

The Northern Edge

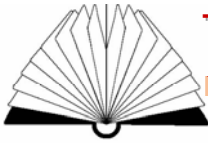
## Study Guide

# Consumer Math

## Consumer math



**36 equal payments**



## Consumer Math

### Introduction

This story is from **Issue #3 of The Northern Edge**. The on-line story tells how Jim looks at different ways he might buy a skidoo – cash, monthly payments to the Northern store, or a bank loan.

There are three on-line quizzes – one to calculate GST, one to calculate monthly payments, and one to calculate the difference in total cost between paying cash and making payments over three years.

This story offers an opportunity for learners to explore things such as writing cheques, keeping a budget, and buying over time.

This section first presents a list of 10 learning activities and the written text for the story. The pages following the written text give instructor notes and handouts for each activity, in the order on the list.

This symbol marks the written text for the story.

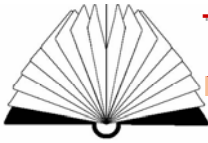




This symbol marks instructor notes.

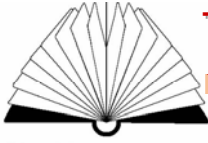


This symbol marks handouts to copy for learners.





<b>Consumer Math</b> List of Learning Activities		
<b>Instructor Notes</b> 	<b>Handouts</b> 	<b>Page #s</b>
1) Vocabulary	1 handout	7, 8
2) Language skills	1 handout	7, 9
3) Questions	2 handouts	10 to 12
4) Writing	2 handouts	13 to 18
5) Calculate the GST	1 handout	19, 20
6) Buying over time	1 handout	19, 21, 22
7) Cash or buying over time	1 handout	19, 23
8) Letter of complaint	1 handout	24 to 26
9) Paying a mortgage	1 handout	24, 27, 28
10) A household budget	1 handout	29 to 37



**Text – Consumer Math**  
Issue #3 The Northern Edge

**Scene 1**

**Jim:** Hey Ken, I'm thinking of getting a skidoo.

**Ken:** Yea Jimmy. What kind?

**Jim:** A Skandic 550.

**Ken:** Sounds good. How much is it?

**Jim:** A lot more than I've got. It's \$10,999 plus GST and shipping.

**Ken:** So what are you going to do?

**Jim:** I've heard you can pay by the month at the Northern.

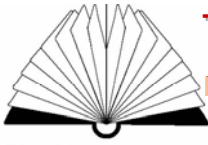
**Ken:** I've heard about that too. Hey let's search for the Northern Store on the internet.

**Jim:** Now let's see if we can find the skidoo I want.

**Ken:** We're in internet explorer. Let's search for the Northern Store.

**Jim:** There it is.

**Ken:** Click on the selections catalogue. Now click on shop online. Great. Scroll down to snow sleds. Click on the underlined text.



**Jim:** Great it says I can pay \$460.00 a month for 36 months. I think I can afford that.

**Ken:** How much is that altogether?

**Jim:** How would I figure that out?

**Ken:** Multiply \$460 a month and then add seven per cent GST and add in the \$49.99 administration fee and you are sledding.

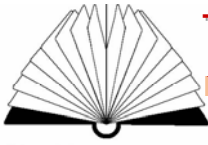
## Scene 2

Let's review those numbers on a calculator.

If Jim chooses the Equal Payment Plan at the Northern Store, he would have to pay \$460 a month for 36 months. \$460 times 36 equals \$16,560 dollars.

Next calculate the GST by taking the price of the snowmobile \$10,999 and multiply it by 7% or point zero seven (.07). The GST is \$769.93. The administration fee is \$49.99. Adding these three numbers we get a total of \$17,379.92. That's a lot more than if Jim paid cash. Let Jim tell it.

**Jim:** Wow. That comes to \$17,379 instead of \$12,099. That means I have to pay \$5,280.00 extra if I pay by the month. Paying an extra five thousand dollars is a lot. There must be a better way. Let's do some research.



