



PART

1

PLANNING YOUR PERSONAL FINANCES

CHAPTER 1

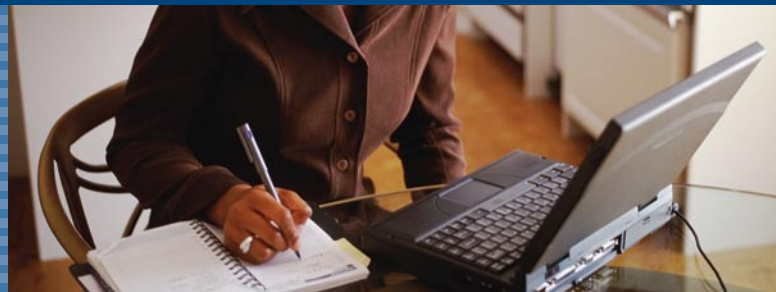
Personal Financial Planning:
An Introduction

CHAPTER 2

Money Management
Strategy: Financial Statements
and Budgeting

CHAPTER 3

Planning Your Tax Strategy



Personal Financial Planning: An Introduction

KAREN'S FINANCIAL PLAN

Karen Edwards, 23, completed her Bachelor of Science one year ago. The major cost of her tuition and books was covered by a scholarship. Through wise planning, she was able to save \$15,000 from her part-time jobs. Acting on a suggestion from her parents, Karen met with a financial planner, who advised her to invest her money in low-risk bonds and saving certificates.

Karen works in an office in Toronto, Ontario, and she earns \$25,000 a year. In approximately three years, she would like to return to school and start her master's degree. Then, she would like to buy a house. Karen wants to live on her salary and invest the \$15,000 for her education and future home.

QUESTIONS

- 1 How did Karen benefit from her parents' advice and her own financial planning?
- 2 What decisions does Karen need to make regarding her future?
- 3 How could various personal and economic factors influence Karen's financial planning?
- 4 What would be the value of Karen's \$15,000 in three years if it earned an annual interest rate of 7 percent?
- 5 Conduct a Web search to obtain information that Karen may find useful.

LEARNING OBJECTIVES

- 1 Analyze the process for making personal financial decisions.
- 2 Develop personal financial goals.
- 3 Assess economic factors that influence personal financial planning.
- 4 Calculate the time value of money.
- 5 Identify strategies for achieving personal financial goals for different life situations.

OVERVIEW

Personal financial planning has many important pieces. We begin with an overview of a six-step planning process, which will help you to review, revise, and align your goals with your changing circumstances. We then take a closer look at developing your financial goals by considering factors that may influence your goals and your changing life situation. We end this section by suggesting guidelines that can help you set realistic goals you can achieve.

Since financial planning does not occur in a vacuum, the next section considers the influence of prevailing economic factors including an overview of market forces, financial institutions, and global conditions that tend to have a major impact on your financial goals and plans.

Although opportunity costs are discussed in step 4 of the financial planning process, we emphasize the importance of financial opportunity costs—and, more specifically, the time value of money. Time value concepts and mechanics are key to understanding how future and present values take into account expectations of inflation and interest rates and how compounding and discounting translate monies over time.

Finally, the last section of this chapter identifies strategies that are consistent in the achievement of personal financial goals. In fact, all of the subsequent topics in this textbook are summarized to give you a preview of the important areas that will be explored in detail so that your financial plan considers all important aspects. This framework is the basis from which you can develop a way of thinking and, more importantly, implement practices and habits that will become the hallmark of effective personal financial decisions.

THE FINANCIAL PLANNING PROCESS

Everywhere you turn, someone is talking about money. When it comes to handling your finances, are you an *explorer*, someone who is always searching through uncharted areas? Are you a *passenger*, just along for the ride on the money decision-making trip of life? Or are you a *researcher*, seeking answers to the inevitable money questions of life?

Most people want to handle their finances so that they get full satisfaction from each available dollar. Typical financial goals include such things as a new car, a larger home, advanced career training, extended travel, and self-sufficiency during working and retirement years. To achieve these and other goals, people need to identify and set priorities. Financial and personal satisfaction are the result of an organized process that is commonly referred to as *personal money management* or *personal financial planning*.

Personal financial planning is the process of managing your money to achieve personal economic satisfaction. This planning process allows you to control your financial situation. Every person, family, or household has a unique financial position, and any financial activity, therefore, must also be carefully planned to meet specific needs and goals.

A comprehensive financial plan can enhance the quality of your life and increase your satisfaction by reducing uncertainty about your future needs and resources. The specific advantages of personal financial planning include:

- Increased effectiveness in obtaining, using, and protecting your financial resources throughout your lifetime.
- Increased control of your financial affairs by avoiding excessive debt, bankruptcy, and dependence on others for economic security.
- Improved personal relationships resulting from well-planned and effectively communicated financial decisions.
- A sense of freedom from financial worries obtained by looking to the future, anticipating expenses, and achieving your personal economic goals.

We all make hundreds of decisions each day. Most of these decisions are quite simple and have few consequences. Some are complex and have long-term effects on our personal and

OBJECTIVE 1

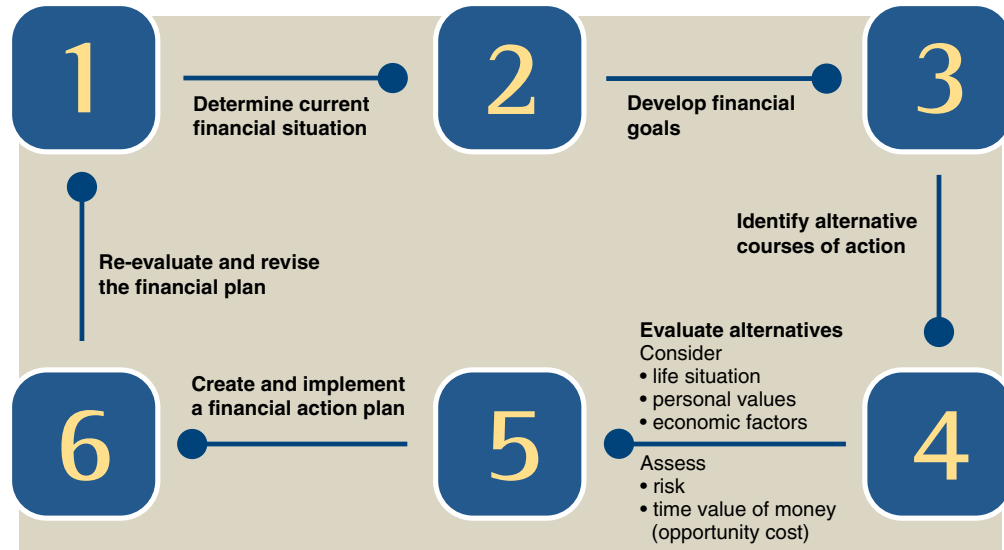
Analyze the process for making personal financial decisions.

personal financial planning The process of managing your money to achieve personal economic satisfaction.



Visit the Web site

See the Weblinks under Chapter 1 on the Online Learning Centre at www.mcgrawhill.ca/olc/kapoor.

Exhibit 1–1**The Financial Planning Process**

financial situations. While everyone makes decisions, few people consider how to make better decisions. As Exhibit 1–1 shows, the financial planning process is a logical, six-step procedure:

1. Determining your current financial situation.
2. Developing financial goals.
3. Identifying alternative courses of action.
4. Evaluating alternatives.
5. Creating and implementing a financial action plan.
6. Re-evaluating and revising the plan.

STEP 1: DETERMINE YOUR CURRENT FINANCIAL SITUATION

In this first step of the financial planning process, you will determine your current financial situation with regard to income, savings, living expenses, and debts. Preparing a list of current asset and debt balances and amounts spent for various items gives you a foundation for financial planning activities. The personal financial statements discussed in Chapter 2 will provide the information you need to match your goals with your current income and potential earning power.

STEP 1 EXAMPLE: Within the next two months, Kent Mullins will complete his undergraduate studies with a major in international studies. He has worked part time in various sales jobs. He has a small savings fund (\$1,700) and more than \$8,500 in student loans. What additional information should Kent have available when planning his personal finances?

STEP 2: DEVELOP FINANCIAL GOALS

You should periodically analyze your financial values and attitude toward money. They will play a major role in shaping your financial goals.

Analyzing your **values** involves identifying what beliefs you hold with respect to money and how these beliefs lead you to act in certain ways. For example, you may believe that it is wrong to borrow to purchase consumer goods, such as expensive clothes. Because of this belief, you will only shop for clothes once you have saved the money. You will not charge the clothes to a credit card when you know you won't have the funds to pay the bill once it arrives.

You should also be aware of your attitude toward money. Do you view money as a form of security? If so, you are likely to be a good saver. Do you view money as a means by which you

values Ideas and principles that a person considers correct, desirable, and important.

opportunity

cost What a person gives up by making a choice.

time value of

money Increases in an amount of money as a result of interest earned.

CONSEQUENCES OF CHOICES Every decision closes off alternatives. For example, a decision to invest in stocks may mean you cannot take a vacation. A decision to go to school full time may mean you cannot work full time. **Opportunity cost** is what you give up by making a choice. This cost, commonly referred to as the *trade-off* of a decision, cannot always be measured in dollars. It may refer to the money you forgo by attending school rather than working, but it may also refer to the time you spend shopping around to compare brands for a major purchase. In either case, the resources you give up (money or time) have a value that is lost.

In addition to time spent, personal opportunity costs include effort made and the effects on your health. For example, poor eating habits, lack of sleep, or avoiding exercise can result in illness, time away from school or work, increased health-care costs, and reduced financial security. Financial opportunity costs include interest, liquidity, and safety of investments. It is measured in terms of the **time value of money**, the increases in an amount of money as a result of interest earned. Saving or investing a dollar today instead of spending it results in a future amount greater than a dollar. Every time you spend, save, invest, or borrow money you should consider the time value of money as an opportunity cost (see Exhibit 1–2).

Decision making will be an ongoing part of your personal and financial situations. Thus, you will need to consider the lost opportunities that will result from your decisions. Since decisions vary on the basis of each person's situation and values, opportunity costs will differ for each person.

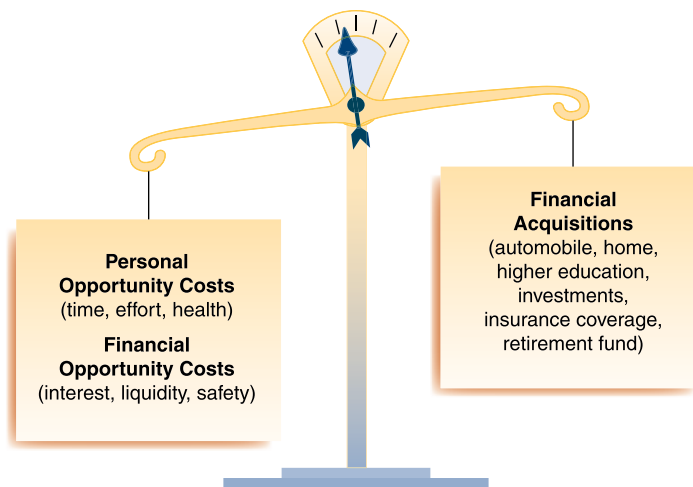
EVALUATING RISK Uncertainty is a part of every decision. Selecting a college or university major and choosing a career field involve risk. What if you don't like working in this field or cannot obtain employment in it? Other decisions involve a very low degree of risk, such as putting money in a savings account or purchasing items that cost only a few dollars. Your chances of losing something of great value are low in these situations.

In many financial decisions, identifying and evaluating risk is difficult. Some types of risk can affect everyone, such as interest rate risk or inflation risk. They arise from the financial and economic environment in which we live or from the products and services that we choose. Other risks are personal in nature, such as the risk of premature death or the risk of disability or loss of health. Some different types of risk are explained in Exhibit 1–3. The best way to consider risk is to gather information based on your experience and the experiences of others and to seek financial planning expertise by consulting various information sources.

FINANCIAL PLANNING INFORMATION SOURCES When you travel, you often need a road map. Travelling the path of financial planning requires a different kind of map. Relevant information is required at each stage of the decision-making process. This book provides the foundation you need to make personal financial planning decisions. Changing personal, social, and economic conditions will require that you continually supplement and update your knowledge. Exhibit 1–4 offers an overview of the informational resources available when

Exhibit 1–2

Opportunity Costs and Financial Results Should Be Evaluated When Making Financial Decisions



Economic and Product Risk	Personal Risk
Interest Rate Risk Changing interest rates affect your costs when you borrow and your benefits when you invest.	Risk of Death Premature death may cause financial hardship to family members left behind.
Inflation Risk Rising prices cause lost buying power.	Risk of Income Loss Your income could stop as a result of job loss or because you fall ill or are hurt in an accident.
Liquidity Risk Some investments may be more difficult to convert to cash or to sell without significant loss in value.	Health Risk Poor health may increase your medical costs. At the same time, it may reduce your working capacity or life expectancy.
Product Risk Products may be flawed or services may not meet your expectations. Retailers may not honour their obligations.	Asset and Liability Risk Your assets may be stolen or damaged. Others may sue you for negligence or for damages caused by your actions.

Exhibit 1-3

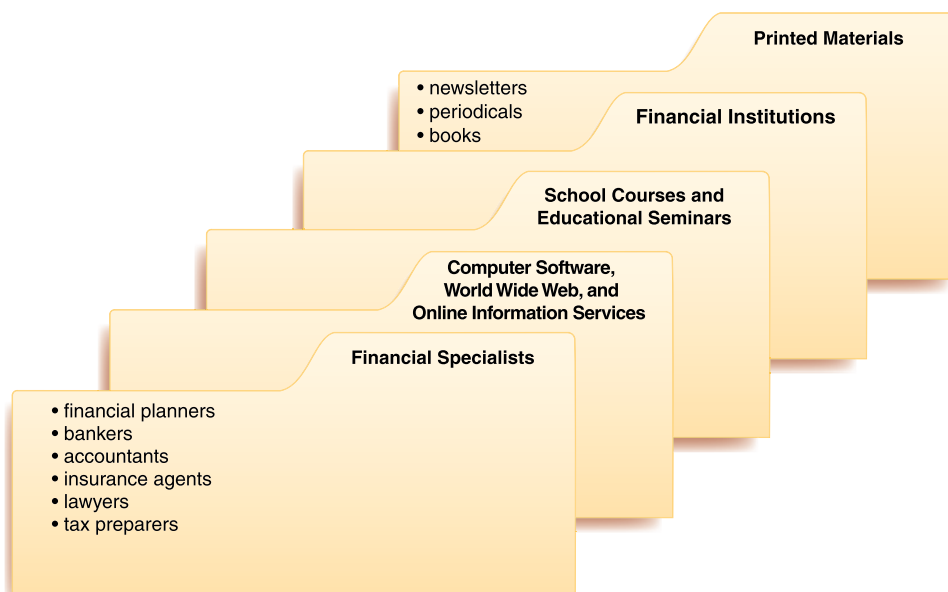
Types of Risk

making personal financial decisions. The Financial Planning for Life's Situations box on page 8 and Appendix 1A provide additional information.

STEP 4 EXAMPLE: As Kent Mullins evaluates his alternative courses of action, he must consider his income needs for both the short term and the long term. He should also assess career opportunities with his current skills and his potential with advanced training. What risks and trade-offs should Kent consider?

STEP 5: CREATE AND IMPLEMENT A FINANCIAL ACTION PLAN

In this step of the financial planning process, you develop an action plan. This requires choosing ways to achieve your goals. For example, you can increase your savings by reducing your

**Exhibit 1-4**

Financial Planning Information Sources

Financial Planning for Life's Situations



Using the Internet for Financial Planning

Web . . . e-mail . . . URL . . . online banking!

