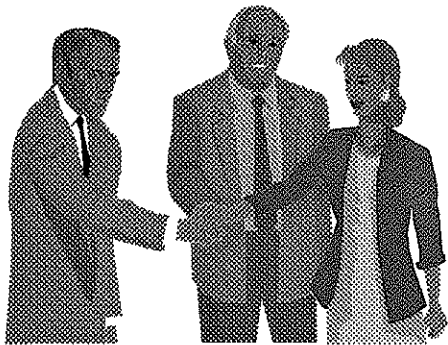
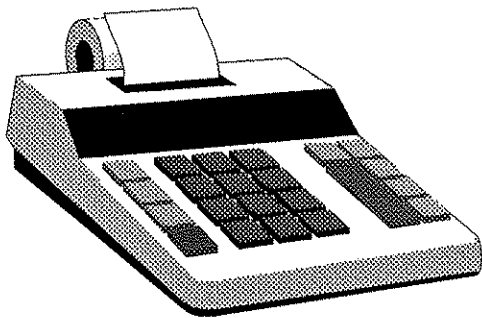


# Consumer Mathematics 10



**By Gail Huber**

---

2000

S105.21

Teaching Materials  
*from the*  
Stewart Resources Centre



To meet the need for instructional resources that complement new curricula, the Saskatchewan Teachers' Federation sponsored a professional development session and a unit writing workshop for teachers.

The workshops were facilitated by the Saskatchewan Professional Development Unit and teachers were assisted in their efforts to polish their units by staff from SPDU and the Stewart Resources Centre.

## Table of Contents

Planning Guide and Record of Unit Study.....	1
Objectives.....	2
Common Essential Learnings .....	4
Instructional Strategies .....	5
Concept Map .....	6
Student Copy of Evaluation Overview.....	7
Motivational Set.....	8
Savings Activity.....	9
Net Pay Activities.....	13
Budgeting .....	15
Calculating Gross Weekly Wages.....	24
Commission Assignment .....	28
Net Pay Assignment .....	33
Bibliography .....	43

## Planning Guide and Record of Unit Study

**Subject and Grade Level:** Mathematics 10

**Duration of Unit:** 1 month

**Number of Library Periods:** 6

**Number of Classes:** 10

**Topic:** Consumer Math

**Subtopics:**

1. Pay
2. Budgeting

### **Foundational Objectives:**

- To apply simple mathematics to assist in the calculation and estimation of income and expenses and to develop a budget to guide current and future planning.
- To communicate a summary of financial projections in appropriate reports, tables and graphs.

## **Objectives**

### **KNOWLEDGE:**

- To calculate weekly gross wages involving regular pay, overtime pay, and piecework earnings
- To calculate earnings for straight commission, or base wage plus commission
- To determine the difference between gross pay and net pay
- To calculate weekly, monthly, and yearly net pay
- To define and explain the purpose of a budget
- To determine and calculate monthly fixed expenditures
- To investigate the guidelines in developing a budget
- To plan a budget based on percentages allotted to various categories as suggested by financial institutions
- To calculate the portion of total income spent on each category using percents
- To draw graphs (including circle graphs) of budget figures using appropriate software
- To calculate the actual amount of money to be spent on each category using predetermined percentages
- To adjust a budget to changes in expenses.

### **SKILLS:**

- To effectively research to meet the needs in mathematics

### **ATTITUDES:**

- To develop a positive attitude toward the use of money
- To work cooperatively in a group

---

Source: *Mathematics 10, 20 : A Curriculum Guide for the Secondary Level*. Regina : Saskatchewan Education, 1995, p.142.

## **CONTENT**

1. Introduction

2. Gross Pay

Net Pay

3. Budget Plan

- Definition of Budget
  
- Budget Plan
  - % of income in specific categories
  - graph drawings
  - budget adjustments

## **ASSIGNMENTS**

- Group question sheet
- Portfolio assignments
- Newspaper activities with collection of work in scrapbook
- Portfolio assignments
- Scrapbook
  
- Jigsaw activity analyzing “Budgeting” booklet from Royal Bank
  
- Research assignment

## **ASSESSMENT**

- Checklist for completion
- Portfolio work
- Newspaper record book
  
  
  
  
  
- Participation
- Presentations
  
  
  
  
  
- Worksheet for portfolio

## **Common Essential Learnings**

### **Introductory Unit**

Communication  
Technological Literacy  
Numeracy

### **Gross Pay**

Numeracy  
Critical and Creative Thinking  
Independent Learning  
Communication  
Personal and Social Values and Skills

### **Net Pay**

Numeracy  
Critical and Creative Thinking

### **Budgets (Jigsawing)**

Communication, Critical and Creative Thinking  
Independent Learning, Personal and Social Values and Skills  
Numeracy

### **Budget (Constructing)**

Communication  
Critical and Creative Thinking  
Technological Literacy  
Numeracy  
Personal and Social Values and Skills  
Independent Learning

### **Culminating Unit**

Personal and Social Values and Skills  
Communication  
Numeracy  
Critical and Creative Thinking

