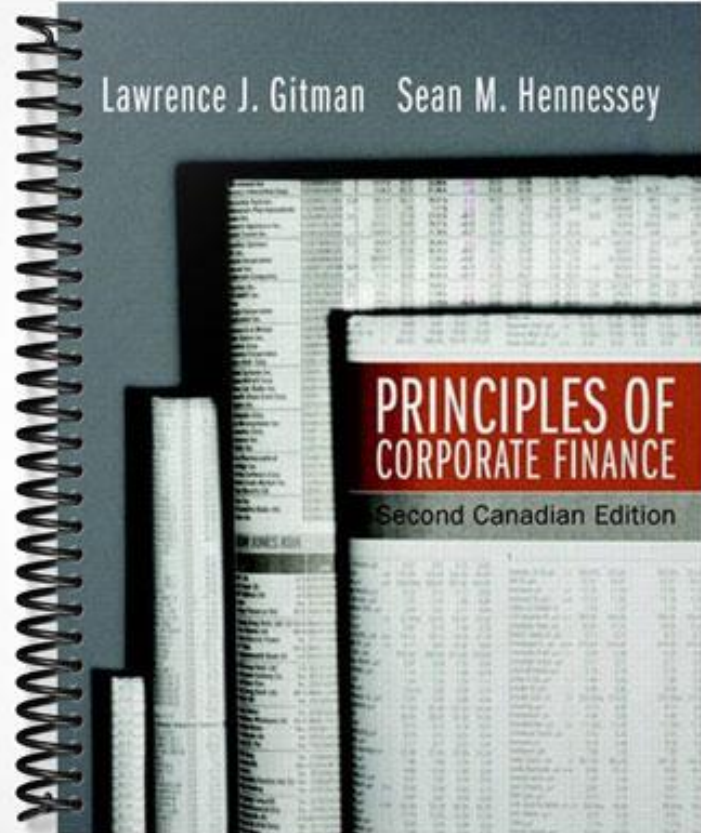


SOLUTIONS MANUAL

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**PRINCIPLES OF
CORPORATE FINANCE**

Second Canadian Edition

CHAPTER 2

Financial Statements, Cash Flows, Taxes, and the Language of Finance

INSTRUCTOR'S RESOURCES

Overview

Chapter 2 focuses on financial statements, cash flows, and taxes. The characteristics, format, key components and relationships between the income statement, balance sheet, statement of retained earnings, and statement of cash flows are reviewed. The income statement summarizes operating results for a period of time by subtracting direct costs, operating and financial expenses, and taxes from sales revenue to determine net income after tax. The balance sheet summarizes a company's financial position at a point in time by balancing the firm's assets against its liabilities and shareholders' equity. The statement of retained earnings illustrates what a company did with the net income earned during the year. The statement of cash flows (SCF) summarizes the change in the cash balance from one period to the next.

The statement of cash flows is very important to a company. It provides a summary of inflows and outflows of cash over a specified time period and is divided into operating, investing and financing cash flows. The six-step process used to develop a SCF is presented in the chapter. Free cash flow is the cash available to make payments to the creditors and investors that supplied capital to the company. Free cash flow is "free" to distribute to creditors or shareholders as interest, principal repayments, dividends, or share repurchases.

The basics of corporate taxation are also introduced in this chapter. Businesses can deduct all direct, operating, and financial expenses from sales to arrive at earnings before taxes. Dividends received from taxable Canadian corporations are tax exempt while only one-half of capital gains are taxable. Corporations can use capital and non-capital operating losses to reduce the taxes they pay. These losses can be applied to prior earnings or they can be carried forward and applied to reduce future taxes payable.

For tax purposes, companies are required to use capital cost allowance (CCA), the tax version of amortization. The maximum amount of CCA that can be claimed in any year is based on the undepreciated capital cost (UCC) in the asset class at year-end. In the year the asset is acquired, only one half of the allowable CCA can be claimed. If a company sells all of the assets in a class during a year, two calculations must be made to determine if there is a terminal loss or a recapture. A terminal loss, meaning the company has not claimed enough CCA, is deducted for tax purposes. A recapture, meaning the company has claimed too much CCA, is treated as income for tax purposes. Another item that impacts taxes payable is an investment tax credit (ITC). The dollar amount of ITC can be deducted from federal taxes payable but it must also be deducted from the UCC of the asset for CCA purposes.

For corporate tax purposes, there are two types of corporations: manufacturing and non-manufacturing. A company can also be classified as a Canadian-controlled private corporation (CCPC) for which the federal government allows the corporation to claim a small business deduction on the first \$400,000 of active business income.

The chapter concludes with a discussion of the annual report, a report provided to shareholders that summarizes the company's financial activities for the year. A typical annual report includes: a summary of financial results, the letter to shareholders,

management's discussion and analysis of financial performance, and the four key financial statements.

