

Math 8 Project: Price Savvy



Think about all the things you spend money on every day. What even are they? How much do they cost you? Understanding how prices are determined will enable you to save money. There are some tricky things that need to be cleared up about shopping though. How do you know if a product is cheaper than another? How are discounts and tax calculated?

Learning Objectives

Be able to work with...

1. percents over 100%
2. fractional percents (between 0% and 1%)
3. population change

Have a basic knowledge of financial literacy...

1. Tips
2. Discounts
3. sales tax
4. sale price

Part A: Food

You will be provided with flyers from multiple grocery stores with costs for different products.

1. Compare prices between items sold at the same store. All prices are prices before sale (or sale price, depending on what is shown). **DO NOT INCLUDE TAX!**
 - Which products are more expensive?
 - Which ones are relatively cheaper?
 - Why do you think this is?
2. Pick two different bags of chips, crackers, or other snacks in two different sizes. Predict which brand is cheaper *per unit*, then calculate. (You pick what unit you wish to use, but make sure it makes sense!)
 - Which brand was cheaper and by how much? Did you predict correctly?
 - Many stores have a bulk section with comparable products. Compare the unit price of the cheaper item with the same or similar item in bulk. Which is cheaper?

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3. Select a vegetable or fruit that is available in both fresh and frozen. Predict if it will be cheaper fresh compared to frozen, then calculate. (You pick which unit you wish to use, but make sure it makes sense!)
 - Was it cheaper frozen or fresh and by how much? Did you predict correctly?
4. Select two different types of meat (ie, beef and pork). Compare the prices; which animal is cheaper *per unit*?
5. Compare two different parts of the same animal (ie, chicken wingettes compared to chicken drumsticks). Which part is cheaper?
6. Compare different types of tofu and beans (do one comparison for tofu and another for beans). Which variety is cheaper?
7. Compare the prices of your favourite milk, juice, and soda. Which one is the cheapest *per unit*? Which one is cheapest altogether?

Part B: Taxes

You will be given two receipts: a receipt for a non-grocery purchase & a grocery receipt.

1. On your receipts, there will be lines that denote the amount of tax you have to pay. In BC, we pay GST and PST on most purchases (but not basic groceries, ie. food not from a restaurant).
2. Begin looking at the non-grocery purchase receipt.
 - Note how much tax you pay compared to the subtotal (total before tax).
 - Calculate the PST and GST as a percent based on how much tax was paid on top of the subtotal.
 - Some provinces have a HST, a combined PST/GST. Explain why one would end up paying more with an HST.
 - BC used to have a HST, but it was scrapped following a referendum. What was the tax rate of the HST in BC?
3. Repeat step 2 with the grocery receipt. Is the tax rate consistent? Were there purchases with only one tax imposed? If so, what items did those tend to be?

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4. If a store has a “Pay no GST and PST” offer, how much would you save compared to the “full” price?

Part C: Clothes

1. A store has a buy one, get one free sale (Assume all items cost the same). How much do I save compared to the regular price as a percent?
2. The next day, the store has a buy one, get one 50% off sale. How much do I save compared to the regular price as a percent?
3. How much did clothing cost you last year? Try estimating; the average American spends \$1100 per person a year on clothes.
 - Let n represent the number of garments you purchased last year (try estimating; the average American buys 52 garments a year).
 - Calculate the average, a , price per garment by adding up the total price and dividing by the amount of clothing you bought. How much was it? Were you surprised by the number?
 - Come up with a class average (arithmetic mean) cost/garment. Was your number greater or less than the class average? By what percent?

Part D: Utilities

Look through the electricity bill you have been provided.

1. How much more for electricity would you pay in the billing period if your basic (Step 5) rate was increased by 10%?
2. Some municipalities charge a *flat rate* for water. Others charge a *variable rate*. In Delta, most residences are charged \$500 per year for water. In Richmond, water costs \$1.2575 per *cubic meter*.
 - Express the Richmond rate in terms of dollars per litre (1 ml = 1 cubic centimetre)
 - Let x represent the amount of water a household consumes, in litres, and y the annual cost of water, in dollars. Graph the cost per year of water for a Delta residence and a Richmond residence for x from 0 to 500.

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- How much water would a Delta residence need to use to be saving money compared to a Richmond residence consuming the same amount?
 - What does this say about variable rate vs. flat rate?
3. Aside from the economic cost, what do you think is the environmental cost of excessive water use?

Part E: Around the World

You will be provided with the costs of varying products in a few different countries. This will include the prices of food, clothing, and utilities, as well as tax rates.

- 1.

Mission Debriefing/Discussion Q's

1. Which methods did you use to figure out percent or rate?
2. What did you find out in your discovery?
3. Comment on the effectiveness of the activity - did it make sense? Did you learn anything new? What have you learned about money, percent, and rate?

