

Money & Finance

I. UNIT OVERVIEW & PURPOSE:

The purpose of this unit is for students to learn how savings accounts, annuities, loans, and credit cards work. All students need a basic understanding of how to save and spend their money responsibly.

II. UNIT AUTHOR:

Elizabeth Hume, Colonial Heights High School, Colonial Heights City Schools

III. COURSE:

Economics & Personal Finance
Math Analysis

IV. CONTENT STRAND:

Exponential Functions

V. OBJECTIVES:

In this unit, the student will be able to calculate interest earned from a savings account and from annuities. The student will be able to calculate loan payments and determine how long it will take to pay off a loan. The student will also be able to understand how credit cards work and how people can get into credit card debt so easily.

VI. MATHEMATICS PERFORMANCE EXPECTATIONS:

MPE.1 – Solve practical problems involving rational numbers (including number in scientific notation), percents, ratios, and proportions.

VII. VIRGINIA STANDARDS OF LEARNING:

EPF.13 – The student will demonstrate knowledge of credit and loan functions by a) evaluating the various methods of financing a purchase; and b) analyzing credit card features and their impact on personal financial planning.

EPF.18 – The student will demonstrate knowledge of investment and savings planning by a) comparing the impact of simple interest vs. compound interest on savings; and b) comparing and contrasting investment and savings options.

MA.9 – The student will investigate and identify the characteristics of exponential and logarithmic functions in order to graph these functions and solve equations and real-world problems. Examples of appropriate models and situations for exponential and logarithmic functions include compound interest.

VIII. NCTM STANDARDS:

- use symbolic algebra to represent and explain mathematical relationships
- identify essential quantitative relationships in a situation and determine the class

- or classes of functions that might model the relationships;
- draw reasonable conclusions about a situation being modeled

IX. CONTENT:

The content of this unit will include a lesson on savings accounts and annuities, a lesson on loans, and a lesson on credit card use and debt.

Saving money and paying off debt is a serious concern in America today, and it is imperative that we teach our students how to prepare for and manage both.

X. REFERENCE/RESOURCE MATERIALS:

PreCalculus with Limits – A Graphing Approach, 4th edition, Larson, Hostetler, & Edwards

Math 641: Mathematical Analysis and Modeling, Dr. Jürgen Gerlach

www.careersearchdatabase.com/salaries

www.kbb.com

www.financefreak.com

“How Payday Loans Work,” John Barrymore, www.howstuffworks.com

Teacher generated notes

Teacher generated exercises and project

VA Math Analysis SOLs

The Virginia Mathematics College and Career Readiness Performance Expectations

XI. PRIMARY ASSESSMENT STRATEGIES:

Class discussions

Short papers (reflection papers)

Projects

Teacher generated exercises

XII. EVALUATION CRITERIA:

Answers are provided in red for the exercises.

XIII. INSTRUCTIONAL TIME:

2-3 90 minute class periods

Lesson 1: Savings

Mathematical Objective(s)

The student will be able to calculate interest earned from a savings account and from annuities.

Materials/Resources

- Teacher generated notes, examples, and exercises (attached)
- Classroom set of graphing calculators

Class Discussion:

- Do any of you have a job?
- Are you saving any of the money you make?
- Do any of you having a savings account? If so, how long have you had it?
- Do you ever look at your statements and wonder how the interest was calculated?
- Did you know you are supposed to pay taxes on the interest you earn because it is considered income?
- Do you think having a savings account is important?

So how do savings accounts work?

We put our money into a savings account and the bank pays us interest (like rent) to use our money while it is in there. As long as we leave our money in the bank, it will continue to gain interest. Each time the interest is added, the account gains interest on the new amount, thus yielding compound interest.

Let P be the principal amount, or original amount invested at r interest rate, converted to a decimal, compounded once a year. When the interest is added at the end of the year, the new balance will be P_1 , where $P_1 = P + Pr = P(1 + r)$.

This pattern of multiplying the previous balance by $(1 + r)$ is then repeated each successive year.

