Solutions for Fundamentals of Investing 1st Edition by Zutter

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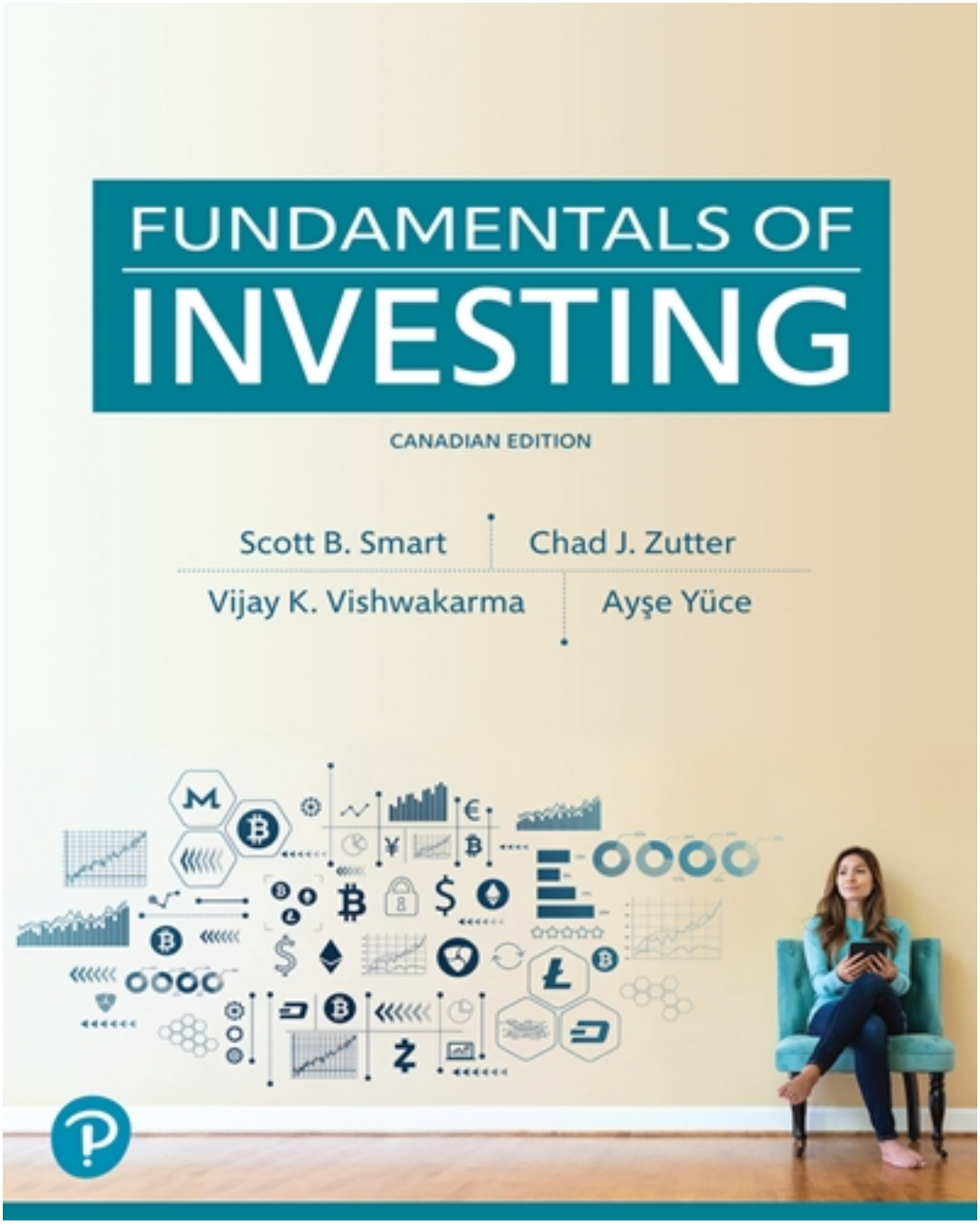

Solutions

INSTRUCTOR RESOURCE MANUAL

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Fundamentals of Investing
Canadian Edition

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ISBN: 978-0-13-661481-4

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3. The importance of and basic steps involved in the investment process
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5. Derivative securities such as options and futures
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■ Overview

This chapter provides an overview of the scope and content of the text.

1. The term *investment* is defined, and the various investment opportunities available to investors are classified by types.
2. The structure of the investment process is examined. This section explains how the marketplace brings together suppliers and demanders of investment funds.
3. The key participants in the investment process—government, business, and individuals—are described, as are institutional and individual investors.
4. *Returns* are defined as rewards for investing. Returns to an investor take two forms—current income and increased value of the investment over time. In this section, the instructor need only define return, since there will be another opportunity to develop the concept of return in Chapter 4; also, providing information about recent investment returns always engages students' attention. In classrooms with Internet access, viewing charts of stock returns over the last month, year, 5 years, and recent changes in interest rates will be especially useful.
5. Next, the following investments available to individual investors are discussed: short-term investments common stock, fixed-income securities, mutual funds, exchange-traded funds, hedge funds, real estate, tangibles, tax-advantaged investments, and options and futures. The text describes their risk-return characteristics in a general way. The instructor may want to expand on the advantages and disadvantages of investing in each, although they will be treated in greater detail in subsequent chapters. It is vital for any investor to establish investment goals that are consistent with his or her overall financial objectives.
6. Writing an investment plan involves summarizing one's current situation, specifying investment goals, articulating an investment philosophy, setting investment selection guidelines, and assigning responsibility for selecting and monitoring investments.
7. Personal taxes are discussed in terms of types of income and tax rates. The investment process is affected by current tax laws. Examples of tax shelters, especially tax-advantaged retirement vehicles, and tax planning are provided.
8. Once investment goals are established, it is important to understand how the investment process is affected by different economic environments. The chapter talks about types of investments such as stocks, bonds, and tangibles as they are affected by business cycles, interest rates, and inflation.

9. Liquidity is defined, and short-term securities that can be used to meet liquidity requirements are described. The discussion includes a look at short-term interest rates and the risk characteristics of various short-term securities.
10. The next section covers the various types of short-term vehicles available to today's investor. The text provides enough detail about everything from passbook accounts to money market funds to commercial paper that students should get a good grasp of the differences between the vehicles. Information on current rates brings realism into the classroom and enhances student perception of the lecturer as a knowledgeable instructor.

■ Famous Failures in Finance: Critical Thinking Question

Ethical Failure—Massaging the Numbers

Why do you think Lehman engaged in Repo 105 transactions?

The ability to borrow short-term funds at low interest rates was critical to Lehman Brothers operations. By disguising these repurchase agreements as sales of assets rather than very short-term loans, Lehman inflated revenues and made their balance sheet look much stronger than it actually was. At this point in its history, Lehman was highly leveraged and facing declining liquidity. The inability to obtain cheap, short-term loans would mean the death of the company which, of course, did ensue. For the individuals involved, large sums in the form of bonuses and investments in the firm were riding on the firm's survival. It might be worth mentioning that the practice was borderline acceptable under British law, but it did not conform to U.S. GAAP.

■ Answers to Concepts in Review

1.1 An *investment* is any asset into which funds can be placed with the expectation of preserving or increasing value and earning a positive rate of return. An investment can be a security or a property. Individuals invest because an investment has the *potential* to preserve or increase value and to earn income. It is important to stress that this does *not* imply that an investment will in fact preserve value or earn income. Investing often involves taking risk, so an investment's actual performance will often differ from its expected performance.

1.2 (a) Securities and property are simply two classes of investments. *Securities* are investments issued by firms, governments, or other organizations that represent a legal claim on the resources of the issuer. For example, a bond represents a loan that the borrower is legally obligated to repay, and a stock represents a proportionate ownership in a firm. An option, on the other hand, represents the legal right to either buy or sell an asset at a predetermined price within a specified time period. *Property* constitutes investments in either real property (land and buildings) or tangible personal property (e.g., Rembrandt paintings, Ming vases, or gold coins). These days, some students are likely to ask about cryptocurrencies, which have characteristics of both transactional currencies and speculative security investments.

(b) With a *direct investment*, an individual acquires a direct claim on a security or property. For example, an investment in one share of BCE stock directly provides the stockholder a proportionate ownership in BCE. An *indirect investment* provides an indirect claim on a security or property. For example, if you buy one share of RBC Growth Fund (a mutual fund) or an ETF that tracks the S&P 500 index, you are in effect buying a portion of a portfolio of securities owned by the fund. Thus, you will have a claim on a fraction of an entire portfolio of securities. Many funds also invest in a variety of debt instruments.

(c) An investment in *debt* represents funds loaned in exchange for the receipt of interest

income and repayment of the loan at a given future date. The bond, a common debt instrument, pays specified interest over a specified time period, then repays the face value of the loan. (Chapters 10 and 11 cover bonds in detail.) An *equity investment* provides an investor an ongoing fractional ownership interest in a firm. The most common example is an investment in a company's common stock. We will study equity instruments in greater detail in Chapters 6 through 8. *Derivative securities* are securities derived from debt or equity securities and structured to exhibit characteristics and value based upon the underlying securities. *Options* are derivative securities that allow an investor to sell or buy another security or asset at a specific price over a given time period. For example, an investor might purchase an option to buy Facebook stock for $50 within nine months.

(d) *Short-term investments* typically mature within one year while *long-term investments* have longer maturities, including common stock, which has no maturity at all. However, long-term investments can be used to satisfy short-term financial goals.

1.3 Investors expect to be paid for accepting risk. Low or no risk investments typically offer low rates of return while riskier investments, meaning that returns are less predictable, tend to offer potentially higher returns.

1.4 In finance, *risk* reflects the uncertainty surrounding the return that an investment will generate. Risk refers to the chance that the return from an investment will differ from its expected value. *Low-risk investments* are those considered safe with respect to the return of funds invested and the receipt of a positive rate of return. *High-risk investments* are those that have more uncertain future values and levels of earnings.

