

BUILDING YOUR FUTURE

→ Accumulating Wealth →

A Student and Teacher Resource for Financial Literacy Education

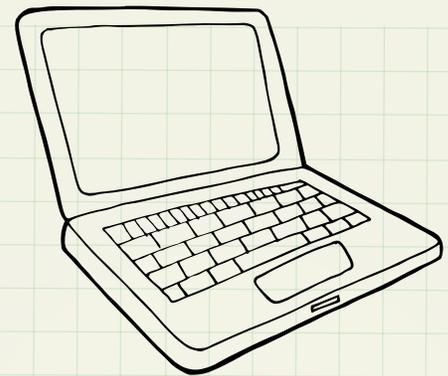


About This Book

Personal finance is part knowledge and part skill — and the *Building Your Future* book series gives students a foundation in both. It addresses knowledge by covering essential financial principles for establishing a foundation in Book 1, paving the road to success in Book 2, expanding responsibilities in Book 3, and accumulating wealth in Book 4. The series also addresses the mathematical skills that students need to live a financially healthy life. They will be able to see the real-world consequences of mastering your finances, which should help them understand the relevance of good mathematical skills. We hope you and your students enjoy this *Building Your Future* book series.

About The Actuarial Foundation

The Actuarial Foundation is a 501(c)(3) nonprofit organization. The mission of The Actuarial Foundation is to enhance math education and financial literacy through the talents and resources of actuaries. Please visit the Foundation's website at www.actuarialfoundation.org for additional educational materials.



What is an Actuary?

Actuaries are the leading professionals in finding ways to manage risk. It takes a combination of strong math and analytical skills, business knowledge, and understanding of human behavior to design and manage programs that control risk. *US News and World Report*, the *Jobs Rated Almanac*, *CNN Money*, and others all agree: few other occupations offer the combination of benefits that an actuarial career can offer. To learn more about the profession, go to www.BeAnActuary.org.

Please Note: Students who read this book in PDF on a computer can click on **highlighted links** to access online resources and can mouseover **bolded terms** for a pop-up definition. All bolded terms are also defined at the start of each chapter in this teacher's guide.

It is possible that some of the online resource links provided here may be renamed or removed by their hosts in the future. A quick internet search should lead to similar online resources that can be used to complete the activities.

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Table of Contents



Chapter 1: Overview of Investing	2
Chapter 2: Bonds	5
Chapter 3: Stocks	10
Chapter 4: Mutual Funds	15
Answer Key: Final Assessment Quiz	19
Appendix: Online Resources	20

CHAPTER 1: Overview of Investing



Overview

This chapter introduces basic principles of investment. Students learn why it is important to set investment goals, and why inflation is a key consideration for every investor. Focusing on everyday costs of living, they learn what inflation is, the factors that affect inflation, how inflation is measured, and its effect on consumers, and the connection between the inflation rate and investment returns. Students also learn to assess risk, determining whether risk is good or bad based on one's investment goals and risk tolerance, and learn the importance of diversification as a counterbalance to financial risk.

Getting Organized

- Students will need one class period to complete each of the two activities in this chapter.
- The activities are designed for students to complete independently using an internet-connected computer/tablet. Alternatively, the activities can be completed as a class using a projector or digital whiteboard, or can be printed out for completion as worksheets.
- To facilitate discussion and illustrate key points, select a few stocks, bonds, mutual funds, and items from the Consumer Price Index to use as examples.

Learning Objectives

As students learn about inflation, risk, and diversification, they will:

- Discuss key terms and concepts associated with planning and achieving investment growth.
- Calculate inflation rates and price series.
- Learn how the CPI is calculated and compare CPI benchmarks with actual costs of current market basket goods and services.
- Discuss what happens to investment returns and purchasing power during periods of high inflation.
- Make predictions about the future costs of goods and services.
- Assess their risk tolerance.
- Learn that risk must be weighed against the potential for growth.

Key Terms

- **Asset Allocation:** the mix of investments within a portfolio that a person chooses; typically it is designed to balance risk and return needs
- **Bureau of Labor Statistics:** division of the U.S. Department of Labor that calculates the Consumer Price Index
- **Capital Gains:** an increase in value of property or of an investment over its purchase price. Note that if the property or investment has been sold, it is called a “realized capital gain;” otherwise it is an “unrealized capital gain”
- **Consumer Price Index (CPI):** a monthly price series showing the inflation rate for a market basket of goods and services
- **Cost of Living:** the amount of money needed to sustain a certain standard of living
- **Disposable Income:** the amount of money left for spending or saving after paying living expenses and taxes
- **Diversify:** putting money into a variety of investments
- **Inflation Rate:** the annual percentage increase in the prices of goods and services
- **Market Basket of Goods and Services:** items that people typically spend money on including food, housing, clothing, transportation, medical care, recreation, education, communication, and miscellaneous goods and services
- **Portfolio:** the entire collection of a person's investments
- **Price Series:** uses a set inflation rate along with actual prices to determine the hypothetical price of the same goods/services in the future
- **Projection:** an estimate of future value
- **Purchasing Power:** the value of money based on the amount and quality of goods and services it can buy
- **Risk:** the probability that something negative might happen
- **Risk Tolerance:** the degree of variability in investment returns that an investor is willing to withstand

Teaching Strategies

1. Introduce the topic of investing by asking students to share what they already know about:
 - Reasons that people invest
 - Different types of investments
 - Inflation
 - Financial risk
2. Use the *Did You Know?* factoid at the start of the chapter to begin exploring inflation. What does it mean to have a high or low rate of inflation? Why is a lower inflation rate better than a high rate?
3. Guide students through the price series calculation to illustrate the impact of inflation, then discuss the CPI market basket of goods and services. What are the benefits of having such a broad assortment of items in the market basket? What would be the benefit of creating your own customized market basket, limited to items you purchase?
4. Have students complete Part 1 of Activity 1 individually and review their answers in class. For Part 2, you might have students work in small groups, with each group member researching items for one or two categories. Compare results in a class discussion.
5. Introduce the section on financial risk by asking students to share their feelings on risk. Do they enjoy any action sports that might be considered risky? Explain that each person has their own level of comfort with risk, and that

there are situations where it is more or less acceptable. Explain what risk means in terms of financial markets.

6. Have students complete Activity 2 individually, then review their answers. Explore their responses to Part 2 in a class discussion, asking students to provide a rationale for their varying degrees of risk tolerance.

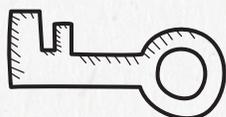
Discussion Questions

- Do you think it is good or bad for the economy when people have less disposable income? Why?
- If you invested \$1,000, how much would you expect it to grow over time? Or do you think you'd be more likely to lose your money? Why?
- Do you think it is important to have a variety of different investments, or does that just make investing more difficult? Why?

Follow-up Activities

- What causes inflation? Ask students to brainstorm and then research various causes of price inflation. You can chart their findings on the board. For example, a T-shirt is affected by the availability of cotton, the cost of labor, import taxes, fashion trends, etc. Cotton prices could be affected if severe weather destroyed crops, and a labor strike could raise manufacturing costs.
- Have students bring in news articles related to inflation and interest rates over the past 10 years. How did the 2008 recession affect both prices and interest rates?

Answer Key:



Activity 1

ESTIMATING INFLATION

PART 1: PRICE PROJECTIONS

Last year you purchased a pair of jeans for \$75.00 at your favorite store. This year that same pair of jeans is priced at \$89.00.