Just a dozen years ago, these terms made no sense to most people. Even now, many people are still not quite sure about all this stuff. However, most know that good financial planning requires information, and the Internet is the most efficient source of information.

Throughout this book, the financial planning content presented can be expanded and updated using the Internet. The Web sites we suggest, along with others you locate yourself, will allow you to quickly obtain information for making financial decisions appropriate to your life situation. In addition, at the end of each chapter, a feature called "Creating a Financial Plan" will give you an opportunity to use the Web to plan, research, and implement various components necessary for a comprehensive financial plan.

As you study the personal financial topics discussed in this book, you will find the following Internet topic areas especially useful:

- *Finding cyber-info for personal financial planning:* With thousands of personal finance Web sites available, where does a person begin? Some of the most useful ones include www.quicken.intuit.ca and www.advocis.ca.
- *Using online banking:* No more lines. No more over-worked bank tellers. No more inhaling exhaust fumes while waiting in the drive-through lane. In addition to existing banks that are online, there are Web-only banks, such as www.ingdirect.ca.

- *Getting online tax information and advice:* Tax planning should not occur only around April 30. For assistance, go to www.cra-arc.gc.ca and www.kpmg.ca.
- *Applying for a mortgage online:* Instead of waiting days or even weeks, prospective home buyers can now obtain financing online at sites like www.scotiabank.ca.
- *Buying a car online:* Information that used to be difficult to get is now available to everyone. More than 70 percent of car buyers research their planned purchases online to obtain information about vehicle features and costs at such Web sites as www.ewheels.ca.
- *Selecting investments online:* As everyone knows, "information is power." This axiom is especially true when investing. You can obtain company information and investment assistance at www.quicken.intuit.ca and www.mutualfundsnet.com.
- *Being your own investment broker:* You already know which investments you want to buy? Then it's time to get into the market by going to www.bmoinvestorline.com.
- *Planning for retirement:* Whether you are 40 years or 40 minutes away from retiring, you can get lots of help at www.wealthwebgurus.com.

Note: Additional Web sites appear on the end sheets of this book and in the end-of-chapter exercises. Refer to Appendix 1A for information on conducting Internet searches. Also, be aware that Web sites may change or no longer be in use.

spending or by increasing your income through extra time on the job. If you are concerned about year-end tax payments, you may increase the amount withheld from each paycheck, file quarterly tax payments, or shelter current income in a tax-deferred retirement program. As you achieve your immediate or short-term goals, the goals next in priority will come into focus.

To implement your financial action plan, you may need assistance from others. For example, you may use the services of an insurance agent to purchase property insurance or the services of an investment broker to purchase stocks, bonds, or mutual funds. Your own efforts should be geared toward achieving your financial goals.

STEP 5 EXAMPLE: Kent Mullins has decided to work full time for a few years while he (1) pays off his student loans, (2) saves money for graduate school, and (3) takes a couple of courses in the evenings and on weekends. What are the benefits and drawbacks of this choice?

STEP 6: RE-EVALUATE AND REVISE YOUR PLAN

Financial planning is a dynamic process that does not end when you take a particular action. You need to regularly assess your financial decisions. You should do a complete review of your

finances at least once a year. Changing personal, social, and economic factors may require more frequent assessments.

When life events affect your financial needs, this financial planning process will provide a vehicle for adapting to those changes. Regularly reviewing this decision-making process will help you make priority adjustments that will bring your financial goals and activities in line with your current life situation.

STEP 6 EXAMPLE: Over the next six to 12 months, Kent Mullins should reassess his financial, career, and personal situations. What employment opportunities or family circumstances might affect his need or desire to take a different course of action?

Did you know?

Research indicates that people with a financial plan (developed themselves or by a professional) had significantly higher amounts in savings than those who didn't.

(Andrea Rock, "You've Gotta Have a Plan," *Money*, March 1999, pp. 117–20, 123, 125–27.)

CONCEPT CHECK 1–1

1. What steps should we take in developing our financial plan?
2. What are some risks associated with financial decisions?
3. What are some common sources of financial planning information?
4. Why should you re-evaluate your actions after making a personal financial decision?
5. What Web site feature of www.advocis.ca or www.canadianfinance.com would provide assistance with your financial decisions?

DEVELOPING PERSONAL FINANCIAL GOALS

Since Canada is among the richest countries in the world, it is difficult to understand why so many Canadians have money problems. The answer seems to be the result of two main factors. The first is poor planning and weak money management habits in such areas as spending and the use of credit. The other is extensive advertising, selling efforts, and product availability. Achieving personal financial satisfaction starts with clear financial goals.

 **OBJECTIVE 2**
Develop personal financial goals.

FACTORS THAT INFLUENCE YOUR FINANCIAL GOALS

Many factors influence your financial aspirations for the future. We have already discussed how your personal values and attitude toward money can shape your financial goals. Additional factors include the time frame in which you would like to achieve your goals, the type of financial need that drives your goals, and your life situation.

TIMING OF GOALS What would you like to do tomorrow? Believe it or not, that question involves goal setting. *Short-term goals* are goals to be achieved within the next year or so, such as saving for a vacation or paying off small debts. *Intermediate goals* have a time frame of two to five years. *Long-term goals* involve financial plans that are more than five years off, such as retirement savings, money for children's college/university education, or the purchase of a vacation home.

Long-term goals should be planned in coordination with short-term and intermediate ones. Setting and achieving short-term goals is commonly the basis for moving toward success of long-term goals. For example, saving for a down payment to buy a house is a short- or medium-term goal that can be a foundation for a long-term goal: owning your own home.

Goal frequency is another ingredient in the financial planning process. Some goals, such as vacations or money for gifts, may be set annually. Other goals, such as a higher education, a car, or a house, occur less frequently.

GOALS FOR DIFFERENT FINANCIAL NEEDS A goal of obtaining increased career training is different from a goal of saving money to pay a semi-annual auto insurance premium. *Consumable-product goals* usually occur on a periodic basis and involve items that are used up relatively quickly, such as food, clothing, and entertainment. Such purchases, if made unwisely, can have a negative effect on your financial situation.

Durable-product goals usually involve infrequently purchased, expensive items, such as appliances, cars, and sporting equipment; these consist of tangible items. In contrast, many people overlook *intangible-purchase goals*. These goals may relate to personal relationships, health, education, and leisure. Goal setting for these life circumstances is also necessary for your overall well being.

LIFE SITUATION

People in their 50s spend money differently from those in their 20s. Personal factors, such as age, income, household size, and personal beliefs, influence your spending and saving patterns. Your life situation or lifestyle is created by a combination of factors.

As our society changes, different types of financial needs evolve. Today, people tend to get married at a later age, and more households have two incomes. Many households are headed by single parents. We are also living longer: more than 80 percent of all Canadians now living are expected to live past age 65. The 2002 General Social Survey indicates that approximately one-third of Canadians aged 45 to 64 not only are raising children, but also are caring for aging parents. Women form the large majority and, in response to these increased demands, report that they have had to reduce their working hours, change schedules, or forgo income.

As Exhibit 1–5 shows, the **adult life cycle**—the stages in the family situation and financial needs of an adult—is an important influence on your financial activities and decisions. The average person goes through four basic stages in personal financial management, referred to as the **life cycle approach** to financial planning. In the early years (until the mid-30s), the focus is on creating an emergency fund, saving for a down payment on a house or condo, and, if necessary, purchasing life insurance. This is also the time to at least start thinking about retirement, because the earlier you start the less money you will have to save in later years to catch up. In the middle years (mid-30s to mid-50s), the focus is on building wealth by paying down the mortgage and increasing savings and investments. In middle age (50s+), when typically more disposable income is available, the focus is on providing an adequate retirement fund. And, finally, in the retirement years the focus is on the efficient management of previously acquired wealth.

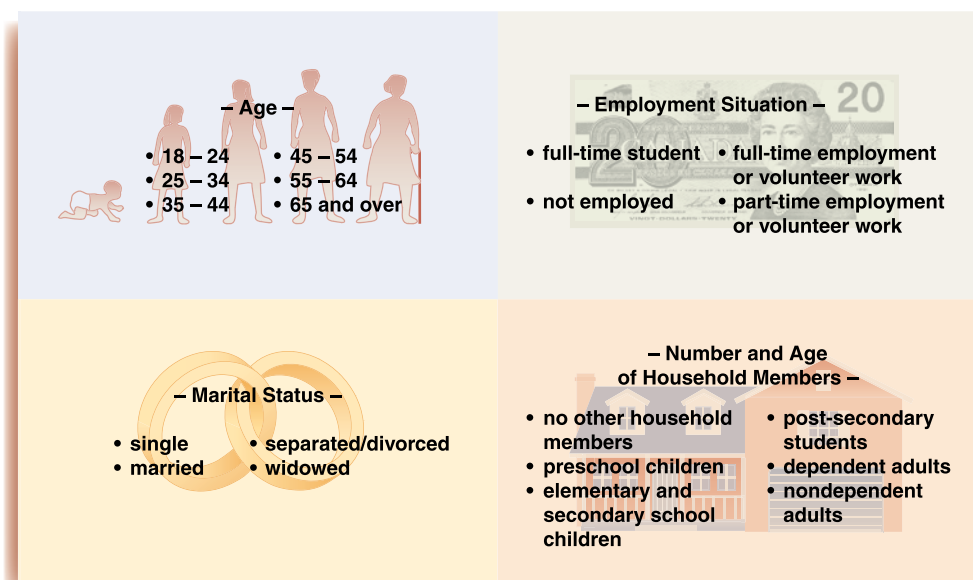
adult life cycle The stages in the family situation and financial needs of an adult.

life cycle approach

The idea that the average person goes through four basic stages in personal financial management.

Exhibit 1–5

Life Situation
Influences on Your
Financial Decisions



Your life situation is also affected by marital status, household size, and employment, as well as such events as

- Graduation (at various levels of education).
- Engagement and marriage.
- The birth or adoption of a child.
- A career change or a move to a new area.
- Dependent children leaving home.
- Changes in health.
- Divorce.
- Retirement.
- The death of a spouse, family member, or other dependant.

Exhibit 1–6 offers typical goals and financial activities for various life situations.

Exhibit 1–6 Financial Goals and Activities for Various Life Situations

Common Financial Goals and Activities		
<ul style="list-style-type: none"> • Obtain appropriate career training. • Create an effective financial recordkeeping system. • Develop a regular savings and investment program. 	<ul style="list-style-type: none"> • Accumulate an appropriate emergency fund. • Purchase appropriate types and amounts of insurance coverage. • Create and implement a flexible budget. 	<ul style="list-style-type: none"> • Evaluate and select appropriate investments. • Establish and implement a plan for retirement goals. • Make a will and develop an estate plan.
Life Situation	Specialized Financial Activities	
Young, single (18–35)	<ul style="list-style-type: none"> • Establish financial independence. • Obtain disability insurance to replace income during prolonged illness. • Consider home purchase. 	
Young couple with children under 18	<ul style="list-style-type: none"> • Carefully manage the increased need for the use of credit. • Obtain an appropriate amount of life insurance for the care of dependants. • Use a will to name a guardian for children. 	
Single parent with children under 18	<ul style="list-style-type: none"> • Obtain adequate amounts of health, life, and disability insurances. • Contribute to savings and investment funds for children's higher education. • Name a guardian for children and make other estate plans. 	
Young dual-income couple, no children	<ul style="list-style-type: none"> • Coordinate insurance coverage and other benefits. • Develop savings and investment programs for changes in life situation (larger house, children). • Consider tax-deferred contributions to retirement fund. 	
Older couple (+50), no dependent children at home	<ul style="list-style-type: none"> • Consolidate financial assets and review estate plans. • Obtain health insurance for post-retirement period. • Plan retirement housing, living expenses, recreational activities, and part-time work. 	
Mixed-generation household (elderly individuals and children under 18)	<ul style="list-style-type: none"> • Obtain long-term health care insurance and life/disability income for care of younger dependants. • Use dependent care service, if needed. • Provide arrangements for handling finances of elderly if they become ill. • Consider splitting of investment cost, with elderly getting income while alive and principal going to surviving relatives. 	
Older (+50), single	<ul style="list-style-type: none"> • Make arrangements for long-term health care coverage. • Review will and estate plan. • Plan retirement living facilities, living expenses, and activities. 	

GOAL SETTING GUIDELINES

An old saying goes, “If you don’t know where you’re going, you might end up somewhere else and not even know it.” Goal setting is central to financial decision making. Your financial goals are the basis for planning, implementing, and measuring the progress of your spending, saving, and investing activities.

Your financial goals should be stated to take the following factors into account:

- [1] *Financial goals should be realistic.* Financial goals should be based on your income and life situation. For example, it is probably not realistic to expect to buy a new car each year if you are a full-time student.
- [2] *Financial goals should be stated in specific, measurable terms.* Knowing exactly what your goals are will help you create a plan designed to achieve them. For example, the goal of “accumulating \$5,000 in an investment fund within three years” is a clearer guide to planning than the goal of “putting money into an investment fund.”
- [3] *Financial goals should have a time frame.* In the preceding example, the goal is to be achieved in three years. A time frame helps you measure your progress toward your financial goals.
- [4] *Financial goals should indicate the type of action to be taken.* Your financial goals are the basis for the various financial activities you will undertake.

It is easier to achieve your financial objectives if your goals have meaning and value to you, and if they are SMART (specific, measurable, action-oriented, realistic, and timely). For example, “I want to save \$3,600 for an emergency fund in the next 12 months by cutting back on entertainment expenses and working an extra 10 hours a week.” The goal is specific and action-oriented. You can measure whether you reached it in exactly one year from today. If you are able to earn more money by working more hours, and are willing to cut down on expenses, your goal is realistic. And finally, it is timely: you have exactly 12 months to save the \$3,600.

The Financial Planning for Life’s Situations box on page 13 gives you an opportunity to set financial goals.

CONCEPT CHECK 1–2

1. What are examples of long-term goals?
2. What are the four main characteristics of useful financial goals?
3. How does your life situation affect your financial goals?

THE INFLUENCE OF ECONOMIC FACTORS ON PERSONAL FINANCIAL PLANNING

OBJECTIVE 3

Assess economic factors that influence personal financial planning.

Daily economic activities are another important influence on financial planning. In our society, the forces of supply and demand play an important role in setting prices. **Economics** is the study of how wealth is created and distributed. The economic environment includes various institutions, principally business, labour, and government, that must work together to satisfy our needs and wants.

MARKET FORCES

economics The study of how wealth is created and distributed.

Prices of goods and services are generally determined by supply and demand. Just as a high demand for a consumer product forces its price up, a high demand for money pushes up interest rates. This price of money reflects the limited supply of money and the demand for it.

Financial Planning for Life's Situations



Creating Financial Goals

On the basis of your current situation or expectations for the future, identify two financial goals, one short-term and one long-term, using the following guidelines:

Step 1. Create realistic goals on the basis of your life situation.

A. SHORT-TERM GOAL

B. LONG-TERM GOAL

Step 2. State your goals in specific, measurable terms.

a.

b.

Step 3. Describe the time frame for accomplishing your goals.

a.

b.

Step 4. Indicate actions to be taken to achieve your goals.

a.

b.

At times, the price of an item may seem to be unaffected by the forces of supply and demand, but in fact, at such times, other economic factors may also be influencing its price. Although such factors as production costs and competition influence prices, the market forces of supply and demand remain in operation.