Let's make a chart to see the pattern and determine a formula no matter how many years our money is in the bank:

Time in years	Balance after each compounding
0	P
1	$P_1 = P(1 + r)$
2	$P_2 = P(1 + r)(1 + r) = P(1 + r)^2$
3	$P_3 = P(1 + r)(1 + r)(1 + r) = P(1 + r)^3$
...	...
t	$P_t = P(1 + r)^t$

To accommodate more frequent compounding of interest, like quarterly, monthly, weekly, or daily, let n be the number of compoundings per year and let t be the number of years. Then the

interest rate per compounding period is $\frac{r}{n}$, the total times the interest will be compounded is nt , and the balance in the account after t years is $A = P \left(1 + \frac{r}{n}\right)^{nt}$.

Examples:

1) Suppose you started a savings account when you were 5 years old with \$100, but you never added any more money to it. How much money is in your savings account now if you were getting 3% interest compounded quarterly?

Answers will vary depending on age of student.

$$16 \text{ years old: } 100 \left(1 + \frac{.03}{4}\right)^{4 \cdot 11} = \$138.93 \quad 17 \text{ years old: } 100 \left(1 + \frac{.03}{4}\right)^{4 \cdot 12} = \$143.14$$

2a) Suppose you started a savings account on your 18th birthday with \$1000. How long would it take to double your money if the interest rate was 5% compounded monthly and you never added any more money to the account? (prior knowledge of solving exponential and logarithmic equations is required)

$$1000 \left(1 + \frac{.05}{12}\right)^{12t} = 2000 \quad \sim \text{solve for } t$$

$$\left(1 + \frac{.05}{12}\right)^{12t} = 2 \quad \sim \text{divide both sides by 1000}$$

$$\ln \left(1 + \frac{.05}{12}\right)^{12t} = \ln 2 \quad \sim \text{take the natural log of both sides}$$

$$12t \ln \left(1 + \frac{.05}{12}\right) = \ln 2 \quad \sim \text{bring the power down in front}$$

$$12t = \frac{\ln 2}{\ln \left(1 + \frac{.05}{12}\right)} \quad \sim \text{divide by the natural log on the left}$$

$$t = \frac{\ln 2}{12 \ln \left(1 + \frac{.05}{12}\right)} \quad \sim \text{divide by 12}$$

$$t = 13.892 \text{ years}$$

2b) What if you started the same account with \$10,000 and you left it in the bank until you were 40? How much money would you have then?

$$10000 \left(1 + \frac{.05}{12}\right)^{12 \cdot 22} = \$29,997.08 \quad \sim \text{That's almost triple your investment!}$$

You can see the more you invest and the longer you leave your money in the bank, the more you will earn!

But what if you added the same amount of money every month to a savings account regularly? How fast would it grow then? This is what is called an **annuity**. The biggest difference between

an annuity and a savings account is that you make regular payments into an annuity. Regular payments are equal deposits made every month.

Discussion: Most people your age don't have annuities, but I encourage you to start one. The sooner you get used to putting money aside each month, the easier it will be when you get older. Have it taken out of your paycheck and deposited into a separate account before you even see it, then you won't miss it. Be careful though, there is usually a fee for taking money out of an annuity before a certain time period is up. Just research your options before you decide on a specific account.

So how do annuities work? The formula for annuities is different than compound interest on a savings account.

$$A_n = D \left(\frac{(1 + i)^n - 1}{i} \right)$$

Where A_n is the amount of money in the account after n periods of time, n is equal to the number of years multiplied by twelve (because there are 12 months in a year), i is equal to the interest rate divided by twelve, and D is the amount you are depositing each month.