### Scene 3

Jim and Ken did some research and they found out that you can possibly save a lot of money. Let's build a chart to help us understand.

If you have the money already saved you could pay cash. In this case, the skidoo costs \$10,999. Shipping is \$330. The GST is \$769.93

Adding these costs we get the total cost of \$12,098.93. You're paying cash so there are no monthly payments and because you're not borrowing any money there are no interest rates.

This is the cheapest way to buy the skidoo but most of us don't have that much money saved.

So we have to look at other ways to buy it.

At the Northern Store, you can pay for the machine every month for two or three years. Let's look at the three year or 36 month plan. You would pay \$460 dollars a month for 36 months. This is \$16,560.

You must pay the GST which is \$769.93 and an administration fee of \$49.99 up front when you buy the machine.

When you add these costs up your total cost is \$17,379.92. You can see that the total cost of the machine is a lot more when you pay by the month - \$5,280 more. Your monthly payment will be \$460 and the interest rate at the Northern Store is 28%.

Click on PLAY to see what a bank loan would look like.



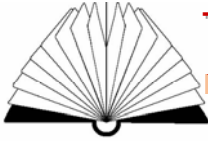
The best way to buy the skidoo over time is to get a bank loan. You will pay interest at a rate of 9.5% at the time this file was made. Interest rates do change over time.

At this rate if you pay over 36 months you will pay \$387.52 per month. This includes the GST and the shipping charges. The total cost after 36 months is \$13,950.72. This is over \$3,000 less than you would pay if you bought it at the Northern Store.

In order to get a loan at a bank you have to have a credit rating. If you are thinking of buying something in the future you might want to go to your bank now and find out how you can establish a good credit rating.

You don't need to have an account with the bank but you do need to have a credit rating.

The last thing to consider before moving on to the Learning Activities is the option of saving some money for a down payment. If we look at the bank option we can see that if you were to save and then pay \$3,000 down on the skidoo, that would reduce your monthly payments by almost \$100 a month. This would certainly make it easier to pay off and it's an option you should seriously consider.



**Vocabulary  
Learning Activity 1**

One handout

Learners match words from one list with meanings in a second list.

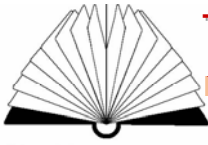


**Language skills  
Learning Activity 2**

One handout

Learners do a word search to find nine words in a table of scrambled letters. Remind learners that words may occur forwards, backwards, up, down, or diagonally.

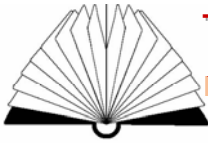




### Vocabulary Learning Activity 1

Match the following words and meanings. Write the number of the word beside the correct meaning.

1) shipping	_____ A sum of money people borrow and pay back, sometimes with interest.
2) downpayment	_____ Extra money people pay when they borrow money.
3) loan	_____ A tax we pay for goods and services.
4) interest	_____ Money people pay to a business when they provide a service.
5) cash	_____ Cash people pay as part of the full cost of something.
6) credit rating	_____ A way to use arithmetic to figure things.
7) administration fee	_____ A person's ability to repay a debt, based on their past performance.
8) calculate	_____ A cost people sometimes pay to transport goods to where they live.
9) GST	_____ Money people use to fully pay for something when they buy it.



Language skills  
Learning Activity 2

Word Search: Find these nine words in the table below.