FINANCIAL INSTITUTIONS

Banks, trust companies, credit unions, insurance companies, and investment companies are the financial institutions with which most people do business. Financial institutions provide services that facilitate financial activities in our economy. They accept savings, handle chequing accounts, sell insurance, and make investments on behalf of others.

While various government agencies regulate financial activities, the Bank of Canada, our nation's central bank, has significant responsibility in our economy. The Bank of Canada is concerned with maintaining an adequate money supply. It achieves this by influencing borrowing, interest rates, and the buying or selling of government securities. The Bank of Canada attempts to make adequate funds available for consumer spending and business expansion while keeping interest rates and consumer prices at an appropriate level.

GLOBAL INFLUENCES

The global marketplace also influences financial activities. Our economy is affected by both the financial activities of foreign investors and competition from foreign companies. Canadian businesses compete against foreign companies for the spending dollars of Canadian consumers.

Did you know?

A basket of goods and services that cost \$100 in 1914 cost \$1,898.31 in 2007.

(www.bankofcanada.ca)

When the level of exports of Canadian-made goods is lower than the level of imported goods, more Canadian dollars leave the country than the dollar value of foreign currency coming into Canada. This reduces the funds available for domestic spending and investment. Also, if foreign companies decide not to invest their dollars in Canada, the domestic money supply is reduced. This reduced money supply may cause higher interest rates.

ECONOMIC CONDITIONS

Newspapers and business periodicals regularly publish current economic statistics. Exhibit 1–7 provides an overview of some economic indicators that influence financial decisions. Your

Exhibit 1–7 Changing Economic Conditions and Financial Decisions

Economic Factor	What It Measures	How It Influences Financial Planning
Consumer prices	The value of the dollar; changes in inflation	If consumer prices increase faster than your income, you are unable to purchase the same amount of goods and services; higher consumer prices will also cause higher interest rates.
Consumer spending	The demand for goods and services by individuals and households	Increased consumer spending is likely to create more jobs and higher wages; high levels of consumer spending and borrowing can also push up consumer prices and interest rates.
Interest rates	The cost of money; the cost of credit when you borrow; the return on your money when you save or invest	Higher interest rates make buying on credit more expensive; higher interest rates make saving and investing more attractive and discourage borrowing.
Money supply	The dollars available for spending in our economy	Interest rates tend to decline as more people save and invest; but higher saving (and lower spending) may also reduce job opportunities.
Unemployment rate	The number of people without employment who are willing and able to work	People who are unemployed should reduce their debt level and have an emergency savings fund for living costs while out of work; high unemployment reduces consumer spending and job opportunities.
Housing starts	The number of new homes being built	Increased home building results in more job opportunities, higher wages, more consumer spending, and overall economic expansion.
Gross domestic product (GDP)	The total value of goods and services produced within a country's borders, including items produced with foreign resources	The GDP provides an indication of a nation's economic viability resulting in employment and opportunities for personal financial wealth.
Trade balance	The difference between a country's exports and its imports	If a country exports more than it imports, interest rates may rise and foreign goods and foreign travel will cost more.
S&P/TSX composite index and other stock market indexes	The relative value of stocks represented by the index	These indexes provide an indication of the general movement of stock prices.

Advice from a Pro



On Personal Financial Planning

“Spend less than you earn” is the foundation of long-term financial security, according to financial planner Ellen Rogin.

Although it sounds simple, most people do not follow this basic requirement for financial planning success. Ms. Rogin has been advising people about their money for more than 12 years. While the typical clients of her company range in age from 30 to 50, some are younger or older. Most of her clients are professionals and executives who have a common concern: a secure retirement. But Ms. Rogin is quick to point out that she works with people with a variety of needs, life situations, and investment philosophies. She has even advised a lottery winner, although she doesn’t recommend that expectation as a steady path to long-term financial security!

The availability of information, Ms. Rogin believes, is the most significant change in the financial planning marketplace in recent years. With the Internet, television programs, and an extensive number of magazines

and books, people can be better informed regarding personal finance topics and investments. However, Ms. Rogin warns that people must assess the validity of the information. She suggests “avoiding specific investment advice from magazines and other sources that may not be appropriate for your individual situation.”

When planning your own financial direction, Ms. Rogin recommends three actions:

1. Set specific financial goals.
2. Reduce your debts.
3. Save for retirement.

Even if someone else is managing your finances, Ms. Rogin encourages you to “be involved.” Be aware of your personal economic situation and the financial marketplace. Communicate your money views, risk acceptance, and financial priorities. Never let a financial planner, your spouse, or another family member have complete control.

personal financial decisions are most heavily influenced by consumer prices, consumer spending, and interest rates.

CONSUMER PRICES **Inflation** is a rise in the general level of prices. In times of inflation, the buying power of the dollar decreases. For example, if prices increased 5 percent during the last year, items that cost \$100 then would now cost \$105. This means it now takes more money to buy the same amount of goods and services.

The main cause of inflation is an increase in demand without a comparable increase in supply. For example, if people have more money to spend because of pay increases or borrowing but the same amounts of goods and services are available, the increased demand can bid up prices for those goods and services.

Inflation is most harmful to people living on fixed incomes. Due to inflation, retired people and others whose incomes do not change are able to afford smaller amounts of goods and services.

Inflation can also adversely affect lenders of money. Unless an adequate interest rate is charged, amounts repaid by borrowers in times of inflation have less buying power than the money they borrowed. If you pay 10 percent interest on a loan and the inflation rate is 12 percent, the dollars you pay the lender have lost buying power. For this reason, interest rates rise in periods of high inflation.

The rate of inflation varies. During the late 1950s and early 1960s, the annual inflation rate was in the 1 to 3 percent range. During the late 1970s and early 1980s, the cost of living increased 10 to 12 percent annually.

More recently, the annual price increase for most goods and services as measured by the consumer price index has been in the

inflation A rise in the general level of prices.

Did you know?

To find out how fast prices double, you can use the rule of 72. Just divide 72 by the annual inflation rate (or interest rate). An annual inflation rate of 8 percent, for example, means prices will double in nine years ($72 \div 8 = 9$).

Did you know?

Canadian households spent an average of \$67,736 in 2006 on everything from furniture to entertainment.

Source: <http://www40.statcan.ca/101/cst01/famil16a.htm>

1 to 3 percent range. The *consumer price index* (CPI), published by Statistics Canada, is a measure of the average change in the prices urban consumers pay for a fixed “basket” of goods and services. For current CPI information, go to www.statcan.ca.

CONSUMER SPENDING Total demand for goods and services in the economy influences employment opportunities and the potential for income. As consumer purchasing increases, the financial resources of current and prospective employees expand. This situation improves the financial condition of many households.

In contrast, reduced spending causes unemployment, since staff reduction commonly results from a company's reduced financial resources. The financial hardships of unemployment are

a major concern of business, labour, and government. Retraining programs, income assistance, and job services can help people adjust.

INTEREST RATES In simple terms, interest rates represent the cost of money. Like everything else, money has a price. The forces of supply and demand influence interest rates. When consumer saving and investing increase the supply of money, interest rates tend to decrease. However, as consumer, business, government, and foreign borrowing increase the demand for money, interest rates tend to rise.

Interest rates affect your financial planning. The earnings you receive as a saver or an investor reflect current interest rates as well as a *risk premium* based on such factors as the length of time your funds will be used by others, expected inflation, and the extent of uncertainty about getting your money back. Risk is also a factor in the interest rate you pay as a borrower. People with poor credit ratings pay a higher interest rate than people with good credit ratings. Finally, we must always take into consideration the role played by personal income taxes with respect to the interest income we earn and the interest expense we pay. Every dollar of interest we earn must be added to our taxable income. Therefore, if our income tax rate is 30 percent, we have only 70 cents of after-tax interest income. On the other hand, we can deduct the interest that we pay on certain types of loans. In that case, the true cost of one dollar of interest paid would be only 70 cents. We will discuss the issue of before and after-tax investment income and borrowing costs in further detail in Chapter 3, Planning Your Tax Strategy.

CONCEPT CHECK 1–3

1. How might the uncertainty of inflation make personal financial planning difficult?
2. What factors influence the level of interest rates?

THE TIME VALUE OF MONEY

OBJECTIVE 4

Calculate the time value of money.

As mentioned earlier, the *time value of money* is the increase in an amount of money as a result of interest earned. To calculate the time value of money you must familiarize yourself with types of interest, and with future value and present value concepts.

INTEREST CALCULATIONS

Three amounts are used to calculate the time value of money for savings in the form of interest earned:

- The amount of the savings (commonly called the *principal*).
- The annual interest rate.
- The length of time the money is on deposit.

There are two methods of calculating interest: **simple interest** and compound interest. Simple interest is calculated as follows: $I = P \times R \times T$



For example, \$500 on deposit at a 6 percent annual interest rate for two years would earn \$60 ($\$500 \times 0.06 \times 2$).

Compounding refers to interest that is earned on previously earned interest. Each time interest is added to the principal, the next interest amount is computed on the new balance. For example, the \$500 on deposit at a 6 percent annual interest rate for two years would earn \$61.80 ($\$500 \times 0.06 = \30 the first year and $[\$500 + \$30] \times 0.06 = \$31.80$ the second year, $\$31.80 + \$30 = \$61.80$).

Since you are earning interest on the principal as well as accumulated interest, the total amount is greater than what you would earn under simple interest ($\$61.80 > \60).

You can calculate the increased value of your money from interest earned in two ways: You can calculate the total amount that will be available later (future value), or you can determine the current value of an amount desired in the future (present value).

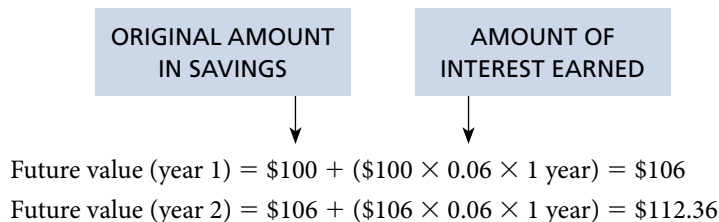
simple interest

Interest computed on the principal, excluding previously earned interest.

compounding A process that calculates interest based on previously earned interest.

FUTURE VALUE OF A SINGLE AMOUNT

Deposited money earns interest that will increase over time. **Future value** is the amount to which current savings will increase on the basis of a certain interest rate and a certain time period. Future value computations typically involve *compounding*, since interest is earned on previously earned interest. Compounding allows the future value of a deposit to grow faster than it would if interest were paid only on the original deposit. For example, \$100 deposited in a 6-percent account for two years will grow to \$112.36. This amount is computed as follows:



future value The amount to which current savings will increase based on a certain interest rate and a certain time period; typically involves compounding.

The same process could be continued for a third, fourth, and fifth year, but the computations would be time consuming. Future value tables simplify the process (see Exhibit 1-8). To use a future value table, multiply the amount deposited by the factor for the desired interest rate and time period. For example, \$650 at 8 percent for 10 years would have a future value of \$1,403.35 ($\650×2.159). The future value of an amount will always be greater than the original amount. As Exhibit 1-8A shows, all the future value factors are larger than 1.

The sooner you make deposits, the greater the future value will be. Depositing \$1,000 in a 5-percent account at age 40 will give you \$3,387 at age 65. However, making the \$1,000 deposit at age 25 would result in an account balance of \$7,040 at age 65.

In the same manner, compounding more frequently than once a year would result in a higher future value. In the above example, the compounding period was one year. However, most investment opportunities specify shorter compounding intervals. This is called *intra-period compounding*, which simply means that compounding frequency is more than once a year. Compounding can be semi-annually, quarterly, monthly, and so on.

Exhibit 1–8

The Value of Money
Tables (condensed)

A. FUTURE VALUE OF \$1 (SINGLE AMOUNT)

Year	Percent				
	5%	6%	7%	8%	9%
5	1.276	1.338	1.403	1.469	1.539
6	1.340	1.419	1.501	1.587	1.677
7	1.407	1.504	1.606	1.714	1.828
8	1.477	1.594	1.718	1.851	1.993
9	1.551	1.689	1.838	1.999	2.172
10	1.629	1.791	1.967	2.159	2.367

B. FUTURE VALUE OF A SERIES OF ANNUAL DEPOSITS (ANNUITY)

Year	Percent				
	5%	6%	7%	8%	9%
5	5.526	5.637	5.751	5.867	5.985
6	6.802	6.975	7.153	7.336	7.523
7	8.142	8.394	8.654	8.923	9.200
8	9.549	9.897	10.260	10.637	11.028
9	11.027	11.491	11.978	12.488	13.021
10	12.578	13.181	13.816	14.487	15.193

C. PRESENT VALUE OF \$1 (SINGLE AMOUNT)

Year	Percent				
	5%	6%	7%	8%	9%
5	0.784	0.747	0.713	0.681	0.650
6	0.746	0.705	0.666	0.630	0.596
7	0.711	0.665	0.623	0.583	0.547
8	0.677	0.627	0.582	0.540	0.502
9	0.645	0.592	0.544	0.500	0.460
10	0.614	0.558	0.508	0.463	0.422

D. PRESENT VALUE OF A SERIES OF ANNUAL DEPOSITS (ANNUITY)

Year	Percent				
	5%	6%	7%	8%	9%
5	4.329	4.212	4.100	3.993	3.890
6	5.076	4.917	4.767	4.623	4.486
7	5.786	5.582	5.389	5.206	5.033
8	6.463	6.210	5.971	5.747	5.535
9	7.108	6.802	6.515	6.247	5.995
10	7.722	7.360	7.024	6.710	6.418

See Appendix 1B at the end of this chapter for more complete future value and present value tables.

Going back to the example of \$100 deposited in a 6-percent account for two years, the amount is now compounded semi-annually:

m = number of compounding periods in a year = 2

i = interest rate per period = $6/2 = 3$ percent

Financial Planning Calculations



Annual Contributions to Achieve a Financial Goal

Achieving specific financial goals often requires regular deposits to a savings or investment account. By using time value of money calculations, you can determine the amount you should save or invest to achieve a specific goal for the future.

EXAMPLE 1

Jonie Emerson has two children who will start college in 10 years. She plans to set aside \$1,500 a year for her children's college education during that period and estimates she will earn an annual interest rate of 5 percent on her savings. What amount can Jonie expect to have available for her children's college education when they start college?

Calculation from table:

$$\begin{aligned} & \$1,500 \times \text{Future value of a series of deposits,} \\ & \quad 5\%, 10 \text{ years} \\ & \$1,500 \times 12.578 = \$18,867 \end{aligned}$$

With calculator:

$$\begin{aligned} & 10 \quad \text{N} \\ & 5 \quad \text{I/Y} \\ & 0 \quad \text{PV} \\ & 1,500 \div - \quad \text{PMT} \\ & \text{Then press } \text{CPT} \quad \text{FV} \quad \text{and the answer} \\ & = \$18,866.84 \end{aligned}$$

EXAMPLE 2

Don Calder wants to accumulate \$50,000 over the next 10 years as a reserve fund for his parents' retirement living expenses and health care. If he earns an average of 8 percent on his investments, what amount must he invest each year to achieve this goal?

Calculation from table:

$$\begin{aligned} & \$50,000 \div \text{Future value of a series of deposits,} \\ & \quad 8\%, 10 \text{ years} \\ & \$50,000 \div 14.487 = \$3,451.37 \end{aligned}$$

Don needs to invest approximately \$3,450 a year for 10 years at 8 percent to achieve the desired financial goal.