1. What is the inflation rate for these jeans? 18.67%
2. If that inflation rate remains consistent, how much will the jeans cost in the future?

JEANS PRICE SERIES – CONSISTENT INFLATION RATE					
Last year	This year	Future year 1	Future year 2	Future year 3	Future year 4
\$75.00	\$89.00	\$105.62	\$125.34	\$148.74	\$176.51

3. Which years reflect actual prices?
Last year and This year.
 Hypothetical prices?
All future years are hypothetical.
4. Inflation rates are rarely consistent from year to year. Estimate the prices if the inflation rate is 5% higher in Future year 2 than it was this year, then another 3.5% higher in Future year 3, and then falls by 2% in Future year 4.

JEANS PRICE SERIES – CHANGING INFLATION RATE					
Last year	This year	Future year 1	Future year 2 (inflation +5%)	Future year 3 (inflation +3.5%)	Future year 4 (inflation -2%)
\$75.00	\$89.00	\$105.62	\$130.62	\$166.11	\$207.92

PART 2: YOUR COST OF LIVING

1. What is the average rate of inflation for all goods and services in your market basket?

Answers will vary depending on the items students have selected.

2. As an investor, what would your annual average rate of return need to be for your portfolio in order to keep up with the inflation rate? Explain how you calculated this. Students would need to earn an annual average after-tax rate of return that is equal to the annual average inflation rate in order to continue to purchase the goods.

3. If your purchasing power were reduced by inflation, which goods/services would you cut from your market basket? Why?

Answers will vary.

4. As a consumer and an investor, why is it important to be in tune with inflation?

Answers will vary but could include maintaining an up-to-date and realistic household budget, monitoring return on investments to ensure true growth, etc.

Activity 2

UNDERSTANDING RISK

HIGH-RISK INVESTMENT ACCOUNT				
Year	Opening Balance	Growth/ Loss Rate	Growth/ Loss	Ending Balance
1	\$1,000.00	-12.00%	-\$120.00	\$880.00
2	\$880.00	-4.00%	-\$35.20	\$844.80
3	\$844.80	-9.00%	-\$76.03	\$768.77
4	\$768.77	29.00%	\$222.94	\$991.71
5	\$991.71	24.00%	\$238.01	\$1,229.72
6	\$1,229.72	26.00%	\$319.73	\$1,549.45
7	\$1,549.45	10.00%	\$154.95	\$1,704.40
8	\$1,704.40	6.00%	\$102.26	\$1,806.66
9	\$1,806.66	12.00%	\$216.80	\$2,023.46
10	\$2,023.46	14.00%	\$283.28	\$2,306.74

PART 1: COMPARING OPTIONS

1. Which account will have a higher balance after two years? The low-risk option – \$1,123.60 vs. \$844.80 for the high-risk option

2. Which account will have a higher balance after six years? The high-risk option – \$1,549.45 vs. \$1,418.52 for the low-risk option

3. Describe what you see in terms of comparing growth between the accounts. The high-risk account loses money and takes six years to catch up, but it continues to grow, and ends about \$500 ahead.

4. Which account will have a higher balance after 10 years? The high-risk option – \$2,306.74 vs. \$1,790.85 for the low-risk option

5. Which investment was a better choice? Answers will vary. The high-risk option gained more money in the long run, but if the investor needed the funds after 5 years, then the low-risk option would have had a higher return.

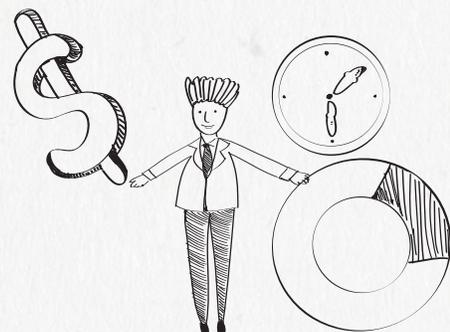
PART 2: RISK TOLERANCE IN ACTION

1. You have just won \$10,000 on a TV game show. Now you must choose between keeping the \$10,000 and quitting the game, or betting the entire \$10,000 in one of three alternative scenarios – if you win, your earnings increase; if you lose, you lose everything. Which do you choose?
 - a. Keep the \$10,000 – it's better to leave with something than nothing!
 - b. 50 percent chance of winning \$50,000
 - c. 20 percent chance of winning \$75,000
 - d. 5 percent chance of winning \$100,000

Answers will vary.

2. Which of the following investments would you choose?
 - a. Potential to earn \$600 or lose \$150
 - b. Potential to earn \$2,000 or lose \$1,000
 - c. Potential to earn \$5,000 or lose \$3,750

Answers will vary.



CHAPTER 2: Bonds

Overview

One way to increase the amount of interest earned on one's money is by "lending" money to the government or a business in the form of a bond purchase. Government and corporate bonds offer people the opportunity to invest in a variety of ways that can generate earnings while providing a lower risk potential.

Getting Organized

- Students will need one class period to complete each of the two activities in this chapter.
- The activities are designed for students to complete independently using an internet-connected computer/tablet. Alternatively, the activities can be completed as a class using a projector or digital whiteboard, or can be printed out for completion as worksheets.

Learning Objectives

As students learn about bonds, they will:

- Discuss the key terms associated with bonds.
- Practice calculating the fair market value of bonds.
- Apply the principles of discount factor and present value to bond scenarios.
- Calculate the yield on various bond scenarios.
- Draw conclusions about when bonds are a good/appropriate investment in terms of one's personal investment goals, including risk profile.

Key Terms

- **Bond:** a loan made by an investor to a government or company with the promise that the principal amount borrowed will be repaid, usually with interest, at a specific time, usually a year or more in the future
- **Bondholder:** the person or company who purchases the bond
- **Callable Bond:** a bond that can be repaid by the issuer prior to its maturity date
- **Certificate:** a document issued by a government or company that includes the name of the bond issuer, the coupon rate, and the bond's maturity date

- **Collateral:** property or an asset that is presented as payment in case of default on a loan
- **Coupon Payments:** interest payments made by the bond issuer to the bondholder
- **Coupon Rate:** the annual percentage interest rate paid on the bond
- **Default:** failure to pay a debt, including a coupon payment on a bond
- **Discount Factor:** the amount that \$1 at some point in the future is worth today
- **Earnings:** money earned through paid employment, as profit, or from investments
- **Face Value:** the amount of money borrowed by the issuer
- **Fair Market Price:** the price that a reasonable investor would expect to pay for the bond
- **High-yield:** in bond terms, a debt that pays high potential rates of interest but has a corresponding level of risk
- **Issuer:** the government or company that borrows the money
- **Market Fluctuation:** change in the marketplace value of bonds
- **Maturity Date:** date by which the issuer must repay the principal amount borrowed
- **Par Value:** same as face value
- **Present Value:** the value of money right now, today
- **Primary Market:** initial offering of a bond by the entity that is taking the loan
- **Secondary Market:** where investors buy and sell bonds after their initial sale by the issuer
- **Yield to Maturity:** the total return anticipated on a bond if the bond is held until it matures, relative to the initial investment