- shipping
- consumer
- loan
- interest rate
- GST
- calculate
- administration
- fee
- credit rating

f	k	l	c	k	l	o	u	d	p	g	c	m	n
q	e	v	h	n	t	r	e	m	u	s	n	o	c
j	m	f	z	u	x	h	a	c	b	t	i	y	f
w	d	h	n	m	x	s	g	t	s	t	j	l	w
b	s	l	e	e	f	p	o	x	a	b	n	r	p
s	v	c	r	e	d	i	t	r	a	t	i	n	g
u	b	k	o	y	c	s	t	x	a	w	v	l	h
q	e	t	a	r	t	s	e	r	e	t	n	i	v
t	w	u	s	h	i	p	p	i	n	g	p	l	n
r	h	m	c	n	z	s	p	a	o	d	f	i	s
e	h	l	i	v	m	w	o	n	o	a	p	e	k
s	l	m	f	c	a	l	c	u	l	a	t	e	y
x	d	k	q	u	o	h	d	k	m	b	p	e	a
a	i	o	b	v	t	c	l	e	x	r	o	r	d



## Questions Learning Activity 3

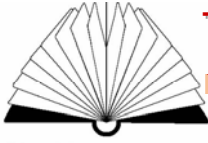
Two handouts

### **3-1: Events are linked by time**

Learners identify the scrambled events from the story. They number the events in the order they happened.

### **3-2: Journal writing**

Learners use questions to guide their journal writing.



## Questions Learning Activity 3

### 3-1: Events are linked by time

**What is the first event that happened in the story?**

- ✓ Jim is thinking about getting a skidoo.

**What is the final outcome?**

- ✓ Another option is to save up and make a down payment

**Here's a list of things that happened in the story, but they are mixed up.**

- 1) Jim wants to buy a skidoo.
- 2) Jim and Ken compare prices: pay by cash, take out a bank loan, or purchase from the Northern.
- 3) Jim thinks he cannot afford to buy the skidoo.
- 4) Jim calculates he would have to pay \$5,280 more if he buys from the Northern Store over three years.
- 5) The best way to pay over time is to get a bank loan.
- 6) They search on the internet for prices from the Northern Store.
- 7) Another option is to save up and make a down payment.

**Rewrite the sentences and put them in the order they happened in the story.**



## Questions Learning Activity 3

### 3-4: Journal writing

Use these questions to guide your journal writing.

- ✓ In what ways do you relate to this story?
- ✓ Did you ever buy something 'over time' or do you know someone else who has? Describe the experience.
- ✓ When you shop for groceries do you buy things that are on sale? Why or why not? Do you follow a menu? Do you think it's a good idea to follow a menu? Why or why not?
- ✓ Do you keep a monthly budget? Why or why not? Do you think it is a good idea to know where you are spending your money?



## Writing Learning Activity 4

Two handouts

### 4-1: Writing large numbers

Learners practice writing words for 3-digit, 4-digit, 5-digit, 6-digit, and 7-digit numbers.

### 4-2: Writing cheques

Learners go through a step-by-step process and practice writing cheques.

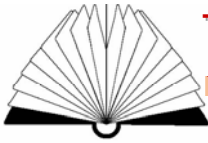


### Writing Learning Activity 4

#### 4-1: Writing large numbers

Write the following numbers in words.

745	
12,002	
44,567	
5,890	
184,060	
8,307,990	



### Writing Learning Activity 4

#### 4-2: Writing cheques

Each cheque has this information:

- ✓ Date
- ✓ The name of the person or business who gets paid on the line 'Pay to the order of \_\_\_\_\_'
- ✓ The amount of money, in numbers and in words
- ✓ The signature of the person who is paying
- ✓ A number in the top right corner to help people keep track
- ✓ The name, address, and phone number of the person who is paying in the left top corner.

Here is an example of a blank cheque.

	<b>No. 543</b>
	Date _____
<b>Pay to the order of</b> _____ <b>\$</b> _____	
_____ /100 dollars	
<b>Bank of the North</b> Lynx River Branch Lynx River, NT IOU OGO	
<b>Memo</b> _____	

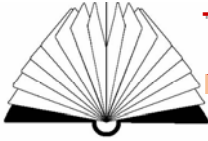




Here is the same cheque filled out.