## **Instructional Strategies**

### **Introductory Unit**

Direct Instruction  
Independent Study

### **Gross Pay**

Interactive Instruction  
Independent Study  
Direct Instruction

### **Net Pay**

Direct Instruction  
Independent Study

### **Budgets (Jigsaw)**

Interactive Instruction

### **Budgets (Constructing)**

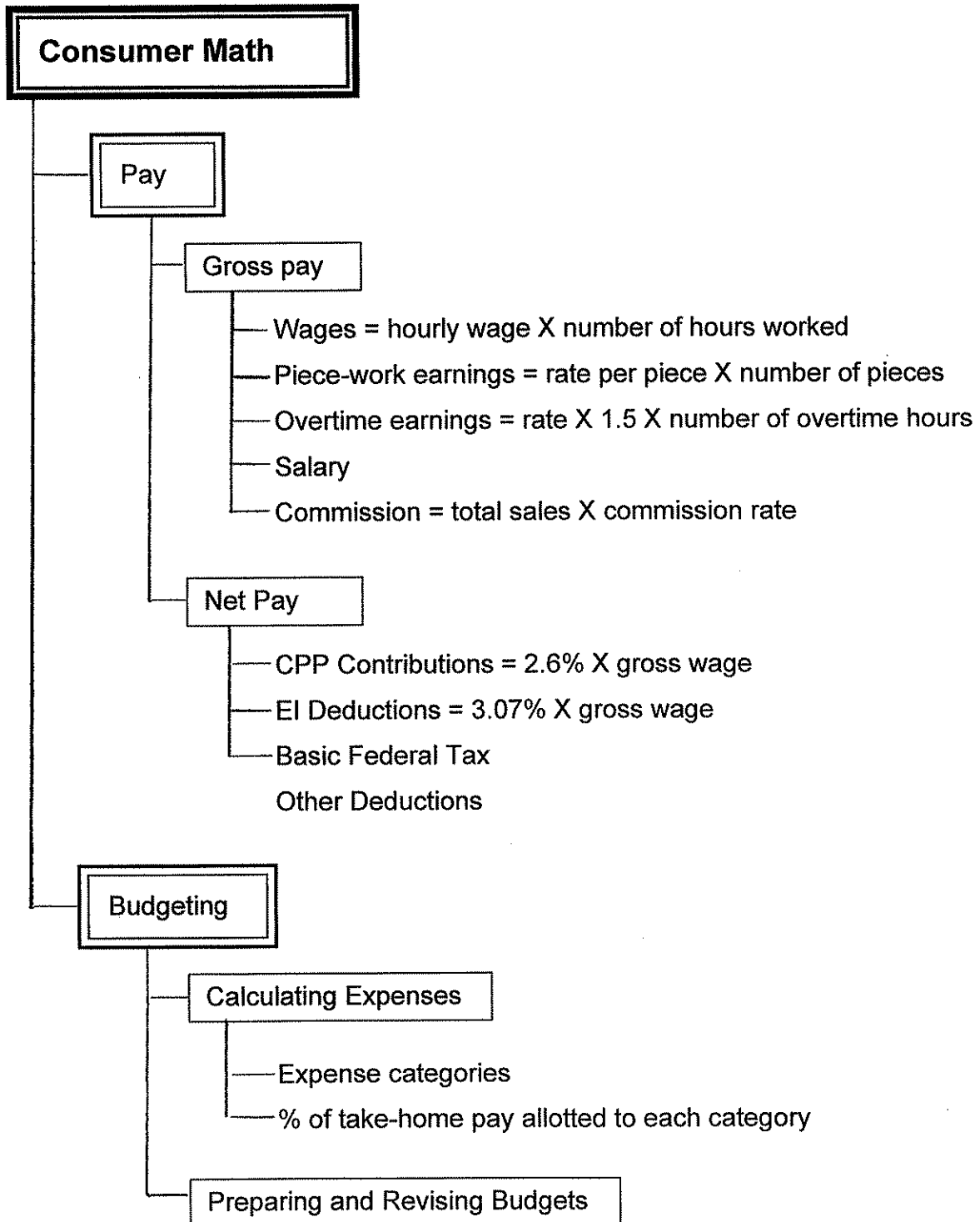
Experiential Learning  
Independent Study  
Indirect Instruction  
Interactive Instruction

### **Culminating Lesson**

Indirect Instruction  
Interactive Instruction



# Concept Map Grade 10 Math



## Student Copy of Evaluation of Consumer Math Unit

### Overall Evaluation of Unit

1. Introductory Activity Group Question Sheet	5%
2. Portfolio Assignments Completion of 10 Consumer Math Assignments	20%
3. Jigsaw Activity on Budgeting	10%
4. Scrapbook	5%
5. Budget Report	60%
	<hr/>
	100%

## **Teacher Strategies and Activities Introductory Lesson / Motivational Set**

**When?**

**Where?**

Classroom

**What?**

- Video – "Savings" from *Financial Fitness* Collection (Credit Union)
- Booklets for each student regarding budgeting from Credit Union, Royal Bank, and Bank of Montreal.

### **Classroom Teacher Responsibility:**

- Show video
- Conduct discussions regarding budgeting and saving
- Form groups for students to answer related questions re: budgeting and saving
- Compile question sheet

### **Teacher-Librarian Responsibility:**

- Contact banking institutions for information on budgeting and saving

### **Resources Requires:**

- Savings video from Credit Union

## Savings

based on "Savings" video and booklet – Credit Union

1. Is it very important to save? Complete questionnaire on page 4 of "Savings" pamphlet and rate whether savings have become a priority to you?
2. State the three points to follow when adopting a simple and effective savings strategy.
3. How do you mathematically calculate a reserve for emergencies?
4. Define the following:
  - assets
  - liabilities
  - net worth
5. Differentiate between simple interest and compound interest.
6. Using the table on page 5 of "Savings" booklet, complete the following:

If you deposit \$1000.00 every year and annually calculate the interest:

Interest Rate	Time	Amount Accumulated
7 ½ %	15a	
9 %	20a	
11 ½ %	25a	
12 %	10a	

## Teacher Strategies and Activities Lesson Plans - Gross Pay

Content Area:                      Knowledge \_\_\_ x \_\_\_                      Skills \_\_\_ x \_\_\_  
   Attitude     \_\_\_ x \_\_\_

### Objective:

- To calculate weekly gross wages involving regular pay, overtime pay and piecework earnings.
- To calculate earnings for straight commission or base wage plus commission.

### Activity:

1. Informational worksheet based on Activities 40-48 of *That's Life!*
2. Investigations of jobs involving different wages and earnings in newspaper.
3. Lecture on actual calculations of earnings.

### Media Research and/or Study Skills:

- Using a newspaper, the table of contents, newspaper sections and especially the classified ads.