1.5 *Foreign investments* are investments in the debt, equity, derivative securities of foreign-based companies, and property in a foreign country. Both direct and indirect foreign investments sometimes provide investors more attractive returns or lower-risk investments compared to purely domestic investments, but beyond that they are useful instruments to diversify a purely domestic portfolio.

1.6 The *investment process* brings together suppliers and demanders of funds. This may occur directly (as with property investments). More often the investment process is aided by a *financial institution* (such as a bank, savings and loan, savings bank, credit union, insurance company, or pension fund) that channels funds to investments and/or a *financial market* (either the money market or the capital market) where transactions occur between suppliers and demanders of funds.

1.7 (a) The various levels of government (federal and provincial) generally require more funds for projects and debt repayment than they receive in revenues. Thus, governments are *net demanders* of funds. The term *net* refers to the fact that, while governments both supply and demand funds in the investment process, on balance they demand more than they supply.

(b) Businesses are also *net demanders,* requiring funds to cover short- and long-term operating and investment (growth) needs. While business firms often supply funds, on balance they also demand more than they supply.

(c) Individuals are the *net suppliers* of funds to the investment process. They put more funds into the investment process than they take out. Individuals play an important role in the investment process—supplying the funds needed to finance economic growth and development.

1.8 *Institutional investors* are investment professionals who are paid to manage other people's money. They are employed by financial institutions like banks and insurance companies, by nonfinancial businesses, and by individuals. *Individual investors* manage their own personal funds in order to meet their financial goals. Generally, institutional investors tend to be

more sophisticated because they handle much larger amounts of money, and they tend to have a broader knowledge of the investment process and available investment techniques.

1.9 *Short-term investments* usually have lives of less than one year. These investments may be used to store temporarily idle funds until suitable long-term investments are found. Due to their safety and convenience, they are popular with those who wish to earn a return on temporarily idle funds or with the very conservative investor who may use these short-term investments as a primary investment outlet. In addition to their storage function, short-term investments provide liquidity—they can be converted into cash quickly and with little or no loss in value. This characteristic is very useful when investors need to meet unexpected expenses or take advantage of attractive opportunities.

1.10 *Common stock* is an equity investment that represents a fractional ownership interest in a corporation. The return on a common stock investment derives from two sources: *dividends,* which are periodic payments made by the firm to its shareholders from current and past earnings, and *capital gains,* which result from selling the stock at a price above the original purchase price. Because common stock offers a broad range of return-risk combinations, it is one of the most popular investments.

1.11 a. *Bonds* are debt obligations of corporations or governments. A bondholder receives a stated interest return, typically semi-annually, plus the face value at maturity. Bonds are usually issued in $1,000 denominations, pay semi-annual interest, and have 10 - to 30-year maturities. Bonds offer fixed/certain returns, if held until maturity.

b. A *convertible security* is a fixed-income security, either a bond or preferred stock, which has a conversion feature. Typically, it can be converted into a specified number of shares of common stock. Convertible securities are quasi-derivative securities, as their market value would depend on the price of the common stock and the conversion ratio.

c. *Preferred stock* is very much like common stock in that it represents an ownership interest in a corporation. But preferred stock pays only a fixed stated dividend, which has precedence over common stock dividends, and does not share in other earnings of the firm.

d. A *mutual fund* is a company that invests in a large portfolio of securities, whereas a *money market mutual fund* is a mutual fund that solely invests in short term "money market" securities. Investors might find mutual funds appealing because a large, well-diversified portfolio may be more consistent with their investment goals in terms of risk and return. As we will see later, a mutual fund offers the investor the benefits of diversification and professional management. Mutual funds do not offer fixed/certain returns. Exchange-traded funds are similar to mutual funds but are traded throughout the day on exchanges and priced continuously.

e. Similar to mutual funds, *hedge funds* pool investors' funds to invest in securities, but hedge funds are open to a narrower group of investors than mutual funds. Hedge funds may employ high-risk strategies. They do not offer a fixed return and the management fees are much higher than for typical mutual funds. Although the term hedge implies limiting risks with derivatives, many hedge funds use derivatives to increase leverage rather than for managing risk.

f. *Options* are derivative securities that provide holders the right to buy or sell another security (typically stock) or property at a specified price over a given time period. Factors like the time until expiration, the underlying stock price behaviour, and supply and demand conditions affect the returns.

g. *Futures* represent contractual arrangements in which a seller will deliver or a buyer will take delivery of a specified quantity of an asset at a given price by a certain date. Unlike

an option, which gives the investor the *right* to purchase or sell another security, futures contracts *obligate* the investor to deliver or take delivery of the asset. The primary factor affecting returns on commodity contracts is the price of the underlying asset.

1.12 Before establishing an investment program, an investor should write down an Investment Policy Statement. The elements of this statement include an overview of the investor's current situation, a description of the investor's goals and investment philosophy, a list of investment selection guidelines, and a statement explaining how, when, and by whom the investment portfolio will be monitored.

1.13 Federal income taxes are charged against all income individuals receive from all sources.

a. *Capital gains* are the profits earned on the sale of capital assets—pleasure or investment. They are measured by the amount by which the proceeds from the sale of the capital asset exceed its original purchase price. Currently, long-term capital gains are taxed at preferential rates to ordinary income. Capital gains are appealing to investors because they are not taxed until they are actually realized.

b. A *capital loss* is the amount by which the proceeds from the sale of a capital asset are less than its original purchase price. Like gains, capital losses may be realized or unrealized, but only realized losses have tax consequences. Before calculating taxes, investors net out all capital gains and losses. **Net losses** that cannot be applied in the current year may be carried forward and used to offset future income, or they can be carried backward up to three previous years to amend a capital gain declared previously, subject to certain conditions.

c. Due to the opportunities and challenges created by the tax laws, *tax planning* is an important part of the investment process. Tax planning involves looking at an individual's current and projected earnings and developing strategies that will defer or minimize the level of his or her taxes. Tax plans involve current income, capital gains, or tax-sheltered investments. For example, one strategy is to take losses as they occur and to delay realizing profits in order to minimize current taxable income.

d. In general, tax-advantaged retirement plans such as RRSPs allow individuals to defer taxes on the contribution and/or portfolio earnings until some future date when retirement withdrawals take place.

1.14 Investors tend to follow different investment strategies as they move through different stages of their life cycle.

a. Investors who are in their twenties and thirties tend to prefer growth-oriented investments that stress *capital gains* rather than income. These investors have little investable funds, and capital gains are seen as the quickest way to build up investment capital.

b. By middle age, investing becomes less speculative or aggressive. *Quality-growth* investments, such as conservative stocks and mutual funds, are employed, and more attention is given to income-producing securities, such as high-quality bonds. The foundation is being set for retirement.

c. As the investor moves into the retirement years, preservation of capital and current income become the principal concerns. High-quality stocks and bonds and money market instruments are used as the investor's objective is to live as comfortably as possible from the investment income.

1.15 Stocks and equity-related securities (such as mutual funds and convertibles) are highly responsive to the economic cycle. During recovery and expansion, stock prices are up. As the decline approaches, stock prices begin to decline as well. The months just prior to a recession tend to show the lowest returns on stocks while the months immediately following the end of a recession have the highest returns. Unfortunately, turning points in the business

cycle are notoriously hard to predict and can only be pinpointed with certainty well after they have happened.

1.16 An asset is *liquid* if it can be converted to cash (sold) easily and quickly, with little or no loss in value. You would want to hold liquid assets as emergency funds or to accumulate funds for some specific purpose. BCE stock is a liquid investment. BCE common shares are heavily traded, and investor can sell BCE shares quickly without incurring high transactions costs or triggering a decline in the value of the shares. Keep in mind, however, that the value of BCE shares fluctuate, so it is not necessarily a safe investment even though it is a liquid investment. While the common stock of large, widely traded companies is a liquid investment, some stocks are not heavily traded, so selling shares in some companies would trigger significant transactions costs and perhaps even a decline in the value of the shares.

1.17 *Purchasing power risk* for short-term investments occurs when the rate of return on these investments falls short of the inflation rate. This generally happens to fixed-rate investments such as passbook savings accounts. Most other short-term investments have managed to provide rates of return about equal to the inflation rate when one looks at these short-term rates over long periods of time. *Default (nonpayment) risk* is very small with most high quality or money market short-term investments. The deposits in banks and other federally insured savings institutions are protected up to $1,000,000 per account by the Federal Government. T-bills are perfectly safe and sometimes called a risk-free investment. Commercial paper and repurchase agreements are extremely safe, based upon past experience, even though there have been rare instances of problems. These latter two instruments are also not insured. Money market mutual funds have also had an exceptionally safe history. Of course, the safest money market funds are those that invest solely in government securities and are virtually default-risk-free.

1.18 *Savings and chequing accounts* are short-term investment that fulfill investors' short-term saving needs. They pay a stated rate of interest, which, as the name implies, is just the rate stated on the account. *High-interest savings accounts* (HISAs) is used by investors to "park" funds when they sold some stock but do not have a suitable long-term investment alternative. The proceeds will be kept in HISAs until they find a longer-term use for them. The returns on these accounts are the highest short-term returns invested in GICs, commercial paper, banker's acceptances, and money funds.

