STUDENT BOOK 4

BUILDING YOUR FUTURE

Accumulating Wealth

A Student and Teacher Resource for Financial Literacy Education


Property News

The latest figures from several property market analysts reveal
value of homes over the previous quarter. In addition there are

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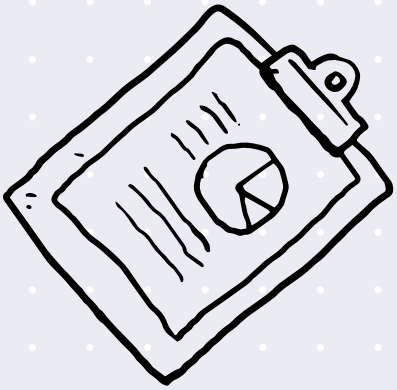

Investors club meeting -- March 23

The Actuarial FOUNDATION

About This Book

Personal finance is part knowledge and part skill — and the *Building Your Future* book series gives you 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 you need to live a financially healthy life. You will be able to see the real-world consequences of mastering your finances, which should help you understand the relevance of good mathematical skills. We hope you 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.

Please Note: If you are reading this book in PDF on a computer, you can click on highlighted links to access online resources. You can also mouseover ***bolded terms*** *for a pop-up definition. Definitions for all bolded terms can also be found in the glossary at the back of the book. You will need a calculator to complete the activities, which all provide spaces for you to type in your answers.*

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 you to similar online resources that you can use to complete the activities.

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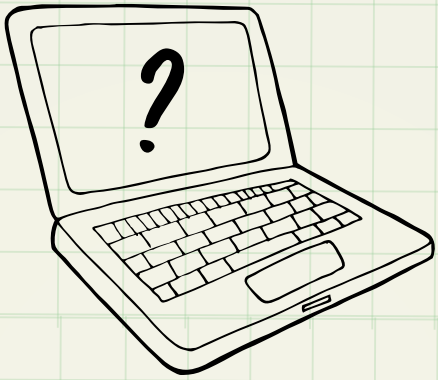
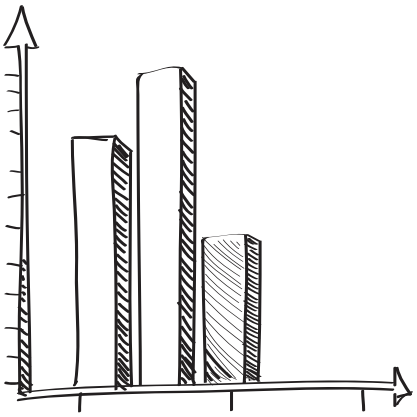


What is an Actuary?

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.



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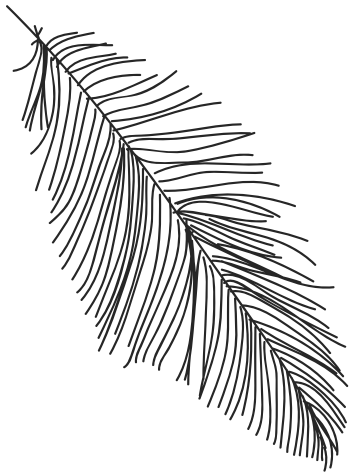


CHAPTER 1: Overview of Investing

Did You Know?

The U.S. and other developed countries have much lower rates of inflation (typically 0-4.0% as of 2017) than developing countries such as Argentina (25.7%), Egypt (23.5%), and South Sudan (187.9%)[1]

Most people who save money do not put all of it into a bank savings account. While bank products like savings accounts and even Certificates of Deposit (CDs) allow for easy access of funds, these accounts typically don't pay much interest. Investing, on the other hand, offers an opportunity to put your money to work and increase earnings on a much larger scale.

There are many different ways to invest, and all have pros and cons. The key is to build a strategy that fits your individual needs.

- The first step is to set an objective — how do you plan to use your investment, and when? Are you building a nest egg for retirement in 40 years? Saving to send a child to college in 15 years? Or maybe you want to accumulate additional wealth in five years? Each of these objectives requires a different investing strategy.
- Next, you'll need to weigh your budget — an investor who can only put aside a little bit of money is likely to invest very differently from someone who has a lot of extra cash.

Once you've answered these basic questions, there are two factors to consider when choosing how to allocate your investment dollars: **inflation** and **risk**.

Calculating Inflation

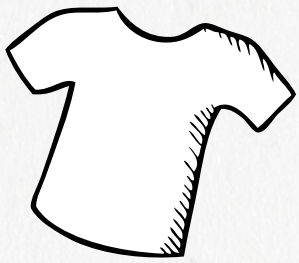
Each year, it may seem that your **disposable income** buys less and less, and the cost of goods and services grows more and more. This is not an illusion — everything from food, clothing, and gasoline to books, movie tickets, and video games is likely to increase in price from year to year. This is what's known as inflation. It is caused by a number of economic factors and measured as a percentage of change from one year to the next. For example:

- Assume that you purchased a T-shirt for $12.99.
- A year later, when you purchase the same shirt for a friend, the cost is $13.99.
- Over the course of one year, the cost of the shirt increased by $1.00.
- To determine the inflation rate, you divide the price increase ($1.00) by the original price of the shirt ($12.99) for a percentage increase of 7.7%.

You can use this rate to predict the cost of those T-shirts in upcoming years. Let's say you are making a budget for next year. Assuming the inflation rate is consistent, you would multiply the most current cost ($13.99) by 7.7%, for a price increase of $1.08. Add that to the current cost and you can estimate that the T-shirt will cost $15.07 next year.

If you wanted to estimate the impact of inflation over time, you could do a **price series**. Again assuming a consistent inflation rate of 7.7% per year, the following table would reflect T-shirt prices for the next five years:

T-SHIRT PRICE SERIES	
Last year	$12.99
This year	$13.99
Future year 1	$15.07
Future year 2	$16.23
Future year 3	$17.48
Future year 4	$18.83
Future year 5	$20.28



In this example, the prices for last year and this year are actual prices. The other prices are **projections**, hypothetical prices based on the assumption that this year's inflation rate of 7.7% will continue forever into the future. Using a price series to project future costs in this way can help you predict how much money you will need, say, in retirement, in order to have the same lifestyle you enjoy today.

[1] https://ww.cia.gov/library/publications/resources/the-world-factbook/fields/229.html

Career Link

When people plan for retirement, they estimate how much money they will need well into the future. Social Security is a key consideration for many, and actuaries have been deeply involved in analyzing the financial soundness of the Social Security System. One part of their analysis is to estimate how the cost of living will change over time and how it will affect future Social Security benefits.

The Consumer Price Index

The **Bureau of Labor Statistics** (www.bls.gov) publishes an important measure of inflation called the **Consumer Price Index (CPI)**. The CPI is based on the combined price of a **market basket of goods and services**, a set of hundreds of commonly purchased items categorized into eight major groups. The items can change over time, but as of 2018, the groups, along with examples of items found in each, are:

CPI MARKET BASKET	
CATEGORY	EXAMPLES
Food/ Beverages	breakfast cereal, milk, coffee, chicken, wine, full service meals, snacks
Housing	rent of primary residence, owners' equivalent rent, fuel oil, bedroom furniture, tools, and hardware
Apparel	men's shirts and sweaters, women's dresses, jewelry
Transportation	new and used vehicles, airline fares, gasoline, motor vehicle insurance, public transportation
Medical Care	prescription drugs and medical supplies, physicians' services, eyeglasses and eye care, hospital services
Recreation	televisions, toys, pets and pet products, sports equipment, admissions (tickets to events, movies, etc.)
Education and Communication	college tuition, childcare and nursery school, educational books, postage, telephone services, computer software and hardware
Other Goods and Services	tobacco, haircuts and other personal services, funeral expenses

Read more at bls.gov/opub/hom/pdf/cpi-20180214.pdf

While no individual or family spends their money exactly according to the market basket used to calculate the CPI, it offers a general guideline for average consumers in cities across the country. It is a useful tool that can help you estimate how your overall **cost of living** will change from month to month and year to year.

As an investor, you can create a customized market basket of goods and services by tracking the monthly or yearly prices of the items that you spend money on. This can help you better understand your spending and plan for the future.

Investment Returns vs. Inflation

Why is it important for investors to understand inflation? Let's suppose that an investor's customized market basket of goods and services costs $1,000 at a particular point in time. Let's also suppose that he or she invests $1,000 at that same point in time in a **portfolio** of stocks and bonds. One year later, assume that the same market basket now costs $1,050. In other words, the annual inflation rate was 5%. The investor will still be able to buy the market basket of goods and services if his or her portfolio is worth at least $1,050. However, if the portfolio is worth less than $1,050, the investor won't have enough money to buy the entire basket of goods and services. In this example, unless the annual total return on the investment portfolio is at least 5%, the investor's portfolio will be insufficient.

