

# *Math Applications in the Real World II*

## *Lesson 3*

Here is what you will learn in this lesson:

### I. Budgeting

- What is a budget?
- Need vs. Want
- Importance of budget

### II. Components of a Budget

- Expenses and Income

### III. Personal Financial Statement

- Cash flow Statement
- Creating a cash flow statement

### IV. Creating a budget

- Difference between personal cash flow statement and budget
- How to create a budget
- Comparing personal cash flow statement and budget

*This lesson is going to utilize everything we have learnt in the previous lessons. If there is something you do not understand from the prior lessons, please read them again or contact your teacher).*

## **Part 1: Budgeting**

### **What is a budget**

A budget is essentially a list of planned expenses and income. In other words, a budget is a list you create that shows a) all the things you plan to spend money on in the future, and b) Where you intend to get the money from. It serves as a means of keeping track of exactly how much money is coming in and exactly how much money is going out, so that you do not run out of

money. A budget helps you monitor your expenses and ensures that you do not spend more than you make. When you make your budget, you want the bulk of your expenses to be the things you need not necessarily the things you want.

### **Need vs. Want**

Need refers to things that you, literally, cannot do without. Examples of needs are: house, car, food, water, clothes, insurance, books for school, tuition, etc. On the other hand, want is something that you would like to have. It is not absolutely necessary. Examples of wants are a) Food, b) water, c) I-pod, d) skates, etc.

If you notice, some of the items in the need list are also on the ‘want’ list. For example food: You need food to survive but the type and amount of food makes it a ‘need’ or a ‘want’. Fruits, vegetables, bread, etc, in moderate quantities are food items that give you vitamins and minerals – these are needs. If you eat too much or you eat unhealthy foods, it becomes something you ‘want’ to do.

### **Importance of Budgeting**

If you are determined to save money, a budget will come in handy. Some people determine that they will save a particular amount of money a month. For example, they might say “I will save \$150” every month. Others decide to save whatever money they have at the end of the month. Either way, to ensure that you have money to save, you need to plan your expenditures ahead of time. In this lesson, we will learn how to create a budget.

## PART II: COMPONENTS OF A BUDGET

There are different parts of a budget: assets, liabilities, income, and expenses.

### **Income and Expenses**

Income is money you earn from working. When you have a job, your employer gives you money; that money is called income. Typically, employers give you money twice a week. This means that, in a month, you have to multiply the amount you get by 2. We do this because a month has four weeks. If you divide the month equally, you get 2 (4/2). This lets us know that we get paid twice a month.

**Example:** Christi earns \$525 every 2 weeks. What is her monthly salary?

**Solution:** Multiply \$525 by 2 to get her monthly salary.

$$\text{Christi's monthly salary} = \$525 * 2 = \$1,050$$

Expenses are amounts you pay for goods and services. When you make purchases or you pay a company/individual for something they have done for you – those amounts are referred to as expenses. Essentially, an expense is money you spend. The difference between expenses and liabilities is this: With a liability, you owe that amount but you have not paid it back. With an expense, you have paid out that amount and no longer owe it.

For example: You have a financing deal with an electronics store for an Xbox 360 that cost \$250. At the end of the month, you paid the store \$50. The original \$250 is a liability because that is what you owe the store. The \$50 you paid back is an expense, because you have paid it to the store and it reduces the amount of money you own.

**Practice Question**

1. The items listed below are either income or expenses. Write down the correct answer in the space next to them.
  - a. \$450 payment made to a car dealership
  - b. \$450.15 you received from your employer
  
2. Toni gets paid \$433.12 every 2 weeks. What is her monthly salary?

Before creating a budget, it is not only important to know how much you have (income) and how much you spend (expenses), you also need to know the amount you have after deducting your expenses. Now, we are going to look at a tool that enables us to figure out how much we really have. This tool is called a personal cash flow statement.