Number of Students: 23

### Abilities, Interests and Special Needs of Students:

- Students with low reading levels

Location: Classroom

### Resources:

- *That's Life!* - from the StarPhoenix
  - A consumer activity and teaching package (Activities 40-48)
- *Windows to Mathematics*
  - Chapter 12, Pages 570-586

### Minimum Expectations:

- Completion of Scrapbook
- Worksheets attempted

### Student Evaluation:

- Scrapbook
- Portfolio work

### Classroom Teacher Responsibility:

- Introduce calculations and make worksheets

### Teacher-Librarian Responsibility:

- Order learning package from the StarPhoenix and newspapers when needed.

## Gross Pay Assignment

### *That's Life! Activity 42*

#### **IF THE SHOE FITS...**

people choose careers for many different reasons. Scan the classified ad pages and clip out job positions that fit the following categories:

- Requires nothing beyond a high school diploma
- Requires some kind of special training
- Requires close integrated team-work on a day-to-day basis
- Lets you be, within limits, your own boss

Share your clippings with classmates and explain which of the above ads is most suitable to you and why.

Ask your classmates whether they agree or disagree with you.

*That's Life!*. The Star Phoenix Educational Services. Saskatoon. 1991.

## **Gross Pay Newspaper Assignment**

Research the business and classified ads sections of the newspaper. Find a job where you would be paid:

1. A salary
2. An hourly wage
3. A straight commission
4. A salary plus commission
5. An hourly wage plus commission
6. By piece work

From the figures you have acquired on your ads, calculate the yearly, monthly and weekly gross wages available for each job.

If not enough information is provided from the advertisements, you are expected to choose a reasonable projection of values suitable for that job.

## Teacher Strategies and Activities Lesson Plans - Net Pay

Content Area:            Knowledge \_\_ x \_\_            Skills \_\_\_\_  
   Attitude        \_\_\_\_\_

### Objective:

- To determine the difference between net pay and gross pay.
- To calculate weekly, monthly, and yearly net pay.

### Activity:

1. "Pay Day In Bruno Math Class"
  - to be able to read a pay stub
2. Discussion of deductions
3. Lecture on calculation of net pay
4. Calculation of deductions from jobs of their choice

**Number of Students:** 23

### Abilities, Interests and Special Needs of Students:

- Students with low reading and math ability

**Location:** Classroom

### Resources:

- *Windows to Math 10*
- *Mathematics 10 - Student Resource Book* (Saskatoon Catholic Schools)
- *Mathematics 10 - Supplementary Materials* (Wood River Board of Education)

### Minimum Expectations:

- Worksheets attempted
- Completion of scrapbook

### Student Evaluation:

- Scrapbook and portfolio work

### Classroom Teacher Responsibility:

- Prepare pay stub, lecture and explanation of deductions

### Teacher-Librarian Responsibility:

- Provide newspapers for project



Bruno Student Employment  
 Bruno School  
 Bruno, SK SOK OSO

2001-91

098

DATE April 2, 1999

\$2369.15

PAY TO  
 THE ORDER OF

-----Two thousand three hundred and sixty-nine----- 15/100 DOLLARS



BRUNO SAVINGS AND CREDIT UNION LIMITED  
 P.O. BOX 158 PH. 369-2901  
 BRUNO, SASK. SOK OSO

MEMO

MP

Income		Regular Pay		Overtime	
	Hours	Amount	Hours	Amount	Time and One-half
Week 1	36	769.32			
Week 2	40	854.80	8	256.44	
Week 3	36	769.32			
Week 4	40	854.80	4	128.22	
<b>Deductions</b>					
Tax	712.63	CPP	89.46	UI	110.53
		Pension	286.00	Union Dues	65.13
<b>Regular Earnings</b>		3248.24		<b>Overtime Earnings</b>	
		384.66		<b>Gross Pay</b>	
		3632.90		<b>Deductions</b>	
		1263.75		<b>Net Pay</b>	
		2369.15			

## Teacher Strategies and Activities Lesson Plan - Budgets

**Content Area:** Knowledge \_\_\_ x \_\_\_ Skills \_\_\_\_\_  
Attitude \_\_\_\_\_

### **Objective:**

- To determine and explain the purposes of a budget.

### **Activity:**

1. Using the booklet, "Budgeting" the students will jigsaw so as to understand information from booklet.

### **Media Research and/or Study Skills:**

- reading
- listening
- presenting

**Number of Students:** 22

### **Abilities, Interests and Special Needs of Students:**

- low reading level students and learning disabled

**Location:** Classroom

### **Resources:**

- "Budgeting for a Better Lifetime" - Royal Bank of Canada, 1996

### **Minimum Expectations:**

- Participation

### **Student Evaluation:**

- Checklist noting participation, involvement and skills

### **Classroom Teacher Responsibility:**

- Facilitate activity

### **Teacher-Librarian Responsibility:**

- Order material from Royal Bank and make arrangements to have it available to the teacher

## **Jigsawing Assignment**

*Budgeting for a Better Lifetime* Royal Bank of Canada, 1996

1. There will be five cooperative groups where the material from the book will be divided. Members of the cooperative groups will be given a certain shape (circle, triangle, square, trapezoid) to form expert groups.
2. The expert groups will study and prepare the following:

### **Content Headings:**

<b>Circles</b>	<b>Budget</b> (pp.1-13) <ul style="list-style-type: none"><li>• Why Budget?</li><li>• Defining Your Goals</li><li>• Understanding Your Spending Habits</li></ul>
<b>Triangles</b>	<b>Where does your money Go</b> (pp. 14-24) <ul style="list-style-type: none"><li>• Knowing Where Your Money Goes</li><li>• Getting Everyone Into the Act</li><li>• Organizing Your Paperwork</li></ul>
<b>Squares</b>	<b>Net Worth</b> (pp. 25-43) <ul style="list-style-type: none"><li>• Evaluating Your Net Worth</li><li>• Setting Your Priorities</li><li>• Budgeting Your Monthly Cash Flow</li></ul>
<b>Trapezoids</b>	<b>Income vs Expenses</b> (pp. 44-54) <ul style="list-style-type: none"><li>• Tips on Increasing Your Income and Reducing Your Expenses</li><li>• About Credit</li><li>• Getting Back on Track</li></ul>