1.19 a. *Government of Canada bonds* are issued by the Bank of Canada , they earn interest at a rate that varies with inflation. They are issued in denominations that make them affordable to everyone and mature in 30 years but can be redeemed after one year.

b. *Treasury bills* are short-term (less than one year) debt obligations of the federal government. They are regarded as the safest but generally lowest yielding of all investments, and the secondary market for T-bills is highly liquid.

c. *Guaranteed Investment Certificates (GICs)* are savings instruments that must remain on deposit for a specified period. Premature withdrawals incur interest penalties. Because of the requirement that they remain on deposit, GICs are less liquid than T-bills, but they are convenient to buy and hold, offer competitive returns, and have federal insurance protection.

d. *Commercial paper* is unsecured short-term debt issued by corporations with very high credit standings. The secondary market for commercial paper is very limited and yields are comparable to yields on large-denomination CDs. Typically, only larger institutions deal directly in this market because the denominations range from $25,000 to the more commonly issued $100,000. Commercial paper is not federally insured.

e. *Bankers' acceptances* are short-term credit arrangements between business firms and banks. Firms use banker's acceptances to finance transactions, most often involving

firms in foreign countries or firms with unknown credit capacities. Banker's acceptances typically are denominated in $100,000 units, are low-risk securities, and have active secondary markets. Yields are slightly below GIC yields and commercial paper and above T-bills.

f. *Money funds (MFs)* pool capital of many investors and invest it exclusively in high-yielding, short-term securities, such as T-bills, large GICs, commercial paper, and other similar "money market" securities. Because these high-yielding securities are in denominations of $10,000 to $1 million, the MF makes them available in a format that is affordable to individual investors. MFs are convenient, offer cheque writing privileges, and yields are based on the ability of the fund manager to invest in various short-term securities. Although they are not federally insured funds, their default risk is nearly zero because the securities they invest in are very low risk and the fund is relatively diversified.

1.20 The senior managers in a corporation, such as the chief financial officer (CFO), have the primary responsibility of managing the firm's capital resources and investments. Because so much of the CFO's primary responsibilities require an understanding of investment principles, a CFO must understand market forces but more importantly communicate in such a way that investors understand the value of the firm and the securities the firm has issued.

1.21 Because insurance companies have large sums of investment capital under management, they require the skills of a person highly trained in investment principles. Since this person is asked to manage risk for individuals as well as businesses, the decisions they make and the strategies they devise will assist the insurance companies' customers in the creation of their individual successful asset and risk management strategies.

■ Suggested Answers to Discussion Questions

1.1 a. Because you fall into the category of a young investor, after meeting basic liquidity needs your key investment goals should be to save for the education of your children and quite possibly to purchase a house. Appropriate investments should focus on longer term goals, such as the education of your children and, though it may seem remote, retirement.

b. You should consider the effects of taxes when investing, maximizing your use of tax sheltered investments such as RRSP plans and taking advantage of the preferential tax treatment of capital gains and dividends. Your focus should be on maximizing the *after-tax return* on your investments. Finally, it is important to know that the tax treatment of various investments and forms of income can and does change. .

c. Because you have a relatively long investment horizon, it is appropriate to focus your portfolio on higher-risk investments such as common stocks.

1.2 Short-term investments play an important part in your investment program. Most importantly, they will provide a pool of reserves that can be used for emergencies such as replacing cars, appliances, and clothing that wear out over time. Returns on safe, short-term investments are usually slightly higher than the inflation rate, but since the 2007-2009 recession, the Bank of Canada (BOC) has kept them at historically low levels compared to the inflation rate.

■ Solutions to Problems

1.1 a.

Goal	$500,000
$44,300 at 5% for 25 years	150,000
Additional requirement	$350,000

b. Saving $104.75 each year produces $5,000 in savings at retirement, but Stefani needs to accumulate 70 times that much ($350,000 is 70 times greater than $5,000). Stefani needs to save 70 times $104.74, or $7,332.50 each year. If she does, then the combined value at age 65 of all of her assets will be very close to $500,000. (*Note:* The problem assumes that Stefani's average rate of return will be about 5%.)

1.2 a. Tax on the Smith's income of $130,000. Looking at the joint tax return rates, we find:

(15% × $48,535) + [20.5% × ($97,069 – $48,535)] + [26% × ($130,000 – $ 97,069)] = $25,792 (rounded to the nearest whole dollar)

Tax on the Jones's income of $65,000. Looking at the joint tax return rates, we find:

(15% × $48,535) + [20.5% × ($65,000 – $48,535)] = $10,656 (rounded to the nearest whole dollar)

b. The Smiths make twice as much as the Joneses.

The ratio of the Smiths' to the Joneses' taxable income is ($130,000/$65,000) = 2.
The ratio of the Smiths' to the Joneses' taxes is ($25,792 /$10,656) = 2.42.
Hence higher-income earners pay a higher proportion of their income as tax.

1.3 a. $50,000/$50 = 1,000 shares of stock.

b. 1,000 shares × $2 = $2,000 per year before gross-up. After gross-up @ 38% = $2,000 × 1.38 = $2,760. Federal tax @ 33% = $910.80. Dividend tax credit @ 15.02% = $414.55. Federal tax owed = $ 910.80 – $ 414.55 = 496.00 (rounded). Dividend earning after tax = $2,000 – $496 = $1,504.

c. ($1,504 × 10) + $50,000 = $65,040

d. $50,000 × 0.05 = $2,500 per year before tax. $2,500 × 0.67 = $1,675 after tax.

e. ($1,675 × 10) + $50,000 = $66,750

f. Investing in the bonds will generate higher expected after-tax income. Jason should buy the bonds.

1.4 a. Julie's ordinary income is $126,000, consisting of $125,000 of salary and wages, and $1,000 in interest income.

Julie will be in the 26% marginal tax bracket based on taxable income, which includes the ordinary income and the other investment income. Therefore, on the $1,000 of interest income she will pay $260 in tax.

b. Assuming all dividends are eligible dividends, the $3,000 in dividends is subject to the different tax rate, so she will pay $455 in taxes on the dividend income. After gross-up @ 38% = $3,000 × 1.38 = $4,140. Federal tax @ 26% = $ 1,076.40. Dividend tax credit @ 15.02% = $621.83. Federal tax owed = $1,076.40 – $ 621.83 = 455.00 (rounded).

c. This is capital gain and is therefore subject to tax at 50%. She will pay 2000 × 50% × 26% = $260 in taxes on this gain.

1.5

Rate	Tax Bracket	Amount Taxed at Rate	Tax at Top of Bracket	Income	Tax	After-tax Earnings	Average Tax Rate
15%	0 – 48,535	$48,535	7,280.25	$10,000	$1,500	$8,500	15%
20.5%	48,535 – 97,069	$48,535	9,949.68	$80,000	$13,731	$66,269	17%
26%	97,069 – 150,473	$53,404	13,885.04	$100,000	$17,992	$82,008	18%
29%	150,473 –214,368	$63,895	18,529.55	$200,000	$45,478	$154,522	23%
33%	214,368+			$300,000	$77,903	$222,097	26%
				$500,000	$143,903	$356,097	29%
				$1,000,000	$308,903	$691,097	31%

1.6 *Note:* This problem is solved using tax brackets given in Problem 1.6.

a. If they remain single, their tax bills will be the same because they make the same income. So each will pay

0.10($9,525) + 0.12($38,700 – $9,525) + 0.22($70,000 – $38,700) = $11,339.50

Their total tax bill will be double this amount, or $22,679.

If they are married, their combined income will be $140,000. Using the tax brackets for married taxpayers filing joint returns, their taxes will be

0.10($19,050) + 0.12($77,400 – $19,050 + 0.22($140,000 – $77,400) = $22,679

In this case, Kim and Kanye pay the same total taxes whether they are married or single.

b. If they remain single, they will each pay the following in taxes:

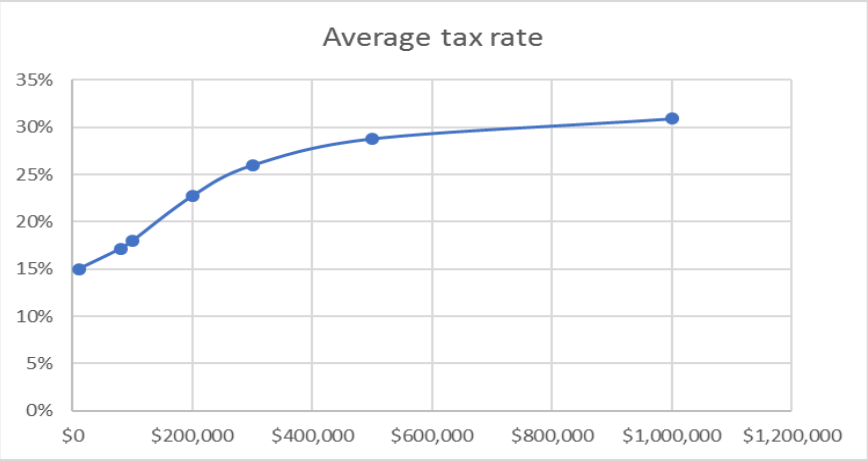
0.10($9,525) + 0.12($38,700 – $9,525) + 0.22($82,500 – $38,700) + 0.24($157,500 – $82,500) + 0.32($200,000 – $157,500) + 0.35($400,000 – $200,000) = $115,689.50

So their combined tax bill is double that amount, or $231,379.

Here is their tax bill as a married couple:

0.10($19,050) + 0.12($77,400 – $19,050) + 0.22($165,000 – $77,400) + 0.24(315,000 – $165,000) + 0.32($400,000 – 315,000) + 0.35($600,000 – $400,000) + 0.37($800,000 – $600,000) = $235,379

c. Kim and Kanye pay a “marriage penalty” because their combined taxes are higher when they are married than when they are single. This happens because income above $400,000 is taxed at higher rates, 35% and 37%, that would not be reached if they filed as individuals.



b. The table and the chart clearly illustrate that average tax rates are progressive—that is, they are higher on higher levels of income.

■ Solutions to Case Problems

Case 1.1 Investments or Golf?