**Personal Cash Flow Statement**

A cash flow statement allows you to measure your income and expenses so that you know how much money you are spending and how much you need to allocate towards savings and other things. There are three major sections in a cash flow statement:

- **Cash inflows:** This refers to money you have. This could be money from in checking accounts, savings account, a coin jar, wallet, investments, etc. A cash inflow is also money you receive as salary or as a gift. Any money you have is referred to as cash inflow. Essentially, cash inflow refers to your income.
- **Cash outflows:** Cash outflow is money that is going out. It could be through your credit card, checking account, etc. Essentially, cash outflow refers to your expenses.
- **Net cash flows:** This refers to what you have left when you subtract your total expenses from your total income. When you add up everything

all the money you have and subtract everything you have spent, the remaining money you have is called net cash flows. Net cash flows help you when you want to plan to save.

Here is how a cash flow statement helps you save. Let us say that you have decided to put \$50 a month in a savings account. If you look at your cash flow statement and notice that your net cash flow at the end of the month is \$15, you realize that you need to cut down how much you spend. Your cash flow statement helps you look at everything you spend and make decisions on how to reduce your spending.

### **Creating a personal cash flow statement**

There are three steps to creating a personal cash flow statement:

- List all your cash inflow
- List all your cash outflow
- Find your net cash flow by subtracting your outflow from your inflow.

### **Example #1:**

Tina is a cashier at Safeway and receives \$300 every 2 weeks. On May 5<sup>th</sup>, her father gave her \$200 cash for her birthday. On May 16<sup>th</sup> her best friend paid back a prior loan by giving her a check for \$50 and an old laptop worth \$150. In the month of May, she had the following expenses: Insurance: \$75, Gas: \$35 and Credit card purchases: \$250. What is Tina's net cash flow at the end of May?

### **Solution:**

The *first* thing we do is to add up the cash inflows. When we add up the inflows, we not include the \$150 laptop. This is because the laptop is not **cash**. Now, if Tina had sold the laptop, we can include it in the inflow section. However, since she did not sell it, we do not include it.

We also multiply \$300 salary by 2. Since Tina receives \$200 every 2 weeks and there are 4 weeks in a month, we multiply \$300 by 2 to get \$600.

The *second* thing is to add up the outflows. Then subtract the outflows from the inflows. Tina’s cash flow statement looks like this:

Tina's Personal Cash Flow Statement	
<b>Cash Inflows</b>	
Paycheck from Safeway	\$600
Birthday Gift from Dad	\$200
Check from friend	\$50
Total Cash Inflow	<b>\$850</b>
<b>Cash Outflows</b>	
Insurance	\$75
Gas	\$35
Credit Card Purchases	\$250
Total Cash Outflow	<b>\$360</b>
Net Cash Flow	<b>\$490</b>

**Example #2:**

Joseph does not have a job but receives an allowance of \$200 *a month* from his uncle. If Joseph spends \$256.99 during the month, what is his net cash flow?

**Solution:**

If you write out Joseph’s personal cash flow statement, this is what it will look like:

<b>Cash Inflows</b>	
Monthly Allowance	\$200
Total Cash Inflow	<b>\$200</b>
<b>Cash Outflows</b>	
Purchases	\$257
Total Cash Outflow	<b>\$257</b>
<b>Net Cash Flow</b>	<b>(\$57)</b>

As you can see, Joseph has a negative 'net cash flow'. This means that Joseph spent more money than he had. So, Joseph needs to cut down on his expenses so that he will have money to save.

#### **PART IV: CREATING A BUDGET**

We already established that a budget helps us look at our planned expenses and income, so that we know whether we have excess cash to invest. Creating a budget is as simple as creating a personal cash flow statement for the future. This just means that you are planning ahead. You are trying to figure out the amount of money you will get and spend in the future.

**(IMPORTANT NOTE: Personal budgets are usually created on a monthly basis.)**

#### **Difference between Personal Cash Flow Statement and Budget**

The major difference between a personal cash flow statement and a budget is this: A personal cash flow statement is created at the end of the month to analyze how much we have spent. On the other hand, a budget is created in advance to help us spend less. Let's look at Joseph in example #2. Remember, he had a negative cash flow at the end of the month. The personal cash flow statement helped him realize that, at the end of the month, he was spending more than he had. If he wanted to try and spend less, creating a

budget will help him plan ahead not to spend too much. He will be able to make a decision not to spend too much money.

