



PERSONAL FINANCE

# Mastering Interest Rates

By Dr. Mike Casey, Professor of Finance, University of Central Arkansas



**ARKANSAS CENTER FOR  
RESEARCH IN ECONOMICS**

UNIVERSITY OF CENTRAL ARKANSAS

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## About ACRE

The Arkansas Center for Research in Economics is an Arkansas-focused research center housed in the College of Business at the University of Central Arkansas. Our scholars and policy analysts use academic research and original analysis to educate the public on important issues of public policy in Arkansas. Our research focuses on barriers to employment, taxes and subsidies, K-12 education, property rights, and government transparency. The views expressed in this publication do not necessarily reflect those of the University of Central Arkansas.

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## Acknowledgements

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# Pacing Guide

**This module covers a lot of information and should be split into several days. It can be extended beyond four days by using additional recommended resources. The following guide is a suggestion about how to sequence the material.**

# Suggested Pacing Guide

## 01 DAY

Topic: Introduction to Interest Rates, Saving vs. Borrowing

Standards:

PPF.7.SI.1: Compare the effects of interest rates as applied to saving and borrowing money

PF.7.SI.4: Analyze the relationship between risk and return

Essential Question: How do interest rates work when I borrow money? How is that different from how interest rates work when I lend money?

Activity: Borrowing vs. Lending

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## 02 DAY

Topic: How Rising or Falling Interest Rates Affect You

Standards:

PF.7.SI.2: Examine how consumers are affected by rising and falling interest rates

Essential Question: Why do interest rates change? What is the relationship between the Federal Reserve and interest rates? How do changing interest rates affect me?

Activities: Changing Interest Rates & How They Affect Us; Graphing Interest Rates

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## 03 DAY

Topic: Simple vs. Compound Interest

Standards:

PF.7.SI.3: Calculate simple and compound interest and explain the difference between the two

Essential Question: What is the difference between simple and compound interest? How long does it take interest to compound?

Activity: Simple Interest vs. Compound Interest

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## 04 DAY

Topic: The Relationship Between Risk & Return

Standards:

PF.7.SI.4: Analyze the relationship between risk and return

Essential Question: What risks do I take as a borrower? What risks do I take as a lender?

Activity: Changes in Interest Rates Over Time

A large, stylized purple graphic that resembles a speech bubble or a large letter 'R' with a white oval cutout in the center. It is positioned behind the main text.

# Content

**The following pages provide instructors with the lessons, vocabulary, questions, and in-depth analysis of the unit topics. Instructors can use these passages and graphics to guide their students through the unit.**



## INTRODUCTION

# Interest Rates

When we think of interest rates, we may begin to get anxious because the topic seems difficult to understand. But really, the concept is simple. Interest can be defined as rent on money. Paying interest when you borrow money for some period is similar to paying rent to use an apartment for some period.

For example, let's think about how the process works when you rent an apartment. You contact the property owner and agree to pay rent every month. In exchange, you get to use the apartment. At the end of your rental agreement, you leave the apartment and return the property to the owner. You paid rent to use the owner's property for some period, perhaps 12 months.

The same principle applies to interest rates. You contact the person who owns the money (the lender) and agree to pay some amount of rent to use that money. That rent is the interest rate, and it is expressed as a percent of the amount you borrowed. This loan amount, or the amount you owe, is called the principal. You pay interest on the principal for as long as you are using the money, just like rent on an apartment.

When you no longer need the money, you return it to the owner. You usually pay the interest plus a fraction of the principal each month for several months or years. This process of making equal payments every month until you completely repay the loan is called amortization.

Just like your apartment has an owner (the landlord) and a renter (the occupant), money has an owner (the lender) and a renter (the borrower). You pay interest if you borrow money, but you can also earn interest if you loan money. In other words, you can be a borrower or a saver. In the rest of this module, we will look at how interest rates affect us in our daily lives.

## Saving versus Borrowing

We need to understand both sides of how interest works so we can use this concept to our advantage. Sometimes it's easier to understand saving and borrowing with simple examples.

**Example 1:** Assume you need \$2,000 to buy a motorcycle so you can get back and forth to school and work over the next year. Your Uncle Jim agrees to loan you the money at an interest rate of 12%. He also agrees to let you pay the interest each month over the next 12 months and then repay the \$2,000 loan at the end of that year. Uncle Jim knows that your grandma told you she would give you \$2,000 when you graduate, so he knows you will have the money to repay the principal. How much interest will you pay your Uncle Jim?

To answer this question, we need to know a couple of things about interest rates. First, we need to know that interest rates are usually expressed as an annual percentage rate, or APR. The agreement you made with your uncle was to pay 12% annually. Since you will be paying monthly, you will need to figure out how much interest accrues on the \$2,000 each month.

### Interest Uncle Jim will earn:

1% per month ( $12\% / 12 \text{ months} = 1\% \text{ per month}$ )

### Interest accrued every month:

1% of \$2,000, or \$20 ( $\$2,000 \times .01 = \$20$ )

### Interest paid over a year:

\$240 (\$20 per month for 12 months)

### At end of loan term:

Motorcycle cost: \$2,000 | Interest paid: \$240

### Total motorcycle cost: \$2,240

( $\$2,000 \text{ principal} + \$240 \text{ interest}$ )



**\$2,000**

Motorcycle Cost



**\$240**

Interest Paid

**Accrued interest** is the amount of interest that the lender earns during some period, or the interest someone owes you if you are the lender. To convert an annual interest rate to a monthly interest rate, simply divide the annual rate by 12 since there are 12 months in a year. In this case, your Uncle Jim will earn 1% per month in interest ( $12\% / 12 \text{ months} = 1\% \text{ per month}$ ). The interest that accrues every month is 1% of \$2,000, or \$20 ( $\$2,000 \times .01 = \$20$ ). Over the year, you will pay Uncle Jim \$240, \$20 per month for 12 months, to borrow the \$2,000. At the end of the loan term, you will repay the original \$2,000. In total, the motorcycle will cost you \$2,240 ( $\$2,000 \text{ principal} + \$240 \text{ interest}$ ).

To summarize, you will pay \$240 in interest to borrow the money, and your Uncle Jim will make \$240 in interest for loaning you the money. As we go through this lesson, keep in mind that the interest rate picture has two sides: borrowers and savers (lenders).

**Example 2:** Assume you didn't buy the motorcycle and waited until graduation to get the \$2,000 your grandma promised you. Further, assume you managed to save another \$500 on your own. Now, what do you do with that \$2,500 if you decide you don't need the motorcycle? You can put the money in a bank account and let it begin working for you. After visiting several banks' websites, you find an online bank (one that has no physical branches) that will pay you a 2% return on your investment. How much interest will you earn in the first year on your \$2,500 investment?  $\$2,500 \times .02 = \$50$  in interest earned in the first year.



**Discussion Topic:** While some students would rather wait until they had \$2000, up front to buy a motorcycle, others might think \$20 a month is a small price to pay to drive a motorcycle to school every day of their senior year. Ask your students what they would prefer and why, recalling the decision-making process and subjective value.



## How Do Rising or Falling Interest Rates Affect You?

Interest rates constantly change. Just as the prices of goods and services change, the price of money (the interest rate) fluctuates due to changes in the **supply and demand** for money.

Three broad groups of people demand money: consumers, businesses, and governments. What factors affect their demand for money? Let's look at each group of money demanders, or borrowers, and see what influences their decision to borrow money.

**Consumers:** Consumers include you and I. We borrow money to purchase houses, cars, and other items. Our demand for money depends on several factors: our current income, our overall wealth, and our optimism about the future. When our income rises or our wealth increases, we have a greater ability to borrow money. We may upgrade our housing, buy a new car, or make another purchase using credit.