3. On returning to cooperative group, experts will teach the rest of the members of their group what they learned.

## The Student Jigsaw Budgeting Activity Assessment Rubric

10%

### I. **Group and Collaborative Learning** (5 points)

#### 4.25 - 5 Exceptional Achievement

- the student always interacted in the group
- the student enthusiastically participated in discussions
- the student reflects awareness of others' views and opinions

#### 3.25 - 4 Superior Achievement

- the student almost always interacts in the group
- the student almost always participates in discussion
- the student almost always reflects awareness of others' views and opinions

#### 2.25 - 3 Commendable Achievement

- the student sometimes interacts in the group
- the student sometimes participates in discussions
- the student sometimes reflects awareness of others' views and opinions

#### 0 - 2 Rudimentary Achievement

- the student does not react in the group
- the student does not participate in discussions
- the student does not reflect awareness of others' views and opinions

### II. **Communication** (5 points)

#### 3.5 - 5 Clear, Complete Communication: The student's explanation gives a clear coherent, unambiguous, and elegant explanation

- the student communicates his/her thinking effectively to the audience
- the student speaks clearly, without hesitation
- the student presents strong supporting arguments

#### 1.5 - 3 Partial or Incomplete Communication: The student's explanation is unclear, inconsistent or not complete

- the student uses terminology incorrectly and inconsistently
- the student sometimes speaks clearly
- the student is not very logical in his/her arguments

#### 0 - 1 Limited or Lack of Communication: The student's explanation is not understandable or not present

- the student does not use or misuses appropriate terminology
- the student does not speak clearly
- the student does not understand what he/she is saying

## Teacher Strategies and Activities Lesson Plans

**Content Area:**                      **Knowledge** \_\_\_ x \_\_\_                      **Skills** \_\_\_ x \_\_\_  
   **Attitude**     \_\_\_ x \_\_\_

**Objective:**

- To plan a budget based on percentages allotted
- To draw graphs of budget figures
- To calculate actual amount of money to be spent
- To adjust a budget to meet individual needs

**Activity:**

1. The students will prepare a budget for themselves. They will receive a specific salary, choose a suitable job for that salary, calculate gross pay, deductions, and net pay for a month.

**Media Research and/or Study Skills:**

- Research different occupations and salaries associated with them.
- Use of Internet, use of tables to gather information

**Number of Students:** 22

**Abilities, Interests and Special Needs of Students:**

- Learning disabled students

**Location:**

- Resource Centre, Computer Room and Classroom

**Resources:**

- Internet, Mentors (Insurance Agents, Bill Payers, etc), StarPhoenix, Auto Trader

**Minimum Expectations:**

- Completion of assignment

**Student Evaluation:**

- Based on completion of Part 1 and 2 of assignment and evaluation procedure

**Classroom Teacher Responsibility:**

- Explain budget assignment

**Teacher-Librarian Responsibility:**

- Schedule library time and assist with Internet searches

# Consumer Math Assignment Grade 10

## Part 1

- a) Using Claris Works, create a one page word processing document that contains:
- 1) A 3-column spreadsheet listing:
    - i. the categories of your current expenses,
    - ii. the amount of money you spend in each category per month, and
    - iii. the percent allocated to each category, and
  - 2) A pie graph representing your personal expenses.
- b) Using the amortization program you learned in Information Processing class, create a spread sheet illustrating the cost for a loan for your vehicle, and / or home. Enter principal, term of the loan and interest rate (in decimal form). You will show the monthly payments, overall interest and number of payments. Highlight the important data.

## Part 2

### 1. Choose a Job

Once you are given your annual salary, choose a job that interests you and that will fit into your pay scale.

Annual salary: \_\_\_\_\_

Calculate your gross income, your deductions, and your net income for one month.

### 2. Budget Your Income

Based on this information decide on the percentage value you will spend in each of the following expense categories, as well as the maximum total amount you can spend in each category: (Note: You can allot more money to the savings category, only providing that your budgeting remains realistic.)

Expenditure	Percent for Category	Maximum
Housing and Utilities:	_____	_____
Transportation:	_____	_____
Food:	_____	_____
Personal:	_____	_____
Miscellaneous:	_____	_____
Savings:	_____	_____

You must budget these percentages within the guidelines set by the Credit Union (pg. 596) *Of Windows to Math 10*. Note that housing and utilities are combined; as well as personal, health and miscellaneous. So the combined total must not exceed those listed.

### 3. **Calculating Expenses** (SHOW ALL WORK)

#### Rent / Mortgage payments

- Include all documentation in your report (pictures, ad, prices)
- Calculate the monthly payment.

#### Electricity / Heating / Telephone

- Survey three people to find out their average monthly costs.
- Either average their costs or determine where your house's expenses would fit relative to theirs (i.e. size, condition)

#### Cable TV

- List the services included in your plan.

#### Insurance

- List the services included in your plan.

#### Car payments

- Include all documentation in your report.
- Calculate the monthly payment.

#### Gas

- Survey three people to find out their average monthly costs. Either average their costs or determine where your car's gas mileage and your amount of driving would fit relative to theirs.

#### Maintenance and Repairs / Tires

- Unless your car is under warranty, assume at least two oil changes and two tune-ups per year will be needed. You can list any other expenses you may need in a year.
- List the price of the repair and where the quote came from.
- Calculate the monthly cost.

#### Insurance / Registration / License

- Show your calculations to determine your monthly cost for each expense.
- For insurance, list the name of your plan and the coverage.