Assessment

SLL Math 8 Project: Price Savvy Resources

Super-Mart



Banana, bunch
\$1.68 (est)
Avg weight is 1.15 kg
1.46/kg



Organic Banana, bunch
\$2.11 (est)
Avg weight is 1.1 kg
1.92/kg



Royal Gala Apples
\$0.78 (est)
Avg weight is 0.21 kg
1.92/kg



Strawberries
\$3.98 (ea)
454 g



Frozen Strawberries, sliced
\$3.97 (ea)
600 g



Frozen Banana, peeled
\$5.99 (ea)
1 kg



Pretzels
\$3.88 (ea)
400 g



Pretzels
\$1.28 (ea)
200 g



Pretzels Bulk
\$0.30/50g



M&M's
\$8.88 (ea)
400 g



M&M's
\$16.99 (ea)
1 kg



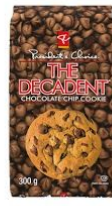
M&M's Bulk
\$20.60/1 kg

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Super-Mart



Chocolate Chip Cookies
\$3.99 (ea)
550g



Chocolate Chip Cookies
\$1.97 (ea)
290g



Sliced Almonds
\$6.98 (ea)
400g



Almonds (Bulk)
\$0.84/50g



Ground Pork
\$6.99 (ea)
750 g



Ground Beef
\$7.05 (ea)
0.76 kg



Ground Turkey
\$10.00 (ea)
1.81 kg



Chicken Wings
\$29.99 (ea)
4 kg



Chicken Thighs
\$7.00 (ea)
0.954 kg



Chicken Breasts
\$23.52 (ea)
2.14 kg



Red Kidney Beans
\$6.98 (ea)
1.81 kg



Lima Beans
\$2.38 (ea)
398 ml



Soft Tofu
\$1.37 (ea)
300 g



Extra Firm Tofu
\$2.47 (ea)
350 g

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Super-Mart



Homogenized Milk
\$4.91 (ea)
4L



Organic Homogenized Milk
\$7.99 (ea)
4L



Skim Milk
\$4.45 (ea)
4L



Organic Skim Milk
\$7.99 (ea)
4L



Apple Juice
\$1.00 (ea)
1L



Orange Juice
\$5.77 (ea)
2.5L



Coca-Cola
\$1.79 (ea)
2L



PC Cola
\$0.97 (ea)
2L

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Grocery Receipt

Strawberries..... 3.98
Skim Milk..... 4.45
Dark Kidney Beans....6.98
M&M's.....8.88

Subtotal: \$24.29

Tax Code	Taxable Value	Tax Value
GST 5%	8.88	0.44
PST 7%	0.00	0.00

Total:\$24.73

Non-Grocery Receipt

12 Rolls Toilet Paper..... 7.77
2L Laundry Detergent..... 8.97
24 Coloured Pencils..... 4.69

Subtotal: \$21.43

Tax Code	Taxable Value	Tax Value
GST 5%	21.43	\$1.07
PST 7%	21.43	\$1.50

Total: \$24.00

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Prepared For
JOHN DOE
 1234 ANYNAME ST
 ANYTOWN BC V6B 5A1

1

3 **Invoice Number:**
 150000000001

Billing Date	Account Number
Jun 15, 2016	1234 567
Pay By	Please Pay
Jul 07, 2016	\$158.55

2

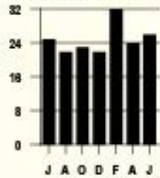
BC Hydro's account services are available online for your convenience.
 Create a MyHydro Profile and link your account at bchydro.com/myhydro.

Meter Reading Information

Electric:
 Meter # 1111111
 Apr 19 72578
 Jun 15 74078
 58 days 1500

Next meter reading on or about Aug 15

kWh Daily Average Usage per Billing Period



7

Daily Average Comparison
 Jun 2015 25 kWh
 Jun 2016 26 kWh

Take action to save electricity and money.
 Call 604 431 9463 or visit bchydro.com/powersmart

Other questions? Call the numbers displayed in the Customer Service area at the top of this bill.

Previous Bill Balance payable from your previous bill 151.11
 Thank you for your payment May 01, 2016 151.11CR

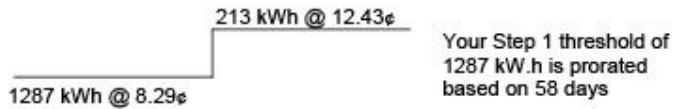
4 **Balance from your previous bill** **\$0.00**

BC Hydro Electric Charges

Apr 19 to Jun 15 (Residential Conservation Rate 1101)
 5 Basic Charge: 58 days @ \$0.18350 /day 10.64*
 6 Energy charge:
 Step 1: 1287 kW.h @ \$0.08290 /kW.h 106.69*
 Step 2: 213 kW.h @ \$0.12430 /kW.h 26.48*
 8 Rate Rider at 5.0% 7.19*
 * GST 7.55

\$158.55

9 Your total consumption for the billing period is 1500 kW.h and your Conservation Rate breakdown is as follows:



*For more information on the Conservation Rate visit bchydro.com/conservationrate.

Taxes The following is a summary of taxes billed to your account since your last invoice:
 GST at 5 % on 151.00 7.55

10 **Balance payable** **\$158.55**

Customer Service Phone: (604) 224-9376 Power Out? 1-888-769-3766 or *49376
 Hours: Mon-Fri 7 a.m. to 8 p.m. and Sat 9 a.m. to 5 p.m. Pacific Time



Return this portion with your payment
ALL PAYMENTS SHOULD BE MADE PAYABLE TO BC HYDRO

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Billing Date	Account Number
Jun 15, 2016	1234 567
Pay By	Please Pay
Jul 07, 2016	\$158.55

Amount Paid