ANSWERS TO REVIEW QUESTIONS

- 2-1**
- a.** *Income Statement:* A summary of revenues generated from sales, the operating and financial costs including taxes, the profit available to owners, the amount of profits distributed to preferred and common shareholders (optional), and the level of earnings retained in the business (optional).
 - b.** *Balance Sheet:* A summary of current assets, long-term assets, current liabilities, long-term liabilities, and shareholders' equity. It shows a picture of the company's financial situation at a given point in time.
 - c.** *Statement of Retained Earnings:* Shows the prior retained earnings balance, net profit/loss after taxes, cash dividends paid to common and/or preferred shareholders, and the amount retained by the firm.

- 2-2** Even though the income statement is a flow statement while the balance sheet is at a point in time, the two statements are related in a number of ways. First, the amortization expense on the income statement flows through to the accumulated amortization account on the balance sheet. Second, net income after tax (NIAT) not paid out to shareholders as dividends is reinvested back into the company through retained earnings. The statement of retained earnings is a link between the income statement and balance sheet. Third, the amortization expense and reinvested profits provide a source of financing and as such this will affect liability accounts (use amortization and reinvested profits to pay off debt), or assets (use amortization and reinvested profits to acquire assets), or both liabilities and assets.

The income statement is related to the statement of cash flows (SCF) through NIAT and the amortization expense. Both of these items are sources of cash and are added together to get net cash from operations on the SCF.

The balance sheet and SCF are linked through the cash account. The SCF illustrates why and how the cash account varied from one period to the next. The change in cash is based in large part on changes in the balance sheet accounts.

- 2-3**
- a.** *Operating flows* relate to the firm's production cycle - from the purchase of raw materials to the finished product. Any expenses incurred that are directly related to this process are considered operating flows.
 - b.** *Investment flows* result from the purchases and sales of fixed assets and business interests.
 - c.** *Financing flows* result from borrowing and repayment of debt obligations and from equity transactions such as the sale or purchase of shares and dividend payments.

2-4	<u>Sources</u>	<u>Uses</u>
	Decrease in any asset	Increase in any asset
	Increase in any liability	Decrease in any liability
	Net income after taxes	Net loss
	Amortization and other non-cash charges	Dividends paid
	Sale of shares	Repurchase or retirement of shares

A decrease in the cash balance is a *source* of cash flow because cash flow must have been released for some purpose, such as an increase in inventory. Similarly, an increase in the cash balance is a use of cash flow, since the cash must have been drawn from some source of cash flow.

2-5 The first 4 steps in developing the statement of cash flows are:

Step 1: Determine cash flow by finding the change in cash and marketable securities from the previous year's to the current year's balance sheet.

Step 2: Calculate net cash from operations: Net income after tax + Amortization

Step 3: Determine the total changes in non-cash working capital accounts such as accounts receivable, inventory, accounts payable, & accruals

Step 4: Determine cash flow from investing activities: the change in long-term assets

Changes in fixed assets are part of cash flow from investing activities. An increase in a fixed asset is a decrease in cash flow and a decrease in fixed assets is an increase in cash flow. Amortization is added back as part of determining cash flow from operations. To avoid double counting, the accumulated amortization account is not included in calculating cash from investing activities, since amortization was added back in calculating cash flow from operations.

2-6 The three inputs to the statement of cash flows obtained from the income statement are net profit/loss after taxes, amortization, and cash dividends paid on common and preferred shares.

Dividends for the period can be calculated by subtracting the change in retained earnings from net income after taxes. Dividends can also be obtained from the statement of retained earnings.

2-7 The statement of cash flows summarizes the firm's operating, investment, and financing cash flows and reconciles them with changes in its cash and marketable securities accounts during the period of concern.

The cash and marketable securities accounts are excluded from cash flows from operations because they represent the period's net cash flow to which the statement is reconciled. The cash and marketable securities already indicate the

net cash position. The purpose of the cash flow statement is to determine what happened to the cash or where it came from. The SCF explains the change in cash.

Current liabilities with a direct cost of financing are excluded because they reflect deliberate financing rather than the spontaneous financing that is associated with normal operating activities, such as accounts payable.

