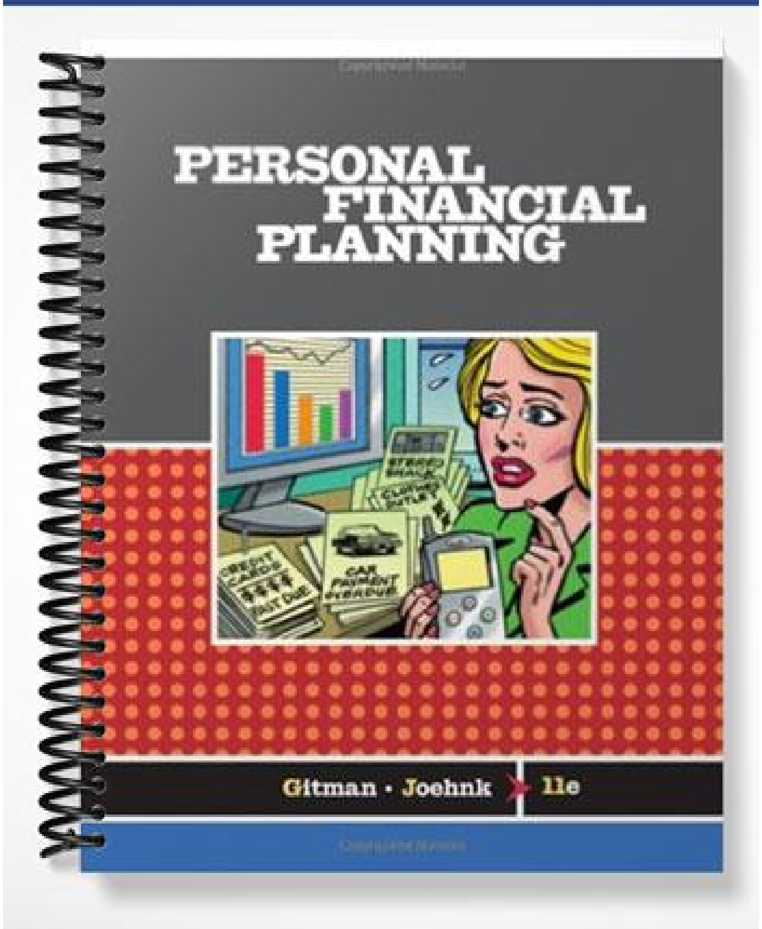
SOLUTIONS MANUAL



THOMSON
SOUTH-WESTERN

Chapter 2

Developing Your Financial Statements and Plans

Chapter Outline

Learning Goals

I. Mapping Out Your Financial Future
- A. The Role of Financial Statements in Financial Planning

II. The Balance Sheet: How Much Are You Worth Today?
- A. Assets: The Things You Own
- B. Liabilities: The Money You Owe
- C. Net Worth: A Measure of Your Financial Worth
- D. Balance Sheet Format and Preparation
- E. A Balance Sheet for Tim and Andrea Shepard

Concept Check

III. The Income and Expense Statement: What We Earn and Where It Goes
- A. Income: Cash In
- B. Expenses: Cash Out
- C. Cash Surplus (or Deficit)
- D. Preparing the Income and Expense Statement
- E. An Income and Expense Statement for Tim and Andrea Shepard

Concept Check

IV. Using Your Personal Financial Statements
- A. Keeping Good Records
  - 1. Organizing Your Records
- B. Tracking Financial Progress: Ratio Analysis
  - 1. Balance Sheet Ratios
  - 2. Income and Expense Statement Ratios

Concept Check

V. Cash In/Cash Out: Preparing and Using Budgets
- A. The Budgeting Process
  - 1. Estimating Income
  - 2. Estimating Expenses
  - 3. Finalizing the Cash Budget
- B. Dealing with Deficits
- C. A Cash Budget for Tim and Andrea Shepard
- D. Using Your Budgets

Concept Check

VI. The Time Value of Money: Putting a Dollar Value on Financial Goals
- A. Future Value
  - 1. Future Value of a Single Amount
  - 2. Future Value of an Annuity
- B. The Rule of 72
- C. Present Value
  - 1. Present Value of a Single Amount
  - 2. Present Value of an Annuity
  - 3. Other Applications of Present Value
- *Concept Check*

VII. Special Planning Concerns
- A. Managing Two Incomes
- B. Managing Employee Benefits
- C. Adapting to Other Major Life Changes
- D. Using Professional Financial Planners
  - 1. Types of Planners
  - 2. Choosing a Financial Planner
- *Concept Check*

Summary
Financial Planning Exercises
Applying Personal Finance
- What's Your Condition?

Critical Thinking Cases
- 2.1 The Sullivans' Version of Financial Planning
- 2.2 Joe Garcia Learns to Budget

Major Topics

We can achieve greater wealth and financial security through the systematic development and implementation of well-defined financial plans and strategies. Certain life situations require special consideration in our financial planning. Financial planners can help us attain our financial goals, but should be chosen with care. Personal financial statements work together to help us monitor and control our finances in order that we may attain our future financial goals by revealing our current situation, showing us how we used our money over the past time period, and providing a plan for expected future expenses. Time value of money calculations allow us to put a dollar value on these future financial goals and thereby plan more effectively. The major topics covered in this chapter include:

1. The importance of financial statements in the creation and evaluation of financial plans.
2. Preparing and using the personal balance sheet to assess your current financial situation.
3. The concept of solvency and personal net worth.

