Math 11 Apprenticeship & Workplace

**CHAPTER 6: Financial Services**

In this chapter we will be learning about different financial services available so that we can:

* evaluate various financial service options, and choose those that best meet your needs
* calculate simple and compound interest
* make informed decisions about the use of credit
* plan ways to use credit effectively

**Lesson 1: Types of Bank Accounts (Choosing an Account)**

Before we start this chapter we must review a few concepts:

**Converting percentages to decimals**

* To convert a percentage to a decimal multiply the number by \_\_\_\_\_\_\_\_.
* Or, move the decimal \_\_\_\_\_ place to the \_\_\_\_\_\_\_\_\_\_.

 Ex.1: Convert the percentage to a decimal:

 a) 25% b) 3% c) 7.5%

**Calculating percentages**

* To calculate a percentage:
1. Change the percentage to a decimal (above)
2. Multiply the decimal by the dollar amount.

 Ex.2: Calculate the percentage

 a) 22% of $5350.00 b) 18.5% of $125.50 c) 6% of $205.00

**Converting to years**

* To convert to years **divide** by the conversion of the unit given.

 Ex.3: Convert to years

 a) 8 months b) 65 days c) 7 weeks

**Converting from years**

* To convert from years **multiply** by the conversion of the unit given.

 Ex.4: Convert from years

 a) 3 years to months b) 0.2 years to weeks c) 0.3 years to days

**TYPES OF ACCOUNTS**

Banks typically offer (at least) these types of accounts



 For daily purchases with a debit card, use a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 To save money from each paycheque, use a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 To save $400 a month to buy a house in 5 years, use a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Which account would you choose right now?

Ex. 5: Teghan is a set designer. In a typical month, she makes 16 transactions. She keeps a minimum monthly balance of $650. Which of the following chequing accounts should she choose?



 **Solution.**

 **A.** Calculate her Value Account costs per month:

 **B.** Calculate her Low-Fee Account costs per month:

 **C.** Calculate her Unlimited Account costs per month:

 **D.** Calculate her Student Account costs per month:

 **E.** Which account should she choose? Explain your choice.

**Debit Cards**

* Explain how to use a debit card to make purchases:

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Why is it important to protect your PIN (Personal Identification Number)?

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

A **debit card** can be used for different purposes. You can:

* make deposits, withdrawals of transfer money between accounts at an ATM.
* pay bills at any branch of your bank.
* make purchases, pay for services, or withdraw cash at a store, restaurant, etc…
* withdraw cash at ATMS worldwide. You need to pay additional fees when the ATM is not your own bank’s or is in another country.
* access your account online or by phone.

Ex. 1: What are some advantages of using a debit card?

1. How can you use your debit card number to keep track of your bank account?
2. How might using a debit card be better than paying with cash?
3. Why might a debit card be better than using a credit card?

Ex. 2: Sean is a truck driver. In a typical week, he uses ATMS three times at truck stops. The average charge is $3.25/transaction.

 a) About how much does Sean pay monthly for ATM use?

 b) How could Sean reduce his ATM expenses?

**Lesson 2: Simple Interest**

A few definitions to start us off!

 **Interest:** Money earned on an investment or a fee paid for borrowing money. Usually expressed as a percentage.

 **Principal**: The original amount invested or borrowed.

 **Term:** The amount of time, in years, of an investment or loan.

**Simple interest** is interest calculated as a percentage of the principal.

Ex. 1: You invested a principal of $500 that earns simple interest at a rate of 5%/year. How much do you have after 3 years?

We can use the following formula for **simple interest:** 

 I = Interest earned

 P = Principal

 r = annual interest rate (as a decimal)

 t = term of the investment or loan

Ex. 2: Allison has $2000.00 to invest. Her bank offers a simple interest rate of 7.5%. She needs to save $2500.00 for college. How long will she need to leave her money in the account?

**Lesson 3: Compound Interest**

**Compound interest** is interest calculated on the principal plus any interest made over the term.

Ex. 3: You invested the same principal of $500 from Ex. 1 in a different account that earns compound interest at a rate of 5%/year. How much do you have after 3 years?