- i) The date is June 10, 2005
- ii) The person who gets paid is the Northern
- iii) The amount of money is \$135.77
- iv) The person who is paying is Mary Tindi
- v) Mary notes she used cheque #544 to pay her June bill at the Northern
- vi) Mary's name, address, and phone number are printed in the top left corner of her cheque.

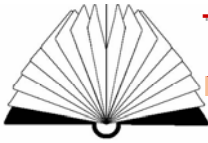
<u>Mary Tindi</u>	No. 544
<u>Box 507, 999-1234</u>	
<u>Lynx River, NT IOU OGO</u>	<b>Date</b> <u>June 30, 2005</u>
<b>Pay to the order of</b> <u>Northern Store</u>	<b>\$</b> <u>135.77</u>
<u>One hundred and thirty-five dollars ----- 77 /100 dollars</u>	
<b>Bank of the North</b> Lynx River Branch Lynx River, NT IOU OGO	
<b>Memo</b> <u>June bill at the Northern</u>	<u>Mary Tindi</u>



Now use this information to fill out a cheque.

- i) The date is March 30, 2005
- ii) The person or business who gets paid is Shell Canada
- iii) The amount of money is \$450.00
- iv) The person who is paying is Dave Hunter. Make up an address and phone number in Lynx River for Dave.
- v) Make a note under 'Memo' about what the cheque is for.

	<b>No. 545</b>
<b>Date</b>	
<b>Pay to the order of</b>	
	<b>\$</b> <span style="border-bottom: 1px solid black;"></span>
	<span style="border-bottom: 1px solid black;"></span> /100 dollars
<b>Bank of the North</b> Lynx River Branch Lynx River, NT IOU OGO	
<b>Memo</b> <span style="border-bottom: 1px solid black;"></span> <span style="border-bottom: 1px solid black;"></span>	



Here are two more cheques to fill out.

- i) Make up a name and address for someone who pays \$198.45 on April 8, 2005 to NorthweTel for the phone.
- ii) Make up a name and address for someone who pays \$298.74 on Dec. 30, 2005 to the ABC Insurance Company for car insurance.

<hr/> <hr/> <hr/>	No. 546
Date _____	
Pay to the order of _____	\$ _____
_____ /100 dollars	
<b>Bank of the North</b> Lynx River Branch Lynx River, NT IOU OGO	
Memo _____	_____

<hr/> <hr/> <hr/>	No. 547
Date _____	
Pay to the order of _____	\$ _____
_____ /100 dollars	
<b>Bank of the North</b> Lynx River Branch Lynx River, NT IOU OGO	
Memo _____	_____



### Calculate the GST Learning Activity 5

One handout

Learners calculate the GST and total cost of items.



### Buying over time Learning Activity 6

One handout

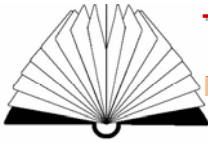
Learners calculate monthly payments for buying items over time.



### Cash or buying over time Learning Activity 7

One handout

Learners calculate the difference between paying cash and buying over time.



### Calculate the GST Learning Activity 5

Canadians pay an extra 7% goods and services tax or GST on most things.

Example:

- ✓ A digital camera costs \$350.00
- ✓ The GST is  $7\% \times \$350 = .07 \times \$350 = \$24.50$
- ✓ The total cost for the camera is  $\$350.00 + \$24.50 = \$374.40$

Calculate the GST and the total cost with GST for the items in the table below.

Item	Cost	GST	Total cost with GST
Digital camera	\$350.00	\$24.50	\$374.50
Laptop computer	\$1500.00		
Kicker	\$6500.00		
Washer and dryer	\$1700.00		
Truck	\$20,000.00		



## Buying over time Learning Activity 6

When people buy over time they make regular payments over a certain period of time to cover the cost of what they're buying. In the **Consumer Math** story, Jim thinks about making payments every month for three years to buy his skidoo.

Buying over time always costs more than paying cash. It costs more because people pay interest or finance charges. They may also pay other fees such as administrative or service fees.