The key is that your investments need to grow at a rate that is equal to or greater than the average annual inflation rate. If your annual return is lower than inflation, then you will actually lose **purchasing power.** Keep in mind that investment growth will fluctuate from year to year, and so most investment portfolios will not be able to beat inflation every year. But, over an extended period of time (usually five years or more), the portfolio's average annual total return must exceed the average annual inflation rate.

There is one more important factor: investors must pay taxes each year on the interest and dividends they earn from their investments. If the investor sells the portfolio assets, he or she will also pay taxes on any **capital gains**. For the portfolio to maintain its purchasing power, the total return must exceed the inflation rate after these taxes. The challenge faced by many investors is to consistently earn total returns after taxes that at least match the inflation rate, particularly when inflation rates are high.

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?

This year's price	– Last year's price	= Price increase	÷ Last year's price	= Inflation rate
$	$	$ 0.00	$	%

2. If that inflation rate remains consistent, how much will the jeans cost in the future? Use a calculator to fill in the chart.

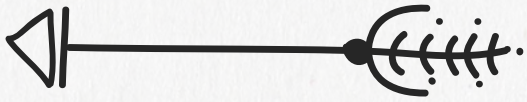
JEANS PRICE SERIES — CONSISTENT INFLATION RATE					
Last year	This year	Future year 1	Future year 2	Future year 3	Future year 4
$75.00	$89.00	$	$	$	$

3. Which years reflect actual prices?_____ Hypothetical prices?_____

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	$	$	$	$

Activity 1



ESTIMATING INFLATION

PART 2: YOUR COST OF LIVING

Create your own sample market basket of goods and services by completing the chart below. For each category, select one item that you typically buy and enter the price you are paying this year. Then visit the Bureau of Labor Statistics Consumer Price Index page (www.bls.gov/cpi/home.htm) to look up the current inflation rate for each category. Use this information to calculate the projected price for each item next year. Use the completed chart to answer the questions below.

Category	Good/ Service Selected	Current Price	Current Inflation Rate	Price Next Year Based on Current Inflation Rate
Food/Beverages		$	%	$
Housing		$	%	$
Apparel		$	%	$
Transportation		$	%	$
Medical Care		$	%	$
Recreation		$	%	$
Education & Communication		$	%	$
Other Goods and Services		$	%	$
TOTAL		$ 0.00		$ 0.00

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

Total Price Next Year	– Total Price This Year	= Annual Price Increase	÷ Total Price This Year	= Inflation rate
$	$	$ 0.00	$	%

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. _____

   _____

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

   _____

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

   _____

Financial Risk

In finance, risk is the potential to lose money or earn only a minimum return on an investment. Risk is something faced by everyone involved in financial transactions — borrowers and lenders, investors, governments, banks, companies, etc. Some common financial risks include:

- A borrower could be unable to repay his or her loan.
- A credit card holder could declare personal bankruptcy and not pay off his or her outstanding balance.
- Inflation could rise faster than expected, causing your savings and investments to become insufficient.
- Tax increases at the local, state, and/or federal level could eat into the total returns on your investments.
- Stock prices could decline sharply.
- Real estate prices could fall.
- Interest rates could rise, causing the value of bonds to fall and increasing the cost of borrowing money.

In the next chapters of this book, you'll learn about different high- and low-risk investment vehicles, such as stocks and bonds. The financial outcome for any investment can be uncertain, but some investment products, like government bonds, are generally considered low-risk because investors are less likely to lose their money. Stocks, on the other hand, are associated with higher risk, because their value rises and falls from day to day.

Most people do not like to take large risks with their money, and you certainly should not take large risks with ALL of your money. But in some circumstances, risk can actually be a benefit, because the riskiness of an investment usually reflects its expected rate of return. The greater the risk, the greater the total return you can expect (otherwise, no one would choose to make a high-risk investment).

Explaining what an actuary does would not be complete without also explaining risk. Risk comes in many forms — for example, the risk of losing one's home to a hurricane, or the risk of losing one's income due to disability or death. Every person and organization faces risk. As experts in measuring and managing risk, actuaries fill a significant need in our society.

Diversifying Your Investments

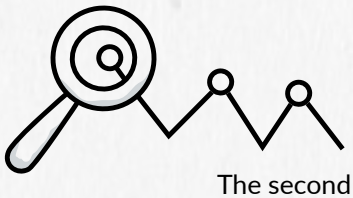
You've probably heard that you shouldn't "put all of your eggs in one basket." Well, investing is an ideal example of the meaning of that phrase. Most people put their money in multiple investments, and it is best to choose a mix of higher- and lower-risk options. This will offer an opportunity for growth while also reducing the risk of financial loss. For example, depending on the economy during any given year, some of your stocks may rise while others fall. If your portfolio is **diversified**, you increase the likelihood of minimizing losses at any given time.

The exact **asset allocation** for your portfolio will likely vary based on your investment objective. For example, if you are saving for retirement in 40 years, you can consider more high-risk investment products. They may lose money at some point, but you will have time for them to catch up, and they will offer the potential for greater growth. If your portfolio has only low-risk options, your assets will grow more slowly — given inflation and taxes, you may even lose purchasing power.

On the other hand, if your investments are necessary for you to have enough money to cover basic living expenses in just 5 years, you will want to choose low-risk investments, accepting lower interest rates in order to guarantee that you at least have something in the bank.

Another consideration is **risk tolerance** — some people are just more comfortable with the potential for losses, if it also means the potential for bigger gains.

Activity 2



UNDERSTANDING RISK

PART 1: COMPARING OPTIONS

You are given $1,000 to invest, and have a choice between two investments. The first is a low-risk option that earns a steady return of 6% per year. Your returns for the first 10 years will look like this:

LOW-RISK INVESTMENT ACCOUNT				
Year	Opening Balance	Interest Rate	Interest	Ending Balance
1	$1,000.00	6%	$60.00	$1,060.00
2	$1,060.00	6%	$63.60	$1,123.60
3	$1,123.60	6%	$67.42	$1,191.02
4	$1,191.02	6%	$71.46	$1,262.48
5	$1,262.48	6%	$75.75	$1,338.23
6	$1,338.23	6%	$80.29	$1,418.52
7	$1,418.52	6%	$85.11	$1,503.63
8	$1,503.63	6%	$90.22	$1,593.85
9	$1,593.85	6%	$95.63	$1,689.48
10	$1,689.48	6%	$101.37	$1,790.85

The second is a high-risk option that varies from year to year. If you could see into the future, you'd find that the annual growth/loss rate of return for this option would be as shown in the chart below. Use a calculator to fill in the blanks on the chart, then use it to answer the questions.

HIGH-RISK INVESTMENT ACCOUNT				
Year	Opening Balance	Growth/ Loss Rate	Growth/ Loss	Ending Balance
1	$1,000.00	-12.00%	$	$
2	$	-4.00%	$	$
3	$	-9.00%	$	$
4	$	29.00%	$	$
5	$	24.00%	$	$
6	$	26.00%	$	$
7	$	10.00%	$	$
8	$	6.00%	$	$
9	$	12.00%	$	$
10	$	14.00%	$	$

1. Which account will have a higher balance after two years? _____
2. Which account will have a higher balance after six years? _____
3. Describe what you see in terms of comparing growth between the accounts.

   _____

   _____
4. Which account will have a higher balance after 10 years? _____
5. Which investment was a better choice? _____

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

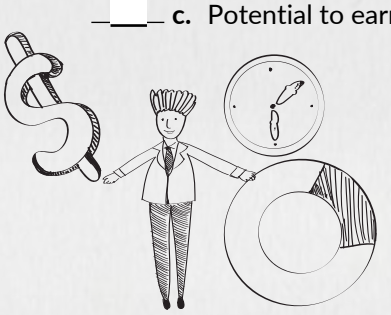
   ____ **d.** 5 percent chance of winning $100,000

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



Click here to clear answers

CHAPTER 2: Bonds

Did You Know?

Some bonds, like municipal bonds, offer tax exemptions that can bolster your long-term earnings.[2]

There are as many different ways to invest as there are flavors of ice cream, but most people in the U.S. can reach their goals through three main investment options: bonds, stocks, and funds. The next chapters will cover the basics of each, beginning with **bonds**.