4. Preparing and using the personal income and expense statement to measure your financial performance over a given time period.
5. The importance of keeping and organizing your records.
6. The use of financial ratios to track financial progress.
7. Developing a personal budget and using it to monitor and control progress toward future financial goals.
8. How to deal with cash deficits.
9. The use of time value of money concepts in putting a dollar value on financial goals.
10. Special planning concerns, including managing two incomes, planning employee benefits, and adapting to other major life changes.
11. The use of professional financial planners in the financial planning process, the various types of financial planners, and choosing a financial planner.

Key Concepts

Personal financial statements play an extremely important role in the financial planning process. They can help in both *setting goals* and in *monitoring progress toward goal achievement* to determine whether one is "on track." Budgeting and financial planning guide future outlays. As such, they require projections of future needs, desires, and costs. Setting up a specific set of forecasts is the basis for future success. The following phrases represent the key concepts discussed in the chapter.

1. Personal financial statements
2. Balance sheet equation
3. Types of assets
4. Fair market value
5. Liabilities
6. Net worth
7. Solvency
8. Income
9. Expenses
10. Cash surplus or deficit
11. Record keeping
12. Ratio analysis of financial statements
13. Cash budgets
14. Estimating income
15. Estimating expenses
16. Monitoring and controlling actual expenses
17. Time value of money concepts and calculations
18. Special planning concerns
19. Financial planners

Answers to Concept Check Questions

2-1. *Personal financial statements* provide important information needed in the personal financial planning process. The balance sheet describes your financial condition at one point in time, while the income and expense statement measures financial performance over a given time period. Budgets help you plan your future spending. These statements allow you to track and monitor your financial progress so you can set realistic goals and meet them.

2-2. Th*e balance sheet* summarizes your financial position by showing your assets (what you own listed at fair market value), your liabilities (what you owe), and your net worth (the difference between assets and liabilities) at a given point in time. With a balance sheet, you know whether your assets are greater than your liabilities, and, by comparing balance sheets for different time periods, you can see whether your net worth is growing.

Investments are assets that are acquired to earn a return; they may consist of either real or personal property or financial assets. *Real property* is immovable: for example, land and anything fixed to it, like a building. *Personal property* is movable property—cars, furniture, jewelry, clothing, etc. Whether real or personal property is an investment depends on the character of the property: some you acquire with the expectation that the property will go up in value while other property may be expected to go down in value.

2-3. The *balance sheet equation* is:

Total Assets – Total Liabilities = Net Worth

A family is *technically insolvent* when their net worth is less than zero. This indicates that the amount of their total liabilities is greater than the fair market value of their total assets.

2-4. There are basically two ways to achieve an *increase in net worth*. First, one could prepare a budget for the pending period to specifically provide for an increase in net worth by acquiring more assets and/or paying down debts. This is accomplished by planning and requires strict control of income and expenses. A second approach would be to forecast expected increases in the market value of certain assets—primarily investment and tangible property assets. If the market value of the assets increased as expected and liabilities remained constant or decreased, an increase in net worth would result. (Note: Decreases in net worth would result from the opposite strategies/occurrences.)

2-5. The *income and expense statement* captures the various financial activities that have occurred over time, normally over the course of a month or a year. In personal financial planning, the statement permits comparison of actual results to the budgeted values.

2-6. The term *cash basis* indicates that only items of actual cash income and cash expense within the given period are included on the statement. For example, if you are due to receive a payment for work you have done, you do not count that amount as income until you actually receive it. A credit purchase becomes a liability on the balance sheet as soon as the debt is incurred. However, credit purchases are shown on the income statement only when payments on these liabilities are actually made. (Also, if a payment-in-full was not made, only that amount actually paid to reduce the liability is shown on the statement.) These cash payments would be treated as *expenses* because they represent disbursements of cash.

2-7. *Fixed* expenses are contractual, predetermined expenses that are made each period, such as rent, mortgage and loan payments, or insurance premiums. *Variable* expenses change each period. These include food, utilities, charge card bills, and entertainment.

2-8. Yes, a *cash deficit* appears on an income and expense statement whenever the period's expenses exceed income. Deficit spending is made possible by using up an asset, such as taking money out of savings, or incurring more debt, such as charging a purchase on a credit card.

2-9. *Accurate records* are important in the personal financial planning process. Such records help you manage and control your financial affairs, including controlling income and spending, preparing financial statements, filing tax returns, and planning future spending. A sophisticated *financial record keeping and control system* includes: (1) setting up a record book, (2) recording actual income and expenses, (3) balancing accounts periodically, (4) controlling budget expenses, and (5) balancing the books and preparing year end financial statements.

2-10. When *evaluating one's balance sheet*, primary concern should be devoted to the net worth figure since it represents a person's wealth at a given point in time. Attention should also be given to the level of various assets and liabilities to determine whether their level and mix is consistent with one's financial goals.

In *evaluating one's income and expense sta*tement, the primary concern should be whether there is a cash surplus or deficit. Consistently having a cash surplus on the income statement means that one's net worth is growing on the balance sheet, because the surplus remaining from one period will then be available to either increase one's assets or decrease one's liabilities.

It is possible to use a number of ratios to evaluate a balance sheet. However, the solvency ratio and the liquidity ratio are most frequently used. The *solvency ratio* relates total net worth to total assets. It shows, in percentage terms, the degree of market value decline in total assets, which a family could absorb before becoming technically insolvent. This ratio is a good indicator of one's exposure to potential financial problems. The *liquidity ratio* relates liquid assets to total current debts. It measures a family's ability to pay current debts and provides an estimate of their ability to meet obligations in the event their income is curtailed.