People need to make sure they know ahead of time about all the fees when they buy things over time.

Here's the digital camera example. Let's say we want to buy it over six months. We find out that if we buy the camera over six months the total cost will be \$420.00. What is the monthly payment?

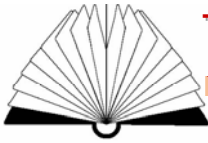
- i) **Total cost with GST and interest over six months:** \$420.00
- ii) **Cost per month for six months:**  $\$420.00 \div 6 = \$70.00$



Calculate the monthly payment for each item in the table below.

Note the number of monthly payments is different for each item.

<b>Item</b>	<b>Total cost over time</b>	<b>Number of monthly payments</b>	<b>Cost per month</b>
Digital camera	\$420.00	6	\$70.00
Laptop computer	\$1880.00	8	
Kicker	\$8775.00	12	
Washer and dryer	\$2125.20	6	
Truck	\$28,080.00	24	



### Cash or buying over time Learning Activity 7

People pay less when they pay cash than when they buy things over time.

Look at the table below and calculate the difference between the total cash payment and the total payment to buy these items over time.

We did the first calculation for the digital camera.

Item	Cash	Buy over time	Difference
Digital camera	\$350.00	\$420.00	\$70.00
Laptop computer	\$1500.00	\$1880.00	
Kicker	\$6500.00	\$8775.00	
Washer and dryer	\$1700.00	\$2125.20	
Truck	\$20,000.00	\$28,080.00	





**Letter of complaint  
Learning Activity 8**

One handout

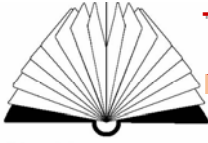
Learners read a sample letter of complaint and then write their own.



**Paying a mortgage  
Learning Activity 9**

One handout

Learners look at and compare monthly and bi-weekly mortgage payments.



## Letter of complaint Learning Activity 8

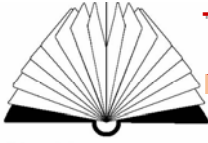
Sometimes you get a bill and you know you don't owe the full amount. If this happens, calculate the amount you believe you owe, send the money, and include a letter to explain.

### Letter writing hints:

- ✓ **Simple:** The main idea is stated simply in the first paragraph.
- ✓ **Complete:** Name the item, the model, and serial number. Explain what happened or what is wrong.
- ✓ **Date for action:** Say when you would expect people to take action about your complaint.
- ✓ **Tone:** Keep a positive, encouraging tone. Write like you expect people to cooperate. Avoid name-calling (crazy, stupid), overly polite phrases (very sorry to bother you, greatly appreciate), and slang (stuff, no way).

Here's an example. Martha Black's Sears bill included charges for garden supplies for three months. Martha never bought any garden supplies. Read Martha's letter on the next page.

After you read Martha's letter, think of a situation you've been in or make up a situation and write your own letter of complaint. Remember the writing hints above.



12 Robin Crescent  
Hay River, NT  
XOE OR8

March 21, 2005

Mr. R. Hood  
Sears Account Department  
5850 Kingsway,  
Edmonton, AB  
G1C 2A2

Dear Mr. Hood:

I have a problem with my Sears bill, account #4261B.

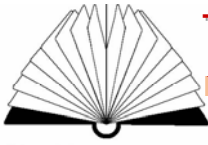
For three months Sears has charged me \$15.98 for garden supplies, plus service charges. I never bought or received any garden supplies.

Please remove this charge, plus the additional service charges, before the next billing. Thanks.

Yours truly,

*Martha Black*

Martha Black



## Paying a mortgage Learning Activity 9

Most people don't have enough money to buy a house with cash. They use a mortgage to borrow money to buy a house.

People pay a certain amount of the total cost as cash. This is the down payment. They get a mortgage for the rest of the cost.

