**UNIT 3-INVESTING AND BORROWING MONEY**

**DECIMALS AND PERCENTS**

1) Write each percent as a decimal.

a) 25% = \_\_\_\_\_\_\_\_\_\_\_\_ b) 7% = \_\_\_\_\_\_\_\_\_\_\_\_ c) 0.5% = \_\_\_\_\_\_\_\_\_\_\_\_

d) 1.5% = \_\_\_\_\_\_\_\_\_\_\_\_ e) 47% = \_\_\_\_\_\_\_\_\_\_\_\_ f) 12.5% = \_\_\_\_\_\_\_\_\_\_\_\_

2) Write each decimal as a percent.

a) 0.65 = \_\_\_\_\_\_\_\_\_\_\_\_ b) 0.04 = \_\_\_\_\_\_\_\_\_\_\_\_ c) 0.12 = \_\_\_\_\_\_\_\_\_\_\_\_

d) 0.055 = \_\_\_\_\_\_\_\_\_\_\_\_ e) 0.1 = \_\_\_\_\_\_\_\_\_\_\_\_ f) 0.002 = \_\_\_\_\_\_\_\_\_\_\_\_

**MORE DECIMALS AND PERCENTS**

1) Calculate the following percentages.

a) 15% of $300.00 b) 45% of $1500.00

c) 140% of $70.50 d) 175% of $24

e) 7.8% of $60.00 f) 0.3% of $175.75

g) 200% of $50.00 h) 135% of $29.95

**Simple Interest**

Whenever you borrow money, you pay a usage fee. That fee is called interest:

**Interest = the amount charged for the use of borrowed money**

The amount of interest you pay is based on three elements: the amount you borrow, the interest rate, and the length of time the money is borrowed for.

The terminology for these elements is as follows:

-Principle: the amount borrowed

Interest Rate: annual percentage of the principle that is charged as a fee

Term: length of time the money is borrowed.

When it is time to pay back the money, you are required to pay the principle plus the amount of interest that has accumulated. This is called simple interest and it is typically used for very short-term borrowing or investments. The formula is as follows:

**Interest = Principle \* rate \* time (I=Prt)**

Example: If you borrow $1000 for five years at 10% interest is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

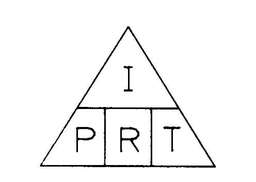
The total amount due at the end of five years is principle + interest:

A = P + I

A =

When you borrow money, you pay interest but when you invest money, you earn interest. An investment is really a case where you lend your money to someone else and they pay you interest such as a bank does. The same equations apply when calculating simple interest that is earned except now principle is the amount invested and interest is the amount earned.

**Examples:** The following triangle is useful when solving for other variables in the equation.



1. How much interest does a $10 000 investment earn at 5.6% over 18 years? 18 months?
2. Susan borrows $8650 to buy a used car and is charged 4.5% interest. If the term of her borrowing is 5 years, how much interest does she pay in total?
3. Henry invests $5000 in a mutual fund with an annual interest of 7.5%. How long will it take him to double his money?
4. If Sheila paid $797.50 in interest on a 5 year loan of $5 800. What was the interest rate?
5. Dorothy loaned John $5000 at an interest rate of 6%. He repaid her $5750 to cover the principal and interest. How long did he borrow the money>

Assignment: Worksheet.

**COMPOUND INTEREST**

1) Calculate the final amount of a deposit of $5000 invested at 3.1% per year, compounded annually for 5 years.

2) Calculate the final amount of a deposit of $650 invested at 4.75% per year, compounded monthly for 3 years.

3) Calculate the final amount of a deposit of $1000 invested at 7.25% per year, compounded semi-annually for 2 years.

4) Tabitha deposits $4275 into an investment account that offers 3.25% interest per year, compounded daily. How much will her investment be worth after 7 years?

5) Calculate how much **interest** you would earn on a deposit of $8500 at 2.75%, compounded annually, for a term of 4 years.

6) If Greg invested $500 for 5 years, compounded annually, at a rate of 6%, how much interest would he earn on his investment?

Assignment: Pg. 301 #1-4

**the RULE OF 72**

1) Use the Rule of 72 to estimate how long it would take the following investments to double in value. All are compounded annually.

a) $6000 invested at 4% b) $1500 invested at 9.35%

c) $2500 invested at 1.95% d) $350 invested at 5.5%

2) If you wanted to double your money in 10 years, at what interest rate would you need to invest your money?