With calculator:

$$\begin{aligned} & 10 \quad \text{N} \\ & 8 \quad \text{I/Y} \\ & 0 \quad \text{PV} \\ & 50,000 \quad \text{FV} \\ & \text{Then press } \text{CPT} \quad \text{PMT} \quad \text{and the answer} \\ & = -\$3,451.47 \end{aligned}$$

$$\begin{aligned} \text{Future value (after six months)} &= \$100 + (\$100 \times 0.03 \times 1 \text{ period}) = \$103 \\ \text{Future value (after 1 year)} &= \$103 + (\$103 \times 0.03 \times 1 \text{ period}) = \$106.09 \\ \text{Future value (after 1.5 years)} &= \$106.09 + (\$106.09 \times 0.03 \times 1 \text{ period}) = \$109.27 \\ \text{Future value (after 2 years)} &= \$109.27 + (\$109.27 \times 0.03 \times 1 \text{ period}) = \$112.55 \end{aligned}$$

The value of the investment grows to \$112.55 instead of \$112.36 due to the increased frequency in compounding per year. The difference in this example may seem negligible, but when you are investing for a long period of time or large sums of money the difference is quite significant.

FUTURE VALUE OF A SERIES OF DEPOSITS

Quite often, savers and investors make regular deposits. An *annuity* is a series of equal deposits or payments. To determine the future value of equal yearly savings deposits, use Exhibit 1-8B. For this table to be used, the deposits must earn a constant interest rate. If you deposit \$50 a year at 7 percent for six years, starting at the end of the first year, you will have \$357.65 immediately after the last deposit ($\$50 \times 7.153$). The Financial Planning Calculations box above presents examples of using future value to achieve financial goals.

present value The current value for a future amount based on a certain interest rate and a certain time period; also referred to as *discounting*.

PRESENT VALUE OF A SINGLE AMOUNT

Another aspect of the time value of money involves determining the current value of a desired amount for the future. **Present value** is the current value for a future amount based on a certain interest rate and a certain time period. Present value computations, also called *discounting*, allow you to determine how much to deposit now to obtain a desired total in the future. Present value tables (Exhibit 1–8C) can be used to make the computations. If you want \$1,000 five years from now and you earn 5 percent on your savings, you need to deposit \$784 ($\$1,000 \times 0.784$).

The present value of the amount you want in the future will always be less than the future value, since all of the factors in Exhibit 1–8C are less than 1 and interest earned will increase the present value amount to the desired future amount.

PRESENT VALUE OF A SERIES OF DEPOSITS


You can also use present value computations to determine how much you need to deposit so that you can take a certain amount out of the account for a desired number of years. For example, if you want to take \$400 out of an investment account each year for nine years and your money is earning an annual rate of 8 percent, you can see from Exhibit 1–8D that you would need to make a current deposit of \$2,498.80 ($\400×6.247).

Instructions on how to use a financial calculator, formulas for calculating future and present values, as well as tables covering a wider range of interest rates and time periods are presented in Appendix 1B. Computer programs for calculating time value of money are also available.

CONCEPT CHECK 1–4

1. How can you use future value and present value computations to measure the opportunity cost of a financial decision?
2. Use the time value of money tables in Exhibit 1–8 or a financial calculator to calculate the following:
 - a. The future value of \$100 at 7 percent in 10 years.
 - b. The future value of \$100 a year for six years earning 6 percent.
 - c. The present value of \$500 received in eight years with an interest rate of 8 percent.

ACHIEVING FINANCIAL GOALS

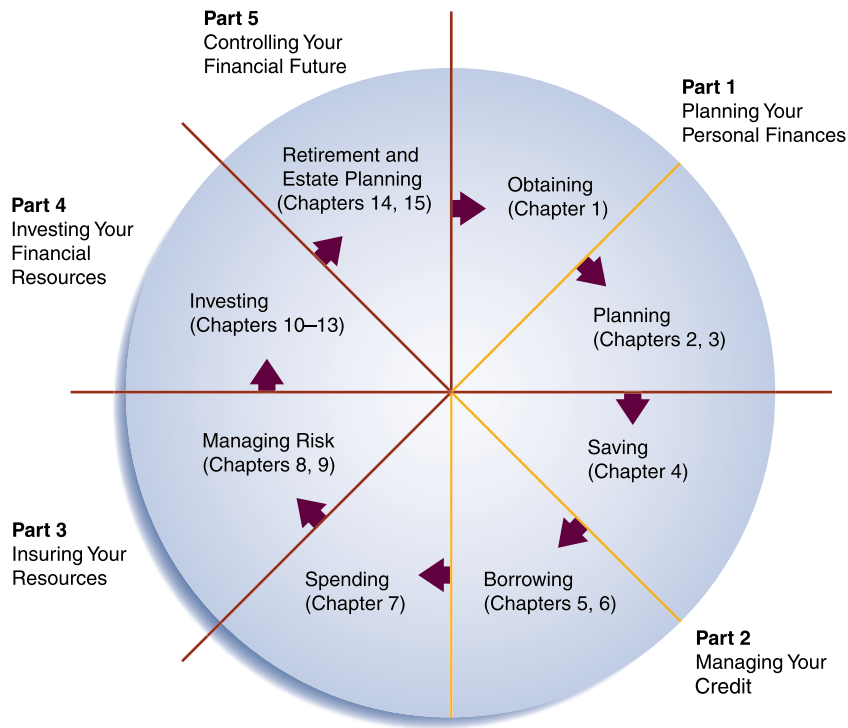
OBJECTIVE 5  Identify strategies for achieving personal financial goals for different life situations.

Throughout life, our needs usually can be satisfied with the intelligent use of financial resources. Financial planning involves deciding how to obtain, protect, and use those resources. By using the eight major areas of personal financial planning to organize your financial activities, you can avoid many common money mistakes.

COMPONENTS OF PERSONAL FINANCIAL PLANNING

This book is designed to provide a framework for the study and planning of personal financial decisions. Exhibit 1–9 presents an overview of the eight major personal financial planning areas. To achieve a successful financial situation, you must coordinate these components through an organized plan and wise decision making.

OBTAINING (CHAPTER 1) You obtain financial resources from employment, investments, or ownership of a business. Obtaining financial resources is the foundation of financial planning, since these resources are used for all financial activities.

**Exhibit 1–9****Components of
Personal Financial
Planning**

Key Web Sites for Obtaining: www.quicken.intuit.ca www.monster.ca

PLANNING (CHAPTERS 2, 3) Planned spending through budgeting is the key to achieving goals and future financial security. Efforts to anticipate expenses and financial decisions can also help reduce taxes. Paying no more than your fair share of taxes is vital to increasing your financial resources.

Key Web Sites for Planning: www.advocis.ca www.quicken.intuit.ca

SAVING (CHAPTER 4) Long-term financial security starts with a regular savings plan for emergencies, unexpected bills, replacement of major items, and the purchase of special goods and services, such as a higher education, a boat, or a vacation home. Once you have established a basic savings plan, you may use additional money for investments that offer greater financial growth.

An amount of savings must be available to meet current household needs. **Liquidity** refers to the ability to readily convert financial resources into cash without a loss in value. The need for liquidity will vary on the basis of a person's age, health, and family situation. Savings plans, such as interest-earning chequing accounts, money market accounts, and money market funds, earn money on your savings while providing liquidity.

Key Web Site for Saving: www.ingdirect.ca

BORROWING (CHAPTERS 5, 6) Maintaining control over your credit-buying habits will contribute to your financial goals. The overuse and misuse of credit may cause a situation in which a person's debts far exceed the resources available to pay those debts. **Bankruptcy** is a set of federal laws that allow you to either restructure your debts or remove certain debts. The people who declare bankruptcy each year might have avoided this trauma with wise spending and borrowing decisions. Chapter 6 discusses bankruptcy in detail.

Key Web Sites for Borrowing: www.cibc.ca www.scotiabank.ca

liquidity The ability to readily convert financial resources into cash without a loss in value.

bankruptcy A set of federal laws that allow you to either restructure your debts or remove certain debts.

Did you know?

Personal bankruptcies in Canada in 2007 totalled 79,796. This level is almost double that of 1990 and almost four times the level declared in 1980. Population growth between 1980 and 2007, on the other hand, was only 35 percent.

SOURCES: www.bankruptcycanada.com and http://en.wikipedia.org/wiki/List_of_population_of_Canada_by_years

SPENDING (CHAPTER 7) Financial planning is designed not to prevent your enjoyment of life but to help you obtain the things you want. Too often, however, people make purchases without considering the financial consequences. Some people shop compulsively, creating financial difficulties. You should detail your living expenses and your other financial obligations in a spending plan. Spending less than you earn is the only way to achieve long-term financial security.

Key Web Sites for Spending: www.consumerworld.org
www.consumer.ca

MANAGING RISK (CHAPTERS 8, 9) Adequate insurance coverage is another component of personal financial planning. Certain types of insurance are commonly overlooked in financial plans. For example, the number of people who suffer disabling injuries or diseases at age 50 is greater than the number who die at that age, so people may need disability insurance more than

they need life insurance. Yet surveys reveal that most people have adequate life insurance but few have disability insurance. The insurance industry is more aggressive in selling life insurance than in selling disability insurance, thus putting the burden of obtaining adequate disability insurance on you.

Many households have excessive or overlapping insurance coverage. Insuring property for more than it is worth may be a waste of money, as may both a husband and a wife having similar health insurance coverage.

Key Web Sites for Managing Risk: www.canadalife.com www.risksvr.com

INVESTING (CHAPTERS 10–13) While many types of investment vehicles are available, people invest for two primary reasons. Those interested in current income select investments that pay regular dividends or interest. In contrast, investors who desire long-term growth choose stocks, mutual funds, real estate, and other investments with potential for increased value in the future.

You can achieve investment diversification by including a variety of assets in your portfolio—for example, stocks, bond mutual funds, real estate, and collectibles, such as rare coins. Obtaining general investment advice is easy; however, it is more difficult to obtain specific investment advice to meet your individual needs and goals.

Key Web Site for Investing: money.canoe.ca

RETIREMENT AND ESTATE PLANNING (CHAPTERS 14, 15) Most people desire financial security upon completion of full-time employment. But retirement planning also involves thinking about your housing situation, your recreational activities, and possible part-time or volunteer work.

Key Web Sites for Retirement and Estate Planning: www.elderweb.org
www.retirenet.com

Transfers of money or property to others should be timed, if possible, to minimize the tax burden and maximize the benefits for those receiving the financial resources. A knowledge of property transfer methods can help you select the best course of action for funding current and future living costs, educational expenses, and retirement needs of dependants.

DEVELOPING A FLEXIBLE FINANCIAL PLAN

A **financial plan** is a formalized report that summarizes your current financial situation, analyzes your financial needs, and recommends future financial activities. You can create this document on your own, seek assistance from a financial planner, or use a money management software package (see Appendix 1A). Exhibit 1–10 offers a framework for developing and implementing a financial plan, along with examples for several life situations. (Also see the Financial Planning for Life's Situations box on pages 24 and 25.)

financial plan A formalized report that summarizes your current financial situation, analyzes your financial needs, and recommends future financial activities.

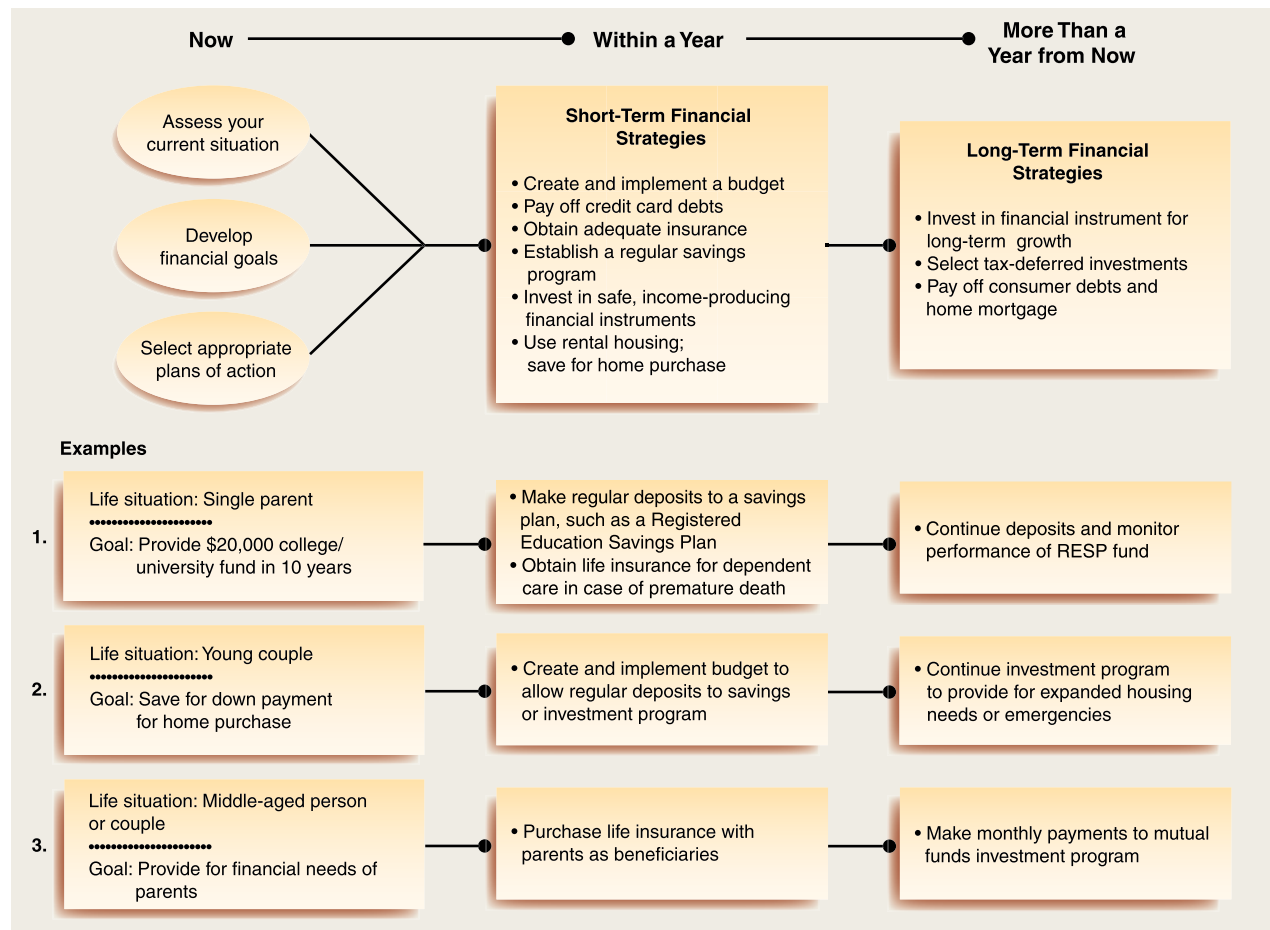
IMPLEMENTING YOUR FINANCIAL PLAN

You must have a plan before you can implement it. However, once you have clearly assessed your current situation and identified your financial goals, what do you do next?

The most important strategy for success is the development of financial habits that contribute to both short-term satisfaction and long-term financial security, including the following:

- [1] Using a well-conceived spending plan will help you stay within your income while you save and invest for the future. The main source of financial difficulties is overspending.
- [2] Having appropriate insurance protection will help you prevent financial disasters.
- [3] Becoming informed about tax and investment alternatives will help you expand your financial resources.

Exhibit 1–10 Financial Planning in Action



Financial Planning for Life's Situations



I Need \$20,000 for My Education. Should I Borrow or Work Part Time?