We also tend to borrow and spend more when we are more optimistic about the safety of our job and the overall economy. You hear about consumer optimism or pessimism when you hear about "consumer confidence." In addition, when interest rates are low, we tend to borrow more money. Conversely, when interest rates are high, we tend to borrow less money.



**Discussion Topic:** One of the biggest credit purchases you will ever make is buying a home. How do falling interest rates affect the homebuying decision? Answer: Lower interest rates make your monthly payment smaller so many consumers will begin shopping for a home when interest rates decline. Current homeowners may opt to refinance their home when interest rates fall since they may be able to lower their monthly payment enough to cover the cost of refinancing.

**Businesses:** Businesses borrow money to invest in assets that will make more money. For example, a local retailer may borrow money to expand their store and generate more sales. Businesses' money demand depends largely on whether consumers are buying their products. If a business's sales grow, the owner is more likely to borrow money to expand. An owner who is worried about future sales, or who fears their customers will reduce their spending, is less likely to borrow money for expansion.

Interest rates also influence business borrowing. When interest rates are lower, a business is more likely to borrow money. Lower interest rates reduce the cost of borrowing and might offer enough incentive to expand the business or replace outdated equipment.



**Discussion Topic:** How do interest rates affect a businesses decision to expand? Answer: The primary reason to expand a business is increasing product demand. However, the decision to borrow money for expansion is more likely to happen when interest rates fall.

**Government:** Government borrowing can occur at the local, state, or national level. At the local level, the need for schools, roads, water systems, and other infrastructure typically drives borrowing. At the state and federal levels, government overspending typically propels borrowing.



**Discussion Topic:** How do rising interest rates affect the government? Answer: The government's decision to borrow money is not linked to interest rates. However, the government's cost of servicing existing debt is related to interest rates. Higher interest rates mean it costs the government more in interest payments for any new debt it issues.

For example, in 2019, the US government spent about \$1 trillion more than it received in tax revenue. To spend this extra money, the government had to borrow this shortfall from investors by issuing bonds. Government demand for money typically does not depend on the same factors that determine consumer or business demand for money.



**Instructor Note:** Have your students redefine supply and demand and discuss the following: How are the supply and demand for money different from the supply and demand for other goods and services?

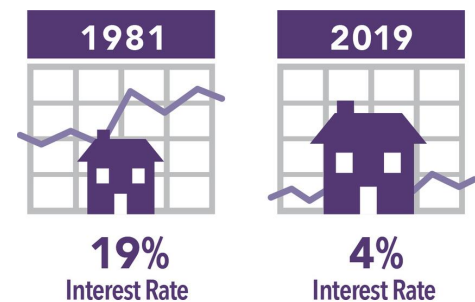
## Monetary Policy and Its Effect on Interest Rates

The government affects interest rates not only through its borrowing activity but also through monetary policy carried out by the central bank of the United States, or the Federal Reserve Bank (the Fed). The Fed conducts monetary policy designed to increase economic growth and keep prices from increasing too fast.

Monetary policy includes any action the Fed takes to accomplish these goals. The most common Fed action is to increase or decrease interest rates through changing the supply of money. If the Fed wants to increase economic growth, it lowers interest rates to encourage consumers and businesses to borrow money and spend it. If the Fed wants to keep prices from rising too fast, then it will increase interest rates to discourage borrowing and spending.

A sustained increase in the general level of prices is called inflation. When the same basket of groceries that cost you \$100 in 2018 costs \$102 in 2019, you're experiencing the effects of inflation. Because inflation reduces the purchasing power of money, lenders want to earn interest rates that are higher than the inflation rate.

For example, mortgage interest rates for a typical 30-year fixed rate mortgage were below 4% at the end of 2019. In 1981, mortgage rates were about 19%. Why the big difference? Inflation rates in 2019 were about 2%, while they were over 10% in 1981. If a bank loaned money at an interest rate below the inflation rate, the bank would be receiving loan payments in dollars that would not be worth as much.



**Discussion Topic:** How do interest rates affect the size of the home you can buy?

**Answer:** When interest rates are lower you can buy a more expensive home without having a larger payment. For example, a 1% drop in interest rates can lower your payment by \$200 to \$300 a month or more if the home is very expensive. When this occurs, many homebuyers will choose to buy a larger home instead of reducing the monthly amount they expected to pay.

These factors affecting the supply and demand for money all work together to cause interest rates to change almost daily. When interest rates change, it affects us in different ways. For example, if I save a lot of money and keep it in the bank, then higher interest rates are good for me since I will earn more money on my deposits. Many people who are in or near retirement would prefer to see higher interest rates since they have already made most of the big purchases of their lifetimes and locked in their interest rates or paid off their debts. Now they have savings in the bank that they intend to live off of during retirement, and they want that savings to earn as much interest as possible.

In contrast, younger people often borrow large sums to buy cars and houses and pay for education. They like to see lower interest rates that reduce their borrowing costs and lower their payments. When interest rates are low, they can borrow more money and keep their payment the same, or borrow the same amount of money and have a lower payment.

As you can see, lower interest rates are good for borrowers and bad for savers. Higher interest rates are bad for borrowers and good for savers. Whether you want interest rates to rise or fall depends on which group you fall into. Are you a borrower or a saver? Many people are both.

One way to determine the borrower's cost of higher interest rates is to compute how much additional interest they will pay over the life of a loan. In the following table, you can see the difference in total interest paid over the life of a home loan, or mortgage, at different interest rates.

## Interest on a \$200,000 Mortgage Loan

<b>Mortgage Type</b>	<b>APR</b>	<b>Monthly Payment</b>	<b>Total Interest Paid over the Life of the Loan</b>	<b>Total Interest and Principal Paid over the Life of the Loan</b>
30-year fixed	5%	\$1,073.64	\$186,510.40	\$386,510.40
30-year fixed	6%	\$1,199.10	\$231,676.00	\$431,676.00
15-year fixed	4%	\$1,479.38	\$66,288.40	\$266,288.40
15-year fixed	5%	\$1,581.59	\$84,686.20	\$284,686.20

As you can see, the total interest over the life of mortgage changes significantly when interest rates go up or down. For this reason, when interest rates increase, homebuyers typically buy less expensive homes. Or, they keep renting because they cannot afford the home they want.

Let's look at a similar example using different interest rate and term combinations for a car loan. We'll use \$15,000 as the purchase price on a used car and see how much interest we would pay over the life of the loan.