3) How long would it take an investment of $1500 to grow to $3000 if the interest rate it is invested at is 6.5% per year, compounded annually? Round your answer to 1 decimal place.

4) An investment offers a rate of 2.80% interest per year, compounded monthly. Use the Rule of 72 to determine how long it will take for the value to double. Round your answer to the nearest whole year.

5) Use the compound interest formula and an investment of $500 to check your answer to the question above.

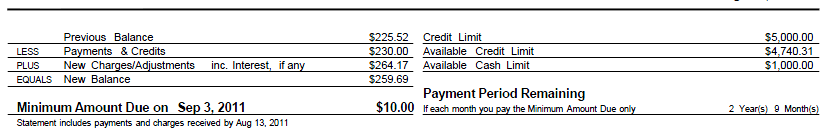
ASSIGNMENT: Pg. 303 #5-8 Quiz next class.

**CREDIT CARDS**

In the first part of this unit, we have looked at different ways of *earning* interest on investments. There is another side to this story – that is when you borrow money or take out a loan to buy something that you pay for later. This is called buying on **credit**. Credit is the type of loan where the borrower receives something of value, and agrees to pay for it later. The best example of people buying on credit is when they use a credit card.

Credit cards have many good features – they are very convenient, and they are a way to improve your credit rating is by using a credit card responsibly, and only charging what you can pay off in full each month. But if you do not pay the balance by the due date, the credit card company charges you interest. The rates for most investments recently are fairly low – mostly less than 4%. However, if you borrow money or use your credit card and do not pay it off each month, the **finance charges** – the total amount of interest paid to borrow that money – are much higher. While you may get as little as 1.5% on an investment, you may have to pay 19.5% or more on an unpaid credit card balance! You may think this is illegal, but it is not. When you agree to use a credit card, these rates are published on each statement. However, people don’t always read them carefully and can get into a lot of debt trouble using credit cards they can’t pay off each month.

Credit card companies require you to pay a minimum payment each time they issue a statement. This **minimum payment** is a percentage of the unpaid balance or a flat dollar amount, usually whichever is greater. Credit card companies are now required by law to print on monthly statements how long it will take to pay off a balance if no further purchases are made and if only the minimum payment is made each month. It can be a scary amount of time for a small balance! Here is an example.



Another way that credit card companies make money is by charging higher rates for cash advances. A **cash advance** is a withdrawal of cash from a bank or ATM machine charged to a credit card. The interest rate charged for a cash advance is usually higher than for purchases, and it is calculated from the day you withdraw the cash advance.

**CREDIT CARDS**

1) How much interest is due on an unpaid credit card balance of $1047.28 at a rate of 21.25% for 27 days?

2) How much interest is due on an unpaid credit card balance of $2111.67 at a rate of 18.5% for 5 months?

3) Adam has an unpaid credit card balance of $765.43 that charges an interest rate of 19.75%. If his payment was due on September 23, how much interest will he owe on October 14? Hint: September has 30 days.

4) Debbie has an unpaid credit card balance of $568.93. Her credit card company charges 24% per year, counting each day that an amount is owed. If she did not pay anything on July 10, her due date, how much does she owe on her next statement date, August 2? July has 31 days.

5) Stuart has an unpaid credit card balance of $268.67. What is his minimum payment if his credit card company charges an interest rate of 18.25%, and Stuart must pay 3% or $25, whichever is greater?

6) If Jamie took a cash advance of $259 on her credit card for 42 days and is charged an interest rate of 21.75%, how much interest will she be charged for that period?

7) Harvey used his credit card to make the following purchases during the month. He does not have a previous balance

|  |  |  |
| --- | --- | --- |
| *Date* | *Item* | *Amount* |
| July 3 | Oil Change | $107.42 |
| July 6 | Groceries | $139.88 |
| July 10 | Gas | $62.00 |
| July 15 | Groceries | $89.71 |
| July 19 | Dinner | $47.69 |
| July 22 | Plane ticket | $725.27 |

a) What is his balance due on his statement date of July 27?

b) If the minimum payment is 5% or $25.00 whichever is greater, what is Harvey’s minimum payment?

c) If Harvey only pays the minimum payment and doesn’t use his credit card between July 27 and August 27, how much will he owe on his statement on August 27?