Jim Stewart is an accounting major at Concordia University; he takes five courses a semester and expects to graduate in three years. Jim came to the Financial Aid Office for help in deciding whether he should borrow money or work part time. Let's look at his situation:

Residential status: Jim lives with his parents and is free of food and board charges.

Potential number of hours allotted for part-time work: Assuming 35 weeks in a school year and that Jim will be unable to work for four weeks; Jim is left with 31 work weeks. Considering Jim's grades are of primary importance, we advise him to work for a maximum of 15 hours a week.

Potential number of hours allotted for full-time summer employment: Jim will have 17 weeks (52 less 35 weeks) during the summer, when he can work full time for 40 hours a week. We suggest he work only 15 of these weeks so that some time is set aside for a vacation.

Type of job: Assuming an entry level job in his discipline, he will earn roughly \$10 an hour.

Personal savings: It is quite common for students to have poor saving habits; therefore, we will assume that Jim currently has no savings.

IF JIM WORKS PART TIME DURING SEMESTERS AND FULL TIME DURING THE SUMMER:

During the school year, Jim can earn \$4,650 ($\$10/\text{hr} \times 15 \text{ hrs} \times 31 \text{ wks} = \$4,650$).

During the summer he can earn \$6,000 ($\$10/\text{hr} \times 40 \text{ hrs} \times 15 \text{ wks} = \$6,000$).

Jim's yearly gross income would be $\$4,650 + \$6,000 = \$10,650$.

Yet, Jim would not have use of the entire amount. His annual pay—net of taxes, Quebec Pension Plan, and Employment Insurance payments—would be \$9,405 (a total of \$1,245 would be deducted according to 2003 rates). However, when he files his income tax return, he should receive a refund of any taxes paid (\$667 of the total \$1,245 deducted).

IF JIM TAKES OUT A STUDENT LOAN FOR \$20,000:

There are student loans offered by both the federal and provincial governments; these loans are of greater advantage because they offer lower interest rates than the banks and you are only required to pay them back once you graduate. If Jim were to take out a loan today for \$20,000 from the Quebec Government's Aide Financiere aux Etudes program, he would pay an annual interest rate of 4.25 percent (www.afe.gouv.qc.ca/en/apresEtudes/tauxInteret.asp). Since he would want to pay the loan back in six years after graduation, using the present value formula he would make monthly payments of \$315.19. (See Appendix 1B for PV of an annuity equation.)

$$PV = \text{Payments} \times \frac{1 - \frac{1}{(1+i)^n}}{i}$$

Where $PV = \$20,000$, $i = \text{Interest Rate} = .0425/12$, $n = \# \text{ of Monthly Payments} = 72$.

Solving for the payments, obtain \$315.19. Jim would be able to make these monthly payments when he graduates, assuming he earns an accountant's starting salary of \$33,000 (www.careers-in-accounting.com/ascl.htm). Overall, this loan would cost Jim roughly \$22,700 ($\$315.19 \times 72 \text{ months}$).



Visit the Web site

See the Post-Test under Chapter 1 on the Online Learning Centre at www.mcgrawhill.ca/olc/kapoor.

Achieving your financial objectives requires two things: (1) commitment and a willingness to learn, and (2) appropriate information sources. You must provide the first element; the chapters that follow will provide the second. For successful financial planning, know where you are now, know where you want to be, and be persistent in your efforts to get there.

CONCEPT CHECK 1–5

1. What are the main components of personal financial planning?
2. What is the purpose of a financial plan?
3. Identify some common actions taken to achieve financial goals.

RECOMMENDATION:

We recommend that Jim work part time during the school year and full time during the summer. We have come to this conclusion on the basis of the following results:

As mentioned above, Jim's net pay after deductions at source will be \$9,405. However, when he files his income tax return, all taxes that had been deducted will be reimbursed (\$667). He will therefore have use of $\$9,405 + \$667 = \$10,072$. Furthermore, he will be considered his parents' dependant for Quebec tax purposes and can transfer unused education credits to his parents for federal tax purposes, which will lower their taxes in turn. They might consider this benefit and reimburse the remaining amounts deducted at source, \$224 for Employment Insurance and \$354 for the Quebec Pension Plan. With this strategy, Jim actually has full use of the \$10,650 he earns. Since he needs \$20,000 to finance his education (or \$6,666.66 in each of his three years of university), will he still have enough money left over for his additional expenses? The following table suggests that he will:

EXPENSES OF AN AVERAGE STUDENT WHO LIVES AT HOME		
Expense	Amount (monthly) \$	Amount (yearly) \$
Clothing	50	600
Entertainment	80	960
Videos & CDs	35	420
Miscellaneous	20	240
Total	185	2,220

$\$10,650 - \$6,666.66 = \$3,983.34$ (amount of money left over after paying for school)

$\$3,983.34 - \$2,220 = \$1,763.34$ (balance left over for saving)

By working part time, we recognize that Jim will forgo the additional time available for his studies. However, in our experience, students tend to squander additional time and procrastinate in completing their assigned work.

If Jim works instead of taking out a loan, he will earn enough money to finance his education, pay for additional personal expenses, and still save an amount, which he can use toward such expenditures as a car or house. Although one advantage of credit is that you can enjoy a good or service now and only pay for it later, it may be more prudent to avoid loans, if possible. The advantage of working part time is to avoid the cost of borrowed money as well as gain experience in the field. With our recommendation, Jim will be debt free upon graduation and with the money he has saved, he can start building a solid savings foundation (see Chapter 10).

SOURCE: Assignment was written by and reproduced with permission from the following students: Vikram Kotecha, Matthew Berry, Mili De Silva, and Rikesh Shah—Introductory Course in Personal Finance, JMSB, Concordia University, Winter 2002, updated for 2003 tax rates.

SUMMARY OF OBJECTIVES

Objective 1

Analyze the process for making personal financial decisions.

Personal financial planning involves the following process: (1) determine your current financial situation; (2) develop financial goals; (3) identify alternative courses of action; (4) evaluate alternatives; (5) create and implement a financial action plan; and (6) re-evaluate and revise the financial plan.

Objective 2

Develop personal financial goals.

Financial goals should (1) be realistic; (2) be stated in specific, measurable terms; (3) have a time frame; and (4) indicate the type of action to be taken. They are affected by a person's values, attitude toward money, and life situation.

Objective 3

Assess economic factors that influence personal financial planning.

Financial decisions are affected by economic factors such as consumer prices, interest rates, and employment opportunities.

Objective 4

Calculate the time value of money.

Every decision involves a trade-off with things given up. Personal opportunity costs include time, effort, and health. Financial opportunity costs are based on the time value of money.

Future value and present value calculations enable you to measure the increased value (or lost interest) that results from a saving, investing, borrowing, or purchasing decision.

Objective 5

Identify strategies for achieving personal financial goals for different life situations.

Successful financial planning requires specific goals combined with spending, saving, investing, and borrowing strategies based on your personal situation and various social and economic factors.

KEY TERMS

adult life cycle 10

bankruptcy 21

compounding 17

economics 12

financial plan 23

future value 17

inflation 15

life cycle approach 10

liquidity 21

opportunity cost 6

personal financial planning 3

present value 20

simple interest 17

time value of money 6

values 4

KEY FORMULAS

Page	Topic	Formula
17	Simple Interest	$I = P \times R \times T$ <p>P = Amount in savings R = Annual interest rate T = Time period</p>
17	Future Value (FV)	$FV = PV (1 + i)^n$ <p>PV = Present value i = Interest rate n = Number of time periods When compounding is more than once a year, $FV = PV (1 + i/m)^{nm}$ i = Annual interest rate m = Number of compounding periods per year n = Number of years</p>
39	Future Value of an Annuity	$FV = \left[\frac{(1 + i)^n - 1}{i} \right]$
40	Present Value (PV)	$FV/(1 + i)^n$
41	Present Value of an Annuity	$PV = \left[\frac{1 - [1 \div (1 + i)^n]}{i} \right]$

FINANCIAL PLANNING PROBLEMS

(Note: Some of these problems require the use of the time value of money tables in Appendix 1B or a financial calculator.)

1. *Calculating Future Value of Property.* Ben Collins plans to buy a house for \$65,000. If that real estate is expected to increase in value by 5 percent each year, what will its approximate value be seven years from now? (Obj. 3)
2. *Using the Rule of 72.* Using the rule of 72, approximate the following amounts: (Obj. 3)
 - a. If land in an area is increasing 6 percent a year, how long will it take for property values to double?
 - b. If you earn 10 percent on your investments, how long will it take for your money to double?
 - c. At an annual interest rate of 5 percent, how long will it take for your savings to double?
3. *Determining the Average Price Increase.* A car that cost \$12,000 in 1998 cost \$16,000 10 years later. What was the annual increase in the cost of the car over the 10-year period? (Obj. 3)
4. *Determining the Required Deposit.* If you want to have \$7,000 in five years, how much would you have to deposit today if your investment earned a rate of 3 percent per annum? (Obj. 3)
5. *Determining the Income Flow.* You have \$100,000 to invest today. At 5 percent per year, what sum could you withdraw at the end of each year, for a period of 20 years, before your money was exhausted? (Obj. 4)
6. *Exploring other Time Value of Money Applications.* Using time value of money tables or a financial calculator, calculate the following: (Obj. 4)
 - a. The future value of \$450 six years from now at 7 percent.
 - b. The future value of \$800 saved each year for 10 years at 8 percent.
 - c. The amount a person would have to deposit today (present value) at a 6-percent interest rate to have \$1,000 five years from now.
 - d. The amount a person would have to deposit today to be able to take out \$500 a year for 10 years from an account earning 8 percent.
7. *Calculating Future Value of a Series of Amounts.* Elaine Romberg prepares her own income tax return each year. A tax preparer would charge her \$60 for this service. Over a period of 10 years, how much does Elaine gain from preparing her own tax return? Assume she can earn 6 percent with a savings certificate. (Obj. 4)
8. *Calculating the Future Value of a Single Sum.* You have \$800 in a savings account that earns 6% interest compounded annually. How much additional interest would you earn in two years if you moved the \$800 to an account that earns 6% compounded semi-annually? (Obj. 4)
9. *Calculating the Future Value of a Single Sum.* What is the future value of \$20,000 received in 10 years if it is invested at 6% compounded annually for the next six years and at 5% compounded annually for the remaining four years? (Obj. 4)
10. *Calculating the Present Value of a Single Sum.* Your parents have promised to give you a graduation present of \$5,000 when you graduate in four years. If interest rates stay at 6% compounded annually for the next four years, how much is this money worth in today's dollars? (Obj. 4)

FINANCIAL PLANNING ACTIVITIES

1. *Researching Personal Finance on the Internet.* Using Web sites, such as www.canadianfinance.com, www.advocis.ca, or www.quicken.intuit.ca, and search engines, obtain information about commonly suggested actions related to various personal financial planning decisions. What are some of the best sources of information on the Internet to assist you with financial planning? (Obj. 1)
2. *Comparing Financial Planning Actions.* Survey friends, relatives, and others to determine the process they use when making financial decisions. How do these people measure risk when making financial decisions? (Obj. 1)
3. *Using Financial Planning Experts.* Prepare a list of financial planning specialists (investment advisers, credit counsellors, insurance agents, real estate brokers, tax preparers) in your community who can assist people with personal financial planning. Prepare a list of questions that might be asked of these financial planning professionals by (a) a young person just starting out on his or her own, (b) a young couple planning for their children's education and for their own retirement, and (c) a person nearing retirement. (Obj. 1, 3)
4. *Setting Financial Goals.* Create one short-term goal and one long-term goal for people in these life situations: (a) a young single person, (b) a single parent with a child aged eight years, (c) a married person with no children, and (d) a retired person. (Obj. 2)
5. *Analyzing Changing Life Situations.* Ask friends, relatives, and others how their spending, saving, and borrowing activities changed when they decided to continue their education, change careers, or have children. (Obj. 3)
6. *Researching Economic Conditions.* Use library resources or Web sites to determine recent trends in interest rates, inflation, and other economic indicators. Information about the

consumer price index (measuring changes in the cost of living) may be obtained at www.statcan.ca. Report how this economic information might affect your financial planning decisions. (Obj. 3)

7. *Comparing Alternative Financial Actions.* What actions would be necessary to compare a financial planner who advertises “One Low Fee Is Charged to Develop Your Personal Financial Plan” and one that advertises “You Are Not Charged a Fee, My Services Are Covered by the Investment Company for Which I Work”? (Obj. 4, 5)

8. *Determining Opportunity Costs.* What is the relationship between current interest rates and financial opportunity costs? Using time value of money calculations, state one or more goals in terms of an annual savings amount and the future value of this savings fund. (Obj. 2, 4)

9. *Researching Financial Planning Software.* Visit software retailers to obtain information about the features and costs of various personal financial planning activities. Information about such programs as Microsoft Money and Quicken may be obtained on the Internet. (Obj. 5)



CREATING A FINANCIAL PLAN

Starting Your Financial Plan

Planning is the foundation for success in every aspect of life. Assessing your current financial situation along with setting goals is the key to successful financial planning.



Web Sites for Financial Planning

- Investing information at www.fpanet.org.
- Selected articles from *Canadian MoneySaver* magazine at www.canadianmoneysaver.ca, from *MoneySense* magazine at www.moneysense.ca.
- Information on the banks and their products: www.td.com, www4.bmo.com, www.rbcroyalbank.ca, www.scotiabank.ca, www.nbc.ca and www.cba.ca for the Canadian Bankers Association.

- Current consumer price index and inflation information from Statistics Canada at www.statcan.ca.
- Information on Bank of Canada activities and publications at www.bankofcanada.ca.
- Retirement planning at www.retirenet.com and www.elderweb.org.

(Note: Addresses and content of Web sites change, and new sites are created daily. Use the search engines discussed in Appendix 1A to update and locate Web sites for your current financial planning needs.)



LIFE SITUATION CASE

Triple Trouble for the “Sandwich Generation”

Until recently, Fran and Ed Blake’s personal finances ran smoothly. Both have maintained well-paying jobs while raising two children. The Blakes have a daughter who is completing her first year of college and a son three years younger. Currently, they have \$22,000 in various savings and investment funds set aside for the children’s education. With education costs increasing faster than inflation, they are uncertain whether this amount is adequate.

In recent months, Fran’s mother has required extensive medical attention and personal care assistance. Unable to live alone, she is now a resident of a long-term-care facility. The cost

of this service is \$2,050 a month, with annual increases of about 7 percent. While a major portion of the cost is covered by the Canada Pension Plan and Old Age Security, Fran’s mother is unable to cover the entire cost. Their desire to help adds to the Blakes’ financial burden.

The Blakes are like many other Canadians who have financial responsibilities for both dependent children and aging parents. Commonly referred to as the “sandwich generation,” this group is squeezed on one side by the cost of raising and educating children and on the other side by the financial demands of caring for aging parents.

Finally, the Blakes, ages 47 and 43, are also concerned about saving for their own retirement. While they have consistently

made annual deposits to a Registered Retirement Savings Plan (RRSP), various current financial demands may force them to tap into this money.

Questions

1. What actions have the Blakes taken that would be considered wise financial planning choices?
2. What areas of financial concern do the Blakes face? What actions might be appropriate to address these concerns?
3. Using time value of money calculations (tables in Appendix 1B or a financial calculator), compute the following:
 - a. At 12 percent, what would be the value of the \$22,000 education funds in three years?
 - b. If the cost of long-term care is increasing at 7 percent a year, what will be the approximate monthly cost for Fran's mother eight years from now?
 - c. Fran and Ed plan to deposit \$1,500 a year to their RRSPs for 35 years. If they earn an average annual return of 9 percent, what will be the value of their RRSPs after 35 years?