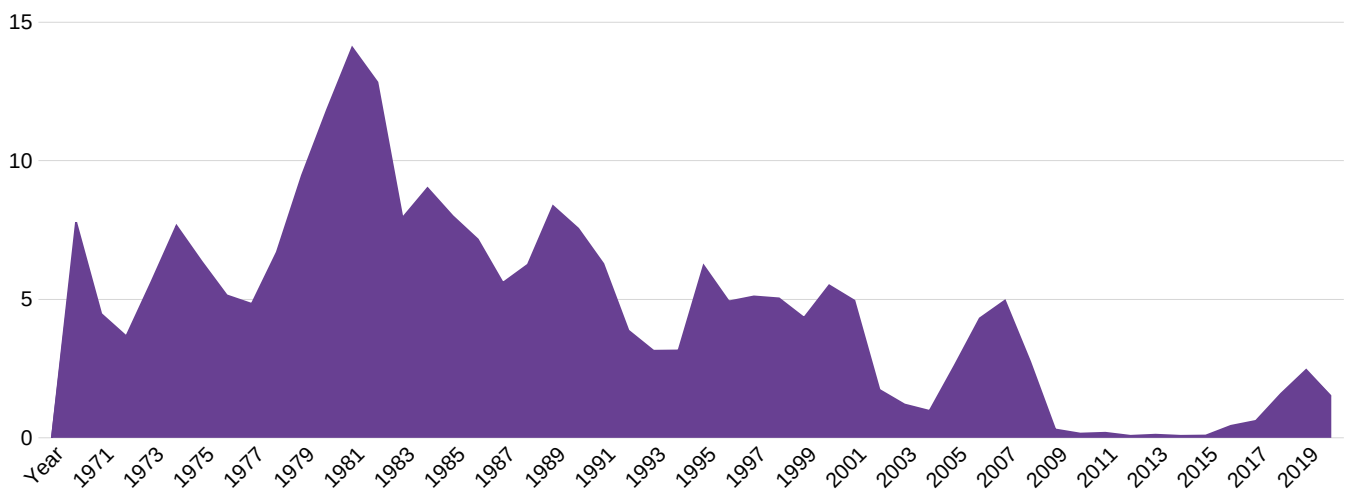
## Interest on a \$15,000 Auto Loan

<b>Auto Loan Type</b>	<b>APR</b>	<b>Monthly Payment</b>	<b>Total Interest Paid over the Life of the Loan</b>	<b>Total Interest Paid over the Life of the Loan</b>
3-year fixed	5%	\$449.56	\$1,184.16	\$16,184.16
3-year fixed	6%	\$466.33	\$1,787.88	\$16,787.88
2-year fixed	4%	\$651.37	\$632.88	\$15,632.88
2-year fixed	5%	\$658.07	\$793.68	\$15,793.68

As you can see, the lower the interest rate for a given term, the lower your monthly payment and the less you pay over the life of the loan. The differences in these amounts may not seem significant, but over the course of your lifetime, you could pay several tens of thousands of dollars in higher interest if you have higher interest rate loans.

The following graph shows how interest rates tend to change over time using US Treasury bills as an example. As you can see, the interest rate on six-month US Treasury bills has fluctuated widely over the past 50 years. You will see the same general trend regardless of the specific interest rate you evaluate.

### Interest Rates Over the Past 50 Years



Source: <http://www.economagic.com/em-cgi/data.exe/fedbog/tbsm6m>

While interest rates have hovered near historic lows from 2008 through 2019, we should not expect them to stay low forever. Interest rates will always move up and down based on several factors that include the supply and demand of money, Federal Reserve policy, and inflation rates.

## The Difference Between Simple Interest and Compound Interest

Simple interest accumulates only on the original loan principal or deposit amount. For example, let's say you deposited \$1,000 in the bank and the stated interest rate was 6%. You would earn  $\$1,000 \times .06 = \$60$  over the course of the year. The interest accumulates only on the original \$1,000 that you deposited.

	Simple Interest	Compound Interest
Initial Deposit	(\$1,000)	(\$1,000)
Interest Rate	(6%) 1 year	(6%) / 4 quarters = 1.5%
The Math	$1,000 \times .06 = \$60$ <hr/> <b>\$1,060</b>	Q1: $\$1,000 \times .015 = \$1,015$ Q2: $\$1,015 \times .015 = \$1,030.23$ Q3: $\$1,030.23 \times .015 = \$1,045.68$ Q4: $\$1,045.68 \times .015 = \$1,061.37$ <hr/> <b>\$1,061.37</b>

In contrast, with compound interest, you earn interest on the original principal plus any previous interest earned that has been added back to the account. Using the same principal and interest rate, now assume interest is compound quarterly. That means that every quarter, or every three months, accumulated interest will be added back to the account and you will begin earning interest on the entire amount.

Let's do an example to see how compound interest works. First, we'll need to convert the annual interest rate to a periodic interest rate. The periodic interest rate is the interest charged per period such as monthly, quarterly, or semi-annually. Since we are using quarters, or three-month periods, we need to convert the 6% to a quarterly interest rate. We'll divide 6% by four quarters (since there are four quarters in a year) to arrive at 1.5% per quarter, or .015.

So, in the first quarter, you will earn  $\$1,000 \times .015 = \$15$  in interest. This amount will now be added back to the original \$1,000, and in the second quarter, you will earn interest on the original principal of \$1,000 plus the first quarter's interest of \$15, for a new total of \$1,015.

In the second quarter, you will earn  $\$1,015 \times .015 = \$15.23$  in interest. When you add this amount back to your account, you will have  $\$1,015.00 + \$15.23 = \$1,030.23$  at the end of this six-month period. You will now begin earning interest on this new amount during the third quarter.

In the third quarter, you will earn  $\$1,030.23 \times .015 = \$15.45$  in interest. When you add this amount back to your account, you will have  $\$1,030.23 + \$15.45 = \$1,045.68$  at the end of this nine-month period. You will now begin earning interest on this new amount during the fourth quarter.

In the fourth quarter, you will earn  $\$1,045.68 \times .015 = \$15.69$  in interest. When you add this amount back to your account, you will have  $\$1,045.68 + \$15.69 = \$1,061.37$  at the end of the year.

When you compare the amount you earned with compound interest (\$1,061.37) to the amount you earned with simple interest (\$1,060.00), you see that you made more money with compounding. The simple interest method earned you \$60 over the year, while the compound method earned you \$61.37. Compound interest will always earn more money than simple interest.

When you look at the difference over one year, it may not seem like much. However, when you look at the difference over a long period, with a larger sum, with higher interest rate, or all three, the difference will be significant.

When you are dealing with a single deposit, such as the \$1,000 in our example, you can estimate the account's future value with the following formula:

Future Value = Present Value x (1 + interest rate)<sup>number of periods</sup>

or

$$FV = PV(1 + i)^n$$

where

n = the number of periods

i = the periodic interest rate expressed in decimal form

PV = the initial deposit

FV = the amount you will have at the end of the period

**Earning compound interest over time can make a huge difference in how much money you accumulate.**

Using our example, let's see how to compute the year-end value (FV) of our \$1,000 invested (PV) at 6% annual interest (i = .06) that was compounded quarterly (n = 4).

$FV = \$1,000(1.015)^4 = \$1,000(1.06136) = \$1,061.36$ . Notice we have a one-cent difference due to rounding. When we computed the year-end value one quarter at a time, we came up with \$1,061.37.

The examples above show that earning compound interest over time can make a huge difference in how much money you accumulate.

Let's look at another quick example. If you deposited \$10,000 in an account earning simple interest of 10%, you would have \$20,000 after 10 years. You would earn \$1,000 a year in interest, but you would not earn any additional interest on that amount. After 10 years of earning \$1,000 a year in interest, you would have a total of \$10,000 principal + (10 years x \$1,000 interest per year) = \$20,000.

However, earning compound interest, you would have

$$FV = \$10,000(1.10)_{10} = \$25,937.42$$

The compound interest account earned almost \$6,000 more! Earning compound interest and beginning to save at a young age are critical to building wealth over time. **Most savings accounts compound interest at least every quarter, but some compound more frequently. Pay attention to the compounding frequency when saving or borrowing money.**

Compound interest doesn't just affect savers, though; it also affects borrowers. If you are a borrower, you will pay more interest if the loan charges compound interest than if it charges simple interest. For example, credit card interest compounds daily. This practice allows credit card issuers to earn millions of dollars more per year since they charge compound interest on all their accounts. It might not make a lot of difference to your account if you carry a small balance, but it adds up to large sums for the credit card issuers. Let's take a closer look at a credit card statement.

- When you receive your statement, you can look at your spending history for the past month and will not be charged interest if the total balance is paid before the due date.

TEAR OFF THIS PAYMENT STUB AND MAIL WITH YOUR CHECK OR MONEY ORDER TO THE ADDRESS BELOW.

Check this box to indicate any **ADDRESS CHANGES** detailed on back.

Payment Due Date	New Balance	Past Due Amount	Minimum Payment Due
10/05/2018	\$284.70	\$0.00	\$25.00

**CREDIT CARD COMPANY**

Account Number .....

\$

Please write your account number on your check. In order to receive payment by your due date, we suggest mailing at least five (5) days prior to the date. See reverse side for important information.