#### Groceries

- Plan a meal for one week.
- Make a grocery list.
- Refer to the field trip for prices.
- Use this one week as an average to calculate the amount for one month.

The report will include:

- A cover page (with title, name, date, class)
- Part 1 (one page)
- Summary worksheet
- Pie graph of Part 2
- Calculations, documentation, price lists, menu plan

Evaluation:

Correct calculations	50%
Neatness	10%
Organization	10%
Realistic budgeting	10%
Overall impact	10%
On task, behaviour during class time	<u>10%</u>
	<b>100%</b>



## Income and Expenses

Job Title: \_\_\_\_\_  
 Gross Income for One Month: \_\_\_\_\_  
 CPP: \_\_\_\_\_  
 UI: \_\_\_\_\_  
 Income Tax: \_\_\_\_\_  
 Net Income for One Month: \_\_\_\_\_

<b>Home Expenses:</b>	( ____%)	<b>Personal Expenses:</b>	( ____%)
Rent	_____	Life Insurance	_____
Mortgage payments	_____	Clothing	_____
Electricity	_____	Medical/Dental costs	_____
Heating	_____	Petty Cash	_____
Maintenance & Repairs	_____	Personal Services (e.g. hair styling)	_____
Telephone	_____	Gifts	_____
Cable TV	_____	Total	\$ _____
Insurance	_____		
Taxes	_____		
Furniture	_____		
Total	\$ _____		

<b>Transportation:</b>	( ____%)	<b>Leisure Time:</b>	( ____%)
Car Payments	_____	Holidays	_____
Gas	_____	Sports	_____
Maintenance & Repairs	_____	Movies, Theater, etc.	_____
Tires	_____	Books, Magazines	_____
Insurance	_____	Total	\$ _____
Registration	_____		
License	_____		
Public Transportation	_____		
Total	\$ _____		

<b>Food:</b>	( ____%)	<b>Savings:</b>	( ____%)
Groceries	_____	Emergency Savings (per installment)	_____
Restaurants	_____	Substantial Savings (investments)	_____
Total	\$ _____	Total	\$ _____

**Total Monthly Expenses \$ \_\_\_\_\_**

## Examples of Portfolio Assignments

You have been looking through the want ads for a new career. You've narrowed it down to the following four jobs. Due to your excellent interview skills you have been offered a position at all four companies. In trying to make your decision you've realized that money is the most important aspect in your life at the moment. If you were to base your decision solely on the job which was to pay the most money, which job would you choose? (Assume that you will be paid the lowest salary if more than one is indicated.)



Get on the information super highway! Sales representatives required for one of Canada's fastest growing industries Satellite Television. Earn \$700-\$1200/wk. Calling on set appointments. Complete training provided, travel and vehicle required.

For complete information contact Sheldon at 931-7532 or fax 1-800-483-5851.

### **PRIORITY**

We require dedicated professional owner/operators to join our team.

**We require:**

— 2-Highway tandem tractors. (10 yr. or newer)

**Benefits:**

— 10,000 to 14,000 miles/month  
— 0.90 and 0.96 cents per running mile. 48 ft. vans provided.  
— Ontario to B.C. only.

**We require:**

— 2-City/Saskatchewan Tandem Tractors

**Benefits:**

— 60% city work. 40% Saskatchewan Highway.  
— Earn \$5,000 — \$8,000 per month (depending on ratio between City and Highway work).  
— Home every night.

Apply in person to 2462 Dudley Street or phone Stacey at 382-1980 for more information.

### Brandon University Faculty of Science Department of Nursing and Health Studies **Assistant Professors**

#### Bachelor of Science in Psychiatric Nursing

The Bachelor of Science in Psychiatric Nursing is a new initiative, established in September, 1995. Graduates are eligible to write qualifying examinations for registrations as a Psychiatric Nurse. It is expected that approximately 200 students will be enrolled once the program is fully operational.

The Department of Nursing and Health Studies is recruiting faculty to assume four challenging positions in this new program. Successful candidates will be responsible for: development and delivery of a series of related courses; facilitation of labs and clinical practice; participation in University and professional; activities; and research and scholarly work. The positions commence in the spring and summer of 1996.

**Qualifications:**

1. A Doctorate in a discipline relevant to Psychiatric Nursing, for example Mental Health Nursing, Nursing, Psychology, sociology, Social Work. A Master's degree and relevant experience will be considered.
2. Eligibility for active-practicing registration with the Registered Psychiatric Nurses Association of Manitoba.
3. University teaching, research, and/or clinical experience in mental health.

Applications will be accepted until March 15, 1996. All positions are probationary, tenure track appointments, rank and salary commensurate with qualifications. (Assistant Professor \$37,798-\$56,856 under review).

In accordance with Canadian Immigration Regulations, this advertisement is directed primarily to Canadian Citizens and permanent residents. Both women and men are encouraged to apply.

Send curriculum vitae and three references to:

Chair, Department of Nursing and Health Studies  
Brandon University  
270 Eighteenth Street  
Brandon, Manitoba R7A 6A9  
Fax: (204) 726-5793

### 100 OPENINGS \$10.05 To Start!

Local branch of international company has several full & part time openings. No experience necessary. Willing to train. No door to door or telemarketing involved. Advancement opportunities available. Call now!

## Calculating Gross Weekly Wages

This is a hand-in assignment. Do the calculations on a separate piece of paper. Show your equations and calculations.

### A. Salary

1. Sally's job pays her \$1,500.00 per month. What is her gross weekly wage?
2. Jim grosses \$27,000.00 a year. What is his gross weekly wage?

### B. Hourly

(A regular work week is 40 hours. Overtime pay is time and one-half).

1. Sue drives a truck for \$8.75 an hour. If she worked 40 hours, what would be her gross earnings for one week?
2. Mark is a word processor operator. He makes \$11.50 an hour. Determine his earnings for a week if he worked 52 hours.