### **Creating a Budget**

We create a budget the same we created a cash flow statement. We start out by adding up all the **potential** income (money we expect to have). The next step is to add up all the **potential** expenses (money we intend to spend). The final step is to subtract potential income from potential expenses to get net cash flow (amount we expect to have, so that we can save it).

**Example #3:** In example #1 above, we created Tina's personal cash flow statement for the month of May. At the end of May, Tina decided to create a budget for the month of June. She knows that in June, she will receive the following: \$600 monthly wage, \$25 interest for a CD she has with her bank and \$1.25 dividends from shares she previously purchased. Tina also knows that in June, she will have to pay a minimum payment of \$15 for her Visa credit card, \$75 for insurance, \$35 for gas and a monthly payment of \$39.99 for her Xbox 360. Tina is also setting aside \$100 for 'other' expenses like shopping. Create Tina's budget for June.

**Solution:** We will go to excel (or equivalent) and draw up Tina's budget for the month of June.

Tina's Budget for June	
<b>Potential Cash Inflows</b>	
Paycheck from Safeway	\$600.00
Interest from CD	\$25.00
Dividends from shares	\$1.25
<b>Total Cash Inflow</b>	<b>\$626.25</b>
<b>Potential Cash Outflows</b>	
Insurance	\$75.00
Gas	\$35.00
'Other' expenses	\$100.00
Minimum Payment for VISA	\$15.00
Xbox Monthly Payment	\$39.99
<b>Total Cash Outflow</b>	<b>\$264.99</b>
<b>Net Cash Flow</b>	<b>\$361.26</b>

As you can see from the table above, Tina expects to have \$361.26 for the month of June. Tina can decide to invest or save that money. She could even decide to increase her budgeted 'other' expenses to \$200 (Of course, we would advise her to save the money).

**Example #4:** Let's assume that when Tina did her budget, she set aside \$500 for 'Other Expenses'. If we recalculate the budget, it looks like this:

Tina's Budget for June	
<b>Potential Cash Inflows</b>	
Paycheck from Safeway	\$600.00
Interest from CD	\$25.00
Dividends from shares	\$1.25
<b>Total Cash Inflow</b>	<b>\$626.25</b>
<b>Potential Cash Outflows</b>	
Insurance	\$75.00
Gas	\$35.00
'Other' expenses	\$500.00
Minimum Payment for VISA	\$15.00
Xbox Monthly Payment	\$39.99
<b>Total Cash Outflow</b>	<b>\$664.99</b>
<b>Net Cash Flow</b>	<b>(\$38.74)</b>

As you can see, Tina has a negative net cash flow. Since Tina is creating her budget a month ahead of time, it will be easy for her to make the decision to reduce her expenses, so that she has a positive net cash flow.

**Comparing Personal Cash Flow Statement and Budget**

At the end of the budgeted month, it is important to create a personal cash flow statement and compare it with the budget you created at the beginning of the month. Your goal should be to either meet your budget or exceed it. In other words, if your budget shows an estimated net cash flow of \$100, you want your personal cash flow statement at the end of the month to show a net cash flow of \$100 or more. This means that you spent the exact amount you budgeted, or that you spent less.

Creating a budget is not something that is easy to do. You do not do it for one month and forget about it. In order to help you plan wisely and save up money, you have to form the habit of always planning your expenses based on what you have. You can create a budget by opening an excel file (or equivalent) and doing it just as we have done in this lesson. You can also create a budget

by using paper and pen. Any method that works for you should be used – but you have to make sure that you make it a habit to **ALWAYS** plan to spend less money than you have, so that you have money you can save.

## **Math Applications II – Lesson 3 Assignments**

When writing your assignment, remember to use Microsoft Excel or OpenOffice Calc or Works Spreadsheet (Depending on what you have) for the ‘number’ and ‘Word Problem’ sections. For the ‘summary’ portion of the assignment, please use Microsoft Word.

