

Personal Financial Literacy: Saving and Investing

Overview

In this lesson, students will learn the difference between saving and investing. They will then learn how to calculate future monetary growth, compare investment options, and learn to recognize the potential risks and rewards associated with investing. For additional lessons on Personal Financial Literacy, see *An Introduction to Financial Literacy*, *Using Credit Wisely*, and *Checking*, all located under Goals 7 and 8 in the Database of Civic Resources.

Grade

10

Key Terms

- Saving
- Investing
- Time value of money
- Inflation
- Earned interest
- Risk/reward trade-off
- Income investment
- Growth investment
- Liquid
- Dividends
- Capital Gain

Materials

- The Power of Compounding handout, attached
- Calculators
- Types of Income and Growth Investments handout, attached
- Venn Diagram handout, attached
- Investopedia Stock Market Challenge instructions, attached
- Computer lab

Duration

One block period for initial lesson

Teacher Preparation

Before using this lesson, teachers should create an account for the Investopedia Stock Simulator at <https://www.investopedia.com/simulator/> Registration is free. Once you have created your username and password:

- Click the “My Home” tab on the Stock Simulator Homepage.
- Click Add/Edit Games, which is in the bar directly below the various tabs (“My Home”, “Portfolio”, etc.”).
- Click “Create Game”
- Edit/Change the following settings: **Game Name; Game Type (choose “private game”); Start Date; End Date.** Teachers can decide whether or not to change any additional default options.
- Teachers should remember the game name so students can register for the correct game later on.
- If you encounter any problems, the help page is here:
<https://invcontent.zendesk.com/hc/en-us/categories/1260801547169-Investopedia-Stock-Simulator>

Procedure

1. As a warm-up, facilitate a discussion about the saying, “It takes money to make money.” Ask students what they think the saying means. After several students have an opportunity to share their thoughts, ask them to

take 3 minutes to come up with a scheme to turn \$100 into \$200. Allow students to share some of their ideas. Tell them that using money to make money may not be as difficult of a task as they might imagine if the money is invested wisely.

2. Ask students to raise their hands if they currently have “investments.” Few are likely to raise their hands. Next, ask students to raise their hands if they have a savings account. Far more are likely to raise their hands in response to this question. Inform them that a savings account is, in fact, a low-risk form of investment. See if they can explain why. If no one knows, tell them that money in a savings account earns a small amount of interest. This means that if \$100 is put in the bank, over time the amount will grow. Explain that there is a fine line between saving and investing (which will be discussed in more detail later in the lesson). Essentially:
 - Saving is what people often do to meet shorter-term goals. Money is put aside for use later, but is accessible when it is needed. This can include putting money under your mattress or putting money in low-risk, low-yield accounts such as savings accounts.
 - Investing is what people do to meet longer-term goals. Money is put aside for use far into the future and is typically not accessible for specified period of time. Investing involves a higher degree of risk than saving because there is no guarantee that money invested will grow. However, in the long-term, investments have the potential to grow tremendously. Generally speaking, the more risk one incurs in investing, the higher the payoff in the end.

So the question is: when should you save and when should you invest? Ask students if they can think of some important reasons why some money should be saved, as well as reasons why some should be invested. Once they have had an opportunity to give some examples, tell them that it is smart to keep some money in savings because you will need to have access to it for regular expenses (gas, food, entertainment, etc.). Savings is also important for unforeseen expenses, such as car repairs, a new pair of shoes, or taking the person you have had a crush on since the 2nd grade a date next weekend. On the other hand, it is wise to invest for expenses you will have farther into the future — college, a house, or even retirement.

3. There are many ways to save and invest, and each of them can have very different outcomes. The important thing to consider is the **time value of money**. Inform students that “a dollar is not always worth a dollar.” Sometimes a dollar is worth more, sometimes less. This will inevitably be a confusing concept. Explain that the value of a dollar changes depending on when you get it and what you do with it. Time is the critical factor in the exact value of a dollar. The time value of money refers to the relationship among time, money, and rate of interest.