2-11. A *cash budget* is a summary of estimated cash income and cash expenses for a specific time period, typically a year. The three parts of the cash budget include: the *income* section where all expected income is listed; the *expense* section where expected expenses are listed by category; and the surplus or deficit section where the cash surplus or deficit is determined both on a month-by-month basis and on a cumulative basis throughout the year. A *budget deficit* occurs when the planned expenses for a period exceed the anticipated income in that same period. A *budget surplus* occurs when the income for the period exceeds its planned expenses.

2-12. Two remedies are available for the Smith family. They may be able to transfer expenses from months in which budget deficits occur to the month in which the budget surplus exists, or conversely, to transfer income from the month with a surplus to the months with deficits. Another alternative is to use savings, investments, or borrowing to cover temporary deficits. The Smiths might also want to consider increasing their income, at least temporarily, by getting a "moonlighting" job.

2-13. By examining end-of-month budget balances, and the associated surpluses or deficits for all accounts, a person can initiate any required corrective actions to assure a balanced budget for the year. Surpluses are not problematic. Deficits normally require spending adjustments during subsequent months to bring the budget into balance by year end.

2-14. A dollar today and a dollar in the future will be able to purchase different amounts of goods and services, because if you have a dollar today, you can invest it and it will grow to more than a dollar in the future. At the same time, inflation works against the dollar, because rising prices erode its purchasing power. *Time value of money* concepts help us quantify these changes in dollar values so that we can plan the amount of money needed at certain points in time in order to fulfill our personal financial goals.

2-15. Interest is earned over a given period of time. When interest is compounded, this given period of time is broken into segments, such as months. Interest is then calculated one segment at a time, with the interest earned in one segment added back to become part of the principal for the next time segment. Thus, in *compounding*, your money earns interest on interest.

The *rule of 72* is a quick way to approximate how long it will take for an investment to double in value. Divide 72 by the percentage rate you are earning on your investment, and the answer will be approximately how many years it will take for your money to double. For example, if your investment is earning 8%, divide 72 by 8 to see that in approximately 9 years your money will double.

2-16. *Future value* calculations show how much an amount will grow over a given time period. Future value is used to evaluate investments and to determine how much to save each year to accumulate a given future amount, such as the down payment on a house or for a child's college education. *Present value* concepts, the value today of an amount that will be received in the future, help you calculate how much to deposit today in order to have enough money to retire comfortably, analyze investments, and determine loan payments.

2-17. a. *Being part of a dual-income couple* requires good financial planning and open communication between partners. They need to discuss financial goals and set priorities together. Deciding how to allocate expenses and set up a money management system that is comfortable for each is especially important and avoids conflicts later. Each person should have some discretionary income to spend as he or she wishes. The partners may also want to analyze the bottom-line contribution of the second income, as shown in Worksheet 2. 1. Coordination of employee benefits and the possibility of being pushed into a higher tax bracket should be included in this analysis.

b. *Major life changes, such as marriage or divorce,* represent important points at which to review financial plans and revise them as necessary. Conflict over money is one of the leading causes of divorce. When getting married, couples need to set financial goals and plan their spending together. They cannot assume that just because they love one another their finances will work out to the satisfaction of both without careful planning and consideration. Divorce is usually a costly process, both financially and emotionally. Newly single individuals or parents may need more careful budgeting of household and personal expenses if income is reduced. Financial plans made during marriage are usually no longer valid, and each individual must now determine how to proceed from this point forward.

c. *Death of a spouse* also requires careful financial planning. A widow/widower must determine how to invest life insurance proceeds and other inherited assets. If the couple had children, the surviving spouse must consider how best to meet the future needs of the children as well as his or her own needs. Careful financial planning and advance discussions can ease the way for these tasks and provide general guidance at a difficult time in a person's life.

2-18. A *professional financial planner* is a person whose business it is to assist clients in establishing long- and short-term financial goals and in developing, implementing and carrying out comprehensive personal financial plans aimed at their achievement. Because in some cases the professional planner's compensation for plan development is based on commissions received from the sale of financial products to clients, there is a tendency to view such planners as not acting in the best interest of their clients. Fee-only compensation systems seem to result in more objective financial plans that better address the real needs of the client. However, the moral and ethical character of the financial planner along with his or her level of expertise needs to be carefully considered regardless of how the planner is compensated.

Financial Planning Exercises

1. While everyone's financial statements will differ based on their own expectation of the future, each should have similar elements such as: assets like a home, automobiles and investments; liabilities like a mortgage, an auto loan, and consumer debt; and a positive net worth. The statement of income and expense should reflect income from a job or business, investment income, and expenses for items such as home repair and operation, debt payments, savings, taxes, and insurance.