Assignment Pg. 306 #1-3, Pg. 309 #4-5

**STORE PROMOTIONS**

Stores want your business! They want you to buy their products, especially big ticket items that cost a lot. So what do stores do to encourage you to buy their product? They advertise special deals like “*Buy Now! No Down Payment*” or “*Free Delivery*” or “*Make No Payments for One Year*” and others. A down payment is a partial payment sometimes required at the time of purchase to secure the purchase. The rest of the cost of the purchase is paid off over time, and usually at a high interest rate.

Sometimes stores will give you the option to choose between two (or more) different payment options for payment if you cannot afford to pay cash at the time of purchase. Be sure you understand all the details of any promotion or payment option before you commit to it.

**STORE PROMOTIONS**

1) Jessica is buying a new big screen TV priced at $1599.99. She can pay the cash price or take the sale promotion of “No Down Payment and 24 Easy Monthly Payments of just $95!” If Jessica chooses the Easy Monthly Payments, how much will she pay for the TV, and what interest rate is she paying?

2) Justin bought a new car. The cash price (including tax) was $32 456.75, but he is paying monthly installments of $675 for 60 months. What interest rate is he paying?

3) Considering interest rate only, which is the better option on a $495.80 purchase?

Option 1: 4 monthly payments of $140.00

Option 2: 6 monthly payments of $90.00

4) Valerie needs to buy a new living room set. Her payment options are:

Option 1: Pay cash $2945.00 plus 12% tax.

Option 2: Pay 15% down payment then 10 monthly payments of $300.00 (no tax)

Option 3: No down payment, and then 6 monthly payments of $555.00 (no tax)

How much does each option cost? Which payment plan offers the best deal?

Assignment: pg. 313 #1-5 and Pg. 312 #6-8

**BORROWING MONEY**

While it usually is a good idea to wait until you have saved up enough money to make buy something, sometimes it makes sense to borrow money and then pay it back over time. For example, you might want to buy a vehicle so you can transport tools for your job. Or you might need to pay for some schooling or training like an apprenticeship to help you with your career. Perhaps the biggest purchase you will make in your life would be a house or condo. If you waited until you had saved enough money for that, you would probably never buy it!!

Borrowing money and paying it back according to the arrangements you have made also helps to build up your credit rating. This allows you to borrow more at a later date when you might want to make a bigger purchase – remember that condo

There are different ways and places to borrow money. Usually we think of a **loan** when we think of borrowing money. A loan is a fixed amount of money that you borrow all at once. It is paid back over a specified term and interest is included in what you pay back. This length of time required to pay the loan back is called the **amortization period**. You will usually sign an agreement with your bank or credit union to make this a contract.

Other ways to borrow money include a line of credit, overdraft protection, and payday loans. A bank **line of credit** is a preapproved loan that lets you borrow on as needed up to a certain limit. Interest is charged but only on the money you use and only when you use it. It is similar to a credit card.

**Overdraft protection** is an agreement with your financial institution that allows you to withdraw more money from your account than you have in it, up to an agreed limit. The bank will cover the extra you have taken out, but you must repay. Interest is charged and it is usually at a higher rate like credit cards. Just like a line of credit, you only get charged if you use this service.