Bond Basics

- Large companies and governments often need to borrow large sums of money in order to conduct business. Instead of taking out a loan from a bank, they can issue (i.e., sell) bonds. Investment banks and institutions typically purchase corporate bonds; individuals are more likely to invest in government bonds.
- Bonds are like IOUs: when a **bondholder** purchases a bond, they are essentially lending the **issuer** money.
- Each bond has a set **face value** (also called the **par value**). Assuming you purchase a bond when it is new, this is also the price you will pay.
- After a pre-set period of time, usually anywhere from five to 30 years, the bond matures, and you get your initial investment back. (There are also **callable bonds** that can be repaid prior to maturity by the issuer.)
- In the meantime, as payment for your loan, you receive interest, also known as **coupon payments**. The interest is paid at set intervals, often twice a year, and at a consistent annual rate, known as the bond's **coupon rate.** Your total **earnings** after the bond matures, relative to your investment, is known as the **yield to maturity**.

Let's say the Metropolis Corporation wants to build a solar farm, which will cost them $2 million, so they issue 10-year bonds for $10,000 each, with a coupon rate of 7%. You purchase a bond at the face value of $10,000. The corporation issues you a **certificate** detailing the face value ($10,000), **maturity date** (10 years from now), and coupon rate (7%). The interest is paid twice a year. This means that every six months for the next 10 years, you will receive a $350 coupon payment. Then, at the end of 10 years, you will get your original $10,000 investment back. Your total earnings of $7,000 equal a 7% yield to maturity.

[2] www.sec.gov/investor/alerts/municipalbonds.htm

Secondary Bond Sales

There are two ways to invest in bonds: the first is simply to purchase the bonds on the **primary market** and collect the interest, as in the example above. In this case, the price you pay is typically the face value, and the yield to maturity is the same as the coupon rate.

The second way to invest in bonds is to buy or sell them sometime after their original offering, on what's known as a **secondary market**. In this case, the bond's price may be different from its face value. In order to understand why, let's look at how secondary bonds are priced.

Keep in mind that once a bond is issued, its coupon rate and coupon payments are set. But coupon rates for new bonds change from year to year based on the economy. A bond issued next year is likely to have a different coupon rate — higher or lower — than a nearly identical bond issued this year. But when investors buy secondary bonds, they expect the same yield that a current bond would offer; otherwise, they would only buy new bonds. To accommodate this, the price of secondary bonds is adjusted.

To see how this works, let's go back to our earlier example. Imagine that after two years, you need to sell your Metropolis bond. But coupon rates have fallen, so new 10-year $10,000 bonds from Metropolis are being issued at a rate of 6% instead of 7%. How much is your two-year-old bond worth now? Here's how to find out:

1. First, calculate the **discount factor** for a new bond using the current coupon rate, compounded semi-annually. The discount factor equals the present value of your investment ($10,000) divided by the future value of your investment after each interest payment. This data is in column F of the chart below.
2. Next, calculate the **present value** for each of the payments remaining on your two-year-old bond by multiplying each payment amount by its corresponding discount factor. Remember that the final payment will include your initial investment of$10,000. This data is in column H below.
3. Add up the present value of all the remaining payments for the total present value of your two-year-old bond. This would be the current **fair market price** for your bond — $10,628.05.

A	B	C	D	E	F	G	H
Semi-Annual Payments over 8 years	Current Coupon Rate (semi-annual)	Beginning Balance	Interest Payments	Ending Balance	Discount Factor	Coupon Payments	Present Value of Coupon Payments
1	3.00%	$10,000.00	$300.00	$10,300.00	0.9709	$350.00	$339.82
2	3.00%	$10,300.00	$309.00	$10,609.00	0.9426	$350.00	$329.91
3	3.00%	$10,609.00	$318.27	$10,927.27	0.9151	$350.00	$320.29
4	3.00%	$10,927.27	$327.82	$11,255.09	0.8885	$350.00	$310.97
5	3.00%	$11,255.09	$337.65	$11,592.74	0.8626	$350.00	$301.91
6	3.00%	$11,592.74	$347.78	$11,940.52	0.8375	$350.00	$293.13
7	3.00%	$11,940.52	$358.22	$12,298.74	0.8131	$350.00	$284.59
8	3.00%	$12,298.74	$368.96	$12,667.70	0.7894	$350.00	$276.29
9	3.00%	$12,667.70	$380.03	$13,047.73	0.7664	$350.00	$268.24
10	3.00%	$13,047.73	$391.43	$13,439.16	0.7441	$350.00	$260.44
11	3.00%	$13,439.16	$403.17	$13,842.33	0.7224	$350.00	$252.84
12	3.00%	$13,842.33	$415.27	$14,257.60	0.7014	$350.00	$245.49
13	3.00%	$14,257.60	$427.73	$14,685.33	0.6810	$350.00	$238.35
14	3.00%	$14,685.33	$440.56	$15,125.89	0.6611	$350.00	$231.39
15	3.00%	$15,125.89	$453.78	$15,579.67	0.6419	$350.00	$224.67
16 (includes face value)	3.00%	$15,579.67	$467.39	$16,047.06	0.6232	$10,350.00	$6,450.12
Total						$15,600.00	$10,628.05

Bond yield to maturity is critically important to the traders who make up the secondary market for all U.S. government and corporate bonds. Bonds offered for sale are quoted in terms of yields, and bond prices are derived from the quoted yields by means of the present value method described above.

When you purchased your Metropolis Corporation bond, the yield to maturity was simply 7% – the same as the coupon rate – because the bond was purchased at par value and held from initial offering to maturity. For bonds purchased on the secondary market, yield also includes the difference between the price paid and the face value payment the bondholder will receive in the end, whether it is a gain or loss. When you sold your bond after two years, the yield to maturity was 6%, and the price of $10,628.05 was derived to reach it.

As you can see, when the interest rates went down, the price for the previously issued bond went up. Why? Simply because of competition — if you can earn more interest for longer on a new bond, why would you spend the same amount of money for a bond with lower earnings?

Bonds and Risk

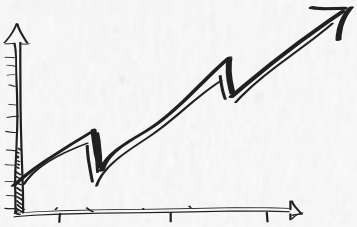
Bonds are typically considered a lower-risk investment, because the returns are steady and predictable. On the flip side, they offer minimal growth. This is true when the bond issuer is stable, like the U.S. government, which is unlikely to **default**. Some corporate bonds are riskier but may be secured by **collateral**, which means that if the bond issuer goes bankrupt, you will be compensated.

There are bonds, however, that offer higher rates of return, but also come with a corresponding higher level of risk. These are known as **high-yield bonds**, and are issued by companies with low credit scores. (This is just like when consumers have low credit scores, and their interest rates are higher because they are more likely to default.) To help investors identify how risky a bond is, there are independent rating agencies that grade them. For example, the agency Standard & Poor's grade scale runs from AAA, AA, and A down to D. A grade of AAA indicates that a bond is very safe, while a grade of C indicates that a bond issuer is highly speculative and a grade of D indicates that the bond is in default.

The other area of risk for bonds is **market fluctuation**. In our example above, we compared two bonds that matched almost exactly in terms of coupon rate, face value, maturity term, and credit rating. In the real world, there seldom exists such a perfect match. Instead, a trader who wants to price an old bond will evaluate a number of other bonds with similar maturity dates and credit ratings, and use them collectively to determine an appropriate yield to maturity.

In this manner, bond traders make the market for all bonds. Traders' collective activities (in response to economic news and to the demand for various bonds) result in interest rates going up and down from trade to trade and day to day. Such fluctuations in bond yields tend to be greater from day to day than from trade to trade, and greater from week to week than from day to day.

Activity 1



BOND BASICS

PART 1: THE PRIMARY BOND MARKET

In January, you purchase a $10,000 bond with an annual coupon rate of 7.00% 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	3.50%	0	0
July Year 1	$10,000.00	3.50%	$350.00	$
January Year 2	$10,000.00	3.50%	$350.00	$
July Year 2	$10,000.00	3.50%	$350.00	$
January Year 3	$10,000.00	3.50%	$350.00	$
July Year 3	$10,000.00	3.50%	$350.00	$
January Year 4	$10,000.00	3.50%	$350.00	$
July Year 4	$10,000.00	3.50%	$350.00	$
January Year 5	$10,000.00	3.50%	$350.00	$
July Year 5	$10,000.00	3.50%	$350.00	$
January Year 6	$10,000.00	3.50%	$350.00	$
July Year 6	$10,000.00	3.50%	$350.00	$
January Year 7	$10,000.00	3.50%	$350.00	$
July Year 7	$10,000.00	3.50%	$350.00	$
January Year 8	$10,000.00	3.50%	$350.00	$
July Year 8	$10,000.00	3.50%	$350.00	$
January Year 9	$10,000.00	3.50%	$350.00	$
July Year 9	$10,000.00	3.50%	$350.00	$
January Year 10	$10,000.00	3.50%	$350.00	$
July Year 10	$10,000.00	3.50%	$350.00	$
January Year 11 (includes face value)	$10,000.00	3.50%	$10,350.00	$

1. How do you calculate the coupon payment amounts? Describe the mathematical steps for doing this or the formula you would use. _____

_____

_____

2. How much money will you make each year from this investment? $_____
3. Over the life of the bond, what will be your total earnings? $_____
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. _____%
5. Do you think this is a wise investment? Why or why not?_____

_____

_____

_____

Activity 1

BOND BASICS

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%, 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%? Complete this chart using a calculator to find your answer.