Examples:

3) Let's go back to the example when you were 5. You start the account with \$100, but this time you add \$10 a month, every month, until you are 18. How much money do you have now assuming it still gets 3% interest?

$$A_{156} = 100 + 10 \left(\frac{\left(1 + \frac{.03}{12}\right)^{13 \cdot 12} - 1}{\frac{.03}{12}} \right) = \$2005.05$$

How much of that money did you actually put it? $100 + 10(156) = \$1660$

How much was interest that you earned? $2005.05 - 1660 = \$345.05$

4) You have a really good job and can afford to put \$500 a month into an annuity with 5% interest? After 8 years, how much money do you have, how much have you put in, and how much interest have you earned?

$$A_{96} = 500 \left(\frac{\left(1 + \frac{.05}{12}\right)^{8 \cdot 12} - 1}{\frac{.05}{12}} \right) = \$58,870.26$$

You put in: $500(96) = \$48,000$

Interest earned: $58870.26 - 48000 = \$10,870.26$

I. Savings

Let P be the principal amount, or original amount invested at r interest rate, converted to a decimal, compounded once a year. When the interest is added at the end of the year, the new balance will be P_1 , where $P_1 = P + Pr = P(1 + r)$.

This pattern of multiplying the previous balance by $(1 + r)$ is then repeated each successive year.

Let's make a chart to see the pattern and determine a formula no matter how many years our money is in the bank:

Time in years	Balance after each compounding
0	P
1	
2	
3	
...	
t	

To accommodate more frequent compounding of interest, like quarterly, monthly, weekly, or daily, let n be the number of compoundings per year and let t be the number of years. Then the interest rate per compounding period is $\frac{r}{n}$, the total times the interest will be compounded is nt , and the balance in the account after t years is $A = P \left(1 + \frac{r}{n}\right)^{nt}$.

Examples:

1) Suppose you started a savings account when you were 5 years old with \$100, but you never added any more money to it. How much money is in your savings account now if you were getting 3% interest compounded quarterly?

2a) Suppose you started a savings account on your 18th birthday with \$1000. How long would it take to double your money if the interest rate was 5% compounded monthly and you never added any more money to the account? (prior knowledge of solving exponential and logarithmic equations is required)

2b) What if you started the same account with \$10,000 and you left it in the bank until you were 40? How much money would you have then?

II. Annuities

$$A_n = D \left(\frac{(1+i)^n - 1}{i} \right)$$

Where A_n is the amount of money in the account after n periods of time, n is equal to the number of years multiplied by twelve (because there are 12 months in a year), i is equal to the interest rate divided by twelve, and D is the amount you are depositing each month.

Examples:

3) Let's go back to the example when you were 5. You start the account with \$100, but this time you add \$10 a month, every month, until you are 18. How much money do you have now assuming it still gets 3% interest?

How much of that money did you actually put it?

How much was interest that you earned?

4) You have a really good job and can afford to put \$500 a month into an annuity with 5% interest? After 8 years, how much money do you have, how much have you put in, and how much interest have you earned?

Name _____

Savings & Annuity Exercises

I. Determine the balance A for P dollars invested at rate r for t years compounded:

a) quarterly b) monthly c) weekly d) daily

1) $P = \$1500$, $r = 6.5\%$, $t = 20$

2) $P = \$30,000$, $r = 9\%$, $t = 15$

3) $P = \$2500$, $r = 2.5\%$, $t = 10$

4) $P = \$3600$, $r = 3.75\%$, $t = 25$

5) $P = \$12,000$, $r = 4.25\%$, $t = 50$

6) Do you have a savings account? If so, find out what interest rate you have and how often it is compounded.

II. Calculate the annuity.

7) You deposit \$150 a month into an annuity with 4.5% interest. How much money do you have in the account after 10 years?

8) You deposit \$200 a month into an annuity with 3% interest. How much money is in the account after 6 years? How much of that money did you put in? How much was interest?

Savings Exercises - answers

I. Determine the balance A for P dollars invested at rate r for t years compounded:

a) quarterly b) monthly c) weekly d) daily

1) $P = \$1500$, $r = 6.5\%$, $t = 20$

a) \$5446.73 b) \$5484.67 c) \$5499.48 d) \$5503.31

2) $P = \$30,000$, $r = 9\%$, $t = 15$

a) \$114,004.04 b) \$115,141.30 c) \$115,587.81 d) \$115,703.51

3) $P = \$2500$, $r = 2.5\%$, $t = 10$

a) \$3207.57 b) \$3209.23 c) \$3209.87 d) \$3210.04

4) $P = \$3600$, $r = 3.75\%$, $t = 25$

a) \$9152.86 b) \$9179.49 c) \$9189.82 d) \$9192.48

5) $P = \$12,000$, $r = 4.25\%$, $t = 50$

a) \$99,354.76 b) \$100,098.28 c) \$100,387.60 d) \$100,462.34

6) Do you have a savings account? If so, find out what interest rate you have and how often it is compounded.