This case illustrates the many facets of the investment process; it involves much more than common stock. The authors recognize the value of physical education and emphasize the importance of sports, but a course in investments offers the student a lifetime of financial benefits. Thus, our arguments for selecting the investments course should be interpreted not as a negative statement on physical education, but rather as a positive discussion of the merits of investments.

a. The term *investment* refers to the process of identifying, evaluating, selecting, and monitoring the placement of funds with a view toward preserving or increasing value and/or earning a positive return. Joshua has simply identified one investment (stock). He will not know how to evaluate, select, or monitor other investments, nor will he know how to adjust his investments in appropriate ways at various stages in the life cycle, without a course in investing. In addition to looking at his own investments, a course in investing will give Joshua a new perspective on the role of investments in the economy. He will learn that as an investor, he is actually supplying funds to government and business, which will contribute to the continued strength and growth of the general economy.

b. Clearly, Joshua has ignored short-term securities, bonds, options, commodities and financial futures, mutual funds, real estate, tangibles, tax shelters, and limited partnerships. Each one of these choices offers another risk-reward relationship that may meet certain unique investment requirements that cannot be met by common stock alone.

c. Joshua does not have the knowledge needed to carry out the investment process described in part a of this question. Knowing about common stocks is not the same as understanding investments, and it is not necessarily true that common stock is the best investment available to Joshua. Besides, the investment decision has to be compatible with his goals and risk preferences. Individual stocks are far riskier than, say, an investment in GICs or even mutual funds that invest in a well-diversified portfolio of stocks.

There are other considerations, too. Does Joshua have plans for future occasions when he will need the money? If so, is it a short-term or a long-term need? Answers to these questions will help determine whether he should make short-term or long-term investments. In summary, to gain an understanding of the investment decision and management process, Joshua should pass up the golf course in favour of learning more about investments.

Case 1.2 Preparing Susan Bowen's Investment Plan

This case allows students to evaluate a proposed investment plan aimed at achieving certain retirement goals.

a. The amount currently available to Susan includes $120,000 from the proceeds of the life insurance and $75,000 from her savings account, or a total of $195,000. At 3% compounded annually, here is what her money will be worth:

If she retires at age 62 (meaning she makes a 7-year investment):

$$\$195{,}000 \times (1.03)^7 = \$239{,}825$$

(You can find this in Excel by typing the formula = fv(0.03,7,0,– 195,000)

Add $225,000 from the sale of her home, and Susan will have $464,825.00.

If she retires at age 65 (meaning she makes a 10-year investment):

$$\$195{,}000 \times (1.03)^{10} = \$262{,}064$$

(You can find this in Excel by typing the formula = fv(0.03,10,0, –195,000)

Add $255,000 from the sale of her home, and Susan will have $517,064.

b. Value of Susan's assets at 62 = Value of savings account + Value of house:

$$\$239{,}825 + \$225{,}000 = \$464{,}825$$

Similarly, value of assets at 65 = $262,064 + $255,000 = $517,064.

Because Susan receives $79 for each $1,000 that she invests in the annuity, we can calculate her annual income starting at age 62 as follows:

$$(\$464{,}825/\$1{,}000) \times \$79 = \$36{,}721 \text{ per year}$$

Similarly, if Susan's assets at age 65 are $517,064, and if for each $1,000 that she invests in the annuity she will receive $89.94 in income, her income starting at age 65 will be

$$(\$517{,}064/\$1{,}000) \times \$89.94 = \$46{,}505 \text{ per year}$$

c.

	Annual Retirement Income	
	Age 62 Retirement	**Age 65 Retirement**
Annual Social Security and pension fund benefits	$31,200	$38,400
+ Annuity income	36,721	46,505
Total annual retirement income	$67,921	$84,905

d. Susan believes she needs $85,000 per year (before taxes) of retirement income. Without considering the change in her tax status upon retirement, she will not satisfy this goal if she retires at age 62. At age 65, she very nearly meets her requirement. The nature of tax legislation and the reduction in Susan's tax liability upon retirement may make retirement at age 65 viable.

e. Susan's plan is extremely conservative and low risk. The returns from the plan are very secure and probably assured. Susan can be confident that the accumulated worth of her investments will be available to her at retirement. Her plan to retire at age 65 meets her goal for retirement income. Susan's plan offers low risk and low return. Through only a slight increase in risk, she might improve her return on investment and have more "cushion" to allow for inflation and unexpected expenditures. Susan could purchase highly rated bonds, GICs, and other blue chip securities investments. In this manner, her risk aversion would be satisfied, and she would earn a higher return on her investments. This should increase the chances of her achieving her retirement-income objectives. Therefore, with very little increase in risk, Susan could invest her funds in such a way as to increase the probability that she will meet or surpass her requirement of an annual retirement income of $85,000. As much as she values the opinions of her psychic consultants, she should periodically get a second opinion from her health care provider and update her financial plan accordingly.

Chapter 2 Securities Markets and Transactions

■ Outline

Learning Objectives

I. Securities Markets

A. Types of Securities Markets
   1. The Primary Market
      a. Public Offerings: The IPO Process
      b. Public Offerings: The Investment Dealer's Role
      c. Public Offerings: The Direct Listing Process
   2. The Secondary Market

B. Broker Markets and Dealer Markets
   1. Broker Markets
   2. The New York Stock Exchange
      a. Listing Policies
      b. Regional Stock Exchanges
   3. The Toronto Stock Exchange (TSX)
      a. Listing Policies
      b. Regional Stock Exchanges
   4. Dealer Markets
      a. Nasdaq Stock Market
      b. The Over-the-Counter Market (U.S.)
      c. Nasdaq Canada
      d. The Over-the-Counter Market (Canada)
   5. Options Exchanges
   6. Futures Exchanges

C. Electronic and High-Frequency Trading
   1. Electronic Communications Networks (ECNs)
   2. High-Frequency Trading (HFT)

D. General Market Conditions: Bull or Bear

Concepts in Review

II. Globalization of Securities Markets

A. Growing Importance of International Markets
B. International Investment Performance
C. Ways to Invest in Foreign Securities
D. Risks of Investing Internationally

Concepts in Review

III. Trading Hours and Regulation of Securities Markets

A. Trading Hours of Securities Markets
B. Regulation of Securities Markets in Canada and Important Laws
C. Regulation of Securities Markets in the United States and Important Laws

Concepts in Review

IV. Basic Types of Securities Transactions

A. Long Purchase
B. Margin Trading
   1. Essentials of Margin Trading
      a. Magnified Profits and Losses
      b. Advantages and Disadvantages of Margin Trading
   2. Making Margin Transactions
      a. Initial Margin
      b. Maintenance Margin
   3. The Basic Margin Formula
   4. Return on Invested Capital
   5. Uses of Margin Trading
C. Short Selling
   1. Essentials of Short Selling
      a. Making Money When Prices Fall
      b. Who Lends the Securities?
      c. Margin Requirements and Short Selling
      d. Advantages and Disadvantages
   2. Uses of Short Selling

Concepts in Review

Chapter Summary
Discussion Questions
Problems
Case Problem 2.1 Darren's Dilemma: What to Buy?
Case Problem 2.2 Ravi Dumar's High-Flying Margin Account
SmartTrak Exercise

■ Key Concepts

1 The types of securities markets in which transactions are made
2 Explain public offering process.
3 The operations, function, and nature of broker (organized securities exchanges) and dealer (the over-the-counter) market
4 Explain how the dealer market works.
5 What are electronic communication networks?
6 Differentiate between a bull and a bear market.
7 The importance of international securities markets and a discussion on the performance and risk involved in these investments
8 Discuss ways to invest in foreign securities both indirectly and directly
9 Describe the risks of investing internationally, particularly currency exchange risk.
10 Extended hours trading and regulation of the securities markets
11 Describe the key requirements of Sarbanes-Oxley, Dodd-Frank and Bill 198 securities laws.
12 Describe a long transaction.
13 How does margin trading magnify profits and losses?

14 Describe the procedures and regulations associated with margin trading.

15 What is the primary motive for short selling?

16 What relevance do margin requirements have in short-selling process

17 Describe the key advantages and disadvantages of short selling.

■ Overview

1 The text divides securities markets into *money markets* and *capital markets*. The instructor should explain the difference.

2 Both *primary* and *secondary transactions* are carried out in capital markets. The instructor should define these transactions for students and explain the role of the investment banker in the selling of new securities (primary transactions).

3 Initial public offerings (IPOs) are the most important transaction in the primary market. The sequence of events includes filing a prospectus with SEC, a quiet period, the distribution of the "red herring" preliminary prospectus, and finally the first day of trading. First day returns and the number of IPOs vary greatly over time with market conditions. Most IPOs take place with the assistance of an investment banking firm. In the underwriting process, the investment bankers buy all of the stock from the issuing firm and bear the risk of reselling at a profit. The instructor should discuss the gross proceeds of an IPO and underpricing offerings.

4 The secondary markets include various *broker markets* and *dealer markets*. The liquidity function of the secondary market and why this is important to investors should be explained to students. How do market makers help provide liquidity? Instructors should explain the difference between a bid price and an ask price and how a market order will be executed. Competition tends to keep the spreads between bid and ask prices fairly narrow.

5 Broker markets include the *organized securities exchanges,* while *dealer markets* include the *Nasdaq* (the National Association of Securities Dealers Automated Quotation System) and *over-the-counter (OTC) markets*. The instructor should emphasize the importance of both the NYSE and the TSX. The instructor might also discuss these aspects of organized security exchanges: the membership of an exchange; its listing policies; the role of the brokers, traders, and specialists; trading activity; and the auctioning process.

6 The chapter introduces options and discuss the Chicago Board Options Exchange (CBOE). It also discusses futures exchanges, futures contracts, and how futures are traded.

7 The dealer markets are described next. The instructor should point out that the Nasdaq and OTC markets are not physical institutions like the organized securities exchanges. The instructor should also mention that while there is only one specialist for each stock on an exchange, there may be several or even many dealers for large companies traded on Nasdaq. The distinctions between broker and dealer markets are blurring as more and more trades are executed electronically. Nasdaq includes larger companies than the over-the-counter market, with companies listed on the *OTC Bulletin Board* being larger than those included in the *OTC Pink* . The instructor should also point out that shares normally traded in the broker markets may trade in the dealer market, in what is known as the *third market*.