2. See the following page for Elizabeth Walker's balance sheet.

   a. *Solvency:* This term refers to having a positive net worth. The calculation for her solvency ratio is as follows:

$$\text{Solvency Ratio} = \frac{\text{Total Net Worth}}{\text{Total Assets}} = \frac{\$27{,}550}{\$84{,}350} = 32.66\%$$

   This indicates that Ms. Walker could withstand about a 33% decline in the market value of her assets before she would be insolvent. Although this is not too low a value, some thought might be given to increasing her net worth.

   b. *Liquidity:* A simple analysis of Ms. Walker's balance sheet reveals that she's *not very liquid.* In comparing current liquid assets ($900) with current bills outstanding ($1,300), it is obvious that she cannot cover her bills and is, in fact, $400 short (i.e., $1,300 current debt – $900 current assets). Her liquidity ratio is:

$$\text{Liquidity ratio} = \frac{\text{Liquid Assets}}{\text{Total Current Debts}} = \frac{\$\ 900}{\$1{,}300} = 69.2\%$$

   This means she can cover only about 69% of her current debt with her liquid assets. If we assume that her installment loan payments for the year are about $2,000 (half the auto loan balance and all of the furniture loan balance) and add them to the bills outstanding, the liquidity ratio at this level of liquid assets is:

$$\text{Liquidity ratio} = \frac{\text{Liquid assets}}{\text{Total Current Debts}} = \frac{\$\ 900}{\$3{,}300} = 27.3\%$$

   This indicates that should her income be curtailed, she could cover only about 27% of her existing one-year debt obligations with her liquid assets—and this does *not* include her mortgage payment! This is clearly not a favorable liquidity position.

   c. *Equity in her Dominant Asset:* Her dominant asset is her condo and property, which is currently valued at $68,000. Since the loan outstanding on this asset is $52,000, the equity is $16,000 (i.e., $68,000 – $52,000). This amount indicates about a 24% equity interest (i.e., $16,000/$68,000) in the market value of her real estate. This appears to be a favorable equity position.

Problem 2—Worksheet 2.1

BALANCE SHEET

Name(s) Elizabeth Walker Date June 30, 2007

ASSETS

Liquid Assets		
Cash on hand	$ 70.00	
In checking	180.00	
Savings accounts		
Money market funds and deposits	650.00	
Certificates of deposit (<1 yr. to maturity)		
Total Liquid Assets		$ 900.00
Investments		
Stocks WIMCO	$ 3,000.00	
Bonds Savings bonds	500.00	
Certificates of deposit (>1 yr. to maturity)		
Mutual funds		
Real estate		
Retirement funds, IRA		
Other		
Total Investments		$ 3,500.00
Real Property		
Primary residence	$ 68,000.00	
Second home		
Other		
Total Real Property		$ 68,000.00
Personal Property		
Auto(s): '03 Honda	$ 10,000.00	
Auto(s):		
Recreational vehicles		
Household furnishing	1,050.00	
Jewelry and artwork		
Other Clothing	900.00	
Other		
Total Personal Property		$ 11,950.00
(I) Total Assets		$ 84,350.00

LIABILITIES AND NET WORTH

Current Liabilities		
Utilities Phone & electric	$ 90.00	
Rent		
Insurance premiums	220.00	
Taxes	400.00	
Medical/dental bills		
Repair bills		
Bank credit card balances	400.00	
Dept. store credit card balances	190.00	
Travel and entertainment card balances		
Gas and other credit card balances		
Bank line of credit balances		
Other current liabilities		
Total Current Liabilities		$ 1,300.00
Long-Term Liabilities		
Primary residence mortgage	$52,000.00	
Second home mortgage		
Real estate investment mortgage		
Auto loans	3,000.00	
Appliance/furniture loans	500.00	
Home improvement loans		
Single-payment loans		
Education loans		
Margin loans used to purchase securities		
Other long-term loans		
Total Long-Term Liabilities		$ 55,500.00
(II) Total Liabilities		$ 56,800.00
Net Worth [(I) - (II)]		$ 27,550.00
Total Liabilities and Net Worth		$ 84,350.00

3. a. Rent paid is listed as an expense. For the year, his rent expense would be $11,400 ($950 x 12) unless he has rent due, the amount of which would show up as a current liability on his balance sheet.

b. The earrings should be shown on the balance sheet as an asset—personal property. Although the earrings have not been paid for, by definition they are an asset owned by Chris. However, they should be listed at fair market value, which is probably less than the price paid due to the high markup on jewelry. The $600 bill outstanding is listed as a current liability on the balance sheet.

c. Assuming the loan proceeds were received during the year ending June 30, 2004, the $2,000 would be shown as income labeled "loan proceeds." Since no loan payments were made during the period, a corresponding expense would not appear, but the obligation to repay the $2,000 would be shown as a liability on the balance sheet.

d. Assuming he made 12 payments during the year, Chris would list loan payments as an expense of $1,440. Of the 20 remaining payments, only about half are for principal. Therefore, on the balance sheet he should show the unpaid principal of about $1,200 (20 x $120/2) as a liability. The balance of the future payments is interest not yet due and therefore should not appear on the balance sheet. If the loan was used to purchase something of value, he would list the fair market value of the item as an asset on his balance sheet.

e. The $2,800 of taxes paid should appear as an expense on the income and expense statement for the period, but because the tax refund was not received during the year it would not be included as income on the statement.

f. The investment in common stock would appear on the income and expense statement as a $1,800 expense labeled "purchase of securities." Under "investments" on the balance sheet he would list the current fair market value of the stock.

4. a. Dave is correct in suggesting that only take-home pay be shown as income if the $650 ($3,000 – $2,350) in taxes is not shown as an expense. If they choose to show the tax expense, Betty would be correct. Expressing income on an after-tax basis would probably be simpler.

b. By having an allowance for "fun money," the Williamsons have specifically set aside a certain portion of their income for a little self-indulgence. This will serve three basic purposes: (1) it will give a little financial independence to each member of the family; (2) to a certain extent it allows for a little impulse buying which might further the enjoyment of life. However, it allows for this luxury under a budget control and diminishes the possibility of it occurring with an allocation from another account; and (3) it generally promotes a higher quality of life. Thus, the inclusion of "fun money" is probably justified.

5.