Answers will vary

II. Calculate the annuity.

7) You deposit \$150 a month into an annuity with 4.5% interest. How much money do you have in the account after 10 years?

\$22,679.71

8) You deposit \$200 a month into an annuity with 3% interest. How much money is in the account after 6 years? How much of that money did you put in? How much was interest?

\$15,755.88

\$14,400.00

\$1,355.88

Lesson 2: Loans

Mathematical Objective(s)

The student will be able to calculate loan payments and determine how long it will take to pay off a loan.

Materials/Resources

- Teacher generated notes, examples, and exercises (attached)
- Classroom set of graphing calculators
- Access to the internet for career and new car search
- www.careersearchdatabase.com/salaries
- www.kbb.com
- www.money.howstuffworks.com/personal-finance/banking/payday-loans.htm

Class Discussion:

- How many of you have your own car?
- Did you buy it yourself?
- Are you making payments on it?
- Do you know your interest rate?
- Do you think you got a good deal?

Today we are going to talk about borrowing money from a bank in the form of a loan. It could be a car loan, or a home loan, or a loan to buy some other large item, maybe even a student loan for college (but those are better to get as federal loans instead of bank loans). Interest works a little differently when you borrow money than when you put money into a savings account. One major difference is that you will be paying the money back by making monthly payments so the amount is declining, therefore, the formulas for compound interest and annuities do not work for loans.

This formula is a little more complicated. The amount you borrow will be P just like the principle amount in savings, the interest rate will still be r , and the length of the loan will be t in years. If you let R represent your monthly payments, the balance B_n after n number of payments can be figured by:

$$B_n = P \left(1 + \frac{r}{12}\right)^n - R \left(\frac{\left(1 + \frac{r}{12}\right)^n - 1}{\frac{r}{12}}\right)$$

If you let $\frac{r}{12} = i$ like it did in the annuities formula, you can write this a little more simply:

$$B_n = P(1 + i)^n - R \left(\frac{(1 + i)^n - 1}{i}\right)$$

If you want to figure out the monthly payments, you can set $B_n = 0$ and solve for R :

$$R = P \left(\frac{i(1+i)^n}{(1+i)^n - 1} \right) = \frac{Pi}{1 - (1+i)^{-n}}$$

Examples:

1) You just bought a car for \$18,500. You took out a 5 year loan at 4.9%. How much will your monthly payment be?

$$R = \frac{Pi}{1 - (1+i)^{-n}}; P = \$18,500, i = \frac{r}{12} = \frac{.049}{12}, n = 12(5) = 60$$

$$R = \frac{18500 \left(\frac{.049}{12} \right)}{1 - \left(1 + \frac{.049}{12} \right)^{-60}} = \$348.27$$

2) What is the balance of your car loan after 3 years?

$$B_n = P(1+i)^n - R \left(\frac{(1+i)^n - 1}{i} \right)$$

$$B_n = P \left(1 + \frac{.049}{12} \right)^{36} - 348.27 \left(\frac{\left(1 + \frac{.049}{12} \right)^{36} - 1}{\frac{.049}{12}} \right) = \$4819.98$$

3) How much do you actually end up paying for the car?

$$348.27(60) = \$20,896.20$$

4) When you have a car, is the payment the only expense you have?

no

5) So just being able to afford the payment isn't the only to think about when buying a car. What else should you consider in your decision?

Insurance, gas mileage, the type of gas it takes, the cost of regular maintenance, etc.

6) What kind of options do you think you have for emergency maintenance when you don't have the cash?