Say you have \$100 today. If you save it in a dresser drawer for a year, you will still have \$100 in a year. However, in a year, it is likely that \$100 will buy less than it does now because of **inflation**, which is a rise in the cost of goods over time. You may have heard your grandparent or someone else older than you reminiscing about a time when things were much cheaper. (For example, in the 1950s a bottle of soda cost around 5 cents! Ask students if they remember how much gas cost when they were 5 years old.) Inflation decreases the spending power of each dollar you have. The situation is not all bad. As a matter of fact, time is on your side:

Say instead of putting your \$100 in a dresser drawer, you put it in a savings account that pays 4% interest per year. You can figure out how much your \$100 will grow over the year using the following formula:

$$\text{Interest} = \text{Principal} \times \text{Interest Rate} \times \text{Time}$$

$$\text{So, } \$4 = \$100 \times .04 \times 1 \text{ year}$$

Over the course of one year, your **earned interest** is \$4. This might not seem like a lot, but imagine how much you could earn over several years if you continuously invested \$100 per month. In short:

- The more money you have to save or invest, the more money you are likely to earn

- The higher the rate of interest you earn, the more money you are likely to gain
 - The sooner you invest your money, the more time it has to make new money, making it likely that you could earn much more as a result
4. Distribute the “Power of Compounding” handout. Give students 10 minutes to make calculations to see how \$100 invested grows over time using different interest rates (the top half of the handout). You may want to make calculations as a class with this initial exercise.

As students will quickly realize, this is an easy but tedious way to determine the amount of **compounded interest**. There is an easier way to calculate compounded interest for decades into the future. Explain the following formula:

<p>Amount = Principal (1 + Interest Rate)^{Number of years Compounded}</p> <p>OR,</p> <p>A = P (1 + i)ⁿ</p>

Have students return to the “Power of Compounding” handout to recheck their initial calculations using the new formula, then give them 10 minutes to complete the lower half of the worksheet. Discuss.

5. You have many options when it comes to investing your money. What you choose depends on your desired rate of return and how much risk you are willing to accept. You also need to consider the length of your investment, the ease of making a transaction (some transactions are costly), and any tax burdens the investment may carry. In general, the safer the investment, the lower the return. High-risk investments can produce higher returns because investors demand higher rates of return to compensate for the risk they face. This principle is called the **risk/reward trade-off**.

So what are your investment options? In general, there are two types of investments—**income investments** (also referred to as savings) and **growth investments**. **Income investments** are those in which you will be paid in cash for owning an account or investment. While income investments are a form of investment, they are actually considered “savings” because you can usually access your money whenever you need to, though usually some fee is charged for access. **Growth investments** are those that you buy and hold in hopes that it will grow over time. If you are looking to set money aside for a few months or even a few years, income investments tend to be the better fit because they are less risky than growth investments. Over long periods of time, such as several years or decades, growth investments earn higher returns than income investments. Part of the difference in risk is due to the differing roles investors play in each type of investment. When you choose an income investment, you are essentially lending your money to a bank, business, or the government. In return, you get interest as your income. When you choose a growth investment, you are essentially buying a part of a company, hoping that it goes up in value. (Source: *National Endowment for Financial Education High School Financial Planning Program*.)

Distribute the “Types of Income and Growth Investments” handout and accompanying Venn Diagram. Have students work in pairs to read about different investment options and complete the Venn Diagram.

6. Before class, visit simulator.investopedia.com and follow the instructions online to create an account and a private game for you class. This should only take a few minutes. For more detailed instructions, see the “Teacher Preparation” section above.
7. Distribute the “Investopedia Stock Market Challenge” instructions to students and explain that over the course of the next several weeks or months (you can choose an “ending time”) they will be involved in a stock market competition to see who can make the wisest stock choices.

On your initial visit to the computer lab, allow students to visit the websites listed on the instruction sheet and learn more about how to choose stocks. Have students follow the instructions to create an account and join the game you created for the class. Ask student to choose a set of stocks any way they wish. Instruct them that they can check their portfolios online at any time. If possible, devote 15 minutes each week during the course of the game to visit the computer lab, allowing students to check on their portfolios and to buy/sell new stocks. Throughout the course of the game, discuss reasons behind increases and decreases in the prices of stocks as they occur. You may want to offer some sort of prize for the student whose portfolio earns the most money at the end of the game.