Teaching Strategies

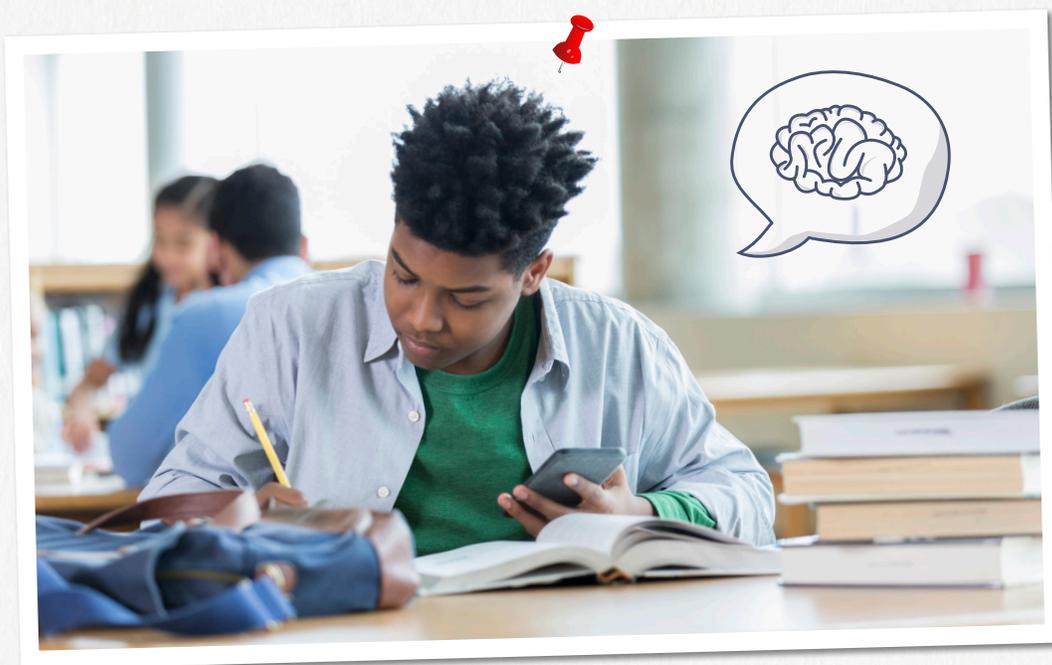
1. Introduce bonds as a relatively low-risk way to earn interest on an investment by asking students, “Where can you invest your money for a significant period of time and earn a guaranteed rate of interest?” Brainstorm possible answers as a class and use the question as a means for introducing students to the concept of bonds.
2. Use techniques such as student pair/share to discuss vocabulary terms and key concepts found in the chapter.
3. Guide students through the calculations used to determine the fair market price of a bond in the secondary market. You can also direct students to the bond value calculator at www.free-online-calculator-use.com/bond-value-calculator.html.
4. Discuss the types of risk associated with investing in bonds. For example, under what circumstances would students choose to invest in high-yield bonds? How would they react to market fluctuations that lowered the value of high-quality bonds? Stay out of the bond market? Go shopping for bond bargains?
5. Have students work independently to complete the two activities, then review their answers in a class discussion. Encourage students to share their opinions about purchasing bonds on the primary and secondary markets, and on the benefits of bonds as an investment option.

Discussion Questions

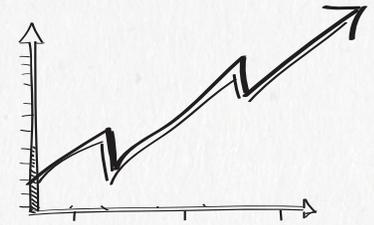
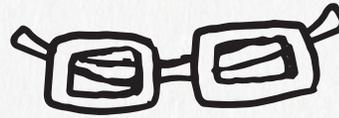
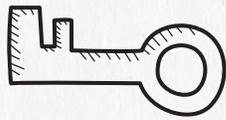
- When interest rates go up, bond prices go down, and vice versa. Ask students to explain this in their own words and to give examples of other times this rule might apply.
- Bond prices are determined using concepts associated with compound interest, but bonds themselves don’t pay compound interest. Ask students to consider why this might be. This is a helpful article to share for background: www.forbes.com/sites/wadepfau/2017/01/24/making-sense-of-bond-pricing/#aa402e85bb8d.

Follow-up Activities

- This chapter covers the basics of bond investing, but you can continue the lesson with a discussion of zero-coupon bonds like U.S. Savings bonds, inflation-linked bonds, a more extensive understanding of bond ratings, bond regulations, tax exemptions, etc.
- To extend student learning, invite a securities broker into the classroom to discuss how bonds can be selected as investments, as well as common mistakes people make when investing in the bond market. After the discussion, provide students with time to investigate various government and corporate bond choices. Have students select one government bond and one corporate bond for purchase based on what they learned from the speaker. Have students write one or two paragraphs about why they selected each bond.



Answer Key:



Activity 1

BOND BASICS

PART 1: THE PRIMARY BOND MARKET

In January, you purchase a \$10,000 bond with an annual coupon rate of 7% (3.5% semi-annually) and a maturity date in 10 years. Use a calculator to complete this chart, then answer the questions below.

Payment Dates	Face Value	Coupon Rate	Coupon Payment	Cumulative Payments
January Year 1 (purchase)	\$10,000.00	3.5%	0	0
July Year 1	\$10,000.00	3.5%	\$350.00	\$350.00
January Year 2	\$10,000.00	3.5%	\$350.00	\$700.00
July Year 2	\$10,000.00	3.5%	\$350.00	\$1,050.00
January Year 3	\$10,000.00	3.5%	\$350.00	\$1,400.00
July Year 3	\$10,000.00	3.5%	\$350.00	\$1,750.00
January Year 4	\$10,000.00	3.5%	\$350.00	\$2,100.00
July Year 4	\$10,000.00	3.5%	\$350.00	\$2,450.00
January Year 5	\$10,000.00	3.5%	\$350.00	\$2,800.00
July Year 5	\$10,000.00	3.5%	\$350.00	\$3,150.00
January Year 6	\$10,000.00	3.5%	\$350.00	\$3,500.00
July Year 6	\$10,000.00	3.5%	\$350.00	\$3,850.00
January Year 7	\$10,000.00	3.5%	\$350.00	\$4,200.00
July Year 7	\$10,000.00	3.5%	\$350.00	\$4,550.00
January Year 8	\$10,000.00	3.5%	\$350.00	\$4,900.00
July Year 8	\$10,000.00	3.5%	\$350.00	\$5,250.00
January Year 9	\$10,000.00	3.5%	\$350.00	\$5,600.00
July Year 9	\$10,000.00	3.5%	\$350.00	\$5,950.00
January Year 10	\$10,000.00	3.5%	\$350.00	\$6,300.00
July Year 10	\$10,000.00	3.5%	\$350.00	\$6,650.00
January Year 11 (includes face value)	\$10,000.00	3.5%	\$10,350.00	\$17,000.00

1. How do you calculate the coupon payment amount?
Describe the mathematical steps for doing this or the formula you would use.
Multiply the face value of \$10,000 by 7%, then divide by 2 because it is paid twice per year.
2. How much money will you make each year from this investment?
\$700 per year
3. Over the life of the bond, what will be your total earnings?
\$7,000
4. Use the yield to maturity calculator at investinganswers.com/calculators/yield/yield-maturity-ytm-calculator-2081 to find out your yield to maturity over the life of the bond.
7%
5. Do you think this is a wise investment? Why or why not?
Answers will vary. Discuss the balance of risk vs. return, and when it might be more important to focus on one or the other. For example, someone who is retiring in 10 years may want to minimize risk; someone with 30 years to grow their investment may want to try for a higher return.