Item No. (1)	Item (2)	Amount Budgeted (3)	Amount Expended (4)	Beginning Balance (5)	Monthly Surplus (Deficit) (6)	Cumulative Surplus (Deficit) (7)
1	Rent	$350	$360	$20	$(10)	$10
2	Utilities	150	145	15	5	20
3	Food	310	275	(15)	35	20
4	Auto	25	38	(5)	(13)	(18)
5	Recr. & enter.	50	60	(50)	(10)	(60)

6. Chuck and Judy's income and expense statement follows. Note that for the purchase of the photographic equipment and the car, only the amounts actually paid during the period are listed as expenses on the income and expenses statement. (We are not told the amount of the car loan payments, so the $2,450 listed does not reflect interest charges.) The outstanding balances will appear as liabilities on the balance sheet. The fair market value of the items purchased will appear as assets on the balance sheet.

Problem 6—Worksheet 2.2

INCOME AND EXPENSE STATEMENT

Name(s) Chuck and Judy Schwartz
For the year Ended December 31, 2007

INCOME		
Wages and salaries	Name: Judy	$ 37,000.00
	Name:	
	Name:	
Self-employment income		
Bonuses and commissions		
Investment income	Interest received	180.00
	Dividends received	
	Rents received	
	Sale of securities	
	Other	
Pensions and annuities		
Other income	Reimbursement of Judy's travel expenses	1,950.00
	(I) Total Income	**$ 39,130.00**
EXPENSES		
Housing	Rent/mortgage payment (include insurance and taxes, if applicable)	$ 9,600.00
	Repairs, maintenance, improvements	
Utilities	Gas, electric, water	960.00
	Phone	
	Cable TV and other	
Food	Groceries	4,150.00
	Dining out	
Transportation	Auto loan payments *see note below	2,450.00
	License plates, fees, etc.	
	Gas, oil, repairs, tires, maintenance	650.00
Medical	Health, major medical, disability insurance (payroll deductions or not provided by employer)	
	Doctor, dentist, hospital, medicines	
Clothing	Clothes, shoes, and accessories	2,700.00
Insurance	Homeowner's (if not covered by mortgage payment)	
	Life (not provided by employer)	
	Auto	
Taxes	Income and social security	
	Property (if not included in mortgage)	
Appliances, furniture, and other major purchases	Loan payments photographic equipment	600.00
	Purchases and repairs	
Personal care	Laundry, cosmetics, hair care	
Recreation and entertainment	Vacations	
	Other recreation and entertainment	280.00
Other items	Chuck's tuition, books, and supplies	3,300.00
	Alpha Corp. bonds	4,900.00
	Travel expense for Judy	1,950.00
	(II) Total Expenses	**$ 31,540.00**
	CASH SURPLUS (OR DEFICIT) [(I)-(II)]	**$ 7,590.00**

* We are not told the amount spent on car loan payments, so the $2,450 reflects on the principal paid and does not include interest charges, as it should.

PLEASE NOTE: Problems 7, 8, and 10 deal with time value of money, and solutions using both the tables and the financial calculator will be presented. The factors are taken from the tables as follows: future value–Appendix A; future value annuity–Appendix B; present value–Appendix C; present value annuity–Appendix D. If using the financial calculator, set on *End Mode* and *1 Payment/Year*. The +/- indicates the key to change the sign of the entry, in these instances from positive to negative. This keystroke is required on some financial calculators in order to make the programmed equation work. Other calculators require that a "Compute" key be pressed to attain the answer.

7. a. At the end of 10 years, your $10,000 investment would grow to $40,460 at 15%, but only $21,590 at 8% (about half as much).

FV	=	PV x FV factor $_{15\%,10\text{ yrs.}}$	10000	+/-	PV
	=	$10,000 x 4.406	15		I
	=	<u>$40,460</u>	10		N
			FV		$40,455.58
FV	=	PV x FV factor $_{8\%,10\text{yrs.}}$	10000	+/-	PV
	=	$10,000 x 2.159	8		I
	=	<u>$21,590</u>	10		N
			FV		$21,589.25

b. At the end of 25 years, your $25,000 investment would grow to $270,850 at a 10% return.

FV	=	PV x FV factor $_{10\%,25\text{yrs.}}$	25000	+/-	PV
	=	$25,000 x 10.834	10		I
	=	<u>$270,850</u>	25		N
			FV		$270,867.65

c. At the end of 10 years the average new home, which costs $125,000 today, will cost $203,625 if prices go up at 5% per year.

FV	=	PV x FV factor $_{5\%,10\text{yrs.}}$	125000	+/-	PV
	=	$125,000 x 1.629	5		I
	=	<u>$203,625</u>	10		N
			FV		$203,611.83

d. Yes, you will have $79,300, $4,300 more than your $75,000 goal.

FV	=	PV x FV factor $_{8\%,15\text{yrs.}}$	25000	+/-	PV
	=	$25,000 x 3.172	8		I
	=	<u>$79,300</u>	15		N
			FV		$79,304.23

You will need to deposit $2,762.23 at the end of each year for 15 years In order to reach the $75,000 goal.

PMT	= FV ÷ FVA factor $_{8\%,15yrs.}$	75000	+/-	FV	
	= $75,000 ÷ 27.152	8		I	
	= $2,762.23	15		N	
		PMT			$2,762.22

e. You will need to invest $2,316.65 at the end of each year at a rate of 12% for the next 35 years in order to retire with $1 million.