- 2-8** To check the final balance, the value of “net increase (decrease) in cash and marketable securities” should be equal to the actual change in cash and marketable securities for the period from the beginning and end-of-period balance sheets.
- 2-9** Interpretation of the statement of cash flows involves an evaluation of both the major categories of cash flows and the individual items of inflow and outflow. This analysis allows the financial manager, investor, or creditor to assess whether any developments have occurred that are contrary to the company’s financial objectives, to evaluate progress toward projected goals and to isolate inefficiencies. For example, the firm’s growth in current and fixed assets and the methods of financing this growth (internal and external) can be analyzed. A projected statement of cash flows could be used to determine the feasibility of proposed financial plans.
- 2-10** The cash flow statement shows a more accurate picture of the firm’s financial situation. It gives investors a much clearer view of a company’s cash generating (and keeping) capabilities which is important in evaluating a company. The statement of cash flows shows how the firm is using and generating cash and can signal problems in the firm’s operations. For example, the statement of cash flows will highlight a significant increase in accounts such as inventory or accounts receivable which will signal that the company is not properly managing its working capital.
- 2-11** The income statement may not provide a clear picture of a company’s results. It focuses on earnings rather than cash flow. The income statement can be clouded by various one-time events and accounting distortions in the treatment of revenues and/or costs. GAAP was implemented to standardize accounting practices but accountants still have latitude in how these principles are reflected in the accounts. The way in which revenues and costs are recognized can have a big impact on the firm’s reported net income.
- 2-12** The calculation of free cash flow requires three inputs: free cash flow from operations, the company’s investment in fixed assets (capital expenditures), and the change in non-cash working capital. The formula is:

$$\text{FCF} = \text{FCFO} - \text{CAPEX} - \text{Change in non-cash working capital}$$

Free cash flow is not really “free.” It is simply the cash that is available to distribute to creditors or shareholders as interest, principal repayments, dividends,

or share repurchases. It is the cash that is left over after the payment of all cash expenses and the investments required by the firm.

- 2-13** The firm can distribute its free cash flow to creditors or shareholders as interest, principal repayments, dividends, or share repurchases. It can also be used by the company's management to fund additional investments in assets or the acquisition of other companies. It is an important measure to shareholders because it represents the amount of cash the firm has available to make payments to the shareholders that supplied capital to the company.
- 2-14** Active income is income derived from normal business activities. It is the amount of sales revenues remaining after all expenses incurred to generate sales are deducted. Active income is taxed at the rates shown in the first three columns of Table 2.7. Passive income is income generated from a specified investment business or from a personal services business. Passive income is taxed at higher corporate tax rates. A capital gain is the positive difference between the selling price of a capital asset and its original cost plus the costs incurred to sell the asset. One-half of the capital gain is included in taxable income and taxed at the corporation's normal tax rate.
- 2-15** Dividends are paid out of after-tax income, thus the income that generated the dividends has already been taxed. If a corporation receiving the dividend also paid tax on this form of income, the income would be taxed twice. This would be unfair taxation. Dividends from taxable corporations are not included in a company's taxable income but are added back to net income after taxes.
- 2-16** A non-capital loss is an operating loss – the loss that occurs when a firm loses money rather than making a profit. A capital loss is when a company sells a non-depreciable asset for less than its original cost. The tax system allows firms to carry backward and forward capital and non-capital losses to reduce the impact of fluctuations in income from year to year on their tax liability. Non-capital losses can be carried back up to three years to reduce taxable income in those years and can be carried forward to reduce taxable income for 20 years. Capital losses can be carried back up to three years to reduce capital gains in those years and can be carried forward to reduce capital gains indefinitely. It is important to note that capital losses can only be applied to reduce capital gains; it cannot be applied to reduce operating income.
- 2-17** It is best for a firm to carry losses back to receive the benefit as early as possible. By carrying losses back, the firm receives the tax refund in the current year. If the firm were to wait and carry the losses forward, there would be a lag before the tax benefit would be received. Also, any tax loss should be applied to the oldest tax year first. This ensures the company applies losses to all the years it is permitted and it maximizes the company's potential to use losses as quickly as possible.
- 2-18** A non-capital loss of \$465,000 would be first carried back and applied to the operating income reported three years ago. Assuming the loss is greater than the operating income in that year, it would be used to reduce the operating income to

zero. Any remaining loss would be applied to reduce operating income reported two years ago. Again, this would be reduced to zero if the remaining loss was enough to cover the operating income. If some of the loss was still remaining, it would be applied to the operating income reported one year ago. It would be reduced to zero, if possible. Finally, any remaining loss would be carried forward to apply to operating income the next year and the subsequent years.

Example: Assume an operating loss of \$465,000 in 2008

	<u>2005</u>	<u>2006</u>	<u>2007</u>
Operating income	\$114,500	\$135,670	\$147,990
Carryback credit	<u>-114,500</u>	<u>-135,670</u>	<u>-147,990</u>
Adjusted operating income	\$0	\$0	\$0

The operating loss is applied to reduce operating income in 2005, 2006 and 2007, in that order. The remaining loss of \$66,840 (\$465,000 - \$114,500 - \$135,670 - \$147,990) can be carried forward to apply to operating income in subsequent years.