Financial Planners and Other Financial Planning Information Sources

“ATM fees rise.”

“Global currency fluctuations may affect consumer prices.”

“Mortgage interest rates remain constant.”

These are just a few of the possible influences on personal financial decisions that occur each day. While this book offers the foundation for successful personal financial planning, changing social trends, economic conditions, and technology influence the decision-making environment. Your ability to continually supplement and update your knowledge is a skill that will serve you for a lifetime.

Various resources are available to assist you with personal financial decisions. These resources include printed materials, financial institutions, courses and seminars, the Internet, computer software, and financial planning specialists.

CURRENT PERIODICALS

As Exhibit 1A-1 shows, a variety of personal-finance periodicals are available to expand and update your knowledge. These periodicals, along with books on various personal-finance topics, can be found in libraries.

FINANCIAL INSTITUTIONS

Some financial advisers, such as insurance agents and investment brokers, are affiliated with companies that sell financial services. Through national marketing efforts or local promotions, banks, trust companies, credit unions, insurance companies, investment brokers, and real estate offices offer suggestions on budgeting, saving, investing, and other aspects of financial planning. These organizations frequently offer booklets, financial planning worksheets, Web sites, and other materials and information.

COURSES AND SEMINARS

Colleges and universities offer courses in investments, real estate, insurance, taxation, and estate planning to enhance your knowledge of personal financial planning.

Civic clubs and community business organizations often schedule free or inexpensive programs featuring speakers and workshops on career planning, small-business management, budgeting, life insurance, tax return preparation, and investments. Financial institutions and financial service trade associations present seminars for current and prospective customers and members.

PERSONAL FINANCE SOFTWARE

Personal computer software is available to help you perform a variety of personal financial planning activities, from selecting a career to writing a will. These programs help you analyze your current financial situation and project your future financial position. Specialized computer programs are also available for conducting investment analyses, preparing tax returns, and

Exhibit 1A–1 Personal Financial Planning Periodicals

The area of personal finance is constantly changing. You can keep up with changes by reading the following periodicals. You can subscribe to them, read them at your school or community library, or access them on the Internet.

CA Magazine 277 Wellington Street West Toronto, ON M5V 3H2 www.camagazine.com	The Globe and Mail 444 Front Street West Toronto, ON M5V 2S9 www.theglobeandmail.com	MoneySense Magazine 156 Front Street West Toronto, ON M5J 2L6 www.moneysense.ca
Canadian Business 777 Bay Street, Fifth Floor Toronto, ON M5W 1A7 www.canadianbusiness.com	Macleans 777 Bay Street Toronto, ON M5W 1A7 www.macleans.ca	National Post 300–1450 Don Mills Road Don Mills, ON M3B 3R5 www.nationalpost.com
Canadian MoneySaver P.O. Box 370 Bath, ON K0H 1G0 www.canadianmoneysaver.ca		

determining the costs of financing and owning a home. Remember, a personal computer cannot change your saving, spending, and borrowing habits; only *you* can do that. However, your computer can provide fast and current analyses of your financial situation and progress. For information about the latest software, visit a computer store or read the articles and advertisements in magazines, such as *PC Computing*, *PC Magazine*, *Computer Life*, *Windows*, *Family PC*, and *Home PC*.

SPREADSHEETS

A spreadsheet program, such as Excel or Lotus 1-2-3, can assist with various financial planning tasks. Spreadsheet software can store, manipulate, create projections, and report data for such activities as

- Creating budget categories and recording spending patterns.
- Maintaining tax records for different types of expenses, such as mileage, travel expenses, materials and supplies, and business-related costs.
- Calculating the growth potential of savings accounts and investments.
- Monitoring changes in the market value of investments.
- Keeping records of the value of items for a home inventory.
- Projecting needed amounts of life insurance and retirement income.

MONEY MANAGEMENT AND FINANCIAL PLANNING PROGRAMS

Integrated financial planning programs can help you maintain home financial records, create a budget, observe spending patterns, write cheques, keep tax records, select and monitor investments, and project retirement needs. The most popular of these software packages are

Microsoft Money

Microsoft

1-800-668-7975

(www.microsoft.com/money)

Quicken

Intuit

1-888-829-8684

(www.quicken.intuit.ca)

TAX SOFTWARE

Each year, the software available to prepare tax returns becomes more helpful. Besides preparation and printing of the various forms and schedules, programs include tax-planning tips (with audio and video clips), audit warnings, and the ability to file your tax return electronically. The most readily available tax software includes

Quicktax
Intuit
1-888-829-8684
(www.quicktax.ca)

INVESTMENT ANALYSIS PROGRAMS

Software designed for researching, trading, and monitoring an investment portfolio is also available. Most of these programs may be connected to online services to obtain current stock quotes and to buy and sell investments.

THE WORLD WIDE WEB AND PERSONAL FINANCIAL PLANNING

The World Wide Web makes it possible to access more information from your home or office than libraries offer. You may use the Web for a variety of personal financial planning activities, including (1) researching current financial information; (2) obtaining programs to do financial planning calculations; (3) monitoring current stock and investment values; and (4) asking questions of experts and others through help lines, bulletin board services, and discussion forums. Some of the most useful Web sites providing current information on various personal finance topics include:

- *Canadian MoneySaver* magazine at www.canadianmoneysaver.ca; and *MoneySense* magazine at www.moneysense.ca.
- Current consumer price index and inflation information from Statistics Canada at www.statcan.ca.
- The Quicken Web site at www.quicken.intuit.ca.
- Information on Bank of Canada activities and publications at www.bankofcanada.ca.
- Investing information at money.canoe.ca.

Additional Web sites are offered at the end of each chapter in the section “Creating a Financial Plan.”

USING SEARCH ENGINES

A search engine is a Web site that allows you to locate information related to specific topics. Some of the most commonly used search engines include

www.altavista.ca	www.webcrawler.com
www.canada.com	www.yahoo.ca
www.searchcanada.ca	www.google.ca

Search engines operate in different ways and provide various features. Some search engines look for topic areas; others seek specific words. When conducting Web searches, be precise with your descriptive words. For example, use “mortgage rates” instead of “interest rates” to obtain information on the cost of borrowing to buy a home. Use “résumés” instead of “career planning” for assistance on developing a personal data sheet.

FINANCIAL PLANNING SPECIALISTS

Various specialists provide specific financial assistance and advice:

- *Accountants* specialize in tax matters and financial documents.
- *Bankers* assist with financial services and trusts.
- *Credit counsellors* suggest ways to reduce spending and eliminate credit problems.
- *Certified financial planners* coordinate financial decisions into a single plan.
- *Insurance agents* sell insurance coverage to protect your wealth and property.
- *Investment brokers* provide information and handle transactions for stocks, bonds, and other investments.
- *Lawyers* help in preparing wills, estate planning, tax problems, and other legal matters.
- *Real estate agents* assist with buying and selling a home or other real estate.
- *Tax preparers* specialize in the completion of income tax returns and other tax matters.

Many of these specialists offer services that include various aspects of financial planning. A financial planner's background or the company he or she represents is a good gauge of the financial planner's principal area of expertise. An accountant is likely to be most knowledgeable about tax laws, while an insurance company representative will probably emphasize how to use insurance for achieving financial goals.

WHO ARE THE FINANCIAL PLANNERS?

Many financial planners represent major insurance companies or investment businesses. Financial planners may also be individuals whose primary profession is tax accounting, real estate, or law. Financial planners are commonly categorized on the basis of three methods of compensation:

- [1] **Fee-only planners** charge an hourly rate that may range from \$75 to \$200, or may charge a fixed fee of between less than \$500 and several thousand dollars. Other fee-only planners may charge an annual fee ranging from .04 percent to 1 percent of the value of your assets.
- [2] **Fee-and-commission planners** earn commissions from the investment and insurance products purchased and charge a fixed fee (ranging from \$250 to \$2,000) for a financial plan.
- [3] **Commission-only planners** receive their revenue from the commissions on sales of insurance, mutual funds, and other investments.

Consumers must be cautious about the fees charged and how these fees are communicated. A recent study revealed that more than half of financial planners who told "mystery shoppers" that they offer "fee-only" services actually earned commissions or other financial rewards for implementing the recommendations made to their clients.

DO YOU NEED A FINANCIAL PLANNER?

The two main factors that determine whether you need financial planning assistance are (1) your income, and (2) your willingness to make independent decisions. If you earn less than \$40,000 a year, you probably do not need a financial planner. Income of less than this amount does not allow for many major financial decisions once you have allocated for the spending, savings, insurance, and tax elements of your personal financial planning.

Taking an active role in your financial affairs can reduce the need for a financial planner. Your willingness to keep up to date on developments related to investments, insurance, and taxes can reduce the amount you spend on financial advisers. This will require an ongoing investment of time and effort; however, it will enable you to control your own financial direction.

When deciding whether to use a financial planner, also consider the services he or she provides. First, the financial planner should assist you in assessing your current financial position with regard to spending, saving, insurance, taxes, and potential investments. Second, the financial planner should offer a clearly written plan with different courses of action. Third, the planner should take time to discuss the components of the plan and help you monitor your financial progress. Finally, the financial planner should guide you to other experts and sources of financial services as needed.

HOW SHOULD YOU SELECT A FINANCIAL PLANNER?

You can locate financial planners by using a telephone directory, contacting financial institutions, or obtaining references from friends, business associates, or professionals with whom you currently deal, such as insurance agents or real estate brokers.

When evaluating a financial planner, ask the following:

- Is financial planning your primary activity, or are other activities primary?
- Are you licensed as an investment broker or as a seller of life insurance?
- What is your educational background and formal training?
- What are your areas of expertise?
- Do you use experts in other areas, such as taxes, law, or insurance, to assist you with financial planning recommendations?
- What professional titles and certifications do you possess?
- Am I allowed a free initial consultation?
- How is the fee determined? (Is this an amount I can afford?)
- Do you have an independent practice, or are you affiliated with a major financial services company?
- What are sample insurance, tax, and investment recommendations you make for clients?
- My major concern is _____. What would you suggest?
- May I see a sample of a written financial plan?
- May I see the contract you use with clients?
- Who are some of your clients whom I might contact?

Also, make sure you are comfortable with the planner and that the planner can clearly communicate. This type of investigation takes time and effort; however, remember that you are considering placing your entire financial future in the hands of one person.

HOW ARE FINANCIAL PLANNERS CERTIFIED?

With the exception of the Province of Quebec, there are currently few regulations governing financial planners in Canada.

Quebec adopted Bill 107 in December 2002 to authorize the creation of the *Autorité des marchés financiers* (AMF) effective February 1, 2004. The AMF certifies and regulates the activities of financial planners, mutual funds representatives, and insurance agents, amongst others. The ongoing training and ethical conduct of financial planners is overseen by the *Chambre de la sécurité financière* (CSF), while those wishing to enter the profession must pass the licensing exam set by the *Institut québécois de la planification financière* (IQPF). In order to sit the exam, candidates are required to obtain a 450-hour personal financial planning certificate from one of four authorized educational institutions and two additional undergraduate certificates in a related field (e.g., commerce, law, or economics). In addition, candidates must successfully complete the 45-hour IQPF Professional Training course. Once they have successfully completed the IQPF exam, they are then entitled to use the title *financial planner*. Once certified, 60 hours of continuing education are required every two years.

The code of ethics governing Quebec's financial planners describes the duties and obligations of a financial planner toward the public, clients, and other members of the profession. With respect to clients, a financial planner must act with integrity, objectivity, and independence;

avoid conflicts of interest; and put the best interests of his client first. All client information must be kept confidential, and full disclosure of the planner's remuneration must be outlined in the service offer signed by the client and financial planner at the outset.

Elsewhere in Canada, a financial planner may be a professional lawyer, accountant, investment adviser, insurance salesperson, mutual fund specialist, or none of the above. Financial planners are bound by the same statutes and common law that apply to anyone selling services. They must perform their work with due care, and they cannot misrepresent their work or their qualifications. Financial planners should be willing and knowledgeable enough to call on an expert when advanced knowledge or licensing is required to meet the client's needs.

The Financial Planning Standards Council (FPSC) is a nonprofit organization established in 1995 to guide the evolution of the financial planning profession across Canada. The FPSC is a self-regulated organization (SRO) and is the only body in Canada authorized to award the CFP (Certified Financial Planner) designation, recognized internationally (although insufficient in the province of Quebec). It also plays a leading role in the development and enforcement of ethical standards amongst financial planning professionals.

In order to sit the CFP exam held twice yearly (June and December), candidates must successfully complete an education program registered directly with the FPSC. Following is a partial list of colleges, universities, and organizations registered with the FPSC. For more information, visit the FPSC's Web site at www.cfp-ca.org:

Advocis	www.advocis.ca
Canadian Institute of Financial Planners	www.cifps.ca
Canadian Securities Institute	www.csi.ca
Institute of Canadian Bankers	www.csi.ca/icb
B.C. Institute of Technology	www.bcit.ca
George Brown College	www.gbrownc.ca
Ryerson University	www.ryerson.ca
University of Manitoba	www.umanitoba.ca
Wilfrid Laurier University	www.wlu.ca

1B

The Time Value of Money: Future Value and Present Value Computations

“If I deposit \$10,000 today, how much will I have for a down payment on a house in five years?”

“Will \$2,000 saved a year give me enough money when I retire?”

“How much must I save today to have enough for my children’s postsecondary education?”

As introduced in Chapter 1 and used to measure financial opportunity costs in other chapters, the *time value of money*, more commonly referred to as *interest*, is the cost of money that is borrowed or lent. Interest can be compared to rent, the cost of using an apartment or other item. The time value of money is based on the fact that a dollar received today is worth more than a dollar that will be received one year from today because the dollar received today can be saved or invested and will be worth more than a dollar a year from today. Similarly, a dollar that will be received one year from today is currently worth less than a dollar today.

The time value of money has two major components: future value and present value. *Future value* computations, which are also referred to as *compounding*, yield the amount to which a current sum will increase based on a certain interest rate and period of time. *Present value*, which is calculated through a process called *discounting*, is the current value of a future sum based on a certain interest rate and period of time.

In future value problems, you are given an amount to save or invest and you calculate the amount that will be available at some future date. With present value problems, you are given the amount that will be available at some future date and you calculate the current value of that amount. Both future value and present value computations are based on basic interest rate calculations.

FINANCIAL CALCULATORS

Currently, financial calculators, with time value of money functions built in, are widely used to calculate future value, present values, and annuities. For the following examples, we will use the Texas Instruments BA II Plus financial calculator, which sells for approximately \$50 and is recommended by the Canadian Institute of Financial Planning.

When using the BA II Plus calculator to solve time value of money problems, you will be working with the TVM keys that include:

- CPT** — Compute key used to initiate financial calculations once all values are inputted.
- N** — Number of periods
- I/Y** — Interest rate per period
- PV** — Present value
- PMT** — Amount of payment, used only for annuities
- FV** — Future value

Enter values for PV, PMT, and FV as negative if they represent cash outflows (for example, investing a sum of money) or as positive if they represent cash inflows (for example, receiving

the proceeds of an investment). To convert a positive number to a negative number, enter the number and then press the \pm key.

The examples that are shown in this chapter assume that interest is compounded annually and that there is only one cash flow per period. To reflect this, we must set the number of payments and compounding per period to 1 (the default setting is 12). To do this, press in turn the **2ND** button (yellow), the **I/Y** button (for the P/Y function shown above it), the number 1, the **ENTER** button, the **2ND** button again, and finally the **CPT** button (for the quit function above it). Before using any financial calculator, we strongly recommend that you consult the instruction manual that accompanies it and attempt the examples shown there.