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	$		$	$
2	4.50%	$	$	$		$	$
3	4.50%	$	$	$		$	$
4	4.50%	$	$	$		$	$
5	4.50%	$	$	$		$	$
6	4.50%	$	$	$		$	$
7	4.50%	$	$	$		$	$
8	4.50%	$	$	$		$	$
9	4.50%	$	$	$		$	$
10	4.50%	$	$	$		$	$
11	4.50%	$	$	$		$	$
12	4.50%	$	$	$		$	$
13	4.50%	$	$	$		$	$
14	4.50%	$	$	$		$	$
15	4.50%	$	$	$		$	$
16 (includes face value)	4.50%	$	$	$		$	$
Total						$ 0.00	$ 0.00

1. How much do you expect to pay for the secondary market bond? $_____
2. How much will you earn each year on the bond? $_____
3. How much will this add up to over the course of the bond's eight year life? $_____
4. Factoring in what you paid for the secondary market bond, what will be your total earnings?

Total coupon payments plus face value	- Amount paid for bond	= Total earnings
$	- $	= $ 0.00

5. 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 secondary market bond.Yield to maturity: _____%
6. 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?

_____

_____

* Discount Factor = Current Value of Money (Beginning Balance) ÷ Future Value of Money (Ending Balance)

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. Use a calculator to complete the chart, then answer the questions below.

Face Value of Bond	Date of Purchase	Coupon Rate	Maturity Date	Total Coupon Payments
$5,000	2010	7.50%	10 years	$
$1,000	2011	6.80%	10 years	$
$5,000	2012	5.00%	10 years	$
$10,000	2014	6.50%	5 years	$
$1,000	2015	7.00%	5 years	$
Combined Total				$ 0.00

1. What will be the total amount earned in coupon payments on all of the bonds together? $_____

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.

_____

_____

3. Which bond earns the most in coupon payments at maturity? Why?

_____

_____

4. Based on what you have learned about bonds, do you think you would consider them as an investment choice? Why or why not?

_____

_____

CHAPTER 3: Stocks

Did You Know?

In the short term, stock prices are volatile. But over time, the total return on stocks has historically exceeded that of any other class of assets. One dollar invested in stocks in 1802 would have grown to $8.8 million by 2003, in bonds to $16,064, in treasury bills to $4,575, and in gold to $19.75. Across the board, the average compound after-inflation rate of return on stocks during that period was 6.80% per year, a rate of return that has remained remarkably steady over time.[3]

What Is Stock?

A **share** of stock is a piece of shared ownership in a business, whether it's a small company with a private group of owners, or a **public** corporation, like Facebook or Nike, with millions of shares available for purchase. Suppose that a company has 10,000 **issued shares** and you own 1,000 of them. This would mean you own 10% of the company as a **shareholder**.

Most people consider purchasing some type of **stock** as part of their long-term investment plans. In simple terms, investors make money by buying stock for one price and selling it for a higher price some time down the road. By selling their stock after it has increased in value, investors earn a **capital gain**. Another way to make money in stocks is when companies pay **dividends,** which are periodic payments made to shareholders, based on a portion of the company's profits.

Career Link

Almost all careers in the financial services industry require strong mathematical skills. Brokers and traders, for example, must be able to quickly calculate prices and analyze market trends, and investment bankers who prepare stocks for public issue must be able to analyze market conditions and determine the price and volume of a stock offering.

[3] www.econlib.org/library/Enc/StockMarket.html

Stock Values and Returns

Stock investments can increase in value if a company performs well and its stock price rises. Note that this is not the same as earning cash, until you actually sell the stocks. The idea here is to hold onto the stocks while they continue to increase in value, and sell them either when you need the cash or when you think they've grown as much as they can.

Additionally, when a company earns a profit, it may choose to pay a portion of that amount to its shareholders as a dividend. The total amount to be paid is divided up equally among all the shares and distributed accordingly. So, if a company has issued 100 shares of stock and wants to distribute $2,000 in profits, the dividend would be $20 per share. If you owned 10 shares, you would receive a dividend of $200. Keep in mind that in the real world, a company that pays dividends usually only pays out a percentage of its profits and reinvests the rest in research, development, expansion, and other business-building opportunities.

Your **return on investment (ROI)** for a stock has two parts — the **price return** and the **dividend return**.

- The price return tells you how much the stock has increased or decreased in value since you purchased it, as a percentage of the purchase price. The formula to calculate this is simple:

  (current stock price – purchase price) ÷ purchase price = price return

  If you purchased a stock for $100 per share and the current price is $110 per share, your price return would be 10%.

  $110 - $100 = $10 ÷ $100 = 10%

- The dividend return is a measure of your total dividend earnings since you purchased the stock, as a percentage of the original purchase price. It is also simple to calculate: Add up all of your dividends and divide by the purchase price.

  total dividends ÷ purchase price = dividend return

  For example, let's say you had 10 shares of stock that you bought for $100 per share, and you received a quarterly dividend (four times per year) of $1 per share. After one year, your dividend return calculation would look like this:

  10 x $1 x 4 = $40 total dividends ÷ ($100 x 10) = 4% dividend return

- The **total annual return** is a more complete measure, as it takes both of these concepts into consideration. For a one-year period, the formula looks like this:

$$\frac{\text{value of stock based on its year-end price + dividends received over the year}}{\text{value of stock based on its price at beginning of year}} - 1 = \text{total annual return}$$

  For your 10 shares of stock that rose in value from $100 to $110 per share and paid $40 in dividends per year, your total annual return calculation would look like this:

  $1,100 + $40 = $1,140 ÷ $1,000 - 1 = 14% total annual return

- You can also calculate the **total return** from the time you purchased the stock. For example, let's say you bought your 10 shares for $100 per share 5 years ago, and the stock is now worth $250 per share (giving you an **unrealized gain** of $1,500). You also received dividends during this time of $200. Here's the calculation of your total return to date:

  $2,500 current value + $200 dividends = $2,700 ÷ $1,000 initial value - 1 = 17% total return

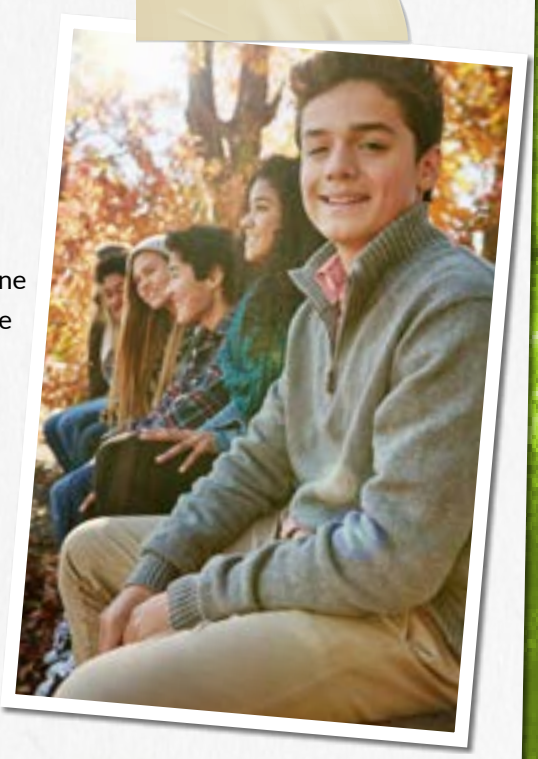
  Of course, if the stock price does not do well, your stock can lose value. Let's suppose that your $100 per share stock is now worth only $50 per share, and over the past 5 years you have received only $100 in dividends. The calculation for total return would look like this:

  $500 current value + $100 dividends = $600 ÷ $1,000 initial value - 1 = -40% total return

Activity 1

THE BUILDING BLOCKS OF STOCKS

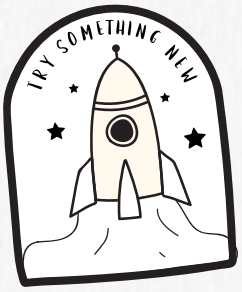
PART 1: SHARED OWNERSHIP



To understand more clearly how stock ownership works, consider the following scenario. You and four friends want to start a lawn and landscape business. You will need to purchase equipment such as mowers, trimmers, and assorted lawn tools to get started. You calculate that it will cost $1,000 to cover all startup costs. None of you has enough money to start the business on your own, so you agree that everyone will contribute what he or she can by purchasing shares of ownership. You divide the $1,000 up and decide that there will be 20 shares, each selling for $50. In order to be part owner of the business, each person will have to purchase a minimum of one share.