PART 2: THE SECONDARY BOND MARKET

Two years after your initial purchase, you would like to purchase another \$10,000 bond. Coupon rates have gone up to 9% annually (4.5% semi-annually), but you would like the bond that you purchase to mature at the same time as the bond you already have, so you don't want to buy a new bond. What can you expect to pay on the secondary market for the same bond that you purchased two years ago, with a coupon rate of 7%?



Semi-Annual Payments (8 Years)	Current Coupon Rate (9%)	Beginning Balance	Interest Payment	Ending Balance	Discount Factor	Coupon Payments	Present Value of Coupon Payments
1	4.50%	\$10,000.00	\$450.00	\$10,450.00	0.9569	\$350.00	\$334.92
2	4.50%	\$10,450.00	\$470.25	\$10,920.25	0.9157	\$350.00	\$320.50
3	4.50%	\$10,920.25	\$491.41	\$11,411.66	0.8763	\$350.00	\$306.71
4	4.50%	\$11,411.66	\$513.52	\$11,925.18	0.8386	\$350.00	\$293.51
5	4.50%	\$11,925.18	\$536.63	\$12,461.81	0.8025	\$350.00	\$280.88
6	4.50%	\$12,461.81	\$560.78	\$13,022.59	0.7679	\$350.00	\$268.77
7	4.50%	\$13,022.59	\$586.02	\$13,608.61	0.7348	\$350.00	\$257.18
8	4.50%	\$13,608.61	\$612.39	\$14,221.00	0.7032	\$350.00	\$246.12
9	4.50%	\$14,221.00	\$639.95	\$14,860.95	0.6729	\$350.00	\$235.52
10	4.50%	\$14,860.95	\$668.74	\$15,529.69	0.6439	\$350.00	\$225.37
11	4.50%	\$15,529.69	\$698.84	\$16,228.53	0.6162	\$350.00	\$215.67
12	4.50%	\$16,228.53	\$730.28	\$16,958.81	0.5897	\$350.00	\$206.40
13	4.50%	\$16,958.81	\$763.15	\$17,721.96	0.5643	\$350.00	\$197.51
14	4.50%	\$17,721.96	\$797.49	\$18,519.45	0.5400	\$350.00	\$189.00
15	4.50%	\$18,519.45	\$833.38	\$19,352.83	0.5167	\$350.00	\$180.85
16 (includes face value)	4.50%	\$19,352.83	\$870.88	\$20,223.71	0.4945	\$10,350.00	\$5,118.08
Total						\$15,600.00	\$8,876.99

- How much do you expect to pay for the secondary market bond?
\$8,876.99
- How much will you earn each year on the bond?
\$700
- How much will this add up to over the course of the bond's 8-year life?
\$5,600
- Factoring in what you paid for the secondary market bond, what will be your total earnings? \$6,723.01
- Use the yield to maturity calculator at: investinganswers.com/calculators/yield/yield-maturity-ytmcalculator-2081 to find out your yield to maturity over the life of the secondary market bond.
9%
- What are the benefits of purchasing a secondary market bond with a lower coupon rate compared to purchasing a bond on the primary market with a higher coupon rate?
Answers will vary. Students should note that upfront costs are lower and the bond will mature sooner, also that the yield is the same.

Activity 2

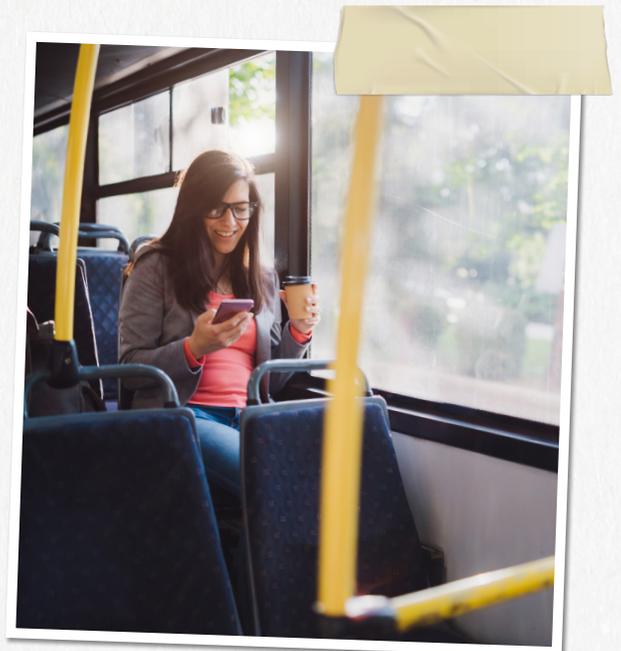
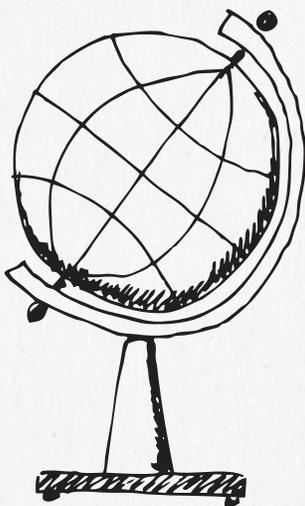
BUILDING A BOND PORTFOLIO

Assume that loved ones have purchased primary market bonds for you on your birthday with the intent that when they mature you will be able to use them to pay some of your college expenses. The chart below shows the face value of each bond, the year it was purchased, the coupon rate, and the maturity date.



Face Value of Bond	Date of Purchase	Coupon Rate	Maturity Date	Total Coupon Payments
\$5,000	2010	7.50%	10 years	\$3,750
\$1,000	2011	6.80%	10 years	\$680
\$5,000	2012	5.00%	10 years	\$2,500
\$10,000	2014	6.50%	5 years	\$3,250
\$1,000	2015	7.00%	5 years	\$350
Combined Total				\$10,530

1. What will be the total amount earned in coupon payments on all of the bonds together?
\$10,530
2. Using the coupon rates on the chart, what can you assume about the price of the 2010 and 2011 bonds if you had sold them on the secondary market in 2012? Explain.
The coupon rate went down, so the price of both bonds would most likely go up since the two are inversely related. The 2010 bond would be more expensive than the 2011 bond because its coupon rate is higher.
3. Which bond earns the most in coupon payments at maturity? Why?
The bond purchased in 2010 because, while it did not have the highest face value, it did have the highest coupon rate and was held twice as long as the \$10,000 bond.
4. Based on what you have learned about bonds, do you think you would consider them as an investment choice? Why or why not?
Answers will vary.



CHAPTER 3: Stocks

Overview

The stock market offers investors the opportunity to purchase a small piece of a company in exchange for the opportunity of making or losing money on that investment. Using data related to specific companies and industries, as well as stock price trends, students will learn the risks and rewards of investing in the stock market.

Getting Organized

- Students will need at least one class period to complete each of the first two activities in this chapter. The third activity requires students to track stock performance over 30 days.
- The activities are designed for students to complete independently using an internet-connected computer/tablet. Alternatively, the activities can be completed as a class using a projector or digital whiteboard, or can be printed out for completion as worksheets.