8 Electronic communications networks (ECNs) are computer-based trading systems that electronically match buy and sell orders among individual traders. Dealers make their profit by buying securities at a *bid* price and selling at a higher *ask* price. ECNs cut out the dealer and function and the payment of the bid/ask spread. Instructors should have students explore other alternative trading systems and high-frequency trading (HFT) and HFT strategies.

9 Instructors should lead the class in a discussion of bull markets and bear markets. How are they defined? Have students look up some history on these terms and how they came to be associated with rising and falling markets. Have students list some recent bull and bear markets.

10 The chapter then discusses the globalization of international securities markets, including a description of investing in the foreign securities marketplace, how to buy foreign securities, and the risks of international investment. Related issues are the existence of after-hours trading and the mergers of stock markets foreshadowing the creation of a worldwide stock exchange, the NYSE Euronext which now includes the Paris, Brussels, Amsterdam and Lisbon exchanges.

11 The chapter discusses returns from international investing and outlines the various options available for international investing including multinational corporations, global and country mutual funds, and ADRs. The instructor needs to provide some discussion of the risks of investing internationally such as differences in securities regulation, accounting practices, and currency exchange risk.

12 The next section introduces extended trading hours as well as various regulations applicable to brokers, investment advisers, and stock exchanges. Recent legislation, such as the Sarbanes-Oxley Act of 2002 and the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, was passed in the wake of financial scandals and designed to protect investors and consumers. Widespread allegations of malfeasance on the part of financial firms leading up to the crisis of 2007–2008 have perhaps added to the importance of this topic. Ethical issues and insider trading are interesting and serve to make a point about the challenges facing those attempting to regulate the exchanges.

13 The text now moves to the different types of transactions, beginning with long purchases. The next section deals extensively with *margin trading,* including the magnification of profits and losses, initial and maintenance margin, and the formulas for their calculation. A number of review problems and a case at the end of the chapter will aid students in understanding the concept of margin.

14 The final section of the chapter deals with *short selling,* including the mechanics and uses of short sales. The text explains initial and maintenance margin requirements and the calculation of profit and loss on short sale transactions.

■ Answers to Concepts in Review

2.1 a. In the *money market,* short-term securities such as GICs, T-bills, and bankers' acceptances are traded. Long-term securities such as stocks and bonds are traded in the *capital markets*.

b. A new security is issued in the *primary market*. Once a security has been issued, it can be bought and sold in the *secondary market*.

c. *Broker markets* are organized securities exchanges that are centralized institutions where securities listed on a particular exchange are traded. The *dealer market* is a complex system of buyers and sellers linked by a sophisticated telecommunication network. Dealer markets include Nasdaq and OTC markets.

2.2 The *investment banker* is a financial intermediary who specializes in selling new security issues in what is known as an *initial public offering (IPO)*. Underwriting involves the purchase of the security issue from the issuing firm at an agreed-on price and bearing the risk of reselling it to the public at a profit. For very large issues, an investment banker brings in other bankers as partners to form the underwriting syndicate and thus spread the financial

risk. The investment banker also provides the issuer with advice about pricing and other important aspects of the issue.

In a *public offering,* a firm offers its shares for sale to the general public after registering the shares with the SEC. Rather than issue shares publicly, a firm can make a *rights offering,* in which it offers shares to existing stockholders on a pro rata basis. In a *private placement* of its shares, a firm sells directly to groups of investors, such as insurance companies and pension funds, and does not register with the SEC.

2.3 a. 5. The prospectus describes the key aspects of a security offering.

b. 2. Underwriting is buying securities from firms and reselling them to investors.

c. 6. The NYSE is the largest stock exchange in the world.

d. 4. The Nasdaq OMX BX is a regional stock exchange.

e. 3. Listing requirements are the conditions a firm must meet before its stock can be traded on an exchange.

f. 1. The OTC trades unlisted securities.

2.4 The dealer market is really a system of markets spread all over the country and linked together by a sophisticated telecommunication system. These markets are made up of traders known as dealers, who offer to buy or sell stocks at specific prices. The "bid" price is the highest price offered by the dealer to purchase a security; the "ask" price is the lowest price at which the dealer is willing to sell the security. The dealers are linked together through Nasdaq. In order to create a continuous market for unlisted securities, IPOs, both listed and unlisted, are sold in the dealer market. The Nasdaq Global Select Market contains the 1,413 biggest and most actively traded companies. Another 717 firms that are generally smaller can be found on the Nasdaq Capital Markets list. Companies that do not make the Nasdaq listing standards are traded on the OTC market's Bulletin Board or "OTC Pink."

Trading in large blocks of outstanding securities, known as *secondary distributions,* also takes place in the OTC market in order to reduce potential negative effects of such transactions on the price of listed securities. *Third markets* are over-the-counter transactions made in securities listed on the NYSE, or any other organized exchange. Mutual funds, pension funds, and life insurance companies use third markets to make large transactions at a reduced cost. *Fourth markets* include transactions made directly between large institutional investors. Unlike the third market, this market bypasses the dealer; however, sometimes an institution will hire a firm to find a suitable buyer or seller and facilitate the transaction.

2.5 Electronic Communications Networks (ECNs) are automated computer-based trading systems that electronically execute orders by matching the buy and sell orders submitted by individual traders. ECNs eliminate the dealer function and the payment of the bid/ask spread.

2.6 A *bull market* is a favourable market normally associated with rising prices, investor optimism, economic recovery, and governmental stimulus. In contrast, *bear markets* are associated with falling prices, investor pessimism, economic downturn, and government restraint.

2.7 The *globalization* of securities markets is important because today investors seek out securities with high returns in markets other than their home country. They may invest in companies based in countries with rapidly growing economies or choose international investments to diversify their portfolios. Securities exchanges now operate in more than 100 countries worldwide. Both large (e.g. Tokyo Stock Exchange) and small (e.g. South Pacific Stock Exchange), they are located not only in major industrialized nations such as Japan, Great Britain, Canada, and Germany but also in emerging economies such as Brazil, Chile,

India, South Korea, Malaysia, Mexico, Poland, Russia, and Thailand. The top four securities markets worldwide (based on dollar volume) are the NYSE, Nasdaq, London Stock Exchange, and Tokyo Stock Exchange. Other important foreign exchanges include the Shanghai Stock Exchange, Osaka Securities Exchange, Toronto Stock Exchange, Montréal Exchange, Australian Securities Exchange, Hong Kong Exchanges and Clearing Ltd., Swiss Exchange, and Taiwan Stock Exchange Corporation. .

2.8 To achieve some degree of international diversification, an investor can make foreign security investments either indirectly or directly. One form of indirect investment is to purchase shares of a Canada-based multinational Many Canada-based multination firms receive huge revenues from overseas operations. By investing in securities of these firms, an investor can achieve a degree of international diversification. Investors can make these transactions conventionally through their stockbrokers; the procedure is similar to buying a domestic security. An investor can also purchase foreign securities indirectly by purchasing shares in a mutual fund that primarily invests in these securities. To make direct investments in foreign companies, investors have three options. They can purchase foreign securities that trade on Canadian exchanges or buy international depository receipts (IDRs/global depository receipts (GDRs.

2.9 The investor must be aware of the additional risks involved in buying foreign securities: country risk, government policies, market regulation (or lack thereof), and foreign currency fluctuations. Investors must consider risks beyond those in making any security transaction. In particular, investors in foreign markets must bear risks associated with doing business in the foreign country, such as trade policies, labour laws, taxes, and political instability.

Because investing internationally involves purchasing securities in foreign currencies, trading profits and losses are affected not only by security price changes, but by *foreign exchange risk*. This risk is caused by the varying exchange rates between two countries. Profits in a foreign security may translate into losses once the foreign currency has been exchanged for dollars. Similarly, transaction losses can result in gains. The bottom line is that investors must be aware that the value of the foreign currency relative to the dollar can have profound effects on returns from foreign security transactions.

2.10 The exchanges, Nasdaq, and *electronic communications networks (ECNs)* offer extended trading sessions before and after regular hours. Most of the after-hours markets are crossing markets, in which orders are only filled if they can be matched with identical opposing orders at the desired price. Many large brokerage firms, both traditional and online, offer their clients after-hours trading services.

ECNs handle after-hours trading for their client brokerages. Obviously, the two investors would have different expectations about subsequent share price performance. The development of securities markets around the globe has essentially created continuous trading in stocks. After-hours trading sessions carry more risk. Price changes tend to be more volatile than regular sessions, and the markets are generally less liquid than day-trading sessions. On the other hand, recent research suggests that ETF prices are less likely to overreact and then overcorrect in relation to news announcements during after-hours trading than during regular trading hours.

2.11 a. The *Sarbanes-Oxley Act of 2002* attempts to eliminate fraudulent accounting and regulate information releases. Heavy penalties are applied to CEOs and financial officers who release deliberately misleading information. The law also establishes guidelines minimizing analyst conflicts of interest, increases SEC authority, and requires instant disclosure of stock sales by corporate executives.

b. The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 was passed to promote financial stability, accountability and transparency in the United States. It

created the *Bureau of Consumer Financial Protection* and other agencies.

c. In Canada, Bill 198 as Chapter 22 of the Statutes of Ontario is similar in nature and purpose to the Sarbanes-Oxley Act in the United States that attempts to eliminate fraudulent accounting and regulate information releases.

2.12 When an investor purchases a security in the hope that it will increase in value and can be sold later for a profit, the investor is making a *long purchase*. The long purchase, the most common type of transaction, derives its returns from dividends or interest received during ownership, plus capital gains or losses—the difference between the purchase price and the sale price.