PMT	= FV ÷ FVA factor $_{12\%,35yrs.}$	1000000	+/-	FV	
	= $1,000,000 ÷ 431.658	12		I	
	= $2,316.65	35		N	
		PMT			$2,316.62

f. You will be able to withdraw $76,351.42 at the end of each year for 25 years if you retire with $750,000 invested at 9%.

PMT	= PV ÷ PVA factor $_{9\%,25yrs.}$	750000	+/-	PV	
	= $750,000 ÷ 9.823	9		I	
	= $76,351.42	25		N	
		PMT			$76,354.69

8. a. Note what a difference 2% makes over the 20 year time period! You would have to initially invest about 44% more money to end up with the same future value [(43,000 – 29,800) ÷ 29,800].

PV	= FV x PV factor $_{10\%,20\ yrs.}$	200000	+/-	FV	
	= $200,000 x .149	10		I	
	= $29,800	20		N	
		PV			$29,728.73

PV	= FV x PV factor $_{8\%,20yrs.}$	200000	+/-	FV	
	= $200,000 x .215	8		I	
	= $43,000	20		N	
		PV			$42,909.64

b. Bill can withdraw $27,812.54 at the end of every year for 15 years.

PV	= PMT x PVA factor $_{11\%,15yrs.}$	200000	+/-	PV	
PMT	= PV ÷ PVA factor $_{11\%,15yrs.}$	11		I	
	= $200,000 ÷ 7.191	15		N	
	= $27,812.54	PMT			$27,813.05

c. To withdraw $35,000 at the end of every year for 15 years, Bill would need a retirement fund of $251,685.

PV	=	PMT x PVA factor $_{11\%,15yrs.}$	35000	+/-	PMT
	=	$35,000 x 7.191	11		I
	=	$251,685	15		N
			PV		$\boxed{\$251,680.44}$

b. To accumulate a retirement fund of $251,685 in 20 years, Bill needs to invest $37,501.07, or an additional $7,701.07 ($37,501.07 – $29,800).

PV	=	FV x PV factor $_{10\%,20yrs.}$	251685	+/-	FV
	=	$251,685 x .149	10		I
	=	$37,501.07	20		N
			PV		$\boxed{\$37,411.37}$

9. This question requires a personal response that will differ for each student. Therefore, a specific example has not been provided. However, the cases below provide several examples of possible answers to this question; it is recommended that the cases be examined in conjunction with this question.

The question provides an effective means to involve the student in the budgeting process. Most students are somewhat amazed when they find out how they have actually been spending their money. Before assigning this question, it is interesting to ask the students to estimate how they actually spend their money. A comparison of their estimates with the actual spending records typically reflects the unconscious manner in which they may be spending. Most students will find that the use of a budget to control and regulate expenses allows them to make more meaningful and satisfying expenses.

10. a. If Helen can earn 12% on her money, $14,188 will be worth about $25,000 in 5 years:

FV	=	PV x FV factor $_{12\%,5yrs.}$	1418	+/-	PV
			8		
	=	$14,188 x 1.762	12		I
	=	$24,999.26	5		N
			FV		$\boxed{\$25,004.10}$

No, she will fall short by about $25,000.

c. Assuming that Helen adds a payment to her savings at the end of each year for the next five years so that the fifth payment comes at the end of the time period, she would have to save $3,935.27 per year. This calculation is as follows:

FV	=	PMT x FVA factor $_{12\%,5yrs.}$	25000	+/-	FV
PMT	=	FV ÷ FVA factor $_{12\%,5yrs.}$	12		I
	=	\$25,000 ÷ 6.353	5		N
	=	<u>\$3,935.15</u>	PMT		$\boxed{\$3,935.24}$

d. If Helen saves only \$2,000 per year she would have an additional \$12,706 for a total of \$37,706 (\$25,000 + 12,706) and will fall \$12,294 short of her \$50,000 goal.

FV	=	PMT x FVA factor $_{12\%,5yrs.}$	2000	+/-	PMT
	=	\$2,000 x 6.353	12		I
	=	<u>\$12,706</u>	5		N
			FV		$\boxed{\$12,705.69}$

Solutions to Critical Thinking Cases

2.1 The Sullivans' Version Of Financial Planning

1. The Sullivans' personal financial statements are on the following page.

2. a. Solvency = $\dfrac{\text{Total Net Worth}}{\text{Total Assets}} = \dfrac{\$\ 44,745}{\$120,070} = .37$

The Sullivans could withstand about a 37% decline in the market value of their assets before they would be insolvent. The solvency ratio also indicates percent ownership: the Sullivans own free and clear about 37% of their total assets. While this ratio is acceptable, they should seek to improve it.

b. Liquidity = $\dfrac{\text{Liquid Assets}}{\text{Total Current Liabilities}} = \dfrac{\$3,070}{\$2,675} = 1.\ 15$

The Sullivans can cover their current liabilities with their liquid assets and have a little to spare. However, they still have to make mortgage and auto loan payments each month and probably would not want to use up their money market funds to do so.

c. Savings = $\dfrac{\text{Cash Surplus}}{\text{Income after Taxes}} = \dfrac{\$2,440}{\$64,350 - \$16,940} = 5.1\%$

At about 5 percent, the Sullivans' current saving rate is comparable to that of the average American family. However, if they were to live off only John's income, their savings rate would be almost nil!

d. Debt Service = $\dfrac{\text{Total Debt Payments}}{\text{Gross Income}}$

$$= \frac{\text{Mortgage + car loan + credit card payments}}{\text{Gross Income}}$$

$$= \frac{\$8{,}000 + \$2{,}150 + \$2{,}210}{\$64{,}350} = \frac{\$12{,}360}{\$64{,}650} = 19.2\%$$