Now let's try a problem. What is the future value of \$100 after three years at a 10 percent annual interest rate? Remember that an investment of money is considered to be an outflow of cash; therefore, the present value of \$100 should be entered as a negative number.

First, you must enter the data. Remember that an investment of money is considered to be an outflow of cash; therefore, the \$100 should be entered as a negative number.

3	N
10	I/Y
100 \pm / -	PV
0	PMT (optional if registers are cleared)

To find the solution, the future value, press **CPT** **FV**, and the future value of 133.1 is displayed.

FUTURE VALUE OF A SINGLE AMOUNT

The future value of an amount consists of the original amount plus compound interest. This calculation involves the following elements:

FV = Future value

PV = Present value

i = Interest rate

n = Number of time periods

The formula for the future value of a single amount is

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

Note: The interest rate must be adjusted to reflect the correct time period. For example, if the yearly rate (i) is 12%, and the amount is being compounded quarterly, then the interest rate per period would be

$$i/m = 12/4 = 3\%, \text{ where } m \text{ is the number of compounding periods per year.}$$

If the amount were being invested for a period of two years, then the number of time periods, $n = m \times \text{number of years} = 4 \times 2 = 8$.

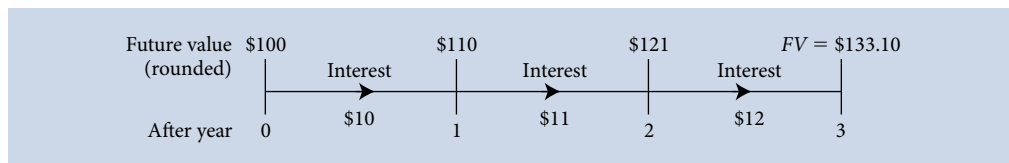
EXAMPLE A

The future value of \$100 at 10 percent after three years is \$133.10. This amount is calculated as follows:

$$\$133.10 = \$100 (1 + 0.10)^3$$

Future value tables are available to help you determine compounded interest amounts (see Exhibit 1B-1 on page 45). Looking at Exhibit 1B-1 for 10 percent and three years, you can see that \$100 would be worth \$133.10 at that time. For other amounts, multiply the table factor by the original amount.

This may be viewed as follows:



Using a financial calculator (BA II Plus Texas Instruments), you would solve the problem as shown below:

*Remember always to clear the time value of money function before any calculation by pressing **2ND** **CLRTVM**. The examples that follow assume that interest is compounded once per period. Therefore, we must set the number of compounding periods per year in the BA II calculator to one. To do this, press in turn the **2ND** button (yellow), the **I/Y** button (for the P/Y function shown above it), the number 1, the **ENTER** button, the **2ND** button again, and finally the **CPT** button (for the quit function above it).

2ND	CLRTVM
3	N
10	I/Y
100	PV
0	PMT (Optional, if registers are cleared)
CPT	FV

The solution of $-\$133.10$ is displayed. Remember from previously that the BA II Plus displays the present value solution with a + and the future value solution with a - because it assumes one is an inflow and the other an outflow.

EXAMPLE B

If your savings of \$400 earn 12 percent, compounded *monthly* over a year and a half, use the table factor for 1 percent for 18 time periods. The future value of this amount is \$478.40, calculated as follows:

$$\$478.40 = \$400 (1.196)$$

Using a financial calculator (BA II Plus Texas Instruments):

2ND	CLRTVM
18	N (There are 18 months in a year and a half)
1	I/Y ($I/Y = 12\% / 12 \text{ months} = 1\% \text{ a month}$)
400	PV
0	PMT (Optional, if registers are cleared)
CPT	FV

The solution of $-\$478.46$ is displayed.

Sample Problem 1 What is the future value of \$800 at 8 percent after six years?

Sample Problem 2 How much would you have in savings if you kept \$200 on deposit for eight years at 8 percent, compounded *semi-annually*?

FUTURE VALUE OF A SERIES OF EQUAL AMOUNTS (AN ANNUITY)

Future value may also be calculated for a situation in which regular additions are made to savings. The following formula is used to compute the future value annuity factor:

$$FV = \frac{[(1 + i)^n - 1]}{i}$$

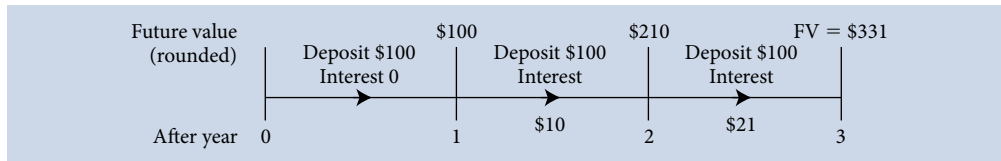
This formula assumes that (1) each deposit is for the same amount, (2) the interest rate is the same for each time period, and (3) the deposits are made at the end of each time period.

EXAMPLE C

The future value of three \$100 deposits made at the end of the next three years, earning 10 percent interest, is \$331. This is calculated as follows:

$$\$331 = \$100 \times \frac{[(1 + 0.10)^3 - 1]}{0.10}$$

This may be viewed as follows:



Using Exhibit 1B-2 on page 46, you can find this same amount for 10 percent for three time periods. To use the table for other amounts, multiply the table factors by the annual deposit.

Using a financial calculator (BA II Plus Texas Instruments):

2 ND	CLRTVM
3	N
10	I/Y
100	PV
0	PMT (A deposit is an inflow)
CPT	FV

The solution of $-\$331$ is displayed.

EXAMPLE D

If you plan to deposit \$40 a year for 10 years, earning 8 percent compounded annually, use the table factor for 8 percent for 10 time periods. The future value of this amount is \$579.48, calculated as follows:

$$\$579.48 = \$40(14.487)$$

Using a financial calculator (BA II Plus Texas Instruments):

2ND	CLRTVM
10	N
8	I/Y
0	PV
40	PMT (A deposit is an inflow)
CPT	FV

The solution of $-\$579.46$ is displayed.

Sample Problem 3 What is the future value of an annual deposit of \$230 earning 6 percent for 15 years?

Sample Problem 4 What amount would you have in a retirement account if you made annual deposits of \$375 for 25 years earning 12 percent, compounded annually?

PRESENT VALUE OF A SINGLE AMOUNT

If you want to know how much you need to deposit now to receive a certain amount in the future, use the following formula:

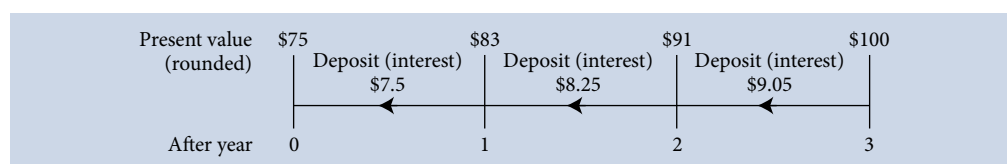
$$PV = \frac{FV}{(1 + i)^n}$$

EXAMPLE E

The present value of \$100 to be received three years from now based on a 10 percent interest rate is \$75. This amount is calculated as follows:

$$\$75 = \frac{\$100}{(1 + 0.10)^3}$$

This may be viewed as follows:



Present value tables are available to assist you in this process (see Exhibit 1B-3 on page 47). Note that \$1 at 10 percent for three years has a present value of \$0.75. For amounts other than \$1, multiply the table factor by the amount involved.

Using a financial calculator (BA II Plus Texas Instruments):

2ND	CLRTVM
3	N
10	I/Y
100	FV
0	PMT (Optional, if registers are cleared)
CPT	PV

The solution of \$75 is displayed.

EXAMPLE F

If you want to have \$300 seven years from now and your savings earn 10 percent, compounded *semi-annually*, use the table factor for 5 percent for 14 time periods. In this situation, the present value is \$151.50, calculated as follows:

$$\$151.50 = \$300(0.505)$$

Using a financial calculator (BA II Plus Texas Instruments):

2ND	CLRTVM
14	N (7 years \times 2 periods per year (semi-annually) = 14 periods)
5	I/Y (I/Y = 10% / 2 periods (semi-annually) = 5% a period)
300	FV
0	PMT (Optional, if registers are cleared)
CPT	PV

The solution of \$151.52 is displayed.

Sample Problem 5 What is the present value of \$2,200 earning 15 percent for eight years?

Sample Problem 6 To have \$6,000 for a child's education in 10 years, what amount should a parent deposit in a savings account that earns 12 percent, compounded *quarterly*?

PRESENT VALUE OF A SERIES OF EQUAL AMOUNTS (AN ANNUITY)

The final time value of money situation allows you to receive an amount at the end of each time period for a certain number of periods. The following formula is one to compute the present value annuity factor:

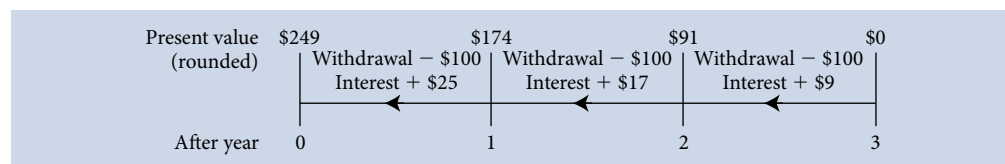
$$PV = \frac{1 - \frac{1}{(1 + i)^n}}{i}$$

EXAMPLE G

The present value of a \$100 withdrawal at the end of the next three years would be \$249, calculated as follows:

$$\$249 = \$100 \times \left[\frac{1 - \frac{1}{(1 + 0.10)^3}}{0.10} \right]$$

This may be viewed as follows:



This same amount appears in Exhibit 1B-4 on page 48 for 10 percent and three time periods. To use the table for other situations, multiply the table factor by the amount to be withdrawn each year.

Using a financial calculator (BA II Plus Texas Instruments):

2ND	CLRTVM
3	N
10	I/Y
0	FV
−100	PMT (A withdrawal is an outflow)
CPT	PV

The solution of \$248.69 is displayed.

EXAMPLE H

If you wish to withdraw \$100 at the end of each year for 10 years from an account that earns 14 percent, compounded annually, what amount must you deposit now? Use the table factor for 14 percent for 10 time periods. In this situation, the present value is \$521.60, calculated as follows:

$$\$521.60 = \$100(5.216)$$

Using a financial calculator (BA II Plus Texas Instruments):

2ND	CLRTVM
10	N
14	I/Y
0	PV
−100	PMT (A withdrawal is an outflow)
CPT	PV

The solution of \$521.61 is displayed.

Sample Problem 7 What is the present value of a withdrawal of \$200 at the end of each year for 14 years with an interest rate of 7 percent?

Sample Problem 8 How much would you have to deposit now to be able to withdraw \$650 at the end of each year for 20 years from an account that earns 11 percent?

USING PRESENT VALUE TO DETERMINE LOAN PAYMENTS

Present value tables can also be used to determine amortized payments for a loan as follows:

$$\frac{\text{Amount borrowed}}{\text{Present value of a series table factor (Exhibit 1B-4)}} = \text{Loan payment}$$

EXAMPLE I

If you borrow \$1,000 with a 6 percent interest rate to be repaid in three equal payments at the end of the next three years, the payments will be \$374.11. This is calculated as follows:

$$\frac{\$1,000}{2.673} = \$374.11$$

Using a financial calculator (BA II Plus Texas Instruments):

2ND	CLRTVM
3	N
6	I/Y
1000	PV
0	FV (A withdrawal is an outflow)
CPT	PMT

The solution of \$374.11 is displayed.

Sample Problem 9 What would be the annual payment amount for a \$20,000, 10-year loan at 7 percent?

ANSWERS TO SAMPLE PROBLEMS

- [1] $\$800(1.587) = \$1,269.60$. (Use Exhibit 1B-1, 8%, 6 periods.)
- [2] $\$200(1.873) = \374.60 . (Use Exhibit 1B-1, 4%, 16 periods.)
- [3] $\$230(23.276) = \$5,353.48$. (Use Exhibit 1B-2, 6%, 15 periods.)
- [4] $\$375(133.33) = \$49,998.75$. (Use Exhibit 1B-2, 12%, 25 periods.)
- [5] $\$2,200(0.327) = \719.40 . (Use Exhibit 1B-3, 15%, 8 periods.)
- [6] $\$6,000(0.307) = \$1,842$. (Use Exhibit 1B-3, 3%, 40 periods.)
- [7] $\$200(8.745) = \$1,749$. (Use Exhibit 1B-4, 7%, 14 periods.)
- [8] $\$650(7.963) = \$5,175.95$. (Use Exhibit 1B-4, 11%, 20 periods.)
- [9] $\$20,000/7.024 = \$2,847.38$. (Use Exhibit 1B-4, 7%, 10 periods.)

Calculator Solutions

- [1] Calculator : 2nd CLRTVM; 6 N; 8 I/Y; 800 PV; CPT FV; Solution \$1,269.50
- [2] Calculator : 2nd CLRTVM; 16 N; 4 I/Y; 200 PV; CPT FV; Solution \$374.60
- [3] Calculator : 2nd CLRTVM; 15 N; 6 I/Y; 230 PMT; CPT FV; Solution \$5353.47
- [4] Calculator : 2nd CLRTVM; 25 N; 12 I/Y; 375 PMT; CPT FV; Solution \$50,000.20
- [5] Calculator : 2nd CLRTVM; 8 N; 15 I/Y; 2,200 FV; CPT PV; Solution \$719.18
- [6] Calculator : 2nd CLRTVM; 40 N; 3 I/Y; 6,000 FV; CPT PV; Solution \$1839.34
- [7] Calculator : 2nd CLRTVM; 14 N; 7 I/Y; 200 PMT; CPT PV; Solution \$1749.09
- [8] Calculator : 2nd CLRTVM; 20 N; 11 I/Y; 650 PMT; CPT PV; Solution \$5176.16
- [9] Calculator : 2nd CLRTVM; 10 N; 7 I/Y; 20,000 PV; CPT PMT; Solution \$2,847.55

CALCULATING THE EFFECTIVE ANNUAL RATE (EAR) USING A FINANCIAL CALCULATOR (BA II PLUS TEXAS INSTRUMENTS)

The formula for calculating the effective annual rate, the return that takes compounding into effect, is as follows:

$$\text{EAR} = [(1 + \text{APR}/m)^m] - 1$$

Example from Chapter 4 (page 129): How much is your nominal EAR on a \$100 loan at 12 percent yearly, compounded monthly? (There are 12 compounding periods in a year.)

2ND ICONV ↑ 12 (Number of periods in a year) ENTER
 ↓ 12 (Rate of return for one period) ENTER
 ↓ CPT

The effective rate of 12.68 percent is displayed on the screen.

EXAMPLE J

Assume your bank offers a 10-percent interest rate that is compounded every three months, while a competitor offers 10 percent compounded on a monthly basis. Which one offers a higher effective rate?

BANK (10% compounded every 3 months = 4 periods)

2ND ICONV ↑ 4 ENTER
 ↓ 10 ENTER
 ↓ CPT

The effective rate is 10.38 percent.

COMPETITOR (10% compounded weekly = 52 periods)

2ND ICONV ↑ 52 ENTER
 ↓ 10 ENTER
 ↓ CPT

The effective rate is 10.51 percent.

As you can see, the competitor offers a higher return than your bank.