**MAKE CHECK PAYABLE TO:**

Transaction Summary				
Transaction Date	Posting Date	Reference Number	Transaction Description	\$ Amount
08/17	08/17		SHOPPING EXPENSES	\$168.00
09/10	09/10		GASOLINE	\$30.68
09/10	09/10		DINNER & A MOVIE	\$86.02

- Now, let's say you receive this bill and promptly forget about it, thinking you could just pay extra the following month. Your next month's statement would look something like this:

TEAR OFF THIS PAYMENT STUB AND MAIL WITH YOUR CHECK OR MONEY ORDER TO THE ADDRESS BELOW.

Check this box to indicate any **ADDRESS CHANGES** detailed on back.

Payment Due Date	New Balance	Past Due Amount	Minimum Payment Due
11/5/2018	\$362.00	\$25.00	\$25.00

Late Fee	Interest Charge
\$25.00	\$52.30

**CREDIT CARD COMPANY**

Account Number .....

\$

Please write your account number on your check. In order to receive payment by your due date, we suggest mailing at least five (5) days prior to the date. See reverse side for important information.

**MAKE CHECK PAYABLE TO:**

Transaction Summary				
Transaction Date	Posting Date	Reference Number	Transaction Description	\$ Amount
10/6/18	10/6/18		INTEREST CHARGE	\$52.30
10/6/18	10/6/18		LATE FEE	\$25.00

For more credit card statements for your students to explore, see more here: <https://www.discover.com/credit-cards/resources/how-to-read-a-credit-card-statement/>

Discussion Topic: Ask your students to list the changes they see from the original bill to the new bill and discuss how interest accumulates on credit cards.



## What Is Risk and How Does it Affect Interest Rates?

Different types of investments have different levels of risk. The greater the chance that we will lose money, or make less than we expect to, the greater the risk. If you are an investor, or someone who lends money to someone else, you will make some assessment of the risk involved. If the risk is higher, you will want to make more money (earn a higher interest rate) to compensate you for taking on more risk.

Any rational person will always invest in a lower risk investment if all investments offer the same potential return. This concept is called risk aversion. Everyone has a different level of risk aversion. Some of us are very risk averse and prefer safe investments that have a low chance of losing money. Some people are even more risk averse and invest only in assets where there is no risk of loss. Still others have low risk aversion and are willing to choose less safe investments that have a higher chance of losing money but offer greater potential returns.

### INVESTING

One investment that has no risk of loss is a bank deposit of up to \$250,000. The Federal Deposit Insurance Corporation (FDIC) guarantees these deposits. If an FDIC insured bank becomes financially insolvent, you will get your money back. However, returns on bank deposits are so low that they might not even keep up with inflation. Recall that inflation occurs when prices increase and it costs more for us to buy the same things. When you keep your money in a bank account earning 1% a year and inflation is 2%, then you are losing purchasing power. Even though you have more money at the end of the year, it will buy less due to inflation.

Many people are willing to take more risk with at least part of their savings if they can earn a higher return. Some investors put money in the stock market. Over the past 100 years, the stock market has returned an average of over 9% per year before inflation. However, there have been years when returns were negative. Many investors are willing to accept this possibility of loss for the greater average returns. This is especially true since investors can often avoid losses by holding onto their stocks until the market recovers.

In between the low but safe returns of bank accounts and the high but riskier returns of stocks are moderate-return options such as government bonds and corporate bonds. Many investors place their money in a variety of savings and investments with the goal of outpacing inflation and building wealth through compound interest, all while taking a level of risk that they're comfortable with.

### BORROWING

If you are a higher-risk borrower, you will have to pay a higher rate of interest to compensate the lender for the possibility that you won't repay what you owe. If you are a lower-risk borrower, you will pay a lower rate of interest since the lender has good reason to believe you'll repay the loan in full.

How does a lender determine the risk associated with loaning money? If you want to borrow, they will require you to submit a loan application that provides information on your income, employment, and any savings or other assets you might have. In addition, the lender will run a credit check that gives them a numeric score regarding your creditworthiness. Your credit score is based on the information in your credit reports, which provide details on your current debt, your payment history, and other factors that help lenders determine whether you are able and likely to repay a loan. If you are deemed likely to repay a loan, then you will pay a lower interest rate since the lender's risk is minimal. If you are deemed less likely or unlikely to repay a loan, then you will pay a higher interest rate if the lender decides to make the loan. In some cases, the lender may decide the risk is too high and decline your application.

## Interest Rates, Risk, and Common Financial Products

Financial products are instruments through which a person can invest money, borrow money, or save money. Common financial products include stocks, bonds, savings accounts, student loans, and home mortgages. Let's look at a few common financial products that most people will use during their lifetime and evaluate some characteristics of each one, including their interest rates.

### **BANK ACCOUNTS**

The first three financial products we'll discuss all have FDIC insurance on each account up to the \$250,000 limit. So, from a saver's perspective, these accounts have no risk. They also pay the lowest interest rates. These accounts are where we keep money for day-to-day transactions and our emergency reserve fund. Financial planners tell us we should have three to six months of living expenses in cash in our emergency reserve fund, which is sometimes called a rainy day fund.

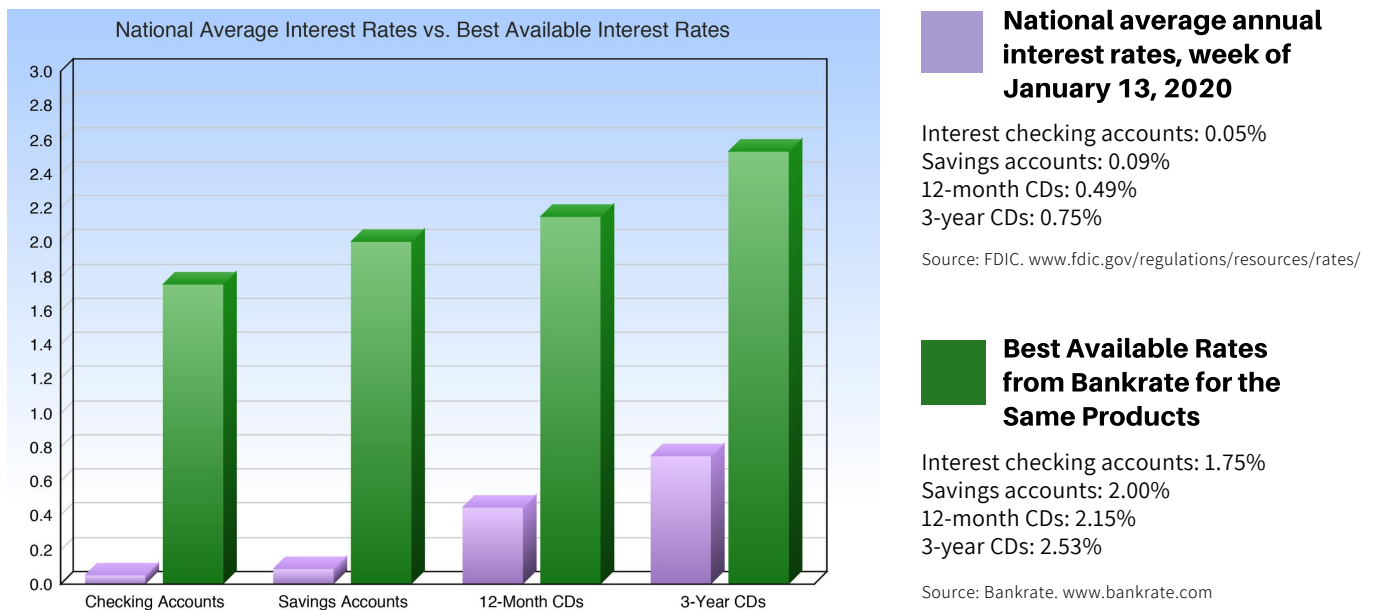
### **CHECKING ACCOUNTS**

Checking accounts, or checkable deposits, are available at banks, credit unions, and other financial institutions. Checking accounts are also called transactional accounts since we use the money in our checking accounts to conduct transactions such as paying bills and making purchases. Most of us probably use online bill pay and our debit cards more than we use checks, but the accounts serve the same purpose regardless of how we withdraw money from them. Most of us also have our pay directly deposited into a checking account. These accounts sometimes pay a small amount of interest—usually far less than the inflation rate—on your balance.