Borrow from parents, credit cards, payday loans, etc.

Payday Loans ~ \$40 billion (per year) industry!

www.money.howstuffworks.com/personal-finance/banking/payday-loans.htm

- Why is there so much talk about Payday Loans? Are they really that good?

Pros:

- You can get one very quickly, usually in less than 30 minutes
- They are convenient. They are open much longer than banks.
- They don't always require a credit check. So people with bad credit can still get a loan.

Cons:

- FEES!!!! For most states, the loan fee is \$15 for every \$100 borrowed, and you are only borrowing the money for 2 weeks at a time.

Example:

Let's say your car broke down and it will cost \$500 to fix and you don't have the cash in the bank to pay for it, but you will have enough after your next paycheck. You need your car fixed right away so you can keep going to school and work. What do you do for the money?
(Assuming your parents won't loan it to you)

You could try to get a loan from a bank, if they are open, but that usually takes several days, even weeks. So you stop by one of the MANY Payday Loan places. You easily secure a loan for \$500.

How much is the fee? $15(5) = \$75$

- So you would end up paying \$575 for a \$500 loan for 2 weeks!

How much interest is that per day? $\frac{75}{14} = \$5.36$

What if it took you a month (4 weeks) to pay off? $5.36(28) = 150.08$ just in fees! Plus the initial \$500; that's \$650.08 to borrow \$500 for a month!

What kind of interest rate is that? \$15 per \$100 for 2 weeks would be $\frac{15}{14} = \$1.07$ per day, multiplied by 365 days would be 390.55 which is almost 391% interest!

Class Discussion:

- Is that a fair price?
- Are Payday Loans ever a good idea?
- Who do you think uses payday loans the most?
- What could people do to help avoid needing payday loans?

Name _____

Notes – Loans

The amount you borrow will be P just like the principle amount in savings, the interest rate will still be r , and the length of the loan will be t in years. If you let R represent your monthly payments, the balance B_n after n number of payments can be figured by:

$$B_n = P \left(1 + \frac{r}{12}\right)^n - R \left(\frac{\left(1 + \frac{r}{12}\right)^n - 1}{\frac{r}{12}}\right)$$

If you let $\frac{r}{12} = i$ like it did in the annuities formula, you can write this a little more simply:

$$B_n = P(1 + i)^n - R \left(\frac{(1 + i)^n - 1}{i}\right)$$

If you want to figure out the monthly payments, you can set $B_n = 0$ and solve for R :

$$R = P \left(\frac{i(1 + i)^n}{(1 + i)^n - 1}\right) = \frac{Pi}{1 - (1 + i)^{-n}}$$

Examples:

1) You just bought a car for \$18,500. You took out a 5 year loan at 4.9%. How much will your monthly payment be?

2) What is the balance of your car loan after 3 years?

3) How much do you actually end up paying for the car?

4) When you have a car, is the payment the only expense you have?

5) So just being able to afford the payment isn't the only to think about when buying a car. What else should you consider in your decision?

6) What kind of options do you think you have for emergency maintenance when you don't have the cash?

Payday Loans ~ \$40 billion (per year) industry!

Pros:

Cons:

Example:

Let's say your car broke down and it will cost \$500 to fix and you don't have the cash in the bank to pay for it, but you will have enough after your next paycheck. You need your car fixed right away so you can keep going to school and work. What do you do for the money?
(Assuming your parents won't loan it to you)

You could try to get a loan from a bank, if they are open, but that usually takes several days, even weeks. So you stop by one of the MANY Payday Loan places. You easily secure a loan for \$500.

How much is the fee?

How much interest is that per day?

What if it took you a month (4 weeks) to pay off?

What kind of interest rate is that?

Loan Project

1. Pick a career for yourself and go to www.careersearchdatabase.com/salaries to find out how much the average salary is for that job. Divide by 12 to figure out your monthly paycheck. Subtract 30% from your monthly paycheck to account for the taxes you have to pay. How much money do you bring home a month?