Case 2.1, Problem 1

Balance Sheet

Name(s): John & Lisa Sullivan **Date:** December 31, 2007

ASSETS		**LIABILITIES**	
Liquid assets:		**Current liabilities:**	
Cash	$ 85	Bank credit card balances	$ 675
Checking	485	Travel & entertainment card balances	2,000
Money Market	2,500		
Investments:		**Long-term liabilities:**	
Common Stocks	7,500	Mortgage on home—loan balance	70,000
		Auto loan balance	2,650
Property:			
Home	98,000		
2004 Nissan	7,000	**TOTAL LIABILITIES**	**$ 75,325**
Household furnishings	4,500		
		NET WORTH (Assets - Liabilities)	**$ 44,745**
TOTAL ASSETS	**$120,070**	**TOTAL LIAB. & NET WORTH**	**$120,070**

Income & Expense Statement	
Name(s): John & Lisa Sullivan	
For the Year **Ending** December 31, 2007	
INCOME	**AMOUNT**
John	$ 38,350
Lisa	26,000
TOTAL INCOME	**$ 64,350**
EXPENSES	
Mortgage payments	$ 9,400
Gas, electric, water	1,990
Phone	640
Cable TV	480
Food	4,200
Auto loan payments	2,150
Transportation expense	2,800
Medical expenses—unreimbursed	600
Clothing expense	2,300
Homeowner's insurance premiums	400
Auto insurance premiums	800
Income and Social Security taxes paid	16,940
Vacation (Trip to Europe)	5,000
Recreation and entertainment	4,000
Credit card loan payments	2,210
Purchase of common stock	7,500
Addition to money market account	500
TOTAL EXPENSES	**$ 61,910**
CASH SURPLUS (DEFICIT)	**$ 2,440**

[Note: $1400 of the $9400 in house payments was for property taxes—only $8000 was for the mortgage. The homeowner's insurance was listed separately.]

The Sullivans are okay for now. However, with only his salary, the debt service ratio becomes rather high:

$$\frac{\$12{,}360}{\$38{,}350} = 32\%$$

3. If the Sullivans continue to manage their finances as described in the case, there is no question that, in the long-run, they are headed for financial disaster. Because the Sullivans have become accustomed to living with a double income, it will be extremely difficult to change their overall way of life or standard of living. The Sullivans must realize that the bottom line of the income statement is the most important, and given their present level of expenses, their contribution to savings or investment will change from an annual surplus—and it's already very small—to an annual deficit. As a result, their net worth will decline, and the long-run consequence of these events will be financially quite detrimental to the Sullivans.

John must understand that the family will incur additional living expenses when the child is born, that inflation will continue, and that the cost of home ownership and everyday living will more than offset his expected 10 percent increase in pay. At the present time, John's take-home income of $26,480 barely covers necessities—which actually total $25,760, not $24,885; perhaps John considers cable TV a luxury and expects to reduce some of their dining out and clothing purchases next year. A 10 percent (take-home) pay increase of $2,650 will increase his take-home pay to
$29,130 and will leave the Sullivan family with only $4,245 to pay for the increased family size (based on John's estimate of necessities), inflation, and numerous other costs. If one conservatively estimates a 3 percent rate of inflation in the cost of these necessities, the resulting total cost would increase to $25,632. This results in a surplus of only $3,498 from which to cover the added expenses for a child as well as other unforeseen costs. Furthermore, the inflation rate could be even higher.

The long-run consequences of John's strategy could prove very harmful. Although the Sullivans' net worth is now positive, any future annual expenses exceeding income (take-home pay) will slowly erode their savings, investments, and net worth. They do not have much excess to cover any emergency expenses. If the Sullivans wish to maintain or increase their net worth and to achieve their financial goals, they must take immediate action to find ways to either increase revenue or decrease expenses.

The logical solution at this time is for John and Lisa to prepare a budget and follow it to live within the constraints of their expected income and expenses. They should immediately look at all expenses, past, present, and future, to develop financial plans so they can live within their means. They should review their balance sheet and income statement and then prepare projected monthly and annual budgets. The couple should record planned income and expenses month by month, monitoring monthly surpluses and deficits so they can quickly correct them. It won't be too long before they realize that maintaining their present standard of living will seriously erode their overall net worth. John and Lisa should develop objectives or goals for both the long- and short-run. By correlating budget control with expected future goals, a realistic plan of action can be developed that allows them to achieve their financial goals and continue to increase their net worth.

2.2 Joe Garcia Learns To Budget

1. a. In order to get the big picture of Joe's expected income and expenses, it may be more useful to simply use Worksheet 2.2, the Income and Expense Statement, to project his expected position for the coming year. When doing this problem together in class, work through the given setup using a blank Income and Expense Statement on the overhead projector. Then have the class decide which items need to be slashed. (See the example which follows.) After these decisions have been

made, divide the expenses into months and fill out Worksheet 2.3 as indicated in part 2 which follows.

b. Joe's total expenses of $29,247 are greater than his expected total income of $28,500; he has a deficit of $747. There are many recommendations that students can make to help him balance his budget. The following were used to develop answers to Question 2 and are shown in the "Adjusted" column in the example shown previously:

	Savings
Reduce dining out to $900 ($75/mo.)	$1,100
Reduce clothing purchases to $1200	650
Cut furniture/TV purchases entirely	660
Cut other entertainment to $900 ($75/mo.)	1,000
Total savings	$3,410

Other possible ideas that students may suggest include: shop garage or yard sales for furniture, drop cable TV, move to a larger apartment shared with roommates so that rent and other expenses can be divided, and consider using public transportation (if it is feasible) to reduce car expenses.