Learning Objectives

As students learn the basics about stocks, they will:

- Discuss the key terms associated with stocks.
- Understand shares as a unit and learn how they are valued.
- Practice calculations associated with stockholder earnings.
- Review the step-by-step process for purchasing stock through a securities firm.
- Read and analyze data related to the various market indices and stock symbols.
- Learn about the risks associated with investing in the stock market and ways to assess these risks.

Key Terms

- **Annual Return:** the return an investment provides over a period of time, expressed as an annual percentage
- **Brokerage Account:** an arrangement between an investor and a licensed brokerage firm permitting the investor to deposit funds with the firm and place investment orders through the brokerage

- **Buy Limit Order:** the highest price at which an investor will purchase a specific stock
- **Capital Gains:** an increase in value of property or of an investment over its purchase price. Note that if the property or investment has been sold, it is called a “realized capital gain,” otherwise it is an “unrealized capital gain”
- **Commission:** a fee for services rendered based on a percentage of an amount received or collected or agreed to be paid
- **Dividend:** amount of money that is paid to an investor by a company for each share of stock owned
- **Dividend Return:** value of stock dividends received over time as a percentage of the stock price
- **Dividend Yield:** the dividend per share, divided by the price per share
- **Exchange:** organization established for the purpose of arranging the buying and selling of various companies’ stocks
- **Floor Broker:** a person who works on the stock exchange floor and communicates buy and sell directions with the specialist
- **Issued Shares:** the total number of shares available in the marketplace to be purchased or owned by stockholders
- **Last Price:** the price of a specific stock at the time the market closes
- **Long-term Trend:** what happens to an investment over a period of several years
- **Market Order:** a buy or sell order to purchase or sell at whatever price is available in the market
- **Market Value:** the last reported sale price or current bid/asking price for a particular stock
- **Online Brokerage:** company that people can use as an agent through which they can buy and sell stocks online
- **Online Trading:** use of the internet to buy and sell stocks
- **Portfolio:** collection of investments owned by an investor
- **Positive Correlation:** the tendency of stock prices to move up or down together



- **Price Return:** change in a stock's price over time
- **Public:** when a company has issued stock available for purchase by the general public, as opposed to a private company that is owned by an individual or small group
- **Return on Investment (ROI):** earnings expressed as a percentage of the original cost
- **Securities Firm:** a company where an account is maintained for the purpose of buying and selling stocks
- **Sell Limit Order:** the lowest price at which an investor will sell a specific stock
- **Share:** a unit of stock owned by an investor
- **Shareholder:** a person who owns one or more shares of stock
- **Specialist:** a member of a stock exchange who facilitates trading in certain stocks
- **Stock:** ownership in a corporation
- **Stock Price Index:** a measure of stock market performance
- **Stockbroker:** employee of a securities firm who acts as an agent to initiate an investor's orders to buy or sell stock
- **Ticker Symbol:** unique abbreviation used to identify a company traded on a stock exchange
- **Total Annual Return:** the return a stock provides over a period of time, including share value and dividends, expressed as an annual percentage
- **Total Return:** the amount of value an investor earns from a stock over a specific period, including all dividends, interest, and capital gains
- **Transaction Cost:** fee paid to stockbroker for each trade that is made
- **Uncorrelated:** changes in stock prices that have no relationship to the performance of other investments
- **Unrealized Capital Gain:** earnings that have not been converted to cash; e.g., when a stock gains value but you haven't sold it yet
- **Upward Trend:** the tendency for a stock price to rise over time
- **Volatility:** a statistical measure of the range of returns for a given security; the higher the volatility, the riskier the security

Teaching Strategies

1. Use the *Did You Know?* factoid at the start of the chapter to introduce students to the investment advantages associated with stocks. Ask students why, given this track record, anyone would invest in anything else? Prompt students to recognize that the benefits of diversification and varying levels of risk tolerance make other types of investments more attractive in many circumstances.
2. Ask students what, if anything, they already know about stocks and the stock market. They may have heard about IPOs or stock prices in the context of social media sites like Facebook, or their parents may have introduced them to stock investing.
3. Use techniques such as student pair/share to discuss vocabulary terms and key concepts found in the chapter.
4. Guide students through the calculations for determining the value and returns on stock. To calculate total annual return and total return, you can direct students to the calculator at financeformulas.net/Total-Stock-Return.html#calcHeader.
5. Have students complete Activity 1, The Building Blocks of Stocks, one part at a time, pausing to review each part as a class before students move on to the next part.
6. For the second half of the chapter, which deals with the mechanics of buying and selling stocks and using market data to analyze stocks, have online examples ready to familiarize students with the New York Stock Exchange, NASDAQ, traditional and online brokerages, the Dow Jones Industrial Average, and the S&P 500, or have students search for examples online as you work through each section.
7. Have students work independently to complete Activity 2, Tracking Market Trends, either in class or as a homework assignment. Review students' answers in a class discussion. Ask students how they would determine who among them was the best stock picker?
8. The chapter's third activity, Playing the Market, requires students to track stock performance over 30 days. Set aside time each week for students to report on their progress and share insights. At the end of the month, allow students one class period to present their findings. Be sure to discuss the follow-up questions as a class.

Discussion Questions

- Ask students, Do you think a person has to be a gambler or a risk-taker to invest in the stock market? Why? Direct students who respond with a “yes” to one side of the room while those responding with a “no” go to the opposite side of the room. If any students answer “maybe,” direct them to another area of the classroom. Provide students with 2-3 minutes to work as a group to brainstorm the reasons for their answer. Select a representative from each group to explain why the group members answered the way they did.
- Remind students that each day’s Dow Jones average is part of almost every daily news report. Why is this number of interest to everyone?

Follow-up Activities

- To extend student learning, have students work in small groups to research topics related to investing in the stock market, such as stock market crashes, day trading, penny stocks, cyclical market trends, unorthodox investing strategies, etc. Each group should present their findings by creating a short lesson, game, or interactive activity that would teach their classmates about the topic they researched.
- After they complete the chapter, have students tune into a financial news channel (Bloomberg News, CNBC, Fox Business, etc.) to see if they have a better understanding of what the experts are talking about. Have students report on their experiences and what they learned in a class discussion.

Answer Key:

Activity 1

THE BUILDING BLOCKS OF STOCKS

PART 1: SHARED OWNERSHIP

Shareholder	Shares Per Person	Percentage of Ownership	Value of Shares
You	5	25%	\$250
Friend 1	3	15%	\$150
Friend 2	6	30%	\$300
Friend 3	4	20%	\$200
Friend 4	2	10%	\$100
Total	20	100%	\$1,000

1. How did you calculate the percentage of ownership for each shareholder? Describe the mathematical steps for doing this or the formula you used.
 $(\text{Shares Per Person} \div \text{Total Shares}) \times 100 = \text{Percentage of Ownership}$
2. How did you calculate the value of shares for each shareholder? Describe the mathematical steps for doing this or the formula you used.
 $\text{Shares Per Person} \times \$50 \text{ per share} = \text{Value of Shares}$

3. Which shareholder has the greatest percentage of ownership in the company?
Friend 2

PART 2: EARNINGS AND RETURNS

1. What are the company’s profits for the year?
The business operates for a total of seven months, making the overall profit \$14,000 (\$2,000 per month \times 7 months = \$14,000).
2. Would you expect the stock price to go up or down? Why?
Answers will vary. In general, profits will help a company’s stock price go up. Since this is the first year in business, it’s hard to say if this is a “good” profit or not. For example, if profits doubled after the first year, you’d expect the stock price to go up, but if profits went down, you’d expect the stock price to go down.