Culminating Activity

- Have students create informational brochures or posters to inform others about a specific investment opportunity. They may want to include details about past performance of the “investment” or potential for future growth.

Sources Davis, James E., and Phyllis Fernlund. Civics and Economics. Needham, Massachusetts: Prentice Hall, 2003.

The Power of Compounding

Assume you have \$100 you are ready to invest. Using the interest rates in the table below, fill in the compound value of \$100 for each of the time periods listed. For example, \$100 growing at 4% is worth \$104 after one year. For the second year, multiply \$104 by 4% and add the result to \$104, for a total of \$108.16.

Remember: **Interest = Principal x Interest Rate x Time**

Interest Rate	1 Year	2 Years	4 Years	6 Years
4%	\$104	\$108.16		
8%				

Remember: **$A = P(1 + i)^n$**

Interest Rate	5 Years	10 Years	15 Years	30 Years
7%	\$140.26	\$196.72		
10%				

The Power of Compounding ANSWER KEY

Answer Key:

Interest Rate	1 Year	2 Years	4 Years	6 Years
4%	\$104	\$108.16	\$116.99	\$126.54
8%	\$108	\$116.64	\$136.05	\$158.69

Interest Rate	5 Years	10 Years	15 Years	30 Years
7%	\$140.26	\$196.72	\$275.90	\$761.23
10%	\$161.05	\$259.37	\$417.72	\$1744.94

Investopedia Stock Market Challenge

Setting up your portfolio:

1. Go to the following link: <https://www.investopedia.com/simulator/>
2. Click the "Get Started" tab. This link should take you to the registration webpage. Choose a user name (you will use this to sign into your account) and try to pick a name that other people will recognize, such as your last name.
3. After entering your information, you will be taken to the Investopedia website, where you will click "Join Game." (Our game name is _____) The next screen will show your portfolio summary, which should be \$100,000 in cash. To choose your stocks, click on "Trade Stock" (located on the right side of the screen under "Portfolio Summary.")
4. This will take you to a new screen. Put in the stock symbol (for example, Microsoft's symbol is MSFT) for a company whose stock you want to buy. If you like a company but don't know the stock symbol, you can click on "Lookup Symbol" and type in the company name and it will tell you the symbol (assuming they are a publicly traded company).
5. After typing in the stock symbol, enter the quantity of shares you want to buy (for example 100 shares). Keep the price at "market" and keep the duration button at "Good till cancelled." Click on "preview order," this will show you how much money you're spending (For example, if Microsoft costs \$30 a share and you buy 100 shares, your order will cost \$3,000 plus \$12.99 for the trade.) If this is the order you want, then click on "submit order." After this screen, the program will allow you to comment on why you choose the stocks that you did, if you don't want to, just click on "skip."

Keep in mind that every time you buy or sell stocks, the commission costs is \$19.99.

Picking Stocks

How should you pick stocks? There is a wide variety of advice on how to choose stocks; a few links are listed below. Another good way is to ask advice from parents or friends who work in investing or are familiar with the stock market. The basic idea is that you want to buy a stock at a low price and then have it increase in value ("Buy low, sell high"). For example, if you bought one share of Microsoft for \$50 and the stock price increased to \$75, if you sold it, you would have a profit of \$25. We are hoping that one of the brown-bag speakers will address choosing stocks in more detail in the future, but for now, some general notes about choosing stocks:

- Most experts recommend having a diversified portfolio, meaning that you hold investments in more than one industry. So, for example, you may want to have stocks in technology companies, consumer goods, and energy companies. That way, if one sector is not doing well (and your stocks are losing money), you will hopefully be making money in other sectors.
- Experts also recommend thinking about what products/services you use regularly. For example, if you eat regularly at Chipotle and think it is a good company and will continue having strong demand, then you may want to invest in it.

Websites with more information about choosing stocks

CNN Money.com's guide to choosing stocks

<http://money.cnn.com/magazines/moneymag/money101/lesson5/index.htm>

Investopedia guide to stocks and the different markets

http://i.investopedia.com/inv/pdf/tutorials/stock_basics.pdf

Yahoo Finance is also an excellent website for learning more about the stock market.

<http://finance.yahoo.com>