### C. Piece Work

1. Gillian gets paid 17 cents a tree for tree planting up north. In one week she planted 2437 trees. What is her wage?
2. A seamstress is paid \$9.55 for every pair of pants made. How many pants would have to be made to receive \$525.00 a week?

### D. Straight Commission

1. A real estate agent earns 2.4% on the sale of a house priced at \$89,950.00. What is her take home pay that day?
2. A salesperson sells \$5780.00 worth of merchandise in one day. From working on commission his gross pay for that day was \$179.18. What is his rate of commission?

### E. Salary Plus Commission

1. Dave earns \$150.00 per week plus 38% commission. He sold \$4175.68 in the month of February. What is his gross monthly earning for February?
2. Mary earns \$28,000.00 a year. One week she grossed \$658.00. She had sold \$1673.19 worth of merchandise. What is her rate of commission?

### F. Hourly Wage Plus Commission

1. Julie is a sales clerk at a bicycle shop. She is paid \$6.25 per hour plus she is given a commission of 8% of sales. In one week she worked 30 hours and her sales were \$2319.75. What is her gross weekly earnings for that week?
2. Sam is paid \$6.45 per hour plus 6% of sales. If he worked 37.5 hours in one week, what would his sales need to be for him to have a gross earning of \$400.00?

Calculate gross earnings for one week given the hours worked and the hourly rate. A regular work week is 40 hours.

Examples: (overtime pays double)

1.	<b>Job:</b>	Truck Driver
	<b>Hours Worked:</b>	40
	<b>Hourly Rate:</b>	9.75

2.	<b>Job:</b>	Wordprocessing Operator
	<b>Hours Worked:</b>	35.5
	<b>Hourly Rate:</b>	11.50

3.	<b>Job:</b>	Landscape Labourer
	<b>Hours Worked:</b>	51
	<b>Hourly Rate:</b>	10.00

(Examples: overtime pays time and one half)

4.	<b>Job:</b>	Auto Mechanic
	<b>Hours Worked:</b>	60
	<b>Hourly Rate:</b>	40.00

5.	<b>Job:</b>	Plumber
	<b>Hours Worked:</b>	41
	<b>Hourly Rate:</b>	37.50

6.	<b>Job:</b>	Tutor
	<b>Hours Worked:</b>	17
	<b>Hourly Rate:</b>	35.00

Source: Morgan, Roger and Walter Wood. *Mathematics 10 - Supplementary Materials*. Lafleche, SK: Wood River Board of Education, 1995.

## **Class Activity**

Considerations when job hunting: wages, hours, type of work, location, distance from work, promotion, responsibility, job security, unemployment, experience.

## Earning Commission

Define what it is to have commission earnings.

Discuss the implications of working strictly on a commission basis.

Would you rather work on a straight commission basis or a salary plus commission basis? Why?

How do you calculate commission?

What jobs can you think of involve commission and what are their rates of commission?

1. State the commission earned in each case:

AMOUNT OF SALES (\$)	RATE OF COMMISSION (%)	COMMISSION (\$)
500.00	10	
2000.00	40	
1500.00	5	
3000.00	8	
1453.00	15	
7216.50	2.5	
898.20	18	
17,641.00	1.9	
2843.92	7.6	

2. Calculate each value missing from the table.

RATE OF COMMISSION (%)	AMOUNT OF SALES (\$)	COMMISSION (\$)
4	1673.19	
10.5	3621.95	
27		412.19
	4275.00	363.38
18		208.12
	3584.32	1505.41

3. A real estate agent earns 2.4% on the sale of a house priced at \$89,950. Calculate the amount of the commission.

4. Sammy is a sales clerk in a bicycle shop. He's paid \$6.25/hour for a 37.5 hour week, plus a commission of 6% of his sales for the week. In one week Sammy's sales were \$2319.75.

Calculate Sammy's total earnings for the week.

What would Sammy's sales for the week have to be for him to earn \$400 in one week?



5. Julie is a beauty consultant for Pretty People Cosmetics. She is paid \$150/week plus a commission of 38% of sales. Her sales for one 4-week interval are shown in the table. How much did she earn in that period of time?

<b>Week Number</b>	1	2	3	4
<b>Amount of Sales (\$)</b>	785	472	1052	976

6. Tatanka sells fertilizer. He is paid \$350/week, plus a step commission based on the value of the fertilizer he sells. He receives 5% on sales up to \$1000, 10% on sales between \$1000 and \$2000, and 20% on sales over \$2000. Calculate Tatanka's total earnings for 2 weeks with sales as shown in the table.

<b>Week Number</b>	1	2
<b>Amount of Sales (\$)</b>	1680	2250

7. Step commission on sales is calculated as follows:

- 8% on the first \$1000
- 12% on the next \$2000
- 20% on sales above \$3000

Calculate the commission if sales are:

\$970.00

\$1500.00

\$2760.42

\$3000.00

\$4563.81

8. You are offered two sales positions. One offers \$500 per month plus 3% commission on all sales over \$1000 while the other offers a straight commission of 10%. What amount of sales would you need in one month to earn more selling on straight commission? Which job would you take? Why?

## Net Pay

When you get a regular job your net pay (take-home pay) will be less than your gross pay. This difference is due to deductions. Federal and Provincial laws require that your employer make certain deductions from your cheque, for the government and other reasons.

Types of deductions: Income Tax, Canada Pension Plan, Employment Insurance, Health Insurance, Union Dues, Staff Fees.

Teresa's pay stub might look like this.

Statement of Earnings	
Name: <u>Teresa LeBlanc</u>	Date: <u>Sept. 28 19 84</u>
Regular Earnings	\$ <u>230.00</u>
Other Earnings	\$ <u>-----</u>
Total Earnings	\$ <u>230.00</u>
Deductions:	
Canada Pension Plan	\$ <u>3.52</u>
Employment Insurance	\$ <u>5.29</u>
Income Tax	\$ <u>21.25</u>
Health Insurance	\$ _____
_____	\$ _____
_____	\$ _____
_____	\$ _____
_____	\$ _____
Total Deductions:	\$ <u>30.06</u>
Net Payment:	\$ <u>199.94</u>

### **Example 1**

Arthur earns \$412/week and has net claim code 2. In addition to weekly deductions for CPP, EI, and income tax, he has other deductions as shown.