The down payment must be at least 5% of the total cost of the house. For example, a house costs \$150,000. At 5% the down payment is \$7500 and the mortgage is \$142,500.

**Interest** – the money people pay to borrow the money. Interest rates vary a lot.

**Principle** – the cost of the house.

**Fees** – money people pay to lawyers and the real estate agent.

When people make mortgage payments, they pay both the interest and the principle.

People usually pay a mortgage over many years. Some people choose to make payments every month and some choose to make payments every two weeks.



Look at this example from a Royal Bank booklet called 'Your Guide to Understanding Residential Mortgages'. These people have a \$100,000 mortgage at 7% interest.

Compare the cost of paying monthly with paying every two weeks.

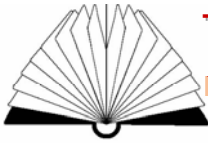
Payment	Amount	Length of Time	Total Interest Paid
Monthly	\$700.42	25.0 years	\$ 110,123.00
Every two weeks	\$323.27	20.8 years	\$ 88,654.00

If they pay every two weeks, will it take more time or less time to pay off the mortgage?

\_\_\_\_\_

If they pay every 2 weeks, how much less interest would they pay?

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



## A household budget Learning Activity 10

One handout

Learners look at two scenarios. The September Scenario is Martha's income and expenses for September. The October Scenario is the Thom family's income and expenses for October.

Learners use basic math skills and calculators to complete this challenging life skills activity.

- i) Walk learners through the September Scenario so they become familiar with the vocabulary and how the budget page is organized. The September budget page is filled in, except for total income and expenses.
- ii) Break into small groups. Each group adds up the total income and expenses for September.
- iii) Each group then fills in income and expenses for the October Scenario. Bring the small groups together to discuss questions in the handout.
- iv) Ask each group to make up a different scenario. Exchange the scenarios among the groups and do a budget page for each. Discuss how people can better manage their budget.
- v) Encourage learners to use a blank budget sheet to keep track of their own personal household budget for one or two months.



## A household budget Learning Activity 10

In this activity you look at Martha's **income** and **expenses** for September and the Thom family's **income** and **expenses** for October.

What is income? \_\_\_\_\_

\_\_\_\_\_

What are expenses? \_\_\_\_\_

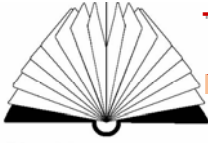
\_\_\_\_\_

Work in a group and use the budget table and your calculators. Find out if Martha and the Thom family spend all their money or if they have money left over at the end of the month.

Compare what you find out with what other groups find out.

The September Scenario has information about Martha's income and expenses for September. We filled in the budget sheet. You have to add up the total income and total expenses.

The October Scenario has information about the Thom family's income and expenses for October. You need to fill in the budget sheet for the Thom family and add up the total income and total expenses.



### September Scenario:

Martha is a single mom and she doesn't have a lot of money. She decided to keep track of her income and expenses to find out where she spends her money.

Here is a list of Martha's income and expenses. We recorded them on the budget sheet on the next page. Add up her total income and total expenses.

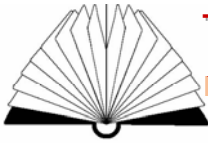
#### Martha's income:

- ✓ Pay from work: \$818.00 on Sept. 2, \$810.87 on Sept. 16, \$789.45 on Sept. 30
- ✓ GST cheque for \$95.98

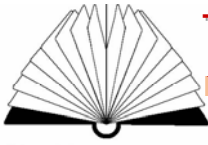
#### Martha's expenses

- ✓ Babysitter, each weekday for eight hours at \$4.50 per hour
- ✓ Rent \$480 per month includes heat and water
- ✓ Phone bill \$32.97 and internet \$16.00
- ✓ Electricity \$102.54
- ✓ Car payment \$125.00, \$43.00 every two weeks to fill up with gas, winter tune-up \$60.00
- ✓ Groceries for the month \$598.80
- ✓ Cough medicine \$13.95
- ✓ Kitchen curtains \$16.82
- ✓ Videos – rented two movies at \$2.50 each and bought three movies at \$8.99 each