This chart shows how many shares each person purchases. Use a calculator to complete the chart, then answer the questions.

Shareholder	Shares Per Person	Percentage of Ownership	Value of Shares
You	5	%	$
Friend 1	3	%	$
Friend 2	6	%	$
Friend 3	4	%	$
Friend 4	2	%	$
Total	20	0 %	$ 0.00



1. How did you calculate the percentage of ownership for each shareholder? Describe the mathematical steps for doing this or the formula you used.

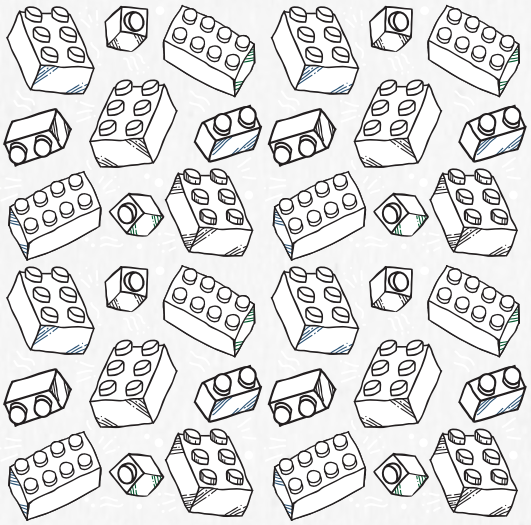
2. How did you calculate the value of shares for each shareholder? Describe the mathematical steps for doing this or the formula you used.

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

Activity 1

THE BUILDING BLOCKS OF STOCKS

PART 2: EARNINGS AND RETURNS



Your lawn and landscape business is seasonal and operates from April through October. During that time, you had a profit of $2,000 per month.

1. What are the company's profits for the year? $_____
2. Would you expect the stock price to go up or down? Why?

_____

_____

_____

Now consider these scenarios:

TRADE 1

At the end of the first year of business, Friend 3 learns that he will be moving out of state and wants to sell his shares. Business is booming and a new person, Friend 5, wants to buy in. She agrees to purchase Friend 3's shares for $60 each.

1. How much money did Friend 3 lose/gain on his investment? $_____
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? Use a calculator to find the answer.

Current stock price	- Purchase price	÷ Purchase price	= Price return
$	- $	÷ $	= %

3. What is your stock now worth? $_____
4. What is your total return after one year? Use a calculator to find the answer.

Current stock value	+ $0.00 dividends	÷ Initial stock value	- 1	= Total return
$	+ $0.00	÷ $	- 1	= %

TRADE 2

It is now the end of the second year, winter comes early, and some of your clients leave for a competitor. As a result, profits are lower than expected. Friend 2 realizes that he needs some extra cash for an unexpected expense, but no one is willing to pay $60 per share anymore. You agree to purchase two of Friend 2's shares for $40 each.

1. How much money did Friend 2 lose/gain on his investment? $_____
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? Use a calculator to find the answer.

Current stock price	- Price at end of year 1	÷ Price at end of year 1	= Price return
$	- $	÷ $	= %

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

   Majority shareholder _____

Activity 1

THE BUILDING BLOCKS OF STOCKS

PART 3: DIVIDENDS

You and your friends have decided that you want to make continuous income on your investment and split the profits. Over time you have developed a list of 15 clients who pay you $40 per week to mow their lawns. After expenses, the profits equal $32 per lawn. You decide to reinvest half of the profits back into expanding the business through marketing, purchasing additional equipment, and training staff. The remaining $16 per lawn you will distribute to the company owners at the end of each week as a stock dividend.

Update this shareholders chart with shares per person and percentages of ownership as they were at the end of Part 2. Then use the chart and a calculator to answer the questions below.

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		%	$	$	$
Friend 1		%	$	$	$
Friend 2		%	$	$	$
Friend 4		%	$	$	$
Friend 5		%	$	$	$
Total	0	0 %	$ 0.00	$ 0.00	$ 0.00

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

   $ _____

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

   $_____

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

   $_____

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

How Are Stocks Bought and Sold?

Most stocks are traded, or bought and sold, through a marketplace called an **exchange**. Some exchanges, like the New York Stock Exchange (NYSE), have a physical trading floor, where **specialists** facilitate the market for specific stocks. The specialist's job is to match up buyers and sellers so that orderly trading takes place and there are no big jumps in the price of the stock from moment to moment.

Other exchanges, like NASDAQ (the National Association of Securities Dealers Automatic Quotation System), complete all of their transactions through a computerized system. Here the market is managed by dealers who have access to buy/sell data on all stocks listed in the exchange, instead of specialists who focus on specific stocks. The process is fairly similar otherwise.

The NYSE and the NASDAQ, both based in New York, are the largest stock exchanges internationally, but there are large and small exchanges all over the world. Companies must meet certain criteria and pay a fee to be listed on each exchange; they typically will choose only one exchange except in special circumstances.

As an individual investor, you do not deal directly with an exchange to buy and sell stocks. Instead, you work through a **stockbroker** at a **securities firm**, or via an **online brokerage**.

Traditionally, a stock purchase proceeds like this:

1. Buyers and sellers call their stockbrokers and ask to make a trade, communicating the amount of money they are willing to spend/accept by indicating a **buy limit order**, **sell limit order,** or **market order.**
2. The stockbroker will issue an order to buy or sell shares of stock to a securities firm's specialist.
3. The specialist sends the order to a **floor broker,** who executes the trade.
4. When the trade is complete, the floor broker sends the final price information to the specialist.
5. The specialist posts the results of the trade in the exchange computer system.
6. The stockbroker phones the investor with details about the final price and number of shares.
7. The investor pays a **transaction cost** or **commission** to the stockbroker for this service.

While many people still use stockbrokers, the popularity of **online trading** has increased dramatically because it is much less expensive and more efficient. Opening an online **brokerage account** is as easy as setting up a bank account: You complete an account application, provide proof of identification, and choose how you want to fund the account. You may fund your account by mailing a check or transferring funds electronically.

For new investors, there are a number of things to consider when choosing an online brokerage:

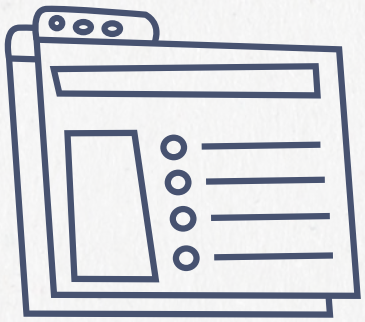
- *Transaction costs:* This is the fee charged for each purchase/sale, which can range from $5-$10 or more. If you trade frequently, or have a limited budget, these costs can add up.
- *Minimum requirement:* The minimum amount of money you have to invest to get started and maintain an account. Many online brokerages have a $0 minimum requirement to set up a traditional individual retirement account or Roth IRA. For other types of accounts, the minimums can range from $0 to $2,000 or more.
- *Other fees:* Some brokerages will charge an inactivity fee if you don't make periodic trades.
- *How much support you want:* Consider the brokerage's offerings of educational tools, investment guidance, stock-trading research, and access to real, live humans via phone, email, online chat, or branch offices.

Interpreting Stock Market Data

Major newspapers and many websites contain pages of information about the stock market. To simplify how this information is displayed, each company's stock is assigned a **ticker symbol**. For example, the Ford Motor Company has F as its ticker symbol, while Microsoft is MSFT.

Each day thousands of investors place orders to buy and sell stocks for a particular company, causing almost continual change in the price of the stock. When the exchange opens for trading in the morning, 10,000 shares of a particular company's stock may trade at a price of $50.00 per share. The next trade in that stock may be for 5,000 shares at a price of $50.25 per share. The trade after that could be for 25,000 shares at $49.75 per share. Throughout the trading day, the company's stock will be bought and sold many more times. The low price for the day could be $48.00 per share and the high price for the day might be $53.00 per share. You can see that the share price fluctuates, or changes, throughout the day as trades occur. The **last price** for the day could be the low price, high price, or a price somewhere in between the two. Investors often discuss the **market value** of a stock, which is the current price at which investors buy or sell a share of common stock.