- 2-19** An asset class is a group of assets that are considered in total for CCA calculation purposes. Assets within the same asset class have the same CCA rate. Asset classes are important for CCA purposes because CCA is claimed on asset classes rather on assets. The amount of CCA the company can claim is based on the book value of the asset class and the CCA rate applicable for the class. Assets must be grouped into their appropriate asset classes to allow the firm to determine the amount of CCA the company can claim.
- 2-20** The half-year rule is the condition that the CRA imposes that only one-half of the allowable CCA can be claimed in the year an asset is acquired. For example, if a company just purchased a \$100,000 asset with a CCA rate of 30%, the maximum CCA the company can claim in year one is \$15,000 ($\$100,000 \times 30\%/2$). The half-year rule also applies to net additions to the asset class. In this case, one-half of the net addition is added to the beginning book value. CCA is then claimed on the sum of these amounts.
- 2-21** When a company both sells and buys assets that are in the same asset class, the net addition to the asset class must be calculated. To calculate net additions, the lesser of the original cost or the proceeds of the assets disposed of during the year is subtracted from the cost of the assets acquired during the year. To account for the half-year rule, one-half of this net amount is added to the UCC balance at the beginning of the year. This becomes the UCC used to calculate CCA for the year of the addition and disposal of assets.
- 2-22** The tax deductibility of corporate expenses reduces their actual after-tax cost. Amortization and corporate interest are tax-deductible expenses, while dividends are not. Amortization, a non-cash expense, is included as an operating expense and therefore reduces the firm's net income. It acts as a tax shield for the firm. The dollar amount of the tax shield is equal to the amortization expense \times tax rate.

- 2-23** Amortization is a cash inflow to the firm since it is treated as a non-cash expenditure from the income statement. This reduces the firm's cash outflows for tax purposes. Cash flow from operations can be found by adding amortization and other non-cash charges back to profits after taxes. Since amortization is deducted for tax purposes but does not actually require any cash outlay, it must be added back in order to get a true picture of operating cash flows.
- 2-24** A recapture or terminal loss results when a company sells all of the assets in a class. A recapture occurs when the UCC balance of the asset class after the sale of all assets is negative. This means that the company claimed too much CCA on the asset class and has recaptured some of the previously deducted CCA. A recapture is treated as income for tax purposes. A terminal loss occurs when the UCC balance of the asset class after the sale of all assets is positive. This means that the company did not claim enough CCA on the asset class. A terminal loss is deducted from income for tax purposes.
- 2-25** There are two calculations to be made when an asset is sold. The first is to determine if there was a capital gain on the asset. This will occur if the asset was sold for more than its original cost. Second, the lesser of the original cost of the asset or the proceeds from the sale are subtracted from the UCC in the asset class prior to the sale. The two possible outcomes are a positive value (a terminal loss) or a negative value (a recapture).
- 2-26** An investment tax credit (ITC) is an incentive for businesses in various regions of the country to purchase certain types of fixed assets or undertake certain types of research and development activities. The dollar amount of ITC can be deducted from federal taxes payable. It impacts CCA because CCA cannot be claimed on the ITC portion of the UCC. The dollar amount of ITC must be subtracted from the beginning UCC before calculating the amount of CCA that can be claimed on the asset.
- 2-27** For corporate tax purposes in Canada, a corporation must be classified based on two characteristics. The first is whether a company is a Canadian-controlled private corporation (CCPC). If the business is a CCPC it will be subject to lower taxes on the first \$400,000 of its active business income. The second characteristic is whether the company is engaged in manufacturing and processing. Manufacturing and processing companies pay lower provincial taxes in some provinces.
- 2-28** The general rate reduction is the deduction that most corporations are allowed from the net federal tax rate of 28 percent. It is important because it reduces the federal tax rate applied to a company's taxable income and thus the amount of federal taxes payable. Without the general rate reduction, the federal tax rate would be 28 percent.

- 2-29** Provinces can use the tax system to encourage business to establish in the province. All provinces in Canada offer financial and other incentives to businesses in order to encourage them to operate there.
- 2-30** The federal government allows CCPCs to claim the small business deduction of 16.5 percent. This deduction is from the net federal tax of 28 percent so that a CCPC does not receive both the general rate reduction and the small business deduction. The small business deduction applies to the first \$400,000 of active business income and is reduced for corporations with taxable capital of more than \$10 million. The government would provide this deduction to a small business to encourage the start-up of small, private businesses that are majority owned by Canadian residents.
- 2-31** It is important that a CCPC earn active business income because the small business deduction applies only to the first \$400,000 of active business income. It does not apply to investment income or passive income. Investment income is taxed at the highest federal rate; there are no tax breaks associated with investment income.
- 2-32** **Generally Accepted Accounting Principles (GAAP)** are the guidelines used to prepare and maintain financial records, reports, and statements.