Some loans are secured with **collateral**, an item of value promised by the borrower that will be surrendered if the loan is not paid. This often is a car or property. Whichever type of loan you take out, if you do not make your payments as agreed in your contract, you are said to be in **default**, and legal action can be taken against you.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **PERSONAL LOAN CALCULATOR:**  **MONTHLY PAYMENT PER 1000.00 BORROWED**  **(INTEREST COMPOUNDED MONTHLY)** | | | | | |
| *Interest rate (%)* | *Term in years* | | | | |
|  | ***1*** | ***2*** | ***3*** | ***4*** | ***5*** |
| 3.00 | 84.69 | 42.98 | 29.08 | 22.13 | 17.97 |
| 3.25 | 84.81 | 43.09 | 29.19 | 22.24 | 18.08 |
| 3.50 | 84.92 | 43.20 | 29.30 | 22.36 | 18.19 |
| 3.75 | 85.04 | 43.31 | 29.41 | 22.47 | 18.30 |
| 4.00 | 85.15 | 43.42 | 29.52 | 22.58 | 18.42 |
| 4.25 | 85.26 | 43.54 | 29.64 | 22.69 | 18.53 |
| 4.50 | 85.38 | 43.65 | 29.75 | 22.80 | 18.64 |
| 4.75 | 85.49 | 43.76 | 29.86 | 22.92 | 18.76 |
| 5.00 | 85.61 | 43.87 | 29.97 | 23.03 | 18.87 |
| 5.25 | 85.72 | 43.98 | 30.08 | 23.14 | 18.99 |
| 5.50 | 85.84 | 44.10 | 30.20 | 23.26 | 19.10 |
| 5.75 | 85.95 | 44.21 | 30.31 | 23.37 | 19.22 |
| 6.00 | 86.07 | 44.32 | 30.42 | 23.49 | 19.33 |
| 6.25 | 86.18 | 44.43 | 30.54 | 23.60 | 19.45 |
| 6.50 | 86.30 | 44.55 | 30.65 | 23.71 | 19.57 |
| 6.75 | 86.41 | 44.66 | 30.76 | 23.83 | 19.68 |
| 7.00 | 86.53 | 44.77 | 30.88 | 23.95 | 19.80 |
| 7.25 | 86.64 | 44.89 | 30.99 | 24.06 | 19.92 |
| 7.50 | 86.76 | 45.00 | 31.11 | 24.18 | 20.04 |
| 7.75 | 86.87 | 45.11 | 31.22 | 24.29 | 20.16 |
| 8.00 | 86.99 | 45.23 | 31.34 | 24.41 | 20.28 |
| 8.25 | 87.10 | 45.34 | 31.45 | 24.53 | 20.40 |
| 8.50 | 87.22 | 45.46 | 31.57 | 24.65 | 20.52 |
| 8.75 | 87.34 | 45.57 | 31.68 | 24.77 | 20.64 |
| 9.00 | 87.45 | 45.68 | 31.80 | 24.89 | 20.76 |
| 9.25 | 87.57 | 45.80 | 31.92 | 25.00 | 20.88 |
| 9.50 | 87.68 | 45.91 | 32.03 | 25.12 | 21.00 |
| 9.75 | 87.80 | 46.03 | 32.15 | 25.24 | 21.12 |
| 10.00 | 87.92 | 46.14 | 32.27 | 25.36 | 21.25 |

**FIXED TERM LOANS**

1) Joe takes out a loan for $7800 at 4% interest for 5 years. What will his monthly payment be? Use the *Personal Loan Calculator* on p.25.

2) Marie is buying a new snowmobile that costs $11 500.00. She will take a loan from her bank at 4.75% for 4 years.

a) Calculate Marie’s monthly payment.

b) Calculate the total amount Marie will pay for the loan over the 4 years.

3) Tim wants to buy a used car that costs $3900.00. He can get a loan at 3.25% for 3 years from his bank.

a) What will his monthly payment be?

b) What is the total amount Tim will pay for the loan over the 3 years?

4) Alan wants to buy a customized mountain bike that costs $3500. He has saved $1200 toward the cost.

a) How much will Alan need to borrow from the bank to buy his bike?

b) Alan can get a loan at 5.5% for 2 years from his bank. What will his monthly payment be for this loan?

c) What is the total amount Alan will pay for the loan over the 2 years?

d) How much will Alan pay in total for his bike?

5) Bruce takes out a $7300 loan and is offered two choices for repayment.

Option1: 5.75% per year for 3 years

Option 2: 7.00% per year for 2 years

a) Calculate the monthly payment for each loan option.

b) What is the total cost for each loan option?

c) Which loan would you recommend Bruce choose? Explain your answer.

Assignment: pg. 321 #7-8 & pg. 323 #3-4

**PAYDAY LOANS**

You have probably seen “stores” or TV commercials where you can borrow money without going to a bank of other financial institution. This type of short-term loan is often called a **payday loan** because the term is usually only until your next pay day. These are usually not a good idea as they charge very high rates of interest and it is compounded daily. Many people get into a lot of financial trouble thinking these loans can get actually get them out of trouble.

**PAYDAY LOANS**

1) Haylie borrowed $325.00 from a payday store, and 10 days later she paid back the loan and interest with a cheque for $365.50.

a) What was Haylie’s daily interest rate?

b) What was Haylie’s annual interest rate?

2) Brad borrowed $250.00 from a payday loan store. He paid back the loan and interest 9 days later. His annual rate of interest was 425%. How much interest did Brad pay?

3) Mike borrowed $725.00 from a payday loan store and agreed to repay it in 15 days at a daily interest rate of 1.67%. How much in total did Mike repay the store?

4) Gurpreet agreed to pay $527.50 to a payday company that gave him a loan of $485.00 at 1.10% per day. How many days did he have the money?

Assignment. Pg. 317 #1-3, Pg. 318 #4-6, Pg. 322 #1,2,5

Quiz next class

Chapter Test: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_