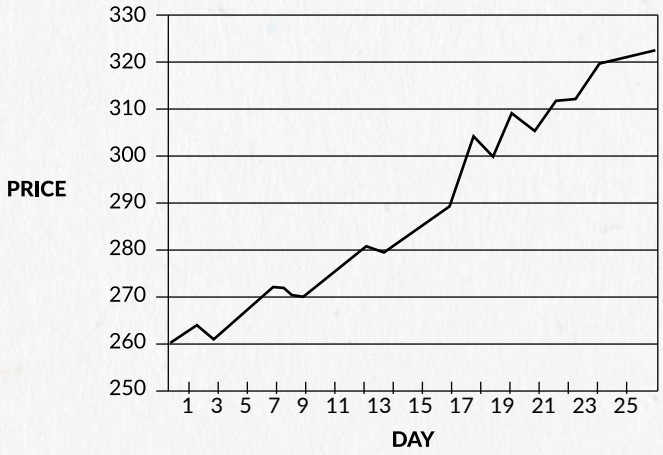
When reviewing daily stock performance in newspapers and online reports, investors can see the last price for the day and compare it to the high and low prices for the day, as well as the last price for the previous day. These prices are shown in increments of one cent. Investors can also see how many shares of the stock were traded, the stock's average price over the past 52 weeks (year), and the stock's **dividend yield**. By studying this information, investors can determine the amount of risk and **volatility** associated with the stock.



Evaluating Stocks

As you learned in the *Did You Know?* section at the start of the chapter, stocks offer a high potential for positive returns. But as with any investment, there are risks involved. The financial outcome for stocks can be uncertain, as market fluctuations are often difficult to predict. This is particularly true in the short-term.

When considering whether to buy a particular stock, one of the first things investors look at is how it has performed over time. Stock prices can fluctuate greatly, but experts try to make predictions based on the **long-term trends** of a company's stock price, in hopes of investing in the ones that will have an **upward trend**.



Stock trends are evaluated by charting the price return of the stock over time. An upward trend means that the stock's price return has a positive average. For example, if you were to study a stock over a three-month period and see an average daily price return of 2.5% during that time, that time period would be referred to as an upward trend.

Examine the stock price trend chart above. Notice that the price changes each day. Some days the price goes up, and some days the price drops. However, if you study its overall change, you will notice that the overall price is higher on Day 23 than it was on Day 1. This is a visual illustration of what an upward trend could look like.

As mentioned in Chapter 1, most investors try to minimize risk by diversifying their portfolio. They will own a number of different stocks in addition to other types of investments. An important thing to look at when considering how to diversify stock investments is the price trends within different industries. It helps to understand the concept of **positive correlation**, which is the tendency of stock prices to move up or down together. For example, if a technology industry expert reports that computer hardware companies are going to make less money than expected, the news is likely to send the prices of all technology stocks down.

On the other hand, there are times when investment performance is **uncorrelated**. For example, if you own stock in a company that produces engines for a specific model of airplane, and its customer decides to discontinue that model, chances are the stock price for the engine-producing company will fall. However, that does not mean the prices for all stocks will fall. In other words, there is no correlation, or connection, between the airplane engine company's stock and other stocks you might own, such as a stock in a pharmaceutical company.

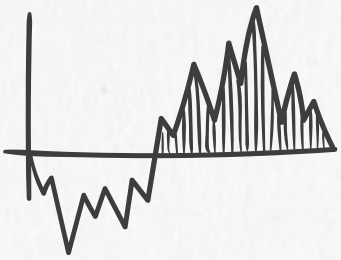
Stock Price Indices

Investors find it very useful to have an overall measure of the stock market's performance. A **stock price index** represents the combined price performance of a large number of companies' stocks. There are several different stock market indices commonly used today; you can find them in the business sections of most daily newspapers and on websites that post information about the financial markets.

The oldest and most widely recognized stock price index is the Dow Jones Industrial Average, known as the "Dow" and quoted as DJIA. It is NOT a broad measure of the stock market, as it is based on only 30 "blue chip" stocks. Blue chip stocks are high quality stocks with a reputation for, and solid record of, stable earnings and dividend growth. Most of the Dow stocks are large industrial companies.

The S&P 500 offers a broader measure of stock market performance because it is based on stocks from 500 companies that represent all different economic sectors, not just specific industries. The NASDAQ Composite Index includes over 5,000 companies that are traded on the NASDAQ exchange. Even though this index includes a large number of companies, it is not as broadly representative as one might think, because many of the companies are from the technology sector rather than from a wide range of industries.

Activity 2



TRACKING MARKET TRENDS

Investment analysts and stock experts study market trends and individual stock activity to try and make predictions for how the stocks and the economy as a whole will behave in the future.

Follow the steps below to select stocks from various market sectors and study their performance over a given time period. Use that data to analyze stock trends and answer the questions related to risk and diversification.

1. Select a stock from each of the market sectors listed below, and one from an industry of your choice. Write the name of the stock and its ticker symbol next to the sector. To get started, visit finance.yahoo.com.

SECTOR	COMPANY NAME AND TICKER SYMBOL
Energy	
Finance	
Healthcare	
Technology	
Transportation	
Your Choice	

2. Using data from the past 30 days, create a line graph or chart that illustrates each stock's performance during that 30-day time period. You may do this on a separate sheet of paper, print charts from an internet resource, or create them using spreadsheet software.

3. In the space below, describe the performance of each stock over the 30-day period you tracked. Note things such as price fluctuations and overall gains and losses over the course of the 30 days.

   Energy stock: _____

   Finance stock: _____

   Healthcare stock: _____

   Technology stock: _____

   Transportation stock: _____

   Your choice: _____

4. Choose one of your stocks and compare its performance over the 30-day period to the Dow Jones Industrial Average and the S&P 500.

   Stock chosen for comparison: _____

   _____

5. Do you see any positive correlation between any of the stocks you selected? If so, explain the positive correlation. If not, explain why the stocks are uncorrelated. _____

   _____

6. Of the stocks you analyzed, which appears to be the most risky? Why? _____

   _____

7. Which appears to be the least risky? Why? _____

   _____

8. Do the six stocks you analyzed seem a good selection for an investor who wants to diversify as a means of reducing risk? Why or why not? _____

   _____

Activity 3

PLAYING THE MARKET

Scenario: You have received a $5,000 inheritance that you must use to purchase stock. You must keep the money in the market for a minimum of one month with the goal of earning as much of a return as you possibly can on your investments.

Using what you have learned about stocks, research and choose a set of one to four stocks to purchase with your $5,000. You also need to research and choose a method for making your purchases. Over the next 30 days, you will track each stock's activity and hypothetically buy or sell as needed. At the end of the month, study your investment choices and create a chart or graph illustrating the gains and losses on your investments.

Step 1. Determine how you will purchase your stock. Will you use a stockbroker or online brokerage? What firm seems to best fit your needs and budget? Explain why, based on what you learned from researching each option.

Step 2. Using what you have learned about stocks, select one to four stocks to buy. Record your findings about each stock in this chart. Create your own chart based on this template to track your investment decisions over the 30-day period. If you decide to sell a stock, explain why in the "Reason to Sell this Stock" column. If you add new stocks to your portfolio, update your chart accordingly.

Name of Company	Ticker Symbol	Market Sector	Past Performance	Annual Dividend	Reason to Purchase this Stock	Reason to Sell this Stock
				$		
				$		
				$		
				$		
				$		

Step 3. How many stocks did you choose? Were they in the same or different industries? Explain whether you chose to diversify and why or why not.

Step 4. Create an investment journal that you can use to track the activity of each stock, and your overall stock portfolio. Keep a daily record of the last price of each stock and its change from day to day. You can use these templates as a guide to get you started. Note that the portfolio template includes space to add new stocks as you sell earlier investments.

STOCK PORTFOLIO						
	Stock 1	Stock 2	Stock 3	Stock 4	Stock 5	Stock 6
Stock Name/Ticker Symbol						
Date of Purchase						
Purchase Price per share						
Number of Shares Purchased						
Transaction Costs						
Date Sold						
Sale Price per share						
Number of Shares Sold						
Transaction Costs						
Profit/Losses						

DAILY STOCK TRACKER										
Company/ Ticker Symbol	Day	1	2	3	4	5	6	7	8	etc.
	Last price									
	Percentage change									
	Last price									
	Percentage change									
	Last price									
	Percentage change									
	Last price									
	Percentage change									
	Last price									
	Percentage change									

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? _____
2. How much did you earn or lose over the course of the month? Be sure to deduct any transaction costs for buying and selling. $_____
3. Do you think the stocks you purchased were good investments? Why or why not?

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

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

6. What are the disadvantages of investing in the stock market?

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?