The **Accounting Standards Board (AcSB)**, part of the Canadian Institute of Chartered Accountants (CICA), is the accounting profession's rule-setting body that authorizes accounting practices and principles. The Canada Business Corporation Act and provincial corporations and securities legislation generally require companies to prepare financial statements for their shareholders in accordance with GAAP. Regulators, such as provincial securities commissions and stock exchanges, enforce the accurate disclosure of corporate financial data.

- 2-33** There are four sections in the typical annual report. First is a summary of the company's financial performance for the year. Second is the letter to shareholders. Third is management's discussion and analysis of financial performance. Fourth are the four required financial statements and the notes to these statements. Students should add some detail to each of these sections in their responses.
- 2-34** The purpose of Management's Discussion and Analysis (MD&A) is to allow the reader of the annual report to look at the company through the eyes of management. Financial statements, by themselves, provide insufficient financial disclosure. MD&A provides much more detail regarding a company's financial performance.
- 2-35** Publicly-traded means the company's common shares are listed and trade on one of the two stock exchanges in Canada.

SOLUTIONS TO PROBLEMS

2-1 LG 1: Reviewing Basic Financial Statements

Income statement: In this one-year summary of the firm's operations, Technica, Inc. showed a net profit for 2008 and the ability to pay cash dividends to its shareholders.

Balance sheet: The financial condition of Technica, Inc. at December 31, 2007 and 2008 is shown as a summary of assets, liabilities and equity. Technica, Inc. has an excess of current assets over current liabilities, demonstrating liquidity. The firm's fixed assets represent over one-half of total assets (\$270,000 of \$408,300). The firm is financed by short-term debt, long-term debt, common shares, and retained earnings. It appears that it repurchased 500 shares of common shares in 2008.

Statement of retained earnings: Technica, Inc. earned a net profit of \$42,900 in 2008 and paid out \$20,000 in cash dividends. The reconciliation of the retained earnings account from \$50,200 to \$73,100 shows the net amount (\$22,900) retained by the firm.

Statement of Retained Earnings
Technica, Inc.
For the Year Ended December 31, 2008

Retained earnings balance (January 1, 2008)	\$50,200
Plus: Net income after taxes (for 2008)	42,900
Less: Cash dividends (paid during 2008)	<u>(20,000)</u>
Retained earnings balance (December 31, 2008)	<u>\$73,100</u>

2-2 LG 1: Financial Statement Account Identification

<u>Account Name</u>	<u>a.</u> <u>Statement</u>	<u>b.</u> <u>Type of Account</u>
Accounts payable	BS	CL
Accounts receivable	BS	CA
Accruals	BS	CL
Accumulated amortization	BS	FA*
Administrative expense	IS	E
Buildings	BS	FA
Cash	BS	CA
Common shares	BS	SE
Cost of goods sold	IS	E
Amortization	IS	E
Equipment	BS	FA
General expense	IS	E
Interest expense	IS	E
Inventories	BS	CA
Land	BS	FA
Long-term debts	BS	LTD
Machinery	BS	FA

Marketable securities	BS	CA
Line of credit	BS	CL
Operating expense	IS	E
Preferred shares	BS	SE
Preferred share dividends	IS	E
Retained earnings	BS	SE
Sales revenue	IS	R
Selling expense	IS	E
Taxes	IS	E
Vehicles	BS	FA

* This is really not a fixed asset, but a charge against a fixed asset, better known as a contra-asset.

2-3 LG 1: Income Statement Preparation

Perry Corporation
Income Statement
For the Year Ended July 31, 2009

Sales revenue	\$525,000
Less: Cost of goods sold	<u>285,000</u>
Gross profits	\$240,000
Less: Operating expenses:	
Selling expense	35,000
General and administrative expense	60,000
Amortization	<u>55,000</u>
Total operating expenses	<u>150,000</u>
Operating profits	\$90,000
Less: Interest expense	25,000
Net income before taxes	\$65,000
Less: Taxes (40%)	<u>26,000</u>
Net income after taxes	\$39,000
Less: Preferred dividends	<u>10,000</u>
Earnings available to common shareholders	<u>\$29,000</u>

2-4 LG 1, 2: Income Statement Preparation

a.

Cathy Chen, CA
Income Statement

For the Year Ended December 31, 2008

Sales revenue	\$180,000
Less: Operating expenses:	
Salaries	90,000
Employment taxes and benefits	17,300
Supplies	5,200
Travel and entertainment	8,500
Lease payment	16,200
Amortization expense	<u>7,800</u>
Total operating expenses	<u>145,000</u>
Operating profit	\$ 35,000
Less: Interest expense	<u>7,500</u>
Net income before taxes	\$ 27,500
Less: Taxes (30%)	<u>8,250</u>
Net income after taxes	<u>\$19,250</u>

b. Operating cash flow = net profit after taxes + amortization
= \$19,250 + \$7,800
= \$27,050

Free cash flow from operations (FCFO) = EBIT × (1 - T) + Amortization
= \$35,000 × (1 - .30) + \$7,800
= \$24,500 + \$7,800
= \$32,300

- c. In her first year of business, Cathy Chen covered all her operating expenses and earned a net profit of \$19,250 on revenues of \$180,000.