**Savings Accounts:** Savings accounts are offered by all the same financial institutions that offer checking accounts. Most people electronically link their checking and savings accounts so they can quickly and easily transfer money between them.

**Certificates of Deposit:** Certificates of deposit are also called bank CDs. Savers can often earn slightly higher interest rates if they put their money in a CD instead of a savings account. When you buy a CD, you are guaranteeing the bank you will keep the money deposited for the length (also called the term or maturity) of the CD. CD maturities vary, but some common lengths are 6 months, 1 year, 3 years, and 5 years. Since the bank can count on this money staying in the account, they are willing to pay more interest. The longer the CD maturity, the higher the interest rate. While you can get your money out early if you need it, you will typically pay a penalty for the early withdrawal.

### National Average Interest Rates vs. Best Available Interest Rates



**For Discussion:** Why are national average annual interest rates different from the best available rates for the same products?

The next three types of financial products are also used to save money and build wealth. You typically do not want to put money in these investments unless you will not need it for several years. Bond values can fall rapidly as interest rates increase and you don't want to be forced to cash out when bond values are low.

**Bonds:** Bonds are essentially IOUs that issuers sell to investors to raise money. For example, a corporation may need \$100 million and decide to issue and sell bonds to raise the funds. Bonds typically have a \$1,000 face value, which means they are sold in \$1,000 increments. The bond will have a stated rate of interest that the bond issuer pays the investor every year. This stated rate of interest is called the coupon payment. Bonds also have a maturity date when the bond issuer will repay the bond's face value.

For example, a firm might issue (sell) a \$1,000 face value bond with a 5% coupon rate that matures in 20 years. The investor that buys this bond will receive \$50 a year in interest (5% coupon rate x \$1,000 face value) for each of the next 20 years, and then the investor will get their \$1,000 back.

Governments also issue bonds to raise money for expenses that tax dollars can't cover. The US government is one of the largest bond issuers, but state and local governments (municipalities) also issue bonds. Government bonds pay for things like new schools, affordable housing, and other projects intended to benefit the community as a whole.

**Bond Mutual Funds:** Mutual funds are professionally managed investment programs that pool investors' money and then invest it according to the fund's goals and objectives. There are thousands of mutual funds available for investors to buy into, and many of these funds are bond funds. Bond fund returns vary, but some component of the fund's returns is due to the bond interest received. Bonds can also generate capital gains or capital losses when sold. Investors can benefit from choosing a bond mutual fund over an individual bond since the mutual fund's risk can be lower simply due to diversification.

**Money Market Mutual Funds:** Money market funds are similar to bond mutual funds except that money market funds invest in very short-term financial securities or products such as bank CDs and short-term US Treasury bills instead of corporate or government projects. Investors in a money market mutual fund will usually earn a slightly higher interest rate from a money market mutual fund than they would earn from a savings account and much less than they would earn from a bond mutual fund. The risk of a money market fund is higher than the risk of an FDIC guaranteed account but lower than the risk of a bond or bond mutual fund.

## **LOANS**

Now, let's look at some financial products where we are the borrowers and not the lenders (savers). As a borrower, you want to pay the lowest rate possible assuming the loan quality is the same. Individuals considered high-risk borrowers will pay thousands of dollars in additional interest over their lifetimes relative to borrowers considered low-risk.

**Credit Cards:** Credit cards are issued by banks and other financial institutions. A credit card account lets you borrow money by using the card to make purchases. Because you can borrow and repay money indefinitely using a credit card, it's considered a revolving line of credit.

When you have a credit card, you can borrow up to your credit limit, a predetermined maximum amount the credit card issuer has agreed to loan you. If you pay the balance in full every month, you will not incur interest charges. However, if you carry a balance on the account, you may pay a high rate of interest. Average credit card interest rates range from 18% to 22% a year. Since credit cards are such a costly way to borrow money, you should not rely on them as a longer-term source of funds unless it is a true emergency.

**Auto Loans:** Many people take out an auto loan when they need to buy a car. While automobile manufacturers sometimes offer zero-interest car loans, it is more common to pay some rate of interest on these loans. The higher the interest rate, the more you will pay for the car over the life of the loan.

The interest rates for used car loans are usually higher than the rates for new car loans. Also, used car loans are for shorter terms in most cases since the life of the car is shortened. Auto companies know that lower interest rates, and lower payments, will make it easier to attract buyers. Of course, whether the payments are actually lower on a new car will depend on the car's cost and the loan's term.

For both used and new car loans, the car is collateral, which means the car's title—its ownership—reverts back to the lender if you fail to make the scheduled payments. In addition, if the car is repossessed, this incident will damage your credit and make it difficult, if not impossible, to borrow money again until some time passes. Defaulting on a loan substantially harms your credit score, the numeric score lenders use to evaluate your creditworthiness.

**Personal Loan:** Personal loans, sometimes called signature loans since they are granted based solely on your promise to repay (your signature), do not have any collateral and are based on your credit rating and the lender's assessment of whether you will repay the loan. Interest rates vary widely on personal loans.

**Mortgages:** A mortgage is a loan made using real estate as collateral. Mortgages are typically repaid over a 15-year or a 30-year period during which borrowers make monthly payments.

The mortgage interest rate depends on the borrower's creditworthiness. Mortgage rates are lower than credit card or personal loan interest rates since the real estate ownership will revert back to the lender if you fail to make payments. This process is called foreclosure.

Mortgages come in two broad types:

- **Fixed rate mortgages:** The interest rate does not change over the life of the mortgage. For a 30-year fixed rate mortgage, the borrower knows the interest rate will not change over the life of the loan. All of the risk associated with changing interest rates in the broader market falls on the lender. No matter how much market interest rates might increase over the life of the loan, the borrower's payment will not change.
- **Variable rate mortgages:** Variable rate mortgages are commonly called adjustable rate mortgages, or ARMs. ARMs have an initial period where the interest rate is fixed, but after that period ends, the rate adjusts up or down to the market rate.

For example, a 5/1 ARM has a fixed interest rate for the first five years of the loan. These loans are set up to be paid over a 15- or 30-year term so the interest rate can adjust every year after the first five years. Most ARMs have a ceiling and a floor on the total amount the loan can adjust. The adjusted interest rate is always based on a benchmark interest rate such as the 10-year US Treasury bond rate.

ARMs shift some of the risk of changing interest rates to the borrower. For example, if market rates of interest increase, the loan's interest rate will adjust and the borrower will have a higher payment.

ARMs can be popular in housing markets that have very high housing prices. Because their initial interest rate tends to be slightly lower than a fixed loan's interest rate, sometimes that small difference means the difference in qualifying for the loan.

Before the 2007 real estate downturn, many people used ARMs without understanding them. When interest rates adjusted upward, they could not make the new, higher payments. This led to a high mortgage default rate and started the decline in housing prices that preceded and caused the Great Recession.

However, ARMs can be useful if you expect to move within three to five years and still want to buy a home—as long as you understand the risks. Remember that borrowers using an ARM are assuming the risk associated with interest rates moving up. When the loan is a fixed rate loan, the lender is assuming that risk.

## Annual Percentage Rate, Annual Percentage Yield, and Effective Annual Interest

When you're shopping for a loan, choosing an investment, or opening an interest-bearing account, it's not enough to know about interest rates and the difference between simple and compound interest. You'll need to understand several other terms as well.