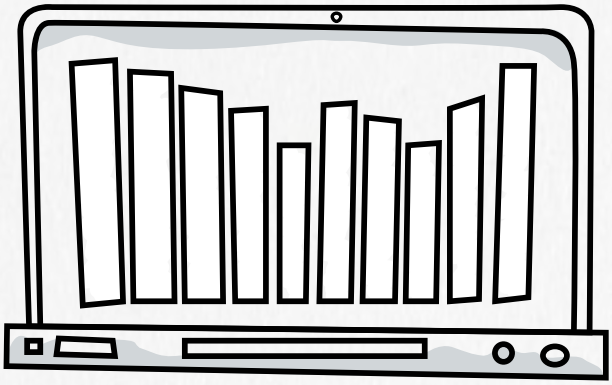
CHAPTER 4: Mutual Funds

Did You Know?

The U.S. mutual fund market — with $18.75 trillion in assets under management in 2017 — is the largest in the world. Stock funds made up 59% of the market and bond funds made up 21% in that year, with 44.5% of American households owning mutual funds.[4]

As we have seen, one of the keys to successful investing is diversifying — putting your money into a variety of carefully selected financial products that collectively balance risk with return. A quick internet search will show that recommendations vary widely for how many different investments you need, but all will more or less agree that 10 is better than two.[5] If you don't have a lot of money to invest, however, it can be tough to build a diversified portfolio of individual stocks and bonds. It also takes a lot of time and expertise to study each industry and company, track the market, and figure out what to buy and when to trade.

That's where **mutual funds** come in. When you buy a share in a mutual fund, your money gets pooled with the investments of many other people, and it all gets invested together. This makes it possible to own small chunks of lots of different financial products and is one reason why mutual funds are popular for company-sponsored 401k retirement savings accounts.[6]



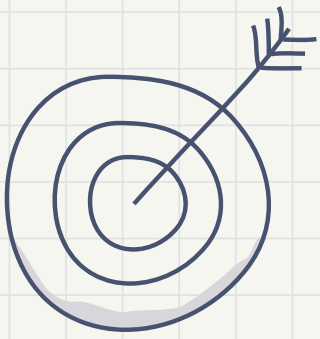
Mutual funds are a smart investment solution for another reason: Since most of us are not experts on a wide range of industries and don't have time to stay up-to-date on the performance of every company, we usually rely on stockbrokers to help us gather and understand this information. Yet, at the same time, most of us want to have control over our own money. With mutual funds, you get both benefits. Each fund is managed by experts, and you can select which funds you want to put your money into and change the amount invested in each fund as you see fit.

TYPES OF MUTUAL FUNDS

Thousands of different mutual funds exist in the U.S. covering nearly every sector of the market. Depending on the fund, it may invest in stocks, bonds, or a combination. Stock funds are known as **equity funds**, while bond funds are typically called **fixed income**. Mutual funds that invest in both stocks and bonds are sometimes called **hybrids**.

Within those three categories, there are hundreds of funds that fit any number of criteria. Looking to invest only in really large or really small companies? Technology companies? Socially responsible industries? You name it, there's probably a fund to match your preference.

Some of these funds are **actively managed**, meaning there is a professional team or individual whose job is to continuously analyze the market, and buy and sell investments for the fund, with the goal of getting higher returns than the rest of the market. Other funds are **passively managed**, which means they're set up to track a segment of the market and are largely left alone. These include **index funds**, which contain assets that mirror a specific stock price index such as the S&P 500 with the goal of matching its growth.

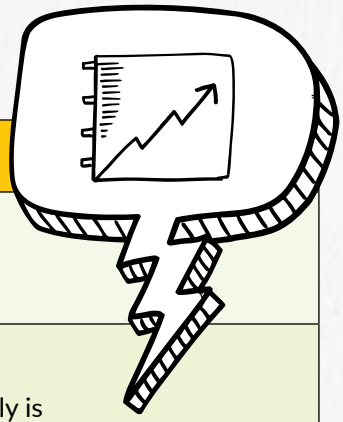


Career Link

Financial analysts can be found throughout the financial industry, working for banks, insurance companies, and mutual funds and securities firms. Their role is to help people decide how to invest their money. In addition to good people skills, math, computer, and problem-solving skills are vital. Most financial analysts have a college degree in business, accounting, statistics, or finance.

[4] www.statista.com/topics/1441/mutual-funds
[5] www.investopedia.com/ask/answers/05/optimalportfoliosize.asp
[6] Biafore, Bonnie, Amy Buttell and Carol Fabbri. Personal Finance: The Missing Manual. O'Reilly. 2010.

Some of the most common types of stock and bond funds include:



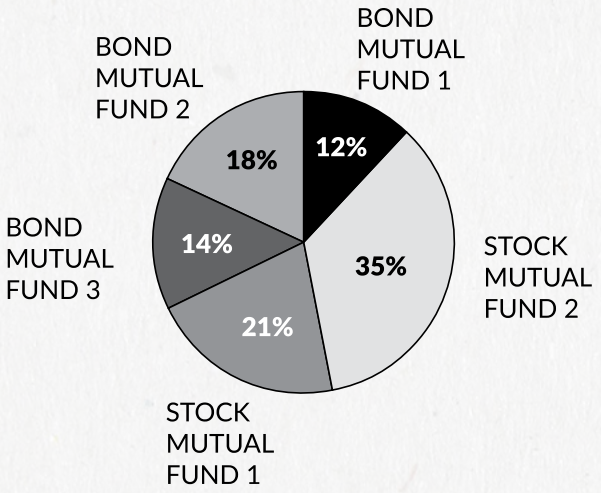
STOCK (EQUITY) FUNDS	
Equity Growth Fund	Stocks of companies for which future earnings are expected to have above-average growth relative to other companies in the marketplace
Equity Value Fund	Stocks of companies for which investment analysts' models indicate that the stock price should be higher than it currently is
Aggressive Equity Fund	Stocks of companies (generally smaller and medium-sized) for which future earnings are expected to have rapid growth
S&P 500 Index Fund	Stocks of 500 large companies; designed to reflect the combined performance of the S&P 500 index
International Equity Fund	Stocks of companies that are based outside of the U.S. that meet the "growth" or "value" criteria described above
European Equity Fund	Stocks of companies based in Europe that meet the "growth" or "value" criteria described above
Asian Pacific Equity Fund	Stocks of companies based in Asia that meet the "growth" criteria described above

BOND (FIXED INCOME) FUNDS	
U.S. Government Fund	Bonds issued by the U.S. federal government with maturities between 1 and 30 years
Fixed Income Fund	Bonds issued by the U.S. federal government and by high-quality U.S.-based companies with maturities between 1 and 30 years
High Yield Fund	Bonds issued by companies with less predictable future earnings; these companies could experience losses that could cause the suspension or elimination of both the periodic coupon payments and repayment of the bond's face amount at maturity
International Fixed Income Fund	Bonds issued by foreign governments and companies

Asset Allocation

The stocks and bonds held by mutual funds are called **assets**. When investors purchase shares in mutual funds, they often do not put all their money into one fund. Instead, they usually put some money into stock funds and some into bond funds. Let's say you decide to put 70% of your money into stock mutual funds and 30% into bond mutual funds. You could then choose to further divide the 70% allocated for stock mutual funds into specific funds, such as 30% into Stock Fund 1, 50% into Stock Fund 2, and 20% into Stock Fund 3. The 30% that was allocated for bond funds may also be divided so that 40% of it goes into Bond Fund 1 and 60% goes into Bond Fund 2. This process of **asset allocation** allows an investor to balance risk and return in a way that suits their individual investment objectives and comfort level with financial risk.

Asset Allocation



This pie chart shows what asset allocation looks like. In this case, the investor's asset allocation (or **asset mix**) is 56% stocks and 44% bonds. Typically, long-term investments and a higher comfort level with risk will have a higher ratio of stocks to bonds. Investors who prefer a steady, low-risk return or who plan to start using their investment sooner would have an asset mix with more bonds than stocks.

Hybrid mutual funds, which invest in both stocks and bonds, will have their own unique asset mix built-in, and will vary accordingly in terms of return and risk. **Target date funds** are a type of hybrid fund that has gained popularity in recent years, particularly for retirement investments. The asset mix for these funds is based on the year when investors expect

to start withdrawing and using their money. Let's say you have just started your first job and expect to retire in 40 years. You could choose to invest for your retirement in a 40-year Target Fund. In the early years, the fund will lean heavily towards stocks and other higher risk investments with a goal of achieving greater growth early on, with the expectation that you will have time to make up any losses. As the 40-year target gets closer, the fund's asset mix will shift to include more bonds and low-risk investments.