Budget: Year 2005		Month	September
Item	Income	Expenses	
Pay Sept. 2, 16, and 30	\$2418.32		
GST cheque	\$95.98		
Babysitter		\$792.00	
Rent		\$480.00	
Phone and internet		\$48.97	
Electricity		\$102.54	
Car payment, gas, tuneup		\$271.00	
Groceries		\$598.80	
Medicine		\$13.95	
Curtains		\$16.82	
Videos		\$31.97	
<b>Total</b>	\$2514.30	\$2356.05	



### October Scenario

Michael Thom works for the community. He is married to Lucy and they have a baby girl. Lucy stays home with their child and she makes mukluks and beaded earrings to earn some money.

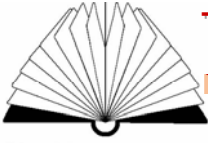
Here is a list of the Thom family's income and expenses. Fill in the blank budget sheet for them. List the items and put the numbers under the income column or the expenses column. Add up the income and the expenses. What is the difference?

#### Income

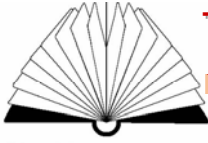
- ✓ Michael's pay: \$959.00 Oct. 14 and \$972.00 Oct. 28
- ✓ Lucy's income from mukluks and earrings: \$225.00

#### Expenses

- ✓ Mortgage \$420.00 per month
- ✓ Water bill \$30.00 per month
- ✓ Heat \$190.00
- ✓ Phone \$96.00 includes an extra line for the computer
- ✓ Electricity 134.00
- ✓ Car payment \$125.00 a month, car insurance \$229.00, and licence renewal \$36.00, gas \$37.00 and \$43.00
- ✓ Groceries \$690
- ✓ Diapers – five packages at \$11.80 each. Special formula – one can a day at \$2.99 per can
- ✓ Bingo money \$45.00



Budget: Year	Month	
Item	Income	Expenses



**Discuss these questions:**

- ✓ Did Martha have any money left over at the end of September?
- ✓ What was different about Martha's income for September?
- ✓ How could Martha manage her budget better?
- ✓ Did the Thoms have any money left over at the end of October?
- ✓ How could the Thoms manage their budget better?

Now make up your own scenarios for one month. Use the information to fill in another budget sheet.

Use a blank budget sheet to keep track of your own income and expenses for a month or two.







## Resources

- ✓ [www.cmhc.ca/en/index.cfm](http://www.cmhc.ca/en/index.cfm)  
Canada Mortgage and Housing Corporation website. Includes information about mortgages, first time buying a house, different housing programs, and other resources.
- ✓ [www.canadamortgages.ca](http://www.canadamortgages.ca)  
This is the website of a mortgage brokering company. Includes some interactive resources to compare renting to buying, and to calculate mortgage amounts and payments.
- ✓ **Canadian banks all have information about residential mortgages.** Use these websites or search the internet with the name of the bank and 'residential mortgages'.

TD Trust

<http://www.tdcanadatrust.com/mortgages/numbers.jsp>

Royal Bank

[www.rbcroyalbank.com/products/mortgages/index.html](http://www.rbcroyalbank.com/products/mortgages/index.html)

CIBC

[www.cibc.com/ca/mortgages/faq.html](http://www.cibc.com/ca/mortgages/faq.html)

Scotia Bank

[www.scotiabank.com/cda/content/0,,CID8216\\_LIDen,00.html](http://www.scotiabank.com/cda/content/0,,CID8216_LIDen,00.html)

BMO Bank of Montreal

[www4.bmo.com/personal/0,4518,35649\\_36691,00.html](http://www4.bmo.com/personal/0,4518,35649_36691,00.html)