
9. What are the chances of getting $1 in 1 spin? 2 spins?
10. What are the chances of getting 2 consecutive $1 spins in order to win $ 10,000.00
11. What are the chances of getting a $1 spin, then getting 5cents or 15cents to win $ 1,000.00
12. If a contest has 100 tickets and you buy 2 tickets, what are your chances of winning?	

Probability

Outcomes

By the end of this course, students will be expected to

G5 simulate familiar situations involving chance and explain the choice of simulation (e.g., simulate the gender of children in a family bu the repeated flipping of a coin and explain why coin flipping was used)

Elaboration–Instructional Strategies/Suggestions

Students should be able to

Probability

Worthwhile Tasks for Instruction and/or Assessment

Performance

Mental Math

Mental Math

Outcomes	**Elaboration–Instructional Strategies/Suggestions**
By the end of this course, students will be expected to	*Students should be able to*
B14 know addition and subtraction facts applied to 1-, 2-, 3-, and 4-digit numbers	
B15 know multiplication facts applied to products of two 1-digit and two 2-digit numbers, and 1-digit and 2- or 3-digit numbers	
B16 estimate appropriate sums, differences, products, and quotients	
B17 mentally calculate 1%, 10%, 15%, 25%, and 50% of quantities that are compatible with these percents	
B18 estimate percents of quantities	

Mental Math

Worthwhile Tasks for Instruction and/or Assessment	Suggested Resources
Performance	

Mental Math

Work Sheet 6: 1% Method Investigation

Purpose: to gain a visual understanding and the concept of percent.

Materials: 10×10 grid

Procedure:
1. 1, 10×10 represents 100%, each cell is 1%. Ask students if there was $100 and it needed to be divided equally among cells, how much would each cell contain? 2 cells contain? 3 cells?
2. Repeated with $ 200.00, $ 300.00, $ 600.00, $ 800.00, $ 1,000.00
3. Repeated with non-multiples of 100 (i.e., $ 50.00, $ 237.00, $ 643.00)

▸ Students can now use their calculators to calculate the value of each cell. Show what 2 cells (2%) equals? 3 cells (3%) equals? Etc.

▸ Questions: 3 types of percent questions are:
   - 4% of $ 180.00 = _____
   - 2% of _____ = 18
   - _____% of 700 = 35