We can use the following formula for **compound interest:** 

 A = Final value of investment

 P = Principal

 r = annual interest rate (as a decimal)

 n = number of compounding periods in a year

 t = term of the investment or loan

The interest rate is started per \_\_\_\_\_\_\_\_\_\_\_\_\_ (a fancy word for year) and is divided into **compounding periods** per year.

 For example:

* semi-annually (twice a year): n = \_\_\_\_\_
* quarterly (four times a year): n = \_\_\_\_\_
* monthly (12 times a year): n = \_\_\_\_\_
* daily (365 times a year): n = \_\_\_\_\_

Ex. 4: Calculate the final value of an initial investment of $6000.00. Interest is paid at 4.00% per annum, compounded semi-annually, for 3 years.

 **Solution A:** Calculate the Simple Interest after each period (half a year), then add together

|  |  |  |  |
| --- | --- | --- | --- |
| *Interest period* | *Value at beginning of period ($)* | *Interest earned ($)**I=Prt* | *Investment value at end of period ($)* |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |

 **Solution B**: (better!) Use the compound interest formula.

**Lesson 4: Credit Cards**

**Credit** is a type of loan in which a borrower receives something of value and agrees to pay the lender for it later.

A credit card can be convenient, but if you do not pay the credit card balance by the due date, the credit card issuer charges \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on the remaining money you owe and on the cost of new purchases made before the next statement.

 -> This can be a very dangerous way to get into \_\_\_\_\_\_\_\_\_\_\_\_!

Each credit card company has different interest charges, so make sure you are clear how it works before signing up. A typical interest rate is somewhere around 18%. (!!!)

* Brainstorm the following questions in a small group.

 - Make a list of three available credit cards

 - What is a minimum payment? How much would you guess it is?

 - What is a credit limit? Why do you think different people have different credit limits?

 - Name two advantage and two disadvantage of using a credit card.

Ex. 1: On Jan. 12, John charges a **cash advance** of $500.00 to his credit card.

**cash advance:** a withdrawal of cash from an ATM of teller charged to a credit card.

 This withdrawal appears on his monthly statement issued Jan. 27. John

 does not pay off this amount by the due date. The next monthly statement

 is issued on Feb. 27. John’s bank charges 18.00% annual interest for cash

 advances starting on the day of the withdrawal.

(Note: no interest is paid during the month an item is purchased, Jan 12th to Jan 27th)

 Calculate the interest that John is charged for the Jan. 12 cash advance.

Ex. 2: Jane is charged 19.50% per annum on her credit card balances. She uses her credit card, which has no previous balance, to purchase a new wood stove that costs $2100.36. Her next credit card statement is dated Sept. 30 and she pays only the minimum payment (5% of her balance).

 On Oct. 5, Jane makes another purchase of $450.00 with her credit card. How much money will Jane owe on Oct. 7? She makes no other purchases with her card.

**Lesson 5: Store Promotions**

Stores often offer promotions where you can purchase an item with little or no down payment. These offers allow you to purchase an item without having to pay for it in full until months or years later. However, these offers usually come with high interest rates.

Be sure you understand the details of a store promotion before signing an agreement.

**Down payment:**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ex 1) Zaynab is buying a new stove, listed at $989.95. The store has an offer of “Nothing down, and 4 easy monthly payments of $265.00.”

a) What is the total cost of the stove on the payment plan?

b) Use the simple interest formula to calculate what monthly rate of interest is being charged.

Ex 2) A store offers a bike for $689.98. You want to purchase it, but cannot pay cash. Your payment options are:

Option 1: 10% down payment then 6 monthly payments of $115.00.

Option 2: No down payment and 24 monthly payments of $35.00.

Option 3: Pay using a cash advance on your credit card. You would be charged interest at an annual rate of 20.95%, and you expect that it will take you 20 days to pay the credit card balance.

Which payment plan offers the better deal?

**Lesson 6: Personal Loans**

A **loan** is an amount of money that you borrow. You receive the full amount of the loan when you sign the agreement, and interest is calculated from that date to the final date of the loan.

The length of time required to pay off the loan is called the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

A loan can be secured or unsecured.

* A secured loan means that the borrower has promised to turn over to the lender a particular item of value, such as a car or property if they **default** (fail to repay) the principal and interest of the loan. This item is viewed as **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* An unsecured loan is a loan for which the lender considers you a low risk, so there is no need for collateral.