- Charities \$ 3.00
- Health insurance \$ 1.90
- Union dues \$ 2.85

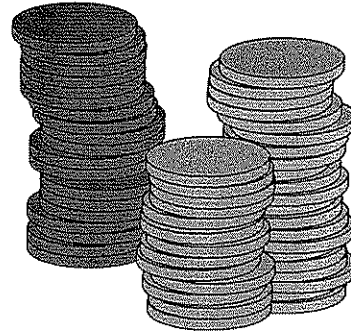
Calculate Arthur's take-home pay.

From tables,

- CPP deduction \$ 6.74
- EI deduction \$ 9.48
- Total \$16.22
- Income tax deduction \$75.65  
(based on \$412 - \$16.22 = \$395.78)

### Example 2

Pat is paid \$5.50/hour for a 37.5 hour week and earns double-time for overtime. Pat has net claim code 1 and other deductions of \$14.73. Determine Pat's net pay for a week in which overtime worked was 4.5 hours.



Calculate Pat's gross wages.

- Regular pay  
= \$ 5.50/h x 37.5 h                      \$206.20
- Overtime pay  
= \$ 5.50/h x 2 x 4.5 h                      \$ 49.50



Gross Wages	\$ 255.70
Calculate Pat's deductions.	
• CPP	\$ 3.95
• EI	\$ 5.87
• Income tax (based on \$255.75-\$9.79 = \$245.96)	\$ 33.40
• Other deductions	<u>\$ 14.70</u>
Total deductions	\$ 57.92

Pat's net pay is \$255.75 - \$57.92, or \$197.83

1. Elizabeth's weekly gross pay is \$380.45. Her net claim code is 3. Her deductions are CPP, EI, and income tax. Calculate her net pay.

**Exercise**

Use the CPP, EI, and income tax tables on pages 444 to 455.

1. State the weekly deductions for CPP and EI according to the weekly income shown.

- |               |               |
|---------------|---------------|
| (a) \$ 178.00 | (d) \$ 385.91 |
| (b) \$ 316.48 | (e) \$ 401.75 |
| (c) \$ 259.00 | (f) \$ 493.00 |

2. State the amount deducted for income tax in each case.

Weekly Income (After CPP and EI Deductions)	Net Claim Code
(a) \$ 298.50	2
(b) \$ 528.72	1
(c) \$ 316.08	3
(d) \$ 401.79	5

3. In each case, calculate:

- taxable earnings after CPP and EI
- income tax payable.

Gross Weekly Income	Net Claim Code
(a) \$ 263.05	4
(b) \$ 327.80	1
(c) \$ 237.17	3
(d) \$ 483.75	6
(e) \$ 392.68	2

4. Helga's weekly gross pay is \$380.45. Her net claim code is 3. If she has only the standard deductions for CPP, EI, and income tax, calculate her net pay.

5. Jason earns \$328 weekly as an assistant in a printing shop and has net claim code 2. Determine Jason's take-home pay if he has other deductions of \$8.19 in addition to CPP, EI, and income tax.

In problems 6 to 9, all deductions noted are in addition to CPP, EI, and income tax.

6. Selina is paid \$ 6.90/hour for a 40 hour week. She has net claim code 4. Her other deductions amount to \$6.15. Calculate her net pay for one week.

7. Arnold works as an apprentice electrician and is paid \$10.50/hour for a 37.5 hour week with overtime paid at time-and-one-half. His net claim code is 1 and his other deductions total \$16.84. Calculate Arnold's take-home pay for a week in which he worked 43 hours.

8. As a salesperson for a small business machines firm, Gail is paid \$300/week plus a commission of 5% of the value of her sales. In one week, Gail sold \$2118 worth of machines. If her net claim code is 3, and she has other deductions of \$19.50, calculate Gail's net pay for the week.
9. Sam earns \$285/week plus a step commission of 8% on the first \$1000 of sales, 10% on the next \$500, and 14% on sales over \$1500. Sam has deductions for health insurance (\$2.19), life insurance (\$3.10), charities (\$4.00) and Canada Savings Bond (\$10.00). If Sam has net claim code 4 and his sales for the week total \$1640, calculate his net pay for the week.

**Ed. Note:**

*Please note: These figures are subject to change because of regular changes for personal exemptions, deductions etc. made by Revenue Canada.*



## Budget

Answer the following questions:

1. What is a budget?
2. What is a budget used for?
3. Who uses a budget?
4. Find examples and graphs of budgets in newspapers and magazines.

Source: Morgan, Roger and Walter Wood. *Mathematics 10 - Supplementary Materials*. Lafleche, SK: Wood River Board of Education, 1995.

### Assignment 1

1. Calculate the regular pay, overtime rate, overtime pay and gross pay for the following:

Job	Regular Hours	Regular Hourly Rate	Regular Pay \$	Overtime Hours	Overtime Rate (1 1/2)	Overtime Pay \$	Gross Pay \$
Shipper/receiver	40	11.50	460.00	4.75	17.25	81.94	541.94
Therapist	40	12.45		0			
Sheet-metal worker	38	10.78		0			
Courier driver	40	8.98		5			
Mechanic	40	9.75		6			
Inspector	40	10.35		8			
Machinist	40	12.95		2.25			
Legal Secretary	40	10.45		15			
Accountant	25	12.75		3.5			
Graphic artist	40	8.93		6.75			
Baker	40	11.39		5.25			