2-5 LG 1: Calculation of EPS and Retained Earnings

a. **Earnings per share:**

Net profit before taxes	\$218,000
Less: Taxes at 40%	<u>87,200</u>
Net profit after taxes	\$130,800
Less: Preferred share dividends	<u>32,000</u>
Earnings available to common shareholders	<u>\$ 98,800</u>

Number of common shares 85,000

Earnings per share: \$1.16

b. Amount to retained earnings:

85,000 shares × \$0.80 = \$68,000 common share dividends

Earnings available to common shareholders	\$98,800
Less: Common share dividends	<u>68,000</u>
To retained earnings	\$30,800

2-6 LG 1: Balance Sheet Preparation

**Owen Davis Company
Balance Sheet
As At July 31, 2009**

Current assets:	
Cash	\$215,000
Marketable securities	75,000
Accounts receivable	450,000
Inventories	<u>375,000</u>
Total current assets	\$1,115,000
Gross fixed assets	
Land and buildings	\$325,000
Machinery and equipment	560,000
Furniture and fixtures	170,000
Vehicles	<u>25,000</u>
Total gross fixed assets	\$1,080,000
Less: Accumulated amortization	<u>265,000</u>
Net fixed assets	<u>\$815,000</u>
Total assets	<u><u>\$1,930,000</u></u>
Current liabilities:	
Accounts payable	\$220,000
Line of credit	475,000
Accruals	<u>55,000</u>
Total current liabilities	\$ 750,000
Long-term debt	<u>420,000</u>
Total liabilities	\$1,170,000
Shareholders' equity	
Preferred shares	\$100,000
Common shares	290,000
Retained earnings	<u>370,000</u>
Total shareholders' equity	<u>\$760,000</u>
Total liabilities and shareholders' equity	<u><u>\$1,930,000</u></u>

2-7 LG 1: Impact of Net Income on a Firm's Balance Sheet

	Account	Beginning Value	Change	Ending Value
a.	Marketable securities	\$ 35,000	+ \$1,365,000	\$1,400,000
	Retained earnings	\$1,575,000	+ \$1,365,000	\$2,940,000
b.	Long-term debt	\$2,700,000	- \$ 865,000	\$1,835,000
	Retained earnings	\$1,575,000	+ \$ 865,000	\$2,440,000

c.	Net buildings	\$1,600,000	+ \$ 865,000	\$2,465,000
	Retained earnings	\$1,575,000	+ \$ 865,000	\$2,440,000

d. No net change in any accounts

2-8 LG 1: Initial Sale Price of Common Shares

$$\text{Initial sales price} = \frac{\text{Proceeds of sale}}{\text{Number of preferred shares outstanding}}$$

$$\text{Initial sales price} = \frac{\$125,000}{6,250} = \$20 \text{ per share}$$

$$\text{Initial sales price} = \frac{\text{Proceeds of sale}}{\text{Number of common shares outstanding}}$$

$$\text{Initial sales price} = \frac{\$2,850,000}{300,000} = \$9.50 \text{ per share}$$

2-9 LG 1, 2: Financial Statement Preparation

a.

Rogers Industries Income Statement For the Year Ended March 31, 2009

Sales		\$1,200,000
Less: Cost of goods sold		<u>720,000</u>
Gross profit		\$ 480,000
Less: Operating expenses		<u>180,000</u>
Operating profit		\$ 300,000
Less: Interest expense		<u>35,000</u>
Earnings before taxes		\$ 265,000
Less: Taxes at 40%		<u>106,000</u>
Net income after taxes		\$ 159,000
Less: Preferred share dividends		<u>4,000</u>
Earnings available to common shareholders		\$ 155,000
Earnings per share (EPS)	=	$\frac{\$155,000}{119,000} = \1.30

b.

Rogers Industries
Balance Sheet
As At March 31, 2009

Assets	
Current assets:	
Cash	\$ 40,000
Marketable securities	10,000
Accounts receivable	96,000
Inventories	<u>120,000</u>
Total current assets	<u>\$ 266,000</u>
Gross fixed assets	\$ 920,000
Less: Accumulated amortization	<u>260,000</u>
Net fixed assets	<u>\$ 660,000</u>
Total assets	<u>\$ 926,000</u>
Liabilities and shareholders' equity	
Current liabilities:	
Accounts payable	\$ 60,000
Line of credit	80,000
Accruals	<u>10,000</u>
Total current liabilities	\$150,000
Long-term debt	<u>270,000</u>
Total liabilities	<u>\$420,000</u>
Shareholders' equity	
Preferred shares	\$ 40,000
Common shares	320,000
Retained earnings	<u>146,000</u>
Total shareholders' equity	<u>\$506,000</u>
Total liabilities and shareholders' equity	<u>\$926,000</u>

c. Free cash flow from operations (FCFO) = $EBIT \times (1 - T) + \text{Amortization}$
= $\$300,000 \times (1 - .40) + \$20,000$
= $\$180,000 + \$20,000$
= $\$200,000$

2-10 LG 1: Statement of Retained Earnings

a.