2. The above adjustments were incorporated into making Joe's annual cash budget summary shown on Worksheet 2.3 which follows. Please note that some of the monthly budgeted items vary by small amounts in order to make the totals correct.

3. (Students' answers will vary depending on the adjustments chosen.)
By reducing his expected expenses by $3,410, Joe will have a cash surplus of $2,663 ($3,410 – $747 deficit on his planned expenses). This will enable Joe to establish an emergency account as well as begin a long-term investing program. He can deposit $663 into a money market mutual fund to use for unexpected expenses or emergencies. This will take the money out of his regular checking account but still leave it accessible, as most money market funds provide check writing privileges. He can contribute $2000 to a Roth IRA and begin his long-term investing program. The Roth IRA also offers Joe flexibility in withdrawing the money if needed later, perhaps for purchasing a home (particularly if he withdraws only principal). He can set up a monthly withdrawal plan out of his regular checking account with a mutual fund company for both the money market fund and the IRA account in order to make his investing easy and automatic.

Case 2.2, Problem 1a

[Note: For simplicity and clarity, *only the expenses which were cut* are shown in the "Adjusted" column. Other expenses will remain the same.]

Income and Expense Statement

Name: Joe Garcia

For the Year Ending December 31, 2008

Income		**Projected**	**Adjusted**
Salary	Joe's take-home pay of $2,375/mo.	$ 28,500	$ 28,500
Other income			
	(I) Total Income	$ 28,500	$ 28,500
Expenses			
Housing	Rent	$ 9,600	$
	Repairs		
Utilities	Gas, electric, water	1,008	
	Phone	660	
	Cable TV and other	300	
Food	Groceries	2,625	
	Dining out	2,000	900
Transportation	Auto loan payments	3,340	
	Auto related expenses	1,638	
	Other transportation expenses		
Medical	Health-related insurance		
	Doctor, dentist, hospital, medicines	190	
Clothing	Clothes, shoes, accessories	1,850	1200
Insurance	Homeowner's		
	Life		
	Auto	546	
Taxes	Income and social security		
	Property (if not included in mortgage)		
Appliances, furniture & other major purchases	Loan payments	540	
	Purchases and repairs	660	0
Personal care	Laundry, cosmetics, hair care	240	
Recreation & entertainment	Vacations	1,100	
	Other recreation and entertainment	1,900	900
Other items	Misc.	600	
	Credit card pmts: 6 mo.@$75/mo.	450	
	Other expenses		
	(II) Total Expenses	$ 29,247	$ 25,837
	CASH SURPLUS (OR DEFICIT) [(I) – (II)]	$ (747)	$ 2,663

Case 2.2, Problem 2—Worksheet 2.3

ANNUAL CASH BUDGET BY MONTH

Name(s) Joe Garcia

For the Year Ending December 31, 2008

INCOME	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Take-home pay	2,375	2,375	2,375	2,375	2,375	2,375	2,375	2,375	2,375	2,375	2,375	2,375	28,500
[1] Total Income	2,375	2,375	2,375	2,375	2,375	2,375	2,375	2,375	2,375	2,375	2,375	2,375	**28,500**
EXPENDITURES													
Rent	800	800	800	800	800	800	800	800	800	800	800	800	9,600
Gas & electricity	84	84	84	84	84	84	84	84	84	84	84	84	1,008
Phone	55	55	55	55	55	55	55	55	55	55	55	55	660
Cable TV	25	25	25	25	25	25	25	25	25	25	25	25	300
Groceries	218	218	218	219	219	219	219	219	219	219	219	219	2,625
Dining out	75	75	75	75	75	75	75	75	75	75	75	75	900
Auto loan payments	279	279	279	279	278	278	278	278	278	278	278	278	3,340
Car expenses	126	247	126	126	126	126	126	127	127	127	127	127	1,638
Medical care, dentist	10	10	45	10	10	10	10	10	45	10	10	10	190
Clothing	100	100	100	100	100	100	100	100	100	100	100	100	1,200
Auto insurance	0	0	0	0	0	273	0	0	0	0	0	273	546
Installment loan for stereo	45	45	45	45	45	45	45	45	45	45	45	45	540
Personal care	20	20	20	20	20	20	20	20	20	20	20	20	240
Vacation at Lake Tahoe	0	0	0	0	0	0	1,100	0	0	0	0	0	1,100
Other recreation & entertainment	75	75	75	75	75	75	75	75	75	75	75	75	900
Savings & investments--Money Market	56	56	56	55	55	55	55	55	55	55	55	55	663
Miscellaneous expenses	50	50	50	50	50	50	50	50	50	50	50	50	600
Credit card payments	75	75	75	75	75	75	0	0	0	0	0	0	450
Roth IRA contributions	167	166	167	166	167	166	167	166	167	166	167	168	2,000
[2] Total Expenditures	2,260	2,380	2,295	2,259	2,259	2,531	3,284	2,184	2,220	2,184	2,185	2,459	28,500
MONTHLY CASH SURPLUSES (DEFICIT) [1-2]	115	(5)	80	116	116	(156)	(909)	191	155	191	190	(84)	0
CUMULATIVE CASH SURPLUS (DEFICIT)	**115**	**110**	**190**	**306**	**422**	**266**	**(643)**	**(452)**	**(297)**	**(106)**	**84**	**0**	