Investment Costs

Unlike purchasing stocks, in which you usually pay a commission only when you buy or sell, mutual funds require ongoing management, so they charge ongoing fees. On an annual basis, total mutual fund charges generally range between 0.2% and 2.5% of the fund's market value.[7] The fee is known as an **expense ratio**, and it is taken from your earnings.

Let's say you have $10,000 in a mutual fund that has an expense ratio of 1%. If the fund's return is 6% ($600), you will have to pay 1% ($100) as a fee, and your net return will be 5% ($500). This may not sound like much, but taken over decades, it can add up. Because of the way they are managed, bond mutual funds and stock index funds typically have lower costs than actively managed funds, something to consider when choosing your investments.

Some funds also charge a **sales load**, which is a commission based on the amount of money you invest. Today, many mutual funds are **no load** funds. The funds that still charge for investing will use a percentage rate for calculating their fee. For example, if you want to invest $1,000 in a fund that has an 8% sales load, then the **net investment** would be $920 ($1,000 x 8% = $80 sales load; $1,000 - $80 sales load = $920 net investment).

[7] www.investopedia.com/ask/answers/032715/when-expense-ratio-considered-high-and-when-it-considered-low.asp

Net Asset Value

When you invest in a mutual fund, you do not directly own any of the individual shares of stock or any of the individual bonds in the fund. Instead, you own **mutual fund shares.** The purchase price of these shares is calculated daily, based on the fund's **net asset value (NAV)**.

Unlike stocks, whose prices change constantly throughout the day, net asset value is calculated at the end of each business day, and all of the day's purchases are put through at that time. The formula is as follows:

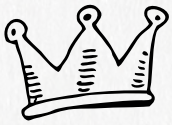
1. Determine the market price of each individual asset in the fund.
2. Calculate the fund's **total market value** by adding up the value of all of the assets.
3. Deduct the daily **total expense** charges to find the net market value.
4. Divide the net market value by the total number of mutual shares for the net asset value.

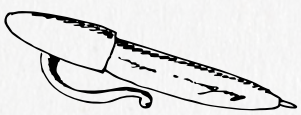
Exchange-Traded Funds

Exchange-Traded Funds, or ETFs, are another popular way that people invest. They are similar to mutual funds in that they contain a variety of assets to provide diversification, and investors purchase shares of the fund instead of shares in the individual assets. Like passively managed mutual funds, most ETFs track a stock price index, so they tend to have higher rates of return and lower costs than actively managed mutual funds.

The primary difference between ETFs and mutual funds is that ETFs are bought and sold on exchanges, the same way that individual stocks are typically traded. This means that the share price fluctuates throughout the day, and is not calculated at the end of each day as it is for a mutual fund. This makes ETFs a better option for people who want greater control and the opportunity to buy and sell more frequently. On the flip side, you can't schedule ongoing automatic purchases as you can with a mutual fund. ETFs also typically have lower minimum purchase limits than mutual funds, because they're priced like stock shares.[8]

[8] https://investor.vanguard.com/etf/etf-vs-mutual-fund





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? Use a calculator to find the answer.

Total Market Value	– (Expense Ratio x Total Market Value)	= Net Market Value	÷ Number of Shares	= Net Asset Value
$	– $	= $	÷	= $

2. How much would it cost you to buy 100 shares if this was a no-load fund? $_____

3. If you had $5,000 to invest, and this fund had a 4.75% sales load, how much would your net investment be? Use a calculator to find the answer.

Investment Amount	– (Sales Load x Investment Amount)	= Net Investment
$	– $	= $

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. Use this chart to create a profile of your mutual fund portfolio, including the pros and cons for each of your choices. (We provide a sample to get you started.) Then answer the questions on the next page.

Fund Name	Symbol	Asset Type	Net Assets	Expense Ratio	Pros	Cons
Baron Partners Retail	BPTRX	Stocks	$2.2 billion	1.34%	High year-to-date return of 15.34%	High risk, borrows money for investment opportunities

1. What is your asset allocation?

By Individual Funds:

- Fund 1: _____%
- Fund 2: _____%
- Fund 3: _____%
- Fund 4: _____%
- Fund 5: _____%

By Asset Type:

- Stock Funds: _____%
- Bond Funds: _____%
- Hybrid Funds: _____%

2. Create a journal to track your funds' expenses and total market value over a 30-day period. (You can modify the Daily Stock Tracker chart you used in Chapter 3.) Describe any returns or changes in your mutual funds over the 30-day tracking period.

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?

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

5. Do you think you allocated your assets correctly when you developed your portfolio? Why or why not?

6. Do you think any of the costs associated with your mutual funds were too high or too low? Explain.

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

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?

Activity 2

ACHIEVING YOUR INVESTMENT GOALS

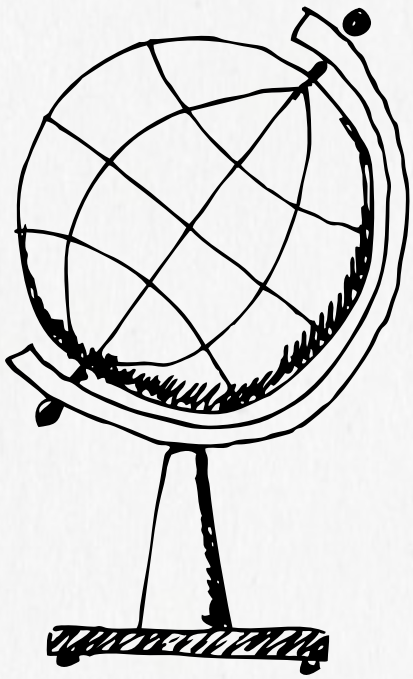
In this book, you learned about the three most common types of investments — stocks, bonds, and mutual funds — and about the importance of diversification. Now you're ready to put what you've learned to work.

Choose one of the investment goals listed below, and design a well-diversified portfolio that would help you achieve it. You might start by examining the portfolios developed by *Kiplinger's*, a personal finance publication, which cover a range of timelines and risk tolerances — visit www.kiplinger.com/tool/investing/T052-S001-investment-portfolio-finder/index.php. You can use one of the *Kiplinger's* portfolios or create your own with a combination of stocks, bonds, and/or mutual funds. Keep in mind that a higher ratio of stocks to bonds in your portfolio typically indicates a higher level of risk but also a higher level of returns — and vice versa.

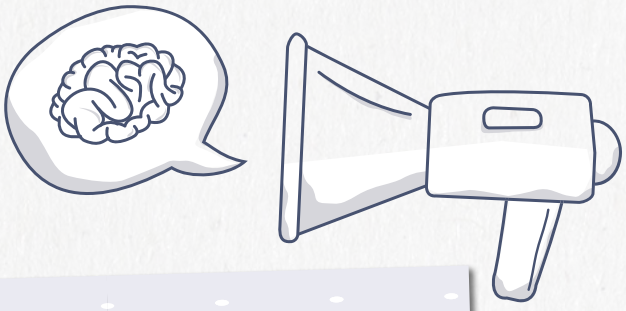
INVESTMENT GOALS (CHOOSE ONE)

1. You'd like to buy a house in five to seven years and need a down payment.
2. You want to buy a vacation home or boat in 8-10 years.
3. Your kids will be going to college in 10-12 years.
4. In 15-18 years, you'd like to start working part-time and use your investments as supplemental income.
5. You are saving for retirement in 25 years. You want to have money to travel and take up new hobbies.
6. You are saving for retirement in 30 years. You want to have a small home near your grandkids and enough money to go out to eat occasionally.

Create a presentation for your class that demonstrates why you chose each of the assets in your portfolio, a timeline of how much money you will need to invest and when, and a projection of your earnings over the time period designated. For example, if you choose Goal 1, you will need to show how much money you will have to invest, and how much you expect to earn, over the 5-year period. Also indicate the strategy you will use for evaluating your portfolio and then buying promising assets and selling assets that aren't performing well.



Book 4 Final Assessment Quiz



Test your understanding of key points from the Accumulating Wealth book by answering True or False for each of the questions.

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

   T F

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.

   T F

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

   T F

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

   T F

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

   T F

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

   T F

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

   T F

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.

   T F

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

   T F

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.

    T F

Click here to clear answers

GLOSSARY

Chapter 1

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

Chapter 2

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

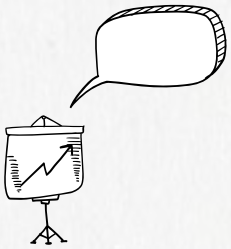
Present Value: the value of money right now, today

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

Chapter 3



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 Gain: an increase in value of property or of an investment over its purchase price. Note that if it 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

Chapter 4

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 is 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: a tool for measuring the change in the value of the stock market by tracking a specific subset, like the S&P 500 which tracks 500 large companies

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