Remember, when you e-mail me your assignments, please make sure that the Subject line on your e-mail includes the class name (**Consumer Math**), your name and the assignment number or numbers.

Example: Subject: Math Applications II- Will-5A

Or (if sending more than one):

Subject: Math Applications II -Will-5B and 5C (and so on...)

### **Assignment 6A**

We are going to review a few concepts from prior lessons; refreshing your memory will come in handy for Assignment 6B

Solve the following number problems:

1. What is the new balance in a checking account if:
  - a. Original balance = \$505.15, Credit = \$100.22, Debit = \$82
  - b. Original balance = \$26.55, Credit = \$65, Credit = \$56.23
  - c. Original balance = \$115.64, Debit = \$45.65, Debit = \$32.13
  - d. Original balance = \$1050.66, Credit = \$980, Debit = \$60.88, Credit = \$12.13, Debit = \$415.12
  
2. Calculate the profit from the following stock transactions:
  - a. Buying price = \$95.15 per share, Selling price = \$105
  - b. Buying price = \$72.33 per share, Selling price = \$70.24 per share
  - c. Total shares bought = 160, buying price per share = \$1.82, selling price per share = \$15.23

- d. Total shares bought = 1200, buying price per share = \$80.44,  
selling price per share = \$102.16
3. Find the following *monthly payments* (**Use an online calculator to solve for the interest when applicable**)
- Loan = \$1000, Interest = 2.5%, Maturity Time = 1 year.
  - Loan = \$1512, Extra charges = \$132.27, Interest = 12%, Maturity Time = 5 years
  - Loan = \$1500, Extra charges = \$45.16, Interest = \$5.66, Maturity Time = 2 years
  - Loan = \$12,795, Interest = 32%, Maturity Time = 5 years.

### Assignment 6B

For this assignment, you will be creating the beginning of the month budget and the month end personal cash flow statement. (Do not forget to show all the steps!)

At the end of June, you realize that you spent more money than you had. You have decided to create a beginning of the month annual budget for July, to help you plan your spending. Here are the potential transactions:

- In the beginning of July, your checking account has a balance of \$315.16
- You expect to receive \$344.40 every 2 weeks from your job at McDonalds
- Your Visa credit card balance is \$96.13 and you intend to pay it off.
- You intend to pay only the minimum payment on your MasterCard which is \$15

- e. You intend to buy a textbook from Amazon that costs \$32.50
- f. You budget \$75 for shopping and 'other' expenses
- g. You previously purchased a laptop from a second hand electronics store that was worth \$1,500. The store offered you a financing option that included \$32.13 in service charges, an interest rate of 1.1% and maturity time of 5 years. You anticipate that you will pay the monthly payment in July. (**Calculate the monthly payment and use your answer for the budget.**)
- h. Your best friend's birthday is on the 17<sup>th</sup> and you want to buy a gift to celebrate the occasion (**Decide how much to spend.**)

### **Create your budget**

At the end of the month, you decide to create your personal cash flow statement and you notice that during the month, you had the following transactions (**Use the answers from the budget, when applicable**):

- a. You sold 5 shares for \$20 each. The original buying price was \$10.56
- b. Do not forget to include your checking account balance at the beginning of the month.
- c. You received your wages from McDonalds (\$344.40 every 2 weeks)
- d. You paid off your Visa credit balance
- e. You paid the monthly payment for your laptop
- f. You paid the minimum payment on your MasterCard
- g. You bought a gift for your best friend (**use the figure you used in the budget**)
- h. Instead of \$75, you spend \$150.07 on shopping and 'other' expenses.

### **Create your Personal Cash Flow Statement**

## Assignment 6C

You have learned a lot in this lesson. Summarize what you have learned in this lesson and answer the questions below:

- a) Compare your budget and cash flow statement from assignment 6B.

What do you notice?

- b) Based on what you noticed from your cash flow statement and budget, what advice will give yourself?