Margin trading involves buying securities in part with borrowed funds. Therefore, investors can use margin to reduce their money and use borrowed money to make a long purchase. Once the investment increases in value, the investor will pay off the loan (with fixed interest charges) and keep the rest as profits. Of course, buying on margin is quite risky, as the investors can lose their whole capital if the investment decreases in value.

2.13 When buying on margin, the investor puts up part of the required capital (perhaps 50% to 70% of the total); this is the *equity* portion of the investment and represents the investor's margin. The investor's broker (or banker) then lends the rest of the money required to make the transaction. Magnification of profits (and losses) is the main advantage of margin trading. This is called *financial leverage* and is created when the investor purchases stocks or other securities on margin. Only the equity portion is financed by the investor, but if the stock goes up, the investor gets all the capital gains, so leverage magnifies the return.

Through leverage, an investor can (1) increase the size of his or her total investment, or (2) purchase the same investment with less of his or her own funds. Either way, the investor increases the potential rate of return (or potential loss). If the margin requirement is, say, 50%, the investor puts up only half the funds and borrows the other half. Suppose the security goes up 10%. If the investor bought the stock without using margin, he or she would earn 10%. However, if the investor used 50% margin, ignoring margin interest, he or she *would earn the same dollar return with only half the funds, so the rate of return would double* to 20%. On the other hand, suppose the stock fell by 10%. Without margin trading, he or she has a 10% loss. With margin trading, *the loss is also doubled*. Both profits and losses are magnified using leverage. ***Note:*** Table 2.3 provides an excellent illustration of this point.

Margin trading has both advantages and disadvantages. *Advantages:* Margin trading provides the investor leverage and the ability to magnify potential profits. It can also be used to improve current dividend income. Through margin trading, an investor can gain greater diversification or be able to take larger positions in the securities he or she finds attractive. *Disadvantages:* With greater leverage comes greater risk, and this is a disadvantage of margin trading. Interest rates on the debit balance can be high, a further disadvantage since these costs can significantly lower returns.

2.14 In order to execute a margin transaction, an investor first must establish a margin account. Although the Federal Reserve Board sets the minimum amount of equity for margin transactions, it is not unusual for brokerage houses and exchanges to establish their own, more restrictive, requirements.

Once a margin account has been established, the investor must provide the minimum amount of required equity at the time of purchase. This is called the *initial margin,* and it is required to prevent excessive trading and speculation. If the value of the investor's account drops below this initial margin requirement, the investor will have a *restricted account*. The *maintenance margin* is the absolute minimum amount of equity that an investor must maintain in the margin account. If the value of the account drops below the maintenance margin, the investor receives a *margin call,* in which case the investor has limited time to replenish the equity up to the initial margin. If the investor cannot meet the margin call, the

broker is authorized to sell the investor's holdings to bring the account up to the required initial margin.

The size of the margin loan is called the *debit balance* and is used along with the value of the securities being margined (the collateral) to calculate the amount of the investor's margin.

Typically, margin is used to magnify the returns to a long purchase. However, when a margin account has more equity than is required by the initial margin, an investor can use this "paper" equity to purchase more securities. This tactic is called *pyramiding* and takes the concept of magnifying returns to the limit.

2.15 An investor attempting to profit by selling short intends to "sell high and buy low," the reverse of the usual (long purchase) order of the transaction. The investor borrows shares and sells them, hoping to buy them back later (at a lower price) and return them to the lender. Short sales are regulated by the SEC and can be executed only after a transaction where the price of the security rises; in other words, short sales are feasible only when there is an uptick.

Equity capital must be put up by a short seller; the amount is defined by an initial *margin requirement* that designates the amount of cash (or equity) the investor must deposit with a broker. For example, if an investor wishes to sell (short) $4,000 worth of stock when the prevailing short sale margin requirement is 50%, he or she must deposit $2,000 with the broker. This margin and the proceeds of the short sale provide the broker with assurance that the securities can be repurchased at a later date, even if their price increases.

2.16 In order to make a short sale, the investor must make a deposit with the broker that is equal to the initial margin requirement. Maintenance margins are still the lowest allowed percentage of equity in a position. Short seller margins decline if the share price rises because some of the deposit (plus the initial proceeds) will be necessary to buy back the shares. If the stock price rises by an amount sufficient to reduce short seller margins to the maintenance levels, they will receive a margin call. The short sellers can either deposit initial margin (and bet on a share price decline) or close out their position by buying back the shares (and take the loss).

2.17 The major *advantage* of short selling is the chance to convert a price decline into a profit-making situation. The technique can also be used to protect profits already earned and to defer taxes on those profits. The major *disadvantage* of short selling is the high risk exposure in the face of limited return opportunities. Also, short sellers never earn dividends but must pay them (back to the lender) as long as the transaction is outstanding.

Short sales can earn speculative profits because the investor is betting against the market, which involves considerable risk exposure. If the market moves up instead of down, the investor could lose all (or more) of the short sale proceeds and margin.

■ Suggested Answers to Discussion Questions

2.1 One reason for the large initial returns is the significant amount of hype surrounding new issues. This was especially true in the late 1990s, during what is now described as the "tech-stock bubble." Investor demand for shares of these firms far exceeded the supply.

Underwriters may intentionally underprice issues to increase their own profits and make it easier to sell the shares. In addition to serving their clients who are issuing shares in an IPO, underwriters also serve clients who buy those shares, and those clients (whom underwriters transact with frequently) benefit if IPO shares are underpriced. Issuing firms may be willing to accept a lower price if it draws attention to their firm, making it easier to sell additional shares at a later date. Institutional investors tend to receive most of the shares in IPOs,

particularly for those issues in great demand. Since they do not want to overpay for the shares, this is yet another factor contributing to underpricing.

2.2 Because it has the same stature and prestige as NYSE. In 2006, it was formally recognized by the SEC as a national securities exchange. For large tech firms, listing on Nasdaq is a part of their public image as innovative, technology-oriented companies.

2.3 Due to global time differences, not all securities markets are open simultaneously, although the possibility exists of trading in after-hour markets. This assumes the markets are equivalent when it comes to liquidity and information ability. There is talk of a market that could trade any share in the world, with the many mergers and cooperative arrangements among securities exchanges enhancing the likelihood of a worldwide stock exchange. Large companies headquartered in North America, Europe, or Japan already trade on many national markets. However, major impediments to such trading still exist especially in listing and trading requirements. Many developing economies place foreign ownership restrictions on their listed stocks and do not insist on the level of disclosure required on the NYSE or other major exchanges. Another stumbling block still prevails related to currency conversion. At present, there are still many foreign currencies that are not acceptable internationally. These restrictions prevent many foreign stocks from trading in one market place. It is not hard to imagine the emergence of 24-hour trading in a unified market consisting of North American, Western European, and major Asian exchanges such as Tokyo.

2.4 The argument in favour of expanded trading sessions is that they would facilitate additional trading, especially for international investors, and increase liquidity. On the other hand, some market participants feel that increasing opportunities to trade encourages a short-term focus rather than a long-term one, and the additional trading will increase market volatility. A "breathing period" gives investors time to process new information before they react to it. Larger brokerages and ECNs are the biggest proponents of expanding trading because they are equipped to handle it and stand to increase their profits significantly. It may also be worth noting that when the TSX, NYSE, and Nasdaq begin trading at 9:30 a.m., it is only 6:30 a.m. in British Columbia and 5:30 a.m. in Hawaii.

2.5 a. Long purchases are typically used by conservative investors so that they receive their expected returns over time.

b. Margin trading is typically used by aggressive investors seeking short-term capital appreciation.

c. Short selling is typically used by aggressive investors seeking short-term profits from falling security prices.

■ Solutions to Problems

2.1 a. First-day close $18.90; IPO price $16. The IPO was underpriced by $2.90, or 18.12%.

b. Lightspeed raised $16 × 15,000,000 shares, or $240,000,000. If the IPO had been priced at $18.90, the company would have raised $18.90 × 15,000,000, or $283,500,000, so it left $43,500,000 on the table.

2.2 a. IPO gross proceeds: $11 × 10,500,000 = $115,500,000.

b. IPO underpricing: ($13.41 – $11)/$11 = 0.2191, or 21.91%.

c. Money left on table: $2.41 × 10,500,000 = $25,305,000.

2.3

Shares Sold		Offer Price	
	8,250,000.00	$	18.00
First-day closing price		$	16.10
a.	Total proceeds	$	148,500,000
b.	Overpricing	$	1.90

c. The shares were actually overpriced, and the subscribers paid too much. This might have been due to the underwriter's misevaluation, new information, or simply shifts in the market.

d. No money was left on the table by the company, which actually realized a surplus of 8,250,000 × $1.90 = $15,675,000.

2.4

Shares Sold	Offer Price	Underwriting Discount per Share	First-day Closing Price	Shares Outstanding
13,000,000.00	$17.00	$1.19	$24.75	125,991,577

a.	Total proceeds	$221,000,000
b.	Percentage underwriter's discount	7%
c.	Underwriting fee	$ 15,470,000
d.	Net proceeds	$205,530,000
e.	Percentage IPO underpricing	45.6%
f.	Market capitalization	$3,118,291,531

2.5 a. Bid/ask spread = $263,770 – $262,850 = $920

b. NYSE: The brokerage cost of $7.00 is the potential minimum.

c. Nasdaq: Maximum transaction cost = (Number of shares × ½ Bid/ask spread + Commission = 1 × 920/2 + 7.00 = $467)

Using the midpoint convention, market value would be (263,770 + $262,850)/$263,310.