### ANNUAL PERCENTAGE RATE (APR)

Federal law mandates that lenders quote borrowers an interest rate that includes all the financing costs involved with the loan. In the past, some lenders attempted to conceal the true cost of a loan by quoting a low interest rate, then tacking on extra fees and expenses such as loan application fees and loan origination fees. This practice effectively increases the interest rate borrowers pay, but because lenders could get away with only quoting the loan's interest rate, the total loan costs were not as apparent to the borrower. Today, the Truth in Lending Act, passed in 1968, mandates that lenders prominently disclose all loan costs prior to making the loan.

The annual percentage rate, or APR, reflects all of the loan's costs, including fees and transaction costs, in addition to the interest rate. APR gives potential borrowers the information needed to evaluate a loan's true cost and makes it easier to compare different loans for the same product.

The following table shows a few examples of how additional fees increase borrowing costs for a one-year loan.

### APR for a One-Year, \$4,000 Loan

Loan and Stated Interest Rate	Interest Expense	Other Finance Charges	Origination Fee	Total Expenses	APR (Total Expenses/ Loan Amount)
Loan 1 (10%)	\$400	\$0	\$0	\$400	$\$400/\$4,000 = 10\%$
Loan 2 (9%)	\$360	\$100	\$50	\$510	$\$510/\$4,000 = 12.75\%$
Loan 3 (10%)	\$400	\$50	\$0	\$450	$\$450/\$4,000 = 11.25\%$
Loan 4 (8%)	\$320	\$0	\$80	\$400	$\$400/\$4,000 = 10\%$

As you can see by comparing APRs, loan 1 and loan 4 are the least expensive options. Both have the same APR, so a borrower should be indifferent between these two loans—though if they didn't understand APR, they might think loan 4 was less expensive because of its lower stated interest rate, or nominal rate. The nominal rate of interest ignores all other loan costs, so you cannot evaluate loans based solely on this rate.

This simplified example illustrates the concept of APR, but it ignores one important point. APR does not take compounding into effect. We need another concept to do that.

## Annual Percentage Yield (APY) or Effective Annual Rate (EAR)

The APY, or EAR, is the interest rate that factors in the effect of compounding frequency. Since APR doesn't consider compounding frequency, it can understate the rate you are actually paying unless the compounding is factored into the interest costs. Remember, compounding refers to the practice of adding interest back to the principal and then charging (or earning) interest on the entire amount. If you are a borrower, a greater compounding frequency increases the interest cost on the loan. If you are a saver, investor, or lender, a greater compounding frequency increases the amount of interest you earn. The APY is also known as the effective annual rate (EAR).

Most lenders now report APR with the compounding frequency included. However, good practice is to read the fine print on your loan agreement before you sign it. If something is not accurate, make the lender change it before signing any documents.



Discussion Topic: Why can't you rely strictly on APR to calculate the cost of a loan?

A large, stylized purple graphic that resembles a thick, rounded letter 'E' or a similar shape, composed of several overlapping curved segments. It is centered on the page and serves as a background for the text.

# Assessment Materials

**The following assessments can be used in multiple ways. Instructors can use these materials to facilitate classroom discussions, group projects, or individual student assignments. Every activity can be completed without Internet access or other outside resources.**



**Exercise #1 | STUDENT VERSION**

**Borrowing vs. Lending**

(30–45 minutes)

Name \_\_\_\_\_ Date: \_\_\_\_\_ Class Period: \_\_\_\_\_

Most of us will use several financial products during our lifetimes. Because of this, we need to understand how these products affect us as borrowers, savers, and investors.

1. Look at each of the financial products listed in the table below and identify whether you would be a borrower or a lender for each product. Then research and record the average interest rate for each of the financial products. Keep in mind that when you deposit money in a bank you are actually loaning the bank money.

<b>Financial Product</b>	<b>Borrower</b>	<b>Lender</b>	<b>Average Interest Rate</b>
Car Loan			
Bank Certificate of Deposit			
Savings Account			
Mortgage			
Bond Mutual Fund			
Credit Card Purchase			
Student Loan			

2. After you classify each item, rank them in order of lowest interest rate to highest interest rate. Rank the borrower accounts first and then rank the lender accounts.

3. Discuss why you think each product has the interest rate it does. How did risk factor into your decision?



## Exercise #1 | TEACHER VERSION

# Borrowing vs. Lending

(30–45 minutes)

**PF.7.SI.1 - Compare the effects of interest rates as applied to saving and borrowing money**

**PF.7.SI.4 - Analyze the relationship between risk and return**

Most of us will use several financial products during our lifetimes. Because of this, we need to understand how these products affect us as borrowers, savers, and investors.

**READING: Each scenario should take about 10 minutes to complete.**

**NOTE: If you do not have internet access in your classroom, average interest rates have been included below to share with your students.**

1. Look at each of the financial products listed in the table below and identify whether you would be a borrower or a lender for each product. Keep in mind that when you deposit money in a bank you are actually loaning the bank money.

Financial Product	Borrower	Lender	Average Interest Rate <small>*Bankrate analytics as of June 2020</small>
Car Loan	<b>X</b>		
Bank Certificate of Deposit		<b>X</b>	
Savings Account		<b>X</b>	
Mortgage	<b>X</b>		
Bond Mutual Fund		<b>X</b>	
Credit Card Purchase	<b>X</b>		
Student Loan	<b>X</b>		

2. After you classify each item, rank them in order of lowest interest rate to highest interest rate. Rank the borrower accounts first and then rank the lender accounts. If you don't have access to the Internet, you can guess which products have higher interest rates and then explain your reasoning.

Borrower accounts ranked by interest rate (expected lowest to highest):

1. Mortgage - 3.297%
2. Student loan - 4.53% (federal loan rate, private rates will vary)
3. Car loan - 5.76% (new) 9.49% (used)
4. Credit card purchase - 15.99%

Lender accounts ranked by interest rate (expected lowest to highest):

1. Savings account - 0.01% (traditional bank) 2.00% (online savings)
2. Bank certificate of deposit - 0.58%
3. Bond mutual fund - 1.11%

3. Discuss why you think each product has the interest rate it does. How did risk factor into your decision?





**Scenario 2:** Anne has been car shopping and has picked out a vehicle that fits her budget. She has been very frugal over the past few years and has benefited from generous grandparents on both sides. As a result of her savings and the gifts received, she has enough money to pay the \$18,000 cash price for the car. However, one financing option intrigues her. One dealer advertised a 0.9% APR 72-month loan. Anne is currently earning 2.2% APR on her money in a money market mutual fund. She plans to quit her job soon and focus full-time on her studies.

1. What factors should Anne consider in her decision?
2. How will Anne be affected if interest rates move higher?
3. What advice would you give Anne with regard to buying the car?

**Exercise #2 | TEACHER VERSION****Changing Interest Rates & How They Affect Us**

(20–30 minutes)

**PF.7.SI.2 - Examine how consumers are affected by rising and falling interest rates**

Interest rates move up and down daily. While daily fluctuations in interest rates may not have a big impact on borrowers or lenders in the short run, they can have a big impact over time. Each of the following scenarios outlines a change in interest rates that will affect a borrower or saver (lender) in some way. Identify the impact and make some recommendations about what each person should do in that situation.

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Read each of the following scenarios and then answer the questions associated with each one. Consider other alternatives for the borrowers in each scenario. Students may work individually or in groups.

**Scenario 1:** Mr. Hernandez borrowed \$150,000 to buy his house. He purchased the home four years ago and financed it with a 5/1 ARM at a 4% initial interest rate. Given that his initial fixed interest rate period is about to expire, he is trying to decide what to do. Should he refinance? Stick with his loan? The current interest rates on mortgages are 3.75% on a 30-year fixed rate mortgage and 3.45% on another 5/1 ARM.