Discuss the following questions in small groups:

1. Which type of loan do you think has a lower interest rate? Why?
2. Do you think the amount of money a financial institution would lend someone would change depending on what was being used to secure it? Why or why not?
3. What **assets** might people generally use as collateral to secure a loan? List at least three.

We will calculate loan payments using a table.

Ex. 1: Jerry borrows $2500.00 to purchase a laptop computer and software. He takes out a personal loan from his credit union at an annual rate of 6.25% with an amortization period of 2 years. Use the personal loan payment calculator table to help answer the following:

 a) What is Jerry’s monthly payment?

 b) Calculate the total amount he will pay over the 2 years.

 c) Calculate the finance charge on the loan.

 Complete the activity “Puzzle it Out” in small groups (pg. 287)

**Lesson 7: Lines of credit and overdraft**

A bank **line of credit** is an approved loan amount that gives you quick access to money in case you need it in the future. It has a limit, similar to a credit card, and interest is charged on the amount of money used.

* Why might a line of credit be preferable to a credit card?

Banks offer **overdraft protection**, which allows you to withdraw more from your account than you have in it, up to an agreed-upon amount. The bank covers the difference, but you must make a minimum monthly payment to repay the overdraft.

* Why would banks offer this?

A **payday loan** is a small, short-term loan with a high interest rate intended to cover the borrower’s expenses until their next pay day.

Ex. 1: A payday loan store charged Matt $40.00 interest on a $350.00 loan. Matt paid back the total amount of $390.00 after 10 days.

 a) What was the daily interest rate for this loan?

 b) What was the annual interest rate for this loan?

 Complete BUILD YOUR SKILLS (pg. 295 – 296) # 1 – 5 on the next page

**Chapter 6 Review**

Match the following terms on the left with their definitions on the right.

|  |  |
| --- | --- |
| **TERM** | **DEFINITION** |
| \_\_\_ Interest | **A)** interest calculated as a percentage of the principal |
| \_\_\_ Self-service banking | **B)** any activity such as a cash withdrawal, deposit, money transfer, pre-authorized payment, or bill payment |
| \_\_\_ Full-service banking | **C)** an item of value pledged by a borrower to secure a loan |
| \_\_\_ Transaction | **D)** an agreement in which a borrower receives something of value, and agrees to pay for it later |
| \_\_\_ PIN  | **E)** the time between calculations of interest, also called the interest period |
| \_\_\_ Simple Interest | **F)** the time required to pay back a loan |
| \_\_\_ Principal | **G)** the total amount of interest paid to borrow a sum of money |
| \_\_\_ Term | **H)** money earned on an investment or a fee paid for borrowing money; usually expressed as a percentage |
| \_\_\_ Compound Interest | **I)** failure to repay a loan |
| \_\_\_ Compounding Period | **J)** banking that is done with the help of a teller |
| \_\_\_ Credit | **K)** a secret numeric password that is used by a computer system to verify the identity of the user |
| \_\_\_ Finance Charge | **L)** a short-term loan with a high interest rate intended to cover the borrower’s expenses until their next pay day |
| \_\_\_ Cash Advance | **M)** an item of economic value owned by an individual that could be converted to cash |
| \_\_\_ Down Payment | **N)** interest paid on the principal plus interest |
| \_\_\_ Loan | **O)** money that is borrowed for a specific term, to be paid back with interest |
| \_\_\_ Amortization Period | **P)** a withdrawal of cash from an ATM or teller charged to a credit card |
| \_\_\_ Line of Credit | **Q)** banking done over the internet, by telephone, or at an ATM does not require the services of a teller |
| \_\_\_ Overdraft Protection | **R)** a partial payment sometimes required at the time of purchase |
| \_\_\_ Payday Loan | **S)** the time in years for an investment or loan |
| \_\_\_Default | **T)** the original amount invested or borrowed |
| \_\_\_Collateral | **U)** an agreement with a bank that allows you to withdraw more money from an account than you have in it |
| \_\_\_Asset | **V)** an approved loan amount that you can draw on as needed, with interest charged on the money used |

Next Class: Review

Next Next Class: Unit Test