2. Find a new car on the internet that you would like to buy. Start at www.kbb.com. Let's assume you have excellent credit so the dealer gives you buying options:

a) 3 year loan for 0.9%

b) 4 year loan for 1.9%

c) 5 year loan for 2.9%

d) 6 year loan for 3.9%

You cannot spend more than 15% of your take-home pay on the car. Can you afford the car you really want? Which buying option is a better option for you?

If you can't afford your dream car, find one that you can afford and determine the best buying option for you.

3. Find a used car that you would be interested in buying. What buying options are available? Even though the used car is cheaper than a new car, is buying a used car always a good option? Why or why not?

Loan Project Rubric

	4	3	2	1	0	Score
1.	Gives chosen career, salary from website, shows all work to figure out monthly income	Does not give career choice but gives salary and shows work for income	Does not list career or salary but does show work to figure out income	Gives career and salary but shows no work for monthly income	No work	
2.	Chooses a car, works out each option, and decides which option is best	Chooses a car, works out 3 of the options and decides which option is best	Chooses a car, works out 2 of the options and decided which option is best	Chooses a car, only works out 1 option	No work	
3.	Finds a used car, lists buying options, answers question	Finds a used car and lists buying options	Finds a used car and answers the question	Finds a used car but doesn't get buying options or answer the question	No work	

Total _____

Lesson 3: Credit Cards

Mathematical Objective(s)

The student will be able to understand how credit cards work and how people can get into credit card debt so easily.

Materials/Resources

- Teacher generated notes, examples, and exercises (attached)
- Classroom set of graphing calculators
- Access to the internet for credit card calculators
- www.financefreak.com

“The National Credit Research Foundation says that Americans owe about \$285 billion in credit card debt...And half of that is by college students!” (www.financefreak.com)

The need to educate young adults on credit cards is becoming increasingly critical. This lesson seeks to educate high school students about the risks of having credit cards and not paying off their balances monthly.

Think back to the lesson on savings accounts. If you invested \$1000 at 19% interest compounded monthly, how much would you have after a year, 2 years, and 5 years?

$$1 \text{ year: } A = 1000 \left(1 + \frac{.19}{12}\right)^{12*1} = \$1207.45$$

$$2 \text{ years: } A = 1000 \left(1 + \frac{.19}{12}\right)^{12*2} = \$1457.94$$

$$5 \text{ years: } A = 1000 \left(1 + \frac{.19}{12}\right)^{12*5} = \$2566.54$$

Unfortunately, savings accounts never have interest rates that high, but credit cards do...

Now think about purchasing something for \$1000, like a sofa, and paying for it with a credit card that has 19% interest. After 5 years, you would owe over \$2500 for that sofa (sort of). Because you will be making payments, it doesn't work exactly like savings interest or other types of loan interest, but you still end up paying a lot more than the original item cost if you don't pay off your balance every month. This is how credit card companies make their money!

The way credit cards get you, is that they only require you to make minimum payments each month, but if that is all you pay, it will take many years to pay off your balance. Here's how it works:

Let's take that \$1000 sofa you just bought with a credit card at 19% interest. To calculate the minimum monthly payment, the credit card company will multiply the balance of \$1000 by $\frac{.19}{12}$ which is \$15.80 and then round the answer, giving you a minimum payment of probably \$20.

So after the first month, you owe \$1015.80 and you only make a \$20 payment. Now you owe \$995.80.

The following month, you make another \$20 minimum payment, but your balance has increased due to interest to $995.80 \left(1 + \frac{.19}{12}\right) = \1011.57 and after you make the monthly payment, it's only down to \$991.57.

Do you see how making the minimum payment is only taking a few dollars off of the initial amount because most is going to pay interest? At this rate, it will take 8.32 years just to pay off that sofa! (credit card calculator on www.financefreak.com) If you pay \$20 a month for 8.32 years, you end up paying \$1996.80 for that sofa ($20 * 8.32 * 12$).

If you can't afford to pay off the balance in full the first month, make sure you are paying more than the minimum payment!

If you paid \$50 a month, you will have it paid off in 2.02 years.