2. Calculate the gross pay for each of the following:

Name	Hourly Rate \$	Hours Worked	Tips Amount \$	% of Tips Kept
Josh Freed	5.75	40	250.00	100%
Celeste Barry	7.80	25	115.00	100%
George Richter	6.15	20	82.00	80%
Vanessa Varouk	6.40	24	104.00	75%
Danny Sabot	8.35	40	212.00	85%
Louise Whitney	7.90	16.5	48.00	95%
Leslie Howick	6.10	34.5	143.00	90%

- 3.
- Jane works at the recreation centre for 8 hours each Saturday and Sunday. She is paid at the rate of \$7.85/hour. during the week she referees 4 games of basketball a week. If the rate per game is \$25.00, what is her total pay in a week?
  - Bryce busses tables at a local restaurant. He gets 25% of the waiter's tips in addition to \$5.80/hour. The waiter received \$255.00 in tips during the 16 hours which Bryce worked. What were Bryce's gross earnings?
  - Because of a snowstorm in Saskatoon, Ron was unable to do his regular daily garbage pickup. In order to get back on schedule, he had to work both routes the next day. After 8 hours he is paid double-time. It took Ron 15 hours to complete the two routes. His regular wage is \$12.90/hour. Calculate Ron's gross earnings for the day.

## Assignment 2

1. In one week, Kathy sold the following cosmetics and personal items. The commission earned on each is shown in the table below. What were her weekly earnings (to the nearest cent)?

Item (# of items)	Price \$	Rate of Commission %
Night Cream (12)	8.50	45
Cleansing Cream (12)	6.75	45
Eyeshadow (16)	5.25	43
Mascara (22)	4.79	43
Blush (22)	4.29	37
Moisturizer (16)	6.80	25
Lip Gloss (27)	2.95	41
Men's Cologne (5)	12.35	33
Air Freshener (8)	3.95	25
Cosmetics Bag (3)	16.55	45

2. Calculate the weekly gross pay for each of the following workers:

Name	Weekly Sales \$	Commission Rate %	Weekly Salary \$
Kerry Saunders	11050.00	1.5	250.00
Mark Danover	10218.00	1.5	255.00
Chris Mendel	13562.00	2	275.00
Ron Brintner	11877.00	2	230.00
Patrick McQuigley	14415.00	1.5	195.00
Nathan Norish	12970.00	1.5	225.00
Rebecca Linate	9957.00	3	225.00
Vera Johannsen	11133.00	2	230.00

### Assignment 3

1. What was the percentage of gross pay for EI in 1996?
2. What was the percentage of gross pay for CPP in 1996?
3. What is the difference between gross and net pay?
4. How is our income tax a progressive tax?
5. Calculate the net pay for the following earnings in Saskatchewan.

	<b>Gross Pay</b>	<b>EI (2.95%) \$</b>	<b>CPP (2.8%) \$</b>	<b>Income Tax \$</b>	<b>Net Pay \$</b>
a)	\$467.89/week				
b)	\$987.78/week				
c)	\$1,200.00/week				
d)	\$5,500.00/month				
e)	\$24,356.98/year				
f)	\$35,000.00/year				

6. Calculate the required deductions and the net pay for each of the following earnings in Saskatchewan.

	<b>Gross Pay</b>	<b>EI (2.95%) \$</b>	<b>CPP (2.8%) \$</b>	<b>Income Tax \$</b>	<b>Other Deductions \$</b>	<b>Net Pay \$</b>
a)	\$567.89/week				\$0.00	
b)	\$907.78/week				\$78.00	
c)	\$1,250.00/week				\$0.00	
d)	\$5,000.00/month				\$251.42	
e)	\$27,356.98/year				\$0.00	
f)	\$50,000.00/year				\$1,266.20	

7.
  - a) Calculate the basic deductions and net pay of a steel worker who earns \$37,200.00 per year in Saskatchewan.
  - b) What percent is the steel worker's net pay of the gross pay?
  - c) What percent is the steel worker's deductions of a the gross pay?

## Teacher Strategies and Activities Lesson Plans

**Content Area:**                      **Knowledge** \_\_\_ x \_\_\_                      **Skills** \_\_\_ x \_\_\_  
   **Attitude**     \_\_\_ x \_\_\_

**Objective:**

- To share information gathered regarding consumerism.

**Activity:**

1. Students will informally share pros and cons of consumer math assignment.  
    They will present one positive and one negative idea from the assignment.  
    They may share their presentations.

**Number of Students:** 22

**Location:** Classroom

## **Bibliography - Gross/Net Pay**

*Budgeting : A Step by Step Approach to Managing Your Money.* Royal Bank of Canada, 1996.

*Career Opportunities : A Saskatchewan Occupational Outlook to 2005.* Regina : Human Resources Development, 1995.

*Financial Fitness : The Working Budget.* Credit Union, 1998.

*Financial Fitness : The Budget Book.* Credit Union, 1998.

Foster-Hinz, Marilyn. *That's Life!* Saskatoon : The Star Phoenix Educational Services, 1991.

*Guidance Centre Occupational Information Monographs. Career Profiles.* Toronto: Guidance Centre - OISE Press, 1987.

Larson, Roland E. *Windows to Mathematics 10 : An Integrated Approach.* Toronto : D.C. Heath Canada Limited, 1996.

Leblanc, Gil. *Mathematics 10 : Student Resource Book.* Saskatoon: Saskatoon Catholic Board of Education, 1997.

*Mathematics 10 : Consumer Math and Geometry, Module 3, lessons 14-20.* Saskatchewan Education, 1996.

*Mathematics 10, 20 : A Curriculum Guide for the Secondary Level.* Regina: Saskatchewan Education, 1995.

Morgan, Roger and Walter Wood. *Mathematics 10 : Supplementary Materials.* Lafleche, SK : Wood River Board of Education, 1995.

Profeit, Michelle. *Consumer Wise.* Saskatoon, SK : Saskatchewan Teachers' Federation, Stewart Resources Centre, 1993.

*Savings - Financial Fitness.* Credit Union (Video and Guide)