1. What factors should Mr. Hernandez consider in his decision?
  - How likely are interest rates to increase?
  - How much risk is he willing to take?
  - How long does he intend to keep the home?
2. What risks does Mr. Hernandez face if he decides to keep his current loan?
  - If interest rates go up, then he may see a significant increase in his monthly mortgage payment. The high use of ARMs, coupled with market interest rates moving higher, was the primary cause for the plummeting real estate values and high default rate that triggered the Great Recession of 2007–2009.
3. What advice would you give Mr. Hernandez?
  - Everyone has a different level of risk tolerance. Some people might prefer to lock in a rate for the next 30 years; they should refinance and get the 3.75% fixed rate mortgage. This rate is extremely low by historical standards. However, if Mr. Hernandez wants to keep the ARM then his rate should decline in the short term since interest rates on the new ARMs are lower. However, he needs to be comfortable with the risk that his interest rate may increase after five years and he may not be able to refinance or sell at that time. Will he be able to afford a higher monthly payment?

**Scenario 2:** Anne has been car shopping and has picked out a vehicle that fits her budget. She has been very frugal over the past few years and has benefited from generous grandparents on both sides. As a result of her savings and the gifts received, she has enough money to pay the \$18,000 cash price for the car. However, one financing option intrigues her. One dealer advertised a 0.9% APR 72-month loan. Anne is currently earning 2.2% APR on her money in a money market mutual fund. She plans to quit her job soon and focus full-time on her studies.

1. What factors should Anne consider in her decision?
  - Does Anne have sufficient cash flows to make the payment?
  - Does she have any cash reserves over and above the \$18,000?
  - Does she need to build a credit history?
  - Does the car's price increase if she elects to finance the car?
  
2. How will Anne be affected if interest rates move higher?
  - If she takes advantage of the low interest offer, then higher rates will allow her to earn more money on her cash.
  - If she pays cash for the car, the higher rates will not affect her with regard to the car.
  
3. What advice would you give Anne with regard to buying the car?
  - I would advise Anne to finance the car at 0.9% and keep her money in the bank. She will be better off letting her money grow, and she could also consider putting a portion of the funds into a higher risk investment since she no longer needs the money immediately.



### Exercise #3 | STUDENT VERSION

## Simple Interest vs. Compound Interest

(20–30 minutes)

Name \_\_\_\_\_ Date: \_\_\_\_\_ Class Period: \_\_\_\_\_

The difference between simple interest and compound interest can be huge over time. Remember that simple interest is earned only on the original principal. For example, let’s say you deposited \$1,000 in the bank and the stated interest rate was 6%. You would earn  $\$1,000 \times .06 = \$60$  over the year.

In contrast, when you earn compound interest, you earn interest on the original principal plus any previous interest earned that has been added back to the account. The greater the length of time, the larger the principal amount, and the higher the interest rate, the greater the difference between simple interest and compound interest.

1. Fill in the "future value" and "total interest earned" columns in the table below. The formula for compounding is:

$$\text{Future Value} = \text{Present Value} \times (1 + \text{interest rate})^{\text{number of periods}}$$

or

$$FV = PV(1 + i)^n$$

where

n = the number of periods

i = the periodic interest rate expressed in decimal form

PV = the initial deposit

FV = the amount you will have at the end of the period

Type of Interest	Present Value	Interest Rate	Number of Years	Future Value	Total Interest Earned
Simple Interest	\$4,000	8%	10		
Compound Interest	\$4,000	8%	10		
Simple Interest	\$10,000	12%	25		
Compound Interest	\$10,000	12%	25		
Simple Interest	\$10,000	12%	40		
Compound Interest	\$10,000	12%	40		

2. Discuss the results in class.



**Exercise #3 | TEACHER VERSION****Simple Interest vs. Compound Interest**

(20–30 minutes)

**PF.7.SI.3 - Calculate simple and compound interest and explain the difference between the two**

The difference between simple interest and compound interest can be huge over time. Remember that simple interest is earned only on the original principal. For example, let's say you deposited \$1,000 in the bank and the stated interest rate was 6%. You would earn  $\$1,000 \times .06 = \$60$  over the year.

In contrast, when you earn compound interest, you earn interest on the original principal plus any previous interest earned that has been added back to the account. The greater the length of time, the larger the principal amount, and the higher the interest rate, the greater the difference between simple interest and compound interest.

1. Fill in the "future value" and "total interest earned" columns in the table below. The formula for compounding is:

Future Value = Present Value  $\times (1 + \text{interest rate})^{\text{number of periods}}$

or

$$FV = PV(1 + i)^n$$

where

n = the number of periods

i = periodic interest rate expressed in decimal form

PV = the initial deposit

FV = the amount you will have at the end of the period

Type of Interest	Present Value	Interest Rate	Number of Years	Future Value	Total Interest Earned
Simple Interest	\$4,000	8%	10	\$7,200.00	\$3,200.00
Compound Interest	\$4,000	8%	10	\$8,635.70	\$4,635.70
Simple Interest	\$10,000	12%	25	\$40,000.00	\$30,000.00
Compound Interest	\$10,000	12%	25	\$170,000.64	\$160,000.64
Simple Interest	\$10,000	12%	40	\$58,000.00	\$48,000.00
Compound Interest	\$10,000	12%	40	\$930,509.70	\$920,509.70

2. Discuss the results in class.



## Exercise #4 | STUDENT VERSION

# Graphing Interest Rates

(20–30 minutes)

Name \_\_\_\_\_ Date: \_\_\_\_\_ Class Period: \_\_\_\_\_

Create a bar graph comparing national average interest rates vs. best available interest rates using the given percentages, then answer questions provided.

### National Average Interest Rates vs. Best Available Interest Rates

**National average annual interest rates, week of January 13, 2020**

Interest checking accounts: 0.05%  
 Savings accounts: 0.09%  
 12-month CDs: 0.49%  
 3-year CDs: 0.75%

Source: FDIC. [www.fdic.gov/regulations/resources/rates/](http://www.fdic.gov/regulations/resources/rates/)

**Best Available Rates from Bankrate for the Same Products**

Interest checking accounts: 1.75%  
 Savings accounts: 2.00%  
 12-month CDs: 2.15%  
 3-year CDs: 2.53%

Source: Bankrate. [www.bankrate.com](http://www.bankrate.com)


1. Why do you think the average interest rates are low compared to the best available rates?
  
2. Why are online rates higher than rates offered by traditional banks?
  
3. If you had \$500 in your savings account at your traditional bank earning 0.09% interest, how much extra would you earn in interest over one year by switching to a 2% online savings account?



## Exercise #4 | TEACHER VERSION

# Graphing Interest Rates

(20–30 minutes)

### National Average Interest Rates vs. Best Available Interest Rates

**National average annual interest rates, week of January 13, 2020**

Interest checking accounts: 0.05%  
 Savings accounts: 0.09%  
 12-month CDs: 0.49%  
 3-year CDs: 0.75%

Source: FDIC. [www.fdic.gov/regulations/resources/rates/](http://www.fdic.gov/regulations/resources/rates/)

**Best Available Rates from Bankrate for the Same Products**

Interest checking accounts: 1.75%  
 Savings accounts: 2.00%  
 12-month CDs: 2.15%  
 3-year CDs: 2.53%

Source: Bankrate. [www.bankrate.com](http://www.bankrate.com)


1. Why do you think the average interest rates are low compared to the best available rates?  
 Average interest rates are normally lower than best available rates because individuals are unaware of their best rate options or do not qualify for accounts with top rate offerings due to their income, credit, or other factors.
  
2. Why are online rates higher than rates offered by traditional banks?  
 Online banks can offer higher rates than traditional banks because they have lower overhead costs. Instead of spending money on location, labor, utilities, etc, they house everything on an online platform and can transfer some of those savings into financial incentives for their account holders.
  