Hayes Enterprises
Statement of Retained Earnings
For the Year Ended December 31, 2008

Retained earnings balance (January 1, 2008)	\$928,000
Plus: Net income after taxes (for 2008)	377,000
Less: Cash dividends (paid during 2008)	
Preferred shares	(47,000)
Common shares (calculation provided below)	<u>(210,000)</u>
Retained earnings (December 31, 2008)	<u>\$1,048,000</u>
Cash Dividends for common shareholders:	
Net income	\$377,000
Dividends paid to preferred shareholders	<u>(47,000)</u>
Available for common dividends and retained earnings	
330,000	
Increase in Retained Earnings (\$1,048,000 - \$928,000)	<u>(120,000)</u>
Cash dividends to common shareholders	\$210,000

b.

$$\text{Earnings per share} = \frac{\text{Net profit after tax} - \text{Preferred dividends (EAC*)}}{\text{Number of common shares outstanding}}$$

$$\text{Earnings per share} = \frac{\$377,000 - \$47,000}{140,000} = \$2.36$$

* Earnings available to common shareholders

c.

$$\text{Cash dividend per share} = \frac{\text{Total cash dividends}}{\text{\# shares}}$$

$$\text{Cash dividend per share} = \frac{\$210,000 \text{ (from part a)}}{140,000} = \$1.50$$

2-11 LG 1: Understanding Financial Statements

- a. One of the characteristics of the balance sheet is that it must balance. You know that the total of the liabilities and equity must equal the total of the assets in order for the balance sheet to balance. Since the values of total assets, current liabilities, and total equity are known, determine long-term debt (liabilities) outstanding.

$$\begin{aligned}\text{Assets} &= \text{liabilities} + \text{equity} \\ \$1,340,600 &= ? + \$855,150 \\ \text{Liabilities} &= \$485,450 \\ \text{Long-term debt} &= \text{liabilities} - \text{current liabilities} \\ \text{Long-term debt} &= \$485,450 - \$231,200 = \$254,250\end{aligned}$$

- b. The change in assets from August 2008 to August 2009 indicates the amount invested in assets during the 2009 fiscal year:

$$\begin{aligned}\text{Change in assets} &= \text{investment in assets} \\ (\text{Assets 2009}) - (\text{Assets 2008}) \\ \$1,340,600 - \$935,000 &= \$405,600\end{aligned}$$

The company invested \$405,600 in assets during the 2009 fiscal year.

Where did the company raise the funds to invest in assets? What are the sources of the \$405,600?

Liabilities and equity are considered sources of funds, while assets are uses of funds. The money to invest in assets comes from liabilities and equity:

Sources of funds = changes in liabilities and equity

Consider the change in each of the liabilities and equity from 2008 to 2009 to determine the sources of the funds used to purchase the assets.

Current Liabilities

(\$6,800)

Current liabilities decreased implying a use of funds. Barrie required funds to pay off current liabilities (payables).

Long-Term Debt

\$128,250

Long-term debt increased. By issuing long-term debt, Barrie raised money to invest in assets.

Preferred Equity

\$25,000

The firm issued (sold) preferred shares to raise money. The value of preferred in 2009 was \$125,000. This is not the amount raised in 2009; the change in the value of preferred equity between 2008 and 2009 indicates the funds raised. This difference is \$25,000, the source of funds in 2009.

Common Shares

\$90,000

The value of common shares increased by \$90,000 through the sale of shares. The problem indicates Barrie sold 1,000 common shares, raising \$90,000.

Change in Retained Earnings = Reinvested Profits\$169,150

The change in retained earnings indicates the profits reinvested. This is a source of funds.

Total

\$405,600

- c. To calculate EPS, you must know the earnings available for common shareholders (EAC) and the number of common shares outstanding. To determine EAC, net income after tax (NIAT) and preferred dividends are required. EAC for 2008 and 2009 are:

	<u>2008</u>	<u>2009</u>	
NIAT	\$162,500	\$202,800	(Given in problem)
less: Preferred Dividends	<u>(\$10,000)</u>	<u>(\$12,500)</u>	(Amount paid by Barrie, given in problem)
EAC	\$152,500	\$190,300	(EAC is the difference between NIAT and preferred dividends paid.)