Exhibit 1B–1 Future Value (Compounded Sum) of \$1 after a Given Number of Time Periods $FV = PV(1 + i)^n$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%
1	1.010	1.020	1.030	1.040	1.050	1.060	1.070	1.080	1.090	1.100	1.110
2	1.020	1.040	1.061	1.082	1.103	1.124	1.145	1.166	1.188	1.210	1.232
3	1.030	1.061	1.093	1.125	1.158	1.191	1.225	1.260	1.295	1.331	1.368
4	1.041	1.082	1.126	1.170	1.216	1.262	1.311	1.360	1.412	1.464	1.518
5	1.051	1.104	1.159	1.217	1.276	1.338	1.403	1.469	1.539	1.611	1.685
6	1.062	1.126	1.194	1.265	1.340	1.419	1.501	1.587	1.677	1.772	1.870
7	1.072	1.149	1.230	1.316	1.407	1.504	1.606	1.714	1.828	1.949	2.076
8	1.083	1.172	1.267	1.369	1.477	1.594	1.718	1.851	1.993	2.144	2.305
9	1.094	1.195	1.305	1.423	1.551	1.689	1.838	1.999	2.172	2.358	2.558
10	1.105	1.219	1.344	1.480	1.629	1.791	1.967	2.159	2.367	2.594	2.839
11	1.116	1.243	1.384	1.539	1.710	1.898	2.105	2.332	2.580	2.853	3.152
12	1.127	1.268	1.426	1.601	1.796	2.012	2.252	2.518	2.813	3.138	3.498
13	1.138	1.294	1.469	1.665	1.886	2.133	2.410	2.720	3.066	3.452	3.883
14	1.149	1.319	1.513	1.732	1.980	2.261	2.579	2.937	3.342	3.797	4.310
15	1.161	1.346	1.558	1.801	2.079	2.397	2.759	3.172	3.642	4.177	4.785
16	1.173	1.373	1.605	1.873	2.183	2.540	2.952	3.426	3.970	4.595	5.311
17	1.184	1.400	1.653	1.948	2.292	2.693	3.159	3.700	4.328	5.054	5.895
18	1.196	1.428	1.702	2.026	2.407	2.854	3.380	3.996	4.717	5.560	6.544
19	1.208	1.457	1.754	2.107	2.527	3.026	3.617	4.316	5.142	6.116	7.263
20	1.220	1.486	1.806	2.191	2.653	3.207	3.870	4.661	5.604	6.727	8.062
25	1.282	1.641	2.094	2.666	3.386	4.292	5.427	6.848	8.623	10.835	13.585
30	1.348	1.811	2.427	3.243	4.322	5.743	7.612	10.063	13.268	17.449	22.892
40	1.489	2.208	3.262	4.801	7.040	10.286	14.974	21.725	31.409	45.259	65.001
50	1.645	2.692	4.384	7.107	11.467	18.420	29.457	46.902	74.358	117.390	184.570

Exhibit 1B–1 (Concluded)

Period	12%	13%	14%	15%	16%	17%	18%	19%	20%	25%	30%
1	1.120	1.130	1.140	1.150	1.160	1.170	1.180	1.190	1.200	1.250	1.300
2	1.254	1.277	1.300	1.323	1.346	1.369	1.392	1.416	1.440	1.563	1.690
3	1.405	1.443	1.482	1.521	1.561	1.602	1.643	1.685	1.728	1.953	2.197
4	1.574	1.630	1.689	1.749	1.811	1.874	1.939	2.005	2.074	2.441	2.856
5	1.762	1.842	1.925	2.011	2.100	2.192	2.288	2.386	2.488	3.052	3.713
6	1.974	2.082	2.195	2.313	2.436	2.565	2.700	2.840	2.986	3.815	4.827
7	2.211	2.353	2.502	2.660	2.826	3.001	3.185	3.379	3.583	4.768	6.276
8	2.476	2.658	2.853	3.059	3.278	3.511	3.759	4.021	4.300	5.960	8.157
9	2.773	3.004	3.252	3.518	3.803	4.108	4.435	4.785	5.160	7.451	10.604
10	3.106	3.395	3.707	4.046	4.411	4.807	5.234	5.696	6.192	9.313	13.786
11	3.479	3.836	4.226	4.652	5.117	5.624	6.176	6.777	7.430	11.642	17.922
12	3.896	4.335	4.818	5.350	5.936	6.580	7.288	8.064	8.916	14.552	23.298
13	4.363	4.898	5.492	6.153	6.886	7.699	8.599	9.596	10.699	18.190	30.288
14	4.887	5.535	6.261	7.076	7.988	9.007	10.147	11.420	12.839	22.737	39.374
15	5.474	6.254	7.138	8.137	9.266	10.539	11.974	13.590	15.407	28.422	51.186
16	6.130	7.067	8.137	9.358	10.748	12.330	14.129	16.172	18.488	35.527	66.542
17	6.866	7.986	9.276	10.761	12.468	14.426	16.672	19.244	22.186	44.409	86.504
18	7.690	9.024	10.575	12.375	14.463	16.879	19.673	22.091	26.623	55.511	112.460
19	8.613	10.197	12.056	14.232	16.777	19.748	23.214	27.252	31.948	69.389	146.190
20	9.646	11.523	13.743	16.367	19.461	23.106	27.393	32.429	38.338	86.736	190.050
25	17.000	21.231	26.462	32.919	40.874	50.658	62.669	77.388	95.396	264.700	705.640
30	29.960	39.116	50.950	66.212	85.850	111.070	143.370	184.680	237.380	807.790	2,620.000
40	93.051	132.780	188.880	267.860	378.720	533.870	750.380	1,051.700	1,469.800	7,523.200	36,119.000
50	289.000	450.740	700.230	1,083.700	1,670.700	2,566.200	3,927.400	5,988.900	9,100.400	70,065.000	497,929.000

Exhibit 1B–2 Future Value (Compounded Sum) of \$1 Paid in at the End of Each Period for a Given Number of Time Periods (an Annuity) $FV = \frac{(1 + i)^n - 1}{i}$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.010	2.020	2.030	2.040	2.050	2.060	2.070	2.080	2.090	2.100	2.110
3	3.030	3.060	3.091	3.122	3.153	3.184	3.215	3.246	3.278	3.310	3.342
4	4.060	4.122	4.184	4.246	4.310	4.375	4.440	4.506	4.573	4.641	4.710
5	5.101	5.204	5.309	5.416	5.526	5.637	5.751	5.867	5.985	6.105	6.228
6	6.152	6.308	6.468	6.633	6.802	6.975	7.153	7.336	7.523	7.716	7.913
7	7.214	7.434	7.662	7.898	8.142	8.394	8.654	8.923	9.200	9.487	9.783
8	8.286	8.583	8.892	9.214	9.549	9.897	10.260	10.637	11.028	11.436	11.859
9	9.369	9.755	10.159	10.583	11.027	11.491	11.978	12.488	13.021	13.579	14.164
10	10.462	10.950	11.464	12.006	12.578	13.181	13.816	14.487	15.193	15.937	16.722
11	11.567	12.169	12.808	13.486	14.207	14.972	15.784	16.645	17.560	18.531	19.561
12	12.683	13.412	14.192	15.026	15.917	16.870	17.888	18.977	20.141	21.384	22.713
13	13.809	14.680	15.618	16.627	17.713	18.882	20.141	21.495	22.953	24.523	26.212
14	14.947	15.974	17.086	18.292	19.599	21.015	22.550	24.215	26.019	27.975	30.095
15	16.097	17.293	18.599	20.024	21.579	23.276	25.129	27.152	29.361	31.772	34.405
16	17.258	18.639	20.157	21.825	23.657	25.673	27.888	30.324	33.003	35.950	39.190
17	18.430	20.012	21.762	23.698	25.840	28.213	30.840	33.750	36.974	40.545	44.501
18	19.615	21.412	23.414	25.645	28.132	30.906	33.999	37.450	41.301	45.599	50.396
19	20.811	22.841	25.117	27.671	30.539	33.760	37.379	41.446	46.018	51.159	56.939
20	22.019	24.297	26.870	29.778	33.066	36.786	40.995	45.762	51.160	57.275	64.203
25	28.243	32.030	36.459	41.646	47.727	54.865	63.249	73.106	84.701	98.347	114.410
30	34.785	40.588	47.575	56.085	66.439	79.058	94.461	113.280	136.310	164.490	199.020
40	48.886	60.402	75.401	95.026	120.800	154.760	199.640	259.060	337.890	442.590	581.830
50	64.463	84.579	112.800	152.670	209.350	290.340	406.530	573.770	815.080	1,163.900	1,668.800

Exhibit 1B–2 (Concluded)

Period	12%	13%	14%	15%	16%	17%	18%	19%	20%	25%	30%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.120	2.130	2.140	2.150	2.160	2.170	2.180	2.190	2.200	2.250	2.300
3	3.374	3.407	3.440	3.473	3.506	3.539	3.572	3.606	3.640	3.813	3.990
4	4.779	4.850	4.921	4.993	5.066	5.141	5.215	5.291	5.368	5.766	6.187
5	6.353	6.480	6.610	6.742	6.877	7.014	7.154	7.297	7.442	8.207	9.043
6	8.115	8.323	8.536	8.754	8.977	9.207	9.442	9.683	9.930	11.259	12.756
7	10.089	10.405	10.730	11.067	11.414	11.772	12.142	12.523	12.916	15.073	17.583
8	12.300	12.757	13.233	13.727	14.240	14.773	15.327	15.902	16.499	19.842	23.858
9	14.776	15.416	16.085	16.786	17.519	18.285	19.086	19.923	20.799	25.802	32.015
10	17.549	18.420	19.337	20.304	21.321	22.393	23.521	24.701	25.959	33.253	42.619
11	20.655	21.814	23.045	24.349	25.733	27.200	28.755	30.404	32.150	42.566	56.405
12	24.133	25.650	27.271	29.002	30.850	32.824	34.931	37.180	39.581	54.208	74.327
13	28.029	29.985	32.089	34.352	36.786	39.404	42.219	45.244	48.497	68.760	97.625
14	32.393	34.883	37.581	40.505	43.672	47.103	50.818	54.841	59.196	86.949	127.910
15	37.280	40.417	43.842	47.580	51.660	56.110	60.965	66.261	72.035	109.690	167.290
16	42.753	46.672	50.980	55.717	60.925	66.649	72.939	79.850	87.442	138.110	218.470
17	48.884	53.739	59.118	65.075	71.673	78.979	87.068	96.022	105.930	173.640	285.010
18	55.750	61.725	68.394	75.836	84.141	93.406	103.740	115.270	128.120	218.050	371.520
19	63.440	70.749	78.969	88.212	98.603	110.290	123.410	138.170	154.740	273.560	483.970
20	72.052	80.947	91.025	102.440	115.380	130.030	146.630	165.420	186.690	342.950	630.170
25	133.330	155.620	181.870	212.790	249.210	292.110	342.600	402.040	471.980	1,054.800	2,348.800
30	241.330	293.200	356.790	434.750	530.310	647.440	790.950	966.700	1,181.900	3,227.200	8,730.000
40	767.090	1,013.700	1,342.000	1,779.100	2,360.800	3,134.500	4,163.210	5,529.800	7,343.900	30,089.000	120,393.000
50	2,400.000	3,459.500	4,994.500	7,217.700	10,436.000	15,090.000	21,813.000	31,515.000	45,497.000	80,256.000	165,976.000

Exhibit 1B-4 Present Value of \$1 Received at the End of Each Period for a Given Number of Time Periods (an Annuity)

$$PV = \frac{1 - \frac{1}{(1+i)^n}}{i}$$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909	0.901	0.893
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736	1.713	1.690
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487	2.444	2.402
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170	3.102	3.037
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791	3.696	3.605
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355	4.231	4.111
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868	4.712	4.564
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335	5.146	4.968
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759	5.537	5.328
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145	5.889	5.650
11	10.368	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495	6.207	5.938
12	11.255	10.575	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814	6.492	6.194
13	12.134	11.348	10.635	9.986	9.394	8.853	8.358	7.904	7.487	7.103	6.750	6.424
14	13.004	12.106	11.296	10.563	9.899	9.295	8.745	8.244	7.786	7.367	6.982	6.628
15	13.865	12.849	11.939	11.118	10.380	9.712	9.108	8.559	8.061	7.606	7.191	6.811
16	14.718	13.578	12.561	11.652	10.838	10.106	9.447	8.851	8.313	7.824	7.379	6.974
17	15.562	14.292	13.166	12.166	11.274	10.477	9.763	9.122	8.544	8.022	7.549	7.102
18	16.398	14.992	13.754	12.659	11.690	10.828	10.059	9.372	8.756	8.201	7.702	7.250
19	17.226	15.678	14.324	13.134	12.085	11.158	10.336	9.604	8.950	8.365	7.839	7.366
20	18.046	16.351	14.877	13.590	12.462	11.470	10.594	9.818	9.129	8.514	7.963	7.469
25	22.023	19.523	17.413	15.622	14.094	12.783	11.654	10.675	9.823	9.077	8.422	7.843
30	25.808	22.396	19.600	17.292	15.372	13.765	12.409	11.258	10.274	9.427	8.694	8.055
40	32.835	27.355	23.115	19.793	17.159	15.046	13.332	11.925	10.757	9.779	8.951	8.244
50	39.196	31.424	25.730	21.482	18.256	15.762	13.801	12.233	10.962	9.915	9.042	8.304

Exhibit 1B-4 (Concluded)

Period	13%	14%	15%	16%	17%	18%	19%	20%	25%	30%	35%	40%	50%
1	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833	0.800	0.769	0.741	0.714	0.667
2	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528	1.440	1.361	1.289	1.224	1.111
3	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106	1.952	1.816	1.696	1.589	1.407
4	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589	2.362	2.166	1.997	1.849	1.605
5	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991	2.689	2.436	2.220	2.035	1.737
6	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326	2.951	2.643	2.385	2.168	1.824
7	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605	3.161	2.802	2.508	2.263	1.883
8	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837	3.329	2.925	2.598	2.331	1.922
9	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031	3.463	3.019	2.665	2.379	1.948
10	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192	3.571	3.092	2.715	2.414	1.965
11	5.687	5.453	5.234	5.029	4.836	4.656	4.486	4.327	3.656	3.147	2.752	2.438	1.977
12	5.918	5.660	5.421	5.197	4.988	4.793	4.611	4.439	3.725	3.190	2.779	2.456	1.985
13	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533	3.780	3.223	2.799	2.469	1.990
14	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611	3.824	3.249	2.814	2.478	1.993
15	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675	3.859	3.268	2.825	2.484	1.995
16	6.604	6.265	5.954	5.668	5.405	5.162	4.938	4.730	3.887	3.283	2.834	2.489	1.997
17	6.729	6.373	6.047	5.749	5.475	5.222	4.988	4.775	3.910	3.295	2.840	2.492	1.998
18	6.840	6.467	6.128	5.818	5.534	5.273	5.033	4.812	3.928	3.304	2.844	2.494	1.999
19	6.938	6.550	6.198	5.877	5.584	5.316	5.070	4.843	3.942	3.311	2.848	2.496	1.999
20	7.025	6.623	6.259	5.929	5.628	5.353	5.101	4.870	3.954	3.316	2.850	2.497	1.999
25	7.330	6.873	6.464	6.097	5.766	5.467	5.195	4.948	3.985	3.329	2.856	2.499	2.000
30	7.496	7.003	6.566	6.177	5.829	5.517	5.235	4.979	3.995	3.332	2.857	2.500	2.000
40	7.634	7.105	6.642	6.233	5.871	5.548	5.258	4.997	3.999	3.333	2.857	2.500	2.000
50	7.675	7.133	6.661	6.246	5.880	5.554	5.262	4.999	4.000	3.333	2.857	2.500	2.000