Trade 1

1. How much money did Friend 3 lose/gain on his investment?
Friend 3 gained \$10 per share, for a total of \$40.
2. Based on the year-end stock value of \$60 per share, what is the price return for a share of stock after one year? 20%

Current stock price	- Purchase price	+ Purchase price	= Price return
\$60.00	-\$50.00	\div \$50.00	= 20%

3. What is your stock now worth?

$\$60 \text{ per share} \times 5 \text{ shares} = \300

4. What is your total return after one year?

20%

Current stock value	+ \$0.00 dividends	÷ Initial stock value	- 1	= Total return
\$60.00	+ \$0.00	÷ \$50.00	- 1	= 20%

Trade 2

1. How much money did Friend 2 lose/gain on his investment?

Loss of \$10 per share, for a total of \$20

2. Based on the year-end stock value of \$40 per share, what is the price return for the stock from the end of year 1 to the end of year 2?

-33%

Current stock price	- Price at end of year 1	÷ Price at end of year 1	= Price return
\$40.00	- \$60.00	÷ \$60.00	= -33%

3. Who has the greatest percentage of ownership in the company, and how many shares of stock does this person own?

You do, with 7 shares or 35%.

PART 3: DIVIDENDS

Shareholder	Shares Per Person	Percentage of Ownership	Weekly Dividend for 15 lawns at \$16 per lawn	Weekly Dividend for 15 lawns at \$10 per lawn	Weekly Dividend for 20 lawns at \$10 per lawn
You	7	35%	\$84.00	\$52.50	\$70.00
Friend 1	3	15%	\$36.00	\$22.50	\$30.00
Friend 2	4	20%	\$48.00	\$30.00	\$40.00
Friend 4	2	10%	\$24.00	\$15.00	\$20.00
Friend 5	4	20%	\$48.00	\$30.00	\$40.00
Total	20	100%	\$240.00	\$150.00	\$200.00

1. What is the total amount of dividends distributed each week at \$16 per lawn for 15 lawns?

\$240.00

2. Use a calculator to fill in the weekly dividend each shareholder receives in this scenario.

$\$16 \text{ per lawn} \times 15 \text{ lawns} = \$240 \text{ total dividends per week} \div 20 \text{ shares} = \$12 \text{ per share} \times \text{number of shares. See chart above for answers.}$

3. Now suppose that profits have decreased to \$25 per lawn and you decide to reinvest 60% of your profits (\$15 per lawn) back into business expansion. What is the total amount of dividends distributed each week in this scenario?

\$150.00

4. Use a calculator to fill in the new weekly dividend each shareholder receives in this scenario.

$\$10 \text{ per lawn} \times 15 \text{ lawns} = \$150 \text{ total dividends per week} \div 20 \text{ shares} = \$7.50 \text{ per share} \times \text{number of shares. See chart above for answers.}$

5. Finally, suppose that the number of clients increases to 20 while profits remain at \$25 per lawn and you still put 60% of your profits back into business expansion. What is the total amount of dividends distributed each week in this scenario?

\$200.00

6. Use a calculator to fill in the new weekly dividend each shareholder receives in this final scenario.

$\$10 \text{ per lawn} \times 20 \text{ lawns} = \$200 \text{ total dividends per week} \div 20 \text{ shares} = \$10 \text{ per share} \times \text{number of shares. See chart above for answers.}$

Activity 2

TRACKING MARKET TRENDS

Answers to all questions will vary based on each student's stock selections. Some suggestions for guidance:

- For the "Your Choice" sector, encourage students to research and choose a niche industry that interests them, e.g., entertainment, agriculture, pharmaceuticals, construction, etc.
- Explain to students that they do not need to detail every rise and fall in stock price, but should instead give a general description of trends and any really significant stock price variations – for example, if a stock is increasing steadily and then has a big drop. Use this part of the activity to discuss how news reports about economics and politics affect "confidence."
- By comparing one stock's performance over 30 days to the Dow Jones Industrial Average and the S&P 500 over that same period, students should realize that the economy as a whole has fluctuations and that individual stocks may or may not be impacted.
- When you discuss students' perceptions of positive correlations, guide the discussion toward how such correlations can be useful in achieving diversification.

Activity 3

PLAYING THE MARKET

Answers for Steps 1-4 will vary based on each student's stock selections.

Step 5: After 30 days, answer the questions below and be prepared to share your ideas in a class discussion.

1. How many times did you buy/sell during the 30-day period?

Answers will vary, but use this question to initiate discussion about investor personality, and how some people are more comfortable taking losses in the short-term if they expect a gain in the long-term.

2. How much did you earn or lose over the course of the month?

You might relate this question back to the topic of investor personality by asking if students notice any trends in who made more profits – people who bought and sold more or people who held onto stocks longer.

3. Do you think the stocks you purchased were good investments? Why or why not?

Answers will vary.

4. Would you choose the same investment strategy if you could re-do the project? Why or why not?

Answers will vary.

5. What are the advantages of investing in the stock market?

Answers will vary, but students should mention the opportunity for significant financial gain, the speed and flexibility of investment, and the transparency of the trading process.

6. What are the disadvantages of investing in the stock market? Answers will vary, but students should mention the risk of significant financial loss and the unpredictable effects of wide-ranging economic and social forces.

7. Do you think you will buy individual stocks in the future based on this experience and what you have learned about investing in the stock market? Why or why not?

Answers will vary.



CHAPTER 4: Mutual Funds

Overview

When investing, it is important to have a wide range of assets and to select them wisely. Mutual funds are a popular way to simplify this process, particularly for newer investors. This chapter examines various types of mutual funds and the costs and benefits associated with each. In addition, students will see how the ability to calculate costs and potential returns can assist them in making smart investment decisions.

Getting Organized

- Students will need only part of a class period to complete Part 1 of the first activity in this chapter. Part 2 of the activity requires students to track mutual fund performance over 30 days. Activity 2 is an extended project that asks students to create a presentation on their investment strategy.
- The activities are designed for students to complete independently using an internet-connected computer/tablet. Alternatively, the activities can be completed as a class using a projector or digital whiteboard, or can be printed out for completion as worksheets.

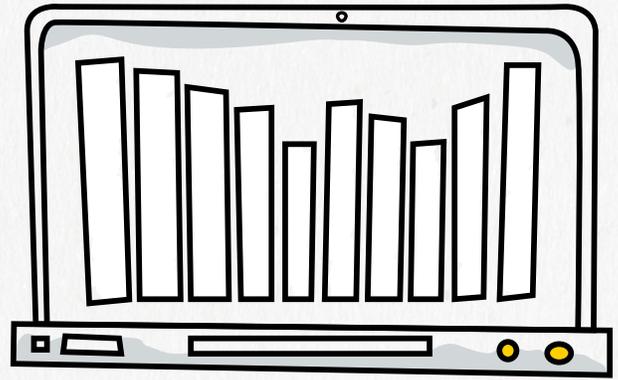
Learning Objectives

As students learn about mutual funds, they will:

- Discuss the key terms associated with mutual funds.
- Discuss various types of mutual funds and how to select funds that match the amount of risk and diversification appropriate for their investment goals.
- Calculate the administrative cost of owning mutual funds as well as the market value and net asset value.
- Select mutual funds and track their investment portfolio.
- Project earnings and draw conclusions about various types of investments.