If you paid \$100 a month, you would pay it off .91 years. That's just under 11 months!

“Credit card debt is the worst possible kind of debt you can have!” (www.financefreak.com) The interest rates are ridiculous and you can't write off the interest on your taxes like you can with interest from a home mortgage loan.

Don't be late with a payment either! You will get charged with a late fee on top of the amount you are already paying, the credit card company could raise your interest rate without even telling you, and it could be reported to the credit bureaus and affect your credit score.

The worst part about credit cards is that we NEED them! You can't buy a car or a house without credit, and you can't earn credit without a credit card.

3 main rules about credit cards (according to www.financefreak.com):

- 1) If you can eat, drink, or wear it, don't put it on a credit card.
- 2) If you can't pay for it at the end of the month when the bill comes, you don't need it now.
- 3) If it's an emergency or an investment in your future, this is a good time to use your credit card. (examples: your car breaks down or you need a new computer for school or work)

Discussion:

The convenience of credit cards is nice. You don't have to actually have the money to buy something you want or need. But is the convenience worth the consequences if you don't pay it off in a timely manner?

Is using a credit card better than a payday loan? Why or why not?

Name _____

Notes – Credit Cards

Think back to the lesson on savings accounts. If you invested \$1000 at 19% interest compounded monthly, how much would you have after a year, 2 years, and 5 years?

Unfortunately, savings accounts never have interest rates that high, but credit cards do...

Now think about purchasing something for \$1000, like a sofa, and paying for it with a credit card that has 19% interest. How much would you owe after 5 years?

Because you will be making payments, it doesn't work exactly like savings interest or other types of loan interest, but you still end up paying a lot more than the original item cost if you don't pay off your balance every month. This is how credit card companies make their money!

The way credit cards get you, is that they only require you to make minimum payments each month, but if that is all you pay, it will take many years to pay off your balance. Here's how it works:

Let's take that \$1000 sofa you just bought with a credit card at 19% interest. To calculate the minimum monthly payment, the credit card company will multiply the balance by the interest rate divided by 12 because there are 12 months in a year. What would that be?

Then they round the answer, giving you a minimum payment of probably \$20.

So after the first month, you owe \$1015.80 and you only make a \$20 payment. What do you owe now?

The following month, you make another \$20 minimum payment, but your balance has increased due to interest to $995.80 \left(1 + \frac{.19}{12}\right) = \underline{\hspace{2cm}}$ and after you make the monthly payment, it's only down to $\underline{\hspace{2cm}}$

Do you see how making the minimum payment is only taking a few dollars off of the initial amount because most is going to pay interest? At this rate, it will take 8.32 years just to pay off that sofa! (credit card calculator on www.financefreak.com)

If you pay \$20 a month for 8.32 years, how much do you end up paying for that sofa?

Use the credit card calculator online to figure out the following:

- 1) If you paid \$50 a month, how long will it take to pay it off?

- 2) If you paid \$100 a month, how long will it take to pay it off?

“Credit card debt is the worst possible kind of debt you can have!” (www.financefreak.com)

Don't be late with a payment either! You will get charged with a late fee on top of the amount you are already paying, the credit card company could raise your interest rate without even telling you, and it could be reported to the credit bureaus and affect your credit score.

The worst part about credit cards is that we NEED them! You can't buy a car or a house without credit, and you can't earn credit without a credit card.

3 main rules about credit cards (according to www.financefreak.com):

- 1)

- 2)

- 3)

Credit Card Assignment: Short paper, 200-300 words

If you already have a credit card, write about some of your experiences. If you do not have a credit card, talk to your parents about them. Find out how much your parents know about credit cards and debt. Write about your findings. If you shared new information with your parents that you learned in class, write about that and their reaction.

Grading is completely up to the teacher. It could be a daily grade for completion or students could be asked to present their papers to the class.

Unit wrap-up discussion:

How do you feel about savings, loans, and credit cards now?

Do you think everyone your age and older knows about savings and loans and credit cards?

Should they?

What can you do to educate others?

What do you think can be done in the community to help educate others?