2.6 a. Total transaction costs = (Number of shares × 1/2 the Bid/ask spread) + Brokerage commission
$59.95 = (1,200 × ½ × Spread) + $29.95
$30 = 600 × Spread
$0.03 = Spread

b. Because Twitter is listed on the NYSE, which is a broker market, if Charles Schwab routed the order to the NYSE, it could have been executed against a buy order for Twitter. In this case, the total transaction costs would have been only the $29.95 brokerage commission. Because the total transaction costs included one-half of the bid/ask spread per share traded, one of two things must have happened. One possibility is that Charles Schwab routed the order to the NYSE, and no public buy order existed to provide liquidity, so the market maker used her inventory to provide liquidity and charged the half spread for doing so. A second possibility is that Charles Schwab routed the order to a dealer market, such as Nasdaq, and the market maker simply used his inventory to provide liquidity and charged the half spread per share for doing so.

c. Total transaction costs = (Number of shares × 1/2 the Bid/ask spread) + Brokerage commission
$47.95 = (1,200 × ½ × Spread) + $29.95
$18 = 600 × Spread
$0.03 = Spread

d. The total round-trip transaction costs are the totals for selling and buying combined.
Total round-trip transaction costs = $59.95 + $47.95 = $107.90
To reduce the total costs, you could have placed the trades online and paid only the $4.95 commission per trade, and you could have requested that your trade be routed to the NYSE, where it would have the best chance of crossing with another public order.

2.7 The C$/yen exchange rate is the inverse of the yen/C$ exchange rate. If an investor could get 79.58 yen per Canadian dollar, then 1,000 yen buys (1,000/79.58) dollars, or C$12.56.

2.8 The investor will receive 1.200 dollars for each euro, or 20,000 × 1.200 × $24,000.

2.9

	Share Price in Foreign Currency	÷	Exchange Rate per US$	=	Share Price in US$
a.	103.2 euro		0.93 €/US$		$110.97
b.	93.3 Sf		.96Sf/US$		$ 97.19
c.	1,350.0 yen		110 ¥/US$		$ 12.27

2.10 a. The euro app*reciated* relative to the US$, as each euro costs more in dollar terms and a euro buys more dollars.

	Date	Transaction	Number of Shares	Price/ Share (€)	Transaction Value (€)	Exchange Rate per €	Value in US$
b.	1 yr. ago	Buy	50	85.5	4,275	1.10 US$/€	$4,702.50
c.	Today	Sell	50	87.1	4,355	1.16 US$/€	$5,051.80
Profits/(Losses):					80		349.30
d.	Sale price	$5,051.80					
	Purchase price	$4,702.50					
	LOSS	$349.30					

2.11. Money spent to acquire the shares (in $): 100 × £260 × $1.50/£ = $39,000
Money received when selling the shares (in $): 100 × £280 × $1.25/£ = $35,000
Loss in dollars: $35,000 – $39,000 = $(4,000).

2.12 No. If the value of the dollar goes up, then the investor will receive fewer dollars for the yen received from the sale of the investment. Therefore, the investor should purchase the U.S. dollar investment.

2.13 a. $2,500 loss. This is because her short sale would have realized $27,000, while the replacement of the shares would cost Oliva $29,500.

b. A profit of $2,500. The long position would initially cost Olivia $27,000. When she sells the stock at $295 per share, she is realizing $25 per share ($295 – $270) in profit for a total of $2,500 (100 shares at $25 per share).

c. $1,500 profit. The short sale brings in $27,000, while the return of the shares to the owner costs only $25,500.

d. A $1,500 profit; buy at $27,000, sell at $25,500.

2.14 a. Value of the position = 250 × $37.50 = $9,375

b. $9,375 × 0.45 = $4,218.75

c. $9,375 – $4,218.75 = $5,156.25

2.15 Original margin = 100 × $45 × 0.65 = $2,925. If the share rises to $60, equity will increase by $15 per share, or $1,500. The new margin position is $6,000 less the debit balance of 0.35($4,500) / $6,000, or 73.75%.

2.16 If an individual purchases 100 shares of stock at $35 per share with a 75% margin:

a. The debit balance (or the amount borrowed in the transaction) would be

Market value of securities	=	$35 × 100 shares	=	$3,500
Debit balance	=		=	$875

b. Equity portion = $3,500 – $875 = $2,625

c. If the stock rises to $55, we would use the formula provided in the text to find the new margin:

$$\text{Margin (\%)} = \frac{\text{Value of securities} - \text{debit balance}}{\text{Value of securities}}$$
$$= \frac{\$55 \times 100 - \$875}{\$55 \times 100}$$
$$= \frac{\$4,625}{\$5,500}$$
$$= 0.84$$

2.17 When she initially purchased the shares, Barbara put up $10,285 in margin (55% of the value of shares purchased), and she borrowed $8,415. Now, Barbara needs to cover a margin call. After the stock price falls to $142, her margin is too low. She now has a margin of 40.7% computed by ($14,200 – $8,415) ÷ $14,200 = 40.7%. This amount is below the 45% maintenance requirement. Barbara needs equity in this account of at least 45% × $14,200 = $6,390, so she must add at least $6,390 – ($14,200 – $8,415), or $605, in cash to her margin account.

2.18 Market value of securities at purchase = 300 × \$95 = \$28,500

Debit balance in the transaction = (1 – 0.60) × \$28,500 = \$11,400

Given a maintenance margin of 35%, the stock has to fall below *\$58.46 per share* in order to justify a margin call; that is:

$$0.35 = (V - 11{,}400)/V$$
$$0.35V = V - 11{,}400$$
$$0.65V = 11{,}400$$
$$V = \$17{,}538.46$$

or \$17,538.46/300 = \$58.46 per share

Note: This problem could also be solved by using a "hit-and-miss" approach or the Excel Solver add-in, which finds a value for V in the margin (%) formula that results in a margin of 35%.

2.19

Market value of securities at purchase	= 300 × \$65	= \$19,500
Market value of securities at sale	= 300 × \$84	= \$25,200
Total current dividend income received	= 300 × \$2 × (6/12)	= \$300
(6/12 is used since the stock will be held for only six months.)		
Equity in investment	= 0.70 × \$19,500	= \$13,650
Margin loan (or debit balance)	= \$19,500 – \$13,650	= \$5,850
Interest paid on loan	= 0.04 × \$5,850 × (6/12)	= \$117
(6/12 is used since the margin loan will be outstanding for only half a year.)		

Return on invested capital:

$$\frac{\text{Total current income received} - \text{Total interest paid on margin loan} + \text{Market value of securities at sale} - \text{Market value of securities at purchase}}{\text{Amount of equity invested}}$$

Return on invested capital:

R = (\$300 – \$117 + \$25,200 – \$19,500)/\$13,650 = \$5,833/\$13,650 = 43.1%

$$r = \frac{\$300 - \$117 + \$25{,}200 - 19.500}{\$13{,}650}$$

$$r = \frac{\$5{,}833}{\$13{,}650} \quad r = \frac{\$300 - \$117 + \$25{,}200 - \$19{,}500}{\$13{,}650}$$

The annualized rate of return is double the six-month return, or 86.2 %.

2.20 a. Initial value: 50 shares × \$190 per share = \$9,500

Debit balance: \$9,500 × (1 – 0.50) margin = \$4,750

Equity position: \$9,500 × 0.50 margin = \$4,750

b. $$\text{Margin \%} = \frac{V - \text{Debit balance}}{V}$$

1. (\$175 × 50 – \$4,750)/(\$175 × \$50) = 45.71%
   Account is *restricted;* margin is below required initial margin (50%).
2. (\$207 × 50 – \$4,750)/(\$207 × \$50) = 54.11%
   Account has *excess equity;* margin is above 50%.

3. ($122 × 50 – $4,750)/($122 × $50) = 22.13%
   Account is *below minimum maintenance margin* (25%) and subject to a call.

c. 1. Dividends received: 50 shares × $1.46 = $73
   2. Interest paid: $4,750 × 0.048 × 6/12 = $114

d. Return on invested capital =

$$\frac{\text{Total current income received} - \text{Total interest paid on margin loan} + \text{Market value of securities at sale} - \text{Market value of securities at purchase}}{\text{Amount of equity invested}}$$

1. ($73 – $114 + ($185 – $190 × 50))/$4,750 = –$291/$4,750 = –6.13% for 6 months or –12.25 annualized rate of return.
2. ($73 – $114 + ($195 – $190 × 50))/$4,750= –$209/$4,750 = 4.40%% for 6 months or 8.80% annualized rate of return.
3. ($73 – $114 + ($207 – $190 × 50))/$4,750 = –$809/$4,750 = 17.03% for 6 months or 34.06% annualized rate of return.

2.21 Ed buys 400 shares at $47 per share, using 60% margin.

Cost of transaction = 400 × $47 = $$18,800

Debit balance = $18,800 × 0.60 = $11,280

At 50%, the new debit balance is $18,800 × 0.5 = $9,400.

Maximum amount of money that can be borrowed under the new 50% margin requirement:

Amount of unused credit in new debit balance:

($60 × 400 × 0.5) – $9,400 = $5,200

Thus, since ($60 × 350 × 0.5) = $10,500 is the amount that can be borrowed in the second transaction, the balance of the investment must be provided by Ed in the form of equity; that is: $10,500 – $5,200 = $5,300 new equity

2.22 The investor sells 500 shares short at $35 per share ($35 × 500 = $17,500). 45% percent margin would require a deposit of $17,500 × 0.45 = $7,875.

2.23 The investor will deposit the margin requirement of 60% × $(250 × $43) = $6,450, and the proceeds of the sale of 10,750 will be deposited by the broker. The account will have a cash balance of $10,750 + $6,450 = $17,200 and a liability of $10,750 × (1 – 0.60) = $4,300. Equity is $17,200 – $4,300 = $12,900.

2.24 Margin is the account equity divided by the cost to cover. The account equity would be the initial amount with the broker from the margin deposit (75 × $69 × 0.6 = $3,105), plus the proceeds from the short sale of (75 × $69 = $5,175), less the cost to cover the short sale ($57 × 75 = $4,275). $3,105 + $5,175 – $4,725 = $3,555 account equity. The margin is the account equity divided by the cost to cover, or 3,555/4,725 = 75.24%, far above the maintenance margin of 30%, so there is no margin call.