Key Terms

- **Actively Managed:** mutual funds that have a manager or team of managers who make investment decisions for a fund based on analytical research, forecasts, and their own experience



- **Asset:** anything you own to which a monetary value can be assigned; in mutual funds it refers to the investment vehicles (stocks, bonds, etc.) that the fund puts its money into
- **Asset Allocation:** a way to divide investments among various categories according to goals, risk tolerance, and investment timeframe
- **Asset Mix:** how the invested amounts are split among different categories (e.g., cash, stocks, bonds, real estate)
- **Equity Fund:** a mutual fund that invests principally in stocks
- **Exchange-Traded Fund (ETF):** an investment fund that is traded on an exchange like stocks
- **Expense Ratio:** total cost of managing a fund expressed as a percentage of assets
- **Fixed Income Fund:** a mutual fund that owns fixed income securities such as U.S. Treasuries, corporate bonds, municipal bonds, etc.
- **Hybrid Fund:** a mutual fund that invests in more than one type of investment security, such as both stocks and bonds
- **Index Fund:** a fund comprised of assets that track those in the index
- **Mutual Fund:** a portfolio of many different investments pooled from multiple investors managed by professionals and subject to laws and regulations designed to protect individual investors
- **Mutual Fund Share:** a very small fraction of each individual stock or bond in the fund; when people invest in mutual funds, they receive shares of the fund, based on the amount of their investment
- **Net Asset Value (NAV):** the price at which you can buy or sell one share of the mutual fund. It is equal to the sum of the market value of the fund (including cash) less any liabilities, divided by the number of shares

- **Net Investment:** money placed in the fund after the sales load (if any) has been deducted
- **No Load:** funds that do not require you to pay a sales load for purchasing shares
- **Passively Managed:** a fund that is left to grow with very little adjustment to its asset mix (e.g., an index fund)
- **Sales Load:** a fee charged when you invest in the mutual fund
- **Target Date Fund:** a mutual fund designed to balance risk and return based on a set end-time; generally with greater risk and more growth in the first few years and less risk as it gets closer to the target date
- **Total Expense:** the sum of all periodic expenses for a fund
- **Total Market Value:** the sum of the value of all assets a fund has invested in, including any cash that the fund may have

Teaching Strategies

1. Begin by reminding students of the adage, “Don’t put all of your eggs in one basket” and discuss how it applies to all types of investment. Explain that mutual funds are designed to help investors live by this adage.
2. Use the *Did You Know?* factoid at the start of the chapter to point out the popularity of mutual funds. Ask students if they are surprised by the high proportion of Americans who own mutual funds. Do any of their families own mutual funds, either directly or through a retirement savings account?
3. Use techniques such as student pair/share to discuss vocabulary terms and key concepts found in the chapter.
4. As you guide students through the chapter, pause at the chart listing some of the most common types of mutual funds. Ask students which ones seem the most risky? The least risky? Why?
5. Help students work through the examples explaining investment costs and asset values, calling on volunteers to show the calculations on the class chalkboard/whiteboard.
6. Have students work independently to complete Part 1 of Activity 1, Asset Management, then review their answers in a class discussion.
7. To encourage collaboration, have students work in pairs to complete Part 2 of Activity 1, which involves tracking mutual fund performance over 30 days.

Walk the class through the stages of this project to clarify expectations and answer any questions. To help students get started selecting mutual funds, direct them to money.usnews.com/funds/mutual-funds.

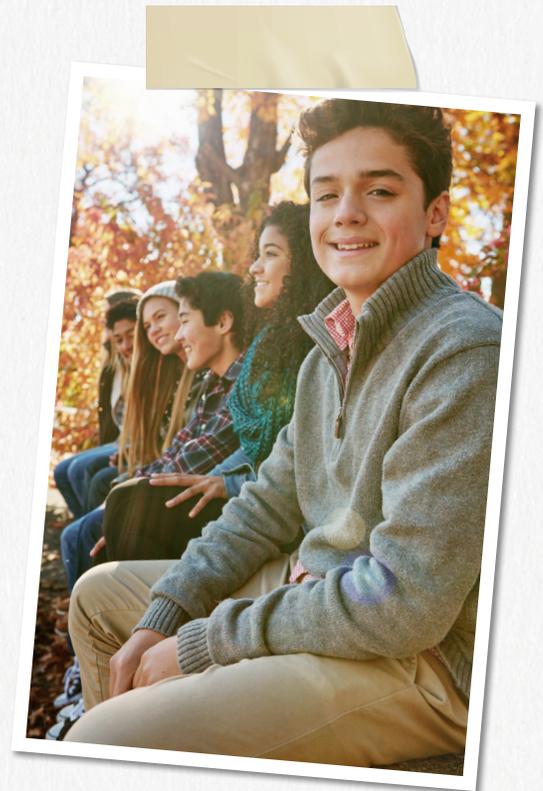
8. After they complete the investment project, have each pair of students give a one-minute presentation on their experience, describing their investment strategy and how they made or lost money. Discuss the follow-up questions as a class.
9. Have students work in small groups to complete Activity 2, which gathers together the key investment concepts they have learned about in Book 4. You might have students group themselves based on their risk tolerance, so they can compare the strategies of high-risk investors, low-risk investors, and moderate-risk investors. Before they begin the activity, take students to the Kiplinger’s website to examine the sample portfolios listed there (kiplinger.com/tool/investing/T052-S001-investment-portfolio-finder/index.php). Choose one or two portfolios and point out some of the key features that make them suitable for the suggested investing goal.
10. When students have completed Activity 2, provide time for each group to present their portfolios to the class. Go through each investment goal and compare/contrast different groups’ strategies and asset choices.

Discussion Questions

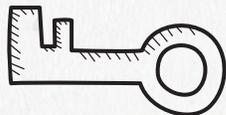
- Ask students, Why would an investor want to rely on a broker or brokerage website to assist with selecting specific stocks or bonds? Isn’t it a better idea to invest in mutual funds, which have expert advice built into them? Discuss as a group and encourage students to provide specific examples to support their opinions and reasons.
- Show students how mutual fund websites like Fidelity.com provide tons of details, including returns over different periods of time and even tenure of the manager. How does each of these bits of information help create an overall picture of a fund? How would something like manager tenure impact your selection process?

Follow-up Activities

- To extend learning, have students work in pairs or small groups to create a short presentation about one of the specific types of stock or bond mutual funds outlined in the chapter. Within the presentation, students should provide at least one graph or chart that tracks the annual gains and losses of a mutual fund they researched.
- Different types of investments (and their returns) are subject to different tax rates and structures. For example, bond income may be taxed at the same rate as ordinary income (as from employment), while stock dividends have a lower tax burden. Have students research the tax rates for various types of investments and discuss whether that would affect their investment strategy.
- There are many different types of investments beyond those covered in the *Building Your Future* program – real estate, futures, commodities, etc. Invite a financial advisor to visit your classroom to introduce students to a wider range of investment options.



Answer Key:



Activity 1

ASSET MANAGEMENT

PART 1: NET ASSET VALUE

You are looking to invest in a mutual fund and want to know the net asset value for today. This is what you learn: The fund has 20 million shares and the total market value of its assets today is \$300 million. The expense ratio for the fund is 0.004% daily.