EPS is EAC divided by the number of common shares outstanding. The number of common shares outstanding in fiscal year 2008 is 20,000 and 21,000 in the 2009 fiscal year (1,000 shares were sold during the 2009 fiscal year).

$$\text{EPS} = \frac{\text{EAC}}{\# \text{ common shares}} \quad \frac{\text{\underline{2008}}}{20,000 \text{ shares}} \quad \frac{\text{\underline{2009}}}{21,000 \text{ shares}}$$

$$\text{EPS} = \quad = \$7.63 \quad = \$9.06$$

d. In 2008, we know the total dividends paid were:

\$10,000 in preferred shares
\$22,250 in common shares
\$32,250 total

Dividends per share are based on common dividends paid divided by the number of common shares outstanding. DPS for the 2008 fiscal year is $\$22,250/20,000$ shares = \$1.11

With NIAT, firms pay dividends: preferred and/or common (some companies pay neither). The remainder is reinvested back into the company. Reinvested profits flow to the retained earnings, which are the running total of reinvested profits. So reinvested profits for Barrie in 2008 are \$130,250 ($\$152,500 - \$22,250$). Think about it this way: the firm earned \$7.63 per share and paid common share dividends of \$1.11 per share, so they reinvested \$6.52 per share. (Note the rounding errors).

In 2009, Barrie paid \$12,500 in preferred dividends. What about common dividends paid?

The problem doesn't directly tell you how much the company paid in common share dividends but you can determine the difference between retained earnings from one year to the next. This is reinvested profits. If the company doesn't pay any common share dividends, the reinvested profits are equal to earnings available for common shareholders (EAC). If reinvested profits are less than EAC, then the company must have paid common share dividends.

Therefore, if Barrie didn't pay any common dividends in 2009, retained earnings in 2009 should have increased by \$190,300. The difference in retained earnings between 2008 and 2009 is \$169,150. Therefore, Barrie must have paid common share dividends; this is the only option available.

We knew that Barrie paid preferred dividends, and now we know that they paid common share dividends.

NIAT 2009	\$202,800	
Preferred Dividends	<u>(\$12,500)</u>	
EAC	\$190,300	
Common Dividends	<u>\$21,150</u>	- Solving for this.
Reinvested Profits	\$169,150	- Calculated from the change in Retained earnings from 2008 to 2009.

You can now calculate total dividends:

Preferred dividends	\$12,500
Common dividends	<u>\$21,150</u>
Total dividends	\$33,650

Now determine dividends per share:

$$\text{DPS} = \frac{\text{common dividends paid}}{\text{number of shares}} = \frac{\$21,150}{21,000} = \$1.01$$

Out of EPS of \$9.06 in 2009, DPS were \$1.01. This means the company reinvested \$8.05 per share (watch rounding errors). Between 2008 and 2009, Barrie paid a lower portion of their earnings to shareholders and reinvested a greater portion. That is very common for high growth companies. High growth companies normally don't pay dividends, or they pay very low dividends.

- e. Barrie had 20,000 common shares outstanding at August 31, 2008. This means they sold 20,000 shares over their history to August 31, 2008 raising \$410,000. The value for common shares on the balance sheet shows how much the company raised from the sale of common shares. To determine the average sale price of the common shares sold over the history of the company, the total amount raised by the sale of the shares is divided by the number of shares outstanding:

Average Selling Price of Common Shares Outstanding at August 31, 2008:

$$\frac{\text{funds raised from the sale of common shares}}{\text{number of common shares outstanding}}$$

$$\frac{\$410,000}{20,000} = \$20.50 \text{ per share}$$

On average, the company sold common shares for \$20.50 per share. This analysis does not mean that every share was sold at the average price. In 2009, Barrie sold an additional 1,000 shares, raising \$90,000 in financing. The average share price for shares sold in 2009:

$$\frac{\$90,000}{1,000 \text{ shares}} = \$90/\text{share}$$

The average price of 21,000 shares sold through to 2009 was:

$$\frac{\text{total funds from sale of common shares}}{\text{number of common shares outstanding}} = \frac{\$500,000}{21,000} = \$23.81$$

- f. You are asked to calculate retained earnings for the beginning of fiscal year 2008. You know the retained earnings (R/E) as of the end of 2008. You also know the NIAT, the preferred dividends paid, and the common dividends paid during the 2008 fiscal year. You have to work backwards to get R/E at the beginning of the 2008 fiscal year:

R/E, beginning 2008	?
+ NIAT	+ \$162,500
- Preferred Dividends	- \$ 10,000
- Common Dividends	- <u>\$ 22,250</u>
R/E, end 2008	\$ 61,000

Retained Earnings, beginning of 2008 = ?

$$? + \$162,500 - \$32,250 = \$61,000$$

$$? + \$130,250 = \$61,000$$

$$? = -\$69,250$$

So, retained earnings at the beginning of 2008 are -