3. If you had \$500 in your savings account at your traditional bank earning 0.09% interest, how much extra would you earn in interest over one year by switching to a 2% online savings account?  
 At a traditional bank, your \$500 deposit at 0.09% interest would make you .45 cents over 1 year. At a 2% interest rate you will earn \$10.09 after 1 year with no additional deposits.





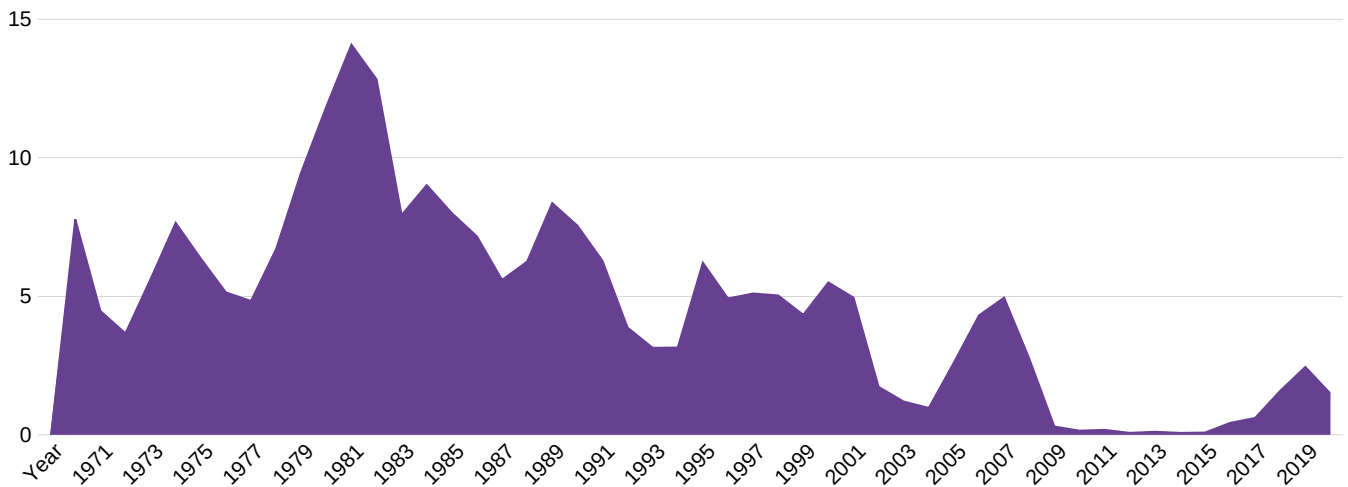
## Exercise #5 | STUDENT VERSION

# Changes in Interest Rates

(20–30 minutes)

Name \_\_\_\_\_ Date: \_\_\_\_\_ Class Period: \_\_\_\_\_

### Interest Rates Over the Past 50 Years



Using the information provided, answer the following questions:

1. What years were interest rates the highest?
2. What years were interest rates the lowest?
3. Research: Why were interest rates so high in 1979-1980? Find one or two articles online that answer this question. Write the article title, author, publication, and main idea of the article below.
  
4. Research: Why were interest rates so low in 2009 – 2015? Find one or two articles online that answer this question. Write the article title, author, publication, and main idea of the article below.

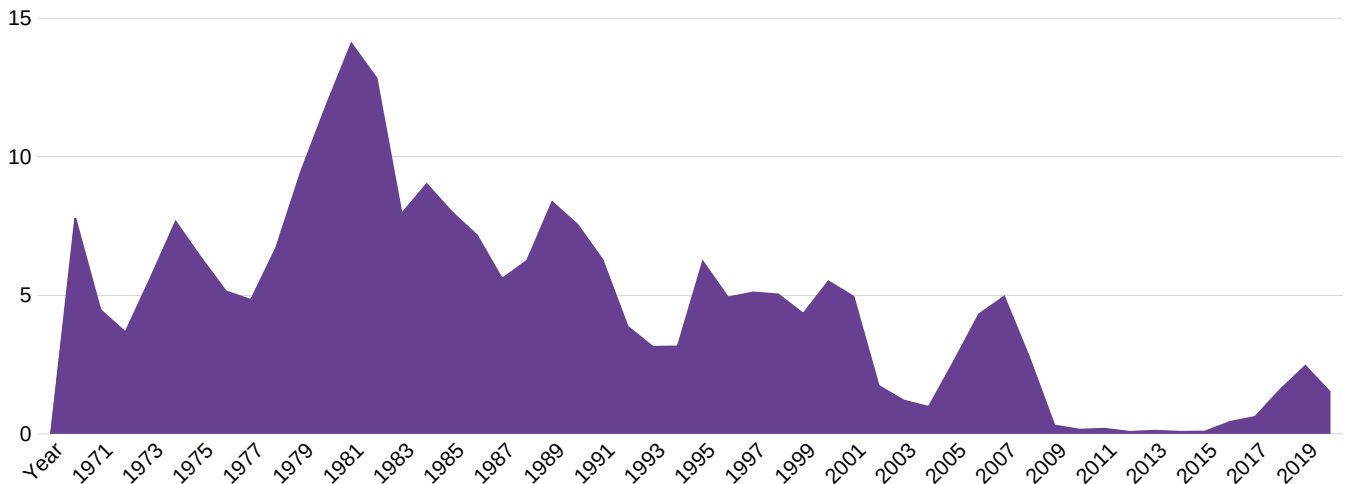


## Exercise #5 | TEACHER VERSION

# Changes in Interest Rates

(20–30 minutes)

### Interest Rates Over the Past 50 Years



Using the information provided, answer the following questions:

1. What years were interest rates the highest?

1979-1980

2. What years were interest rates the lowest?

2009 – 2015

3. Research: Why were interest rates so high in 1979-1980? Find one or two articles online that answer this question. Write the article title, author, publication, and main idea of the article below.

ANSWER: The Federal Reserve, under the leadership of Chairman Paul Volcker, raised interest rates to fight rampant inflation caused by higher oil prices. Inflation was in the double digit range and one of the Fed's goals is price level stability. Today inflation is extremely low, around 2%, but in 1980 inflation was 13.5%.

4. Research: Why were interest rates so low in 2009 – 2015? Find one or two articles online that answer this question. Write the article title, author, publication, and main idea of the article below.

ANSWER: The Federal Reserve, under the leadership of Chairman Ben Bernanke, lowered interest rates to stimulate economic growth following the Great Recession. Recall that lower interest rates encourage consumers to borrow money and spend which stimulates growth. Bernanke's term as chair ended in 2014 but the low interest rate policy continued for a while under the new chair's leadership. Janet Yellen was appointed chair of the Federal Reserve in 2014.



# Additional Materials

**The following materials will provide instructors with additional information and activity suggestions to expand on the topics presented in this unit. Some of these materials may require Internet access. These materials were created by various other organizations and were included in this module for their connections to Arkansas standards.**

# Vocabulary

**Accrued interest:** The amount of interest that has accumulated on a loan balance since the last payment.

**Amortization:** Making equal payments every month until a loan is repaid.

**Annual percentage rate (APR):** An interest rate that includes all of the loan's costs, including fees and transaction costs.

**Annual percentage yield (APY):** Real rate of return earned on a savings deposit or investment taking into account the effect of compounding interest.

**Borrower:** An individual wanting money in the form of a loan.

**Compound interest:** Interest calculated on the initial loan or deposit principal plus all accumulated interest from previous periods.

**Consumer confidence:** A statistical measure of consumers' feelings about current and future economic conditions.

**Financial product:** Any instrument through which a person can invest, borrow, or save money.

**Inflation:** A sustained increase in the general level of prices that means consumers pay more to buy the same things.

**Interest:** The cost of borrowing money or the return from lending money.

**Investing:** Expending money with the expectation of earning a positive return.

**Principal:** The amount of money you borrow when taking out a loan.

**Simple interest:** A method of computing the interest owed or earned that uses only the principal as the base amount.