2.25 Margin is the account equity divided by the cost to cover. The account equity would be the initial amount with the broker from the margin deposit (75 × $69 × 0.6 = $3,105), plus the proceeds from the short sale of (75 × $69 = $5,175), less the cost to cover the short sale ($82 × 75 = $6,150). $3,105 + $5,175 – $6,150 = $2,130 account equity. The margin is the account equity divided by the cost to cover, or 2,130/6,150 = 34.63%, which is below the maintenance margin of 40%, so there will be a margin call.

2.26 **Intuition:** If the stock price falls subsequent to a short sale, the transaction results in a profit. If the stock price rises subsequent to a short sale, the transaction results in a loss.

Transaction	Stock Sold Short at Price/Share	Stock Purchased to Cover Short at Price/Share	Profit/Loss per Share on Each Transaction (in $)
A	93	78	= 93 – 78 = 15 (Profit)
B	13	27	= 13 – 27 = –14 (Loss)
C	98	75	= 98 – 75 = 23 (Profit)
D	62	44	= 62 – 44 = 18 (Profit)
E	129	134	= 129 – 134 = –5 (Loss)

2.27 Number of PharmaScripts shares short sold by Sharnel Bitker: 1,000 short-selling price/share = $9.75.

Intuition: If the stock price falls below $9.75 in eight months, the transaction results in a profit. If the stock price rises above $9.75 in eight months, the transaction results in a loss. Transaction costs are ignored.

Transaction	Stock Sold Short at Price/Share	Stock Purchased to Cover Short at Price/Share	Profit/Loss per Share on Each Transaction (per share in $)	Total Profit/Loss on Each Transaction (total in $)
A	9.75	12.50	= 9.75 – 12.50 = –2.75	= –2.75 × 1000 = –2,750
B	9.75	9.00	= 9.75 – 9.00 = 0.75	= 0.75 × 1000 = 750
C	9.75	5.75	= 9.75 – 5.75 = 4.00	= 4.00 × 1000 = 4,000
D	9.75	16.45	= 9.75 – 16.45 = –6.70	= –6.70 × 1000 = –6,700
E	9.75	10.67	9.75 – 10.67 = –0.92	= –0.92 × 1000 = –920

2.28

		Without Margin (100% Equity)	With Margin (70%)
	Nimber of $25 shares purchased	300	300
	Cost of investment	$ 7,500	$ 7,500
b.	Less: Borrowed money (debit balance)	$ –	$ 2,250
a.	Equity in investment	$ 7,500	$ 5,250
	Investors position if price rises by $15 to $40 per share		
	Value of stock	$ 12,000	$ 12,000
	Less: Cost of investment	$ 7,500	$ 7,500
	Capital gain	$ 4,500	$ 4,500
d.	Margin position $(V - DB)/V$		81%
	Return on investor's equity (capital gain/original equity in investment)	60%	86%
	Investor's position if price falls by $15 to $10 per share		
	Value of stock	$ 3,000	$ 3,000
	Less: Cost of investment	$ 7,500	$ 7,500
e.	Capital loss	$ (4,500)	$ (4,500)
	Margin position $(V - DB)/V$		25%
f.	Return on investor's equity (capital gain/original equity in investment)	–60%	–86%

If the price declines to $10, the investor will need to deposit additional equity to raise the margin to the maintenance level of 30%. Current equity is $750 ($5,250 – $4,500); it needs to be $900 ($300 × 0.30), so she will need to add $150.

■ Solutions to Case Problems

Case 2.1 Darren's Dilemma: What to Buy?

In this case, the student has to evaluate several alternatives, given a limited amount of information. The instructor can expect a variety of answers for each question, which should provide for lively discussion and high student interest.

a. In evaluating the four alternatives, one must consider: the volatility of the stock price (large swings in the price); Darren's attitude toward risk , and how the new purchases would affect the diversification of his portfolio; we know that he has invested previously, but we know nothing about the extent or nature of those investments except that they are relatively conservative.. Since a case can be made for any alternative, each is listed below with its advantages and disadvantages.

Alternative 1—It appears that Darren is willing to tolerate more risk in an effort to increase the returns on his fairly conservative portfolio. The NewestHighTech IPO will certainly accomplish this goal. The stock, by definition, has no track record, and the company is only 1 year old. It could turn out to be the next Apple or Google, or the next Research in Motion,

maker of the once successful, but now largely obsolete, BlackBerry phones. By leveraging the risk of an IPO with the risk of a start-up tech, the investment could be hugely profitable or could result in major losses. It is worth noting, however, that the most Darren could lose would be his $20,000 investment.

Alternative 2—Buying, say, 400 shares of Casino International now at $54 and monitoring closely is a lower-risk alternative than the tech IPO purchase. Darren might decide now how much loss he is willing to tolerate (10% or 20%) before he sells. He might also try to track the progress of the company's application to open a floating casino and sell if it appears that the bid will be unsuccessful. Later chapters will discuss some excellent strategies using options and stop-loss orders to limit risk or leverage gains.

Alternative 3—Selling Casinos short provides a profitable opportunity if things start to look bad for the company and its floating casino project. Darren really needs to decide which outcome he considers more likely. If he cannot decide, then perhaps he should avoid this company altogether. The short-selling option is perhaps the riskiest alternative of all, because losses are potentially unlimited. If the floating casino project is approved against expectations, he would need to react very quickly to avoid major losses.

Alternative 4—If Darren waits to see what happens with the casino permit, it will probably be too late to earn exceptional profits from either a long or a short position, because the stock price will have already moved up or down in response to the news. Again, there are ways to exploit the uncertainty with options, but they will be studied later.

Alternative 1 may be the best choice if Darren really wants to accept more risk in exchange for the possibility of higher returns. If he monitors the investment closely, he may be able to avoid catastrophic losses, and the company just may turn out to be the next Google or Apple. If he can purchase the IPO at the offer price, underpricing could lead to a quick gain. The Casino alternatives might be more attractive if there were any indication which outcome Darren considers more likely.

b. If the stock price rises to $60, then under alternative 2, Darren would have a gain of $6.00 per share, or $2,400, if he bought 400 shares. Under alternative 3, he would lose the $2,400. Which of the alternatives is preferable depends entirely on the probability of a favourable or unfavourable outcome, and even Darren seems unable to decide about that.

c. If the price falls to $45, then under alternative 2, Darren would probably sell the stock, accept his loss, and move on. The lower price would most likely have resulted from denial of the floating casino permit or failure of the project. With a pessimistic economic outlook for the casino industry, the stock is unlikely to recover any time soon. Under alternative 3, Darren should probably cover his short and celebrate his profit of $9.00 per share. There would be no particular reason to expect the price to go lower, because the price would have quickly reflected the bad news.

Case 2.2 Ravi Dumar's High-Flying Margin Account

This case requires the student to review the concept of pyramiding. It also requires the student to review the mechanics of margin trading and to evaluate the risk-return characteristics of a specific pyramiding example.

a. Pyramiding is a margin-trading technique in which the investor uses the paper profits in his or her margin account to acquire additional securities. Here, Ravi has a margin account with a margin of 60% [($75,000 – $30,000)/$75,000 = 0.60]. Since the initial margin requirement is only 50%, he has excess margin and can use it to acquire additional shares of RS. The trick with pyramiding is to add as many stocks as possible to the account without putting up any additional money and without violating the initial margin required *in the account*.

b. Ravi currently has an account with a market value of $75,000 and a debit balance of $30,000. His margin position is:

$$\text{Margin (\%)} = \frac{V - D}{V} = \frac{\$75{,}000 - \$30{,}000}{\$75{,}000} = 60\%$$

c. If Ravi purchases 1,000 shares of RS (a $20,000 transaction):

1. Using $10,000 cash and $10,000 from a margin loan:

	Initial	+	New Purchase	=	Total Account
Value of securities	$75,000		$20,000		$95,000
Debit balance	$30,000		$10,000		$40,000
Equity	$45,000		$10,000		$55,000

Thus, the new margin in the account = $55,000/$95,000 = 57.90%.

2. Using $2,500 cash and $17,500 in a margin loan:

	Initial	+	New Purchase	=	Total Account
Value of securities	$75,000		$20,000		$95,000
Debit balance	$30,000		$17,500		$47,500
Equity	$45,000		$2,500		$47,500

Therefore, the new margin in the account = $47,500/$95,000 = 50%.

3. Ravi can purchase the stock, in question (b) above, with only 12.5% margin ($2,500/$20,000) because the margin requirements are on the account, not on the transaction. As long as he has excess margin in the account, new purchases can be made with transaction margin percentages below the initial requirement; the key is that *after* the transaction, the margin in the account be equal to or greater than the required initial margin.

d. If Ravi purchases 1,000 shares using $2,500 cash and $17,500 in a margin loan, and the stock then goes to $40 per share, he will earn:

1. Return on invested capital:

$$= \frac{\$0 - (\$17{,}500 \times 0.10) + (\$40 \times 1{,}000) - (\$20 \times 1{,}000)}{\$2{,}500}$$
$$= \frac{\$0 - \$1{,}750 + \$40{,}000 - \$20{,}000}{\$2{,}500} = 730\%$$

2. If he had purchased the 1,000 shares using $20,000 cash, then return on invested capital

$$= \frac{\$0 - \$0 + (\$40 \times 1{,}000) - (\$20 \times 1{,}000)}{\$20{,}000} = 100\%$$

e. Ravi's idea to pyramid appears to be a good one since he can make use of his paper profits to gain additional leverage and magnify his potential profit. If he is right about RS, he will increase his return even more by pyramiding. The disadvantage is that he has to make interest payments on the margin loan, and the stock appreciation must be sufficient to compensate him for these interest payments. Also, given the low margin Ravi will be using (12.5%), it will not take much of a price decline for Ravi to lose money in a big way.