1. What is the net asset value of one share of this mutual fund?
\$15

Total Market Value	- (Expense Ratio x Total Market Value)	= Net Market Value	÷ Number of Shares	= Net Asset Value
\$300,000,000.00	- \$12,000.00	= \$299,988,000.00	÷ 20,000,000	= \$15.00

2. How much would it cost you to buy 100 shares if this was a no-load fund?
 $\$15 \times 100 = \$1,500$
3. If you had \$5,000 to invest, and this fund had a 4.75% sales load, how much would your net investment be?
\$4,762.50

Investment Amount	- (Sales Load x Investment Amount)	= Net Investment
\$5,000.00	- \$237.50	= \$4,762.50

PART 2: BUILDING A MUTUAL FUND PORTFOLIO

Imagine you have \$20,000 to invest in mutual funds. Spend some time researching different funds that might fit your needs and then select at least five to invest your money. You must include at least one stock fund, one bond fund, and one hybrid in your selection.

1. What is your asset allocation?

Answers will vary depending on the funds students select.

2. Describe any returns or changes in your mutual funds over the 30-day tracking period.

Explain to students that they do not need to detail every rise and fall of their mutual fund investments, but should instead give a general description of trends and any really significant variations – for example, if a fund is steadily increasing in value and then has a big drop. Use this part of the activity to discuss how mutual fund performance reflects developments in the stock and bond markets.

3. Thirty days is not a long time in the life of a mutual fund, but did you notice anything about how your funds changed value that made you confident/concerned about your investments?

Answers will vary depending on the funds students select.

4. Which of your investments was the most risky? Least risky?

Answers will vary depending on the funds students select.

5. Do you think you allocated your assets correctly when you developed your portfolio? Why or why not? *Answers will vary depending on the funds students select.*

6. Do you think any of the costs associated with your mutual funds were too high or too low? Explain. *Answers will vary depending on the funds students select.*

7. What changes, if any, would you make to your portfolio or asset allocations if you could re-do the assignment? Explain.

Answers will vary depending on the funds students select.

8. Exchange-traded funds (ETFs) are more cost-efficient to buy and sell frequently. Do you think, based on this project, that they'd be a good choice for you? Why or why not?

Answers will vary.

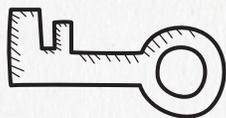
Activity 2

ACHIEVING YOUR INVESTMENT GOALS

Answers will vary. Students should understand that investors typically take higher risks for longer-term goals, because they have time to make up for any losses. When there is a shorter timeline, or greater “need” for the income to remain stable, they should go with lower risk investments. Other considerations include personality (risk tolerance) and whether they are looking for regular income in the form of dividends. Students should demonstrate understanding that even if they choose a Target Date Fund or all index funds, they will want to periodically evaluate the performance of their portfolio and make changes, as needed. How often they do so will be a product of their personality and investment selections.



Answer Key



Final Assessment Quiz

(Answers in **bold**.)

1. Stocks are typically, but not always, a lower risk than bonds.

False. Stocks are typically a higher risk because their prices fluctuate.

2. When you are investing for long-term goals, like retirement more than 20 years down the road, you can afford to take greater risks because you have time to make up any losses.

True.

3. When choosing an investment, you want to make sure your after-tax returns at least match inflation.

True. If your rate of return falls below the inflation rate, you are losing purchasing power even though the value of your investment may increase.

4. Stock dividends can offer a variable but ongoing stream of income.

True.

5. Unrealized gain means money that you have lost from bond depreciation.

False. Unrealized gains are increases in stock or bond values which you will not actually have (realize) unless/ until you sell the stock or bond.

6. A target date mutual fund pays a set amount of money each month until maturity.

False. A target date mutual fund varies risk from higher to lower over the span of a set amount of time, based on the expectation that investors will need their money starting at a certain date.

7. Actively managed mutual funds have higher costs than index funds.

True.

8. When selecting a mutual fund, one criterion you should look at is the expense ratio, which is a measure of how much you will pay in fees.

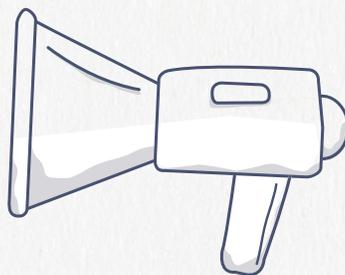
True.

9. An upward stock trend shows a positive price return over a period of time.

True.

10. If interest rates have fallen significantly over the past year, bonds issued a year ago should be priced at a premium on the secondary market.

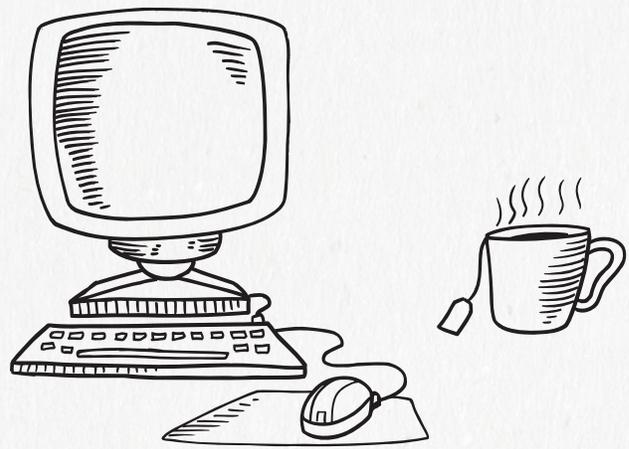
False. When interest rates fall, secondary market bond prices rise because those bonds have fixed coupon rates based on the earlier, higher interest rate.



APPENDIX:

Online Resources

Below you will find a list of additional resources related to the chapters in this book. These resources can be used to extend your understanding and study of the subjects in each section.



CHAPTER 1: OVERVIEW OF INVESTING

Bureau of Labor Statistics

Provides documentation about the CPI, inflation calculators, and statistics and information related to inflation

www.bls.gov/cpi

CHAPTER 2: BONDS

Treasury Direct

Find information about U.S. government bonds and ways to purchase them.

www.savingsbonds.gov

Library of Economics and Liberty

Provides detailed articles about bonds and the various types available for investment.

www.econlib.org/library/Enc/Bonds.html

CHAPTER 3: STOCKS

How The Market Works

A free stock market game that gives students a virtual \$100,000 to invest in stocks, ETFs, and mutual funds using real-time prices. Includes tutorials and other resources, plus teachers can create customized assignments and games for the whole class.

www.howthemarketworks.com

Yahoo! Finance

News site with articles and data for tracking stocks over time.

finance.yahoo.com

CHAPTER 4: MUTUAL FUNDS

U.S. Securities and Exchange Commission

Get information about important factors to consider when investing, common pitfalls, a mutual fund fee calculator, and a glossary of terms.

www.sec.gov/reportspubs/investor-publications/investorpubsinwsmfhtm.html

Morningstar

Investment tracking and news site; students can sign up for a free account to track their investment selections for various activities throughout the chapter.

www.morningstar.com/

Kiplinger's Investment Portfolio Finder

20 sample portfolios designed for a range of risk tolerances and time horizons

www.kiplinger.com/tool/investing/T052-S001-investment-portfolio-finder/index.php

U.S. Securities and Exchange Commission

Get tips and information about ways to minimize risk through diversifying investments.

www.sec.gov/investor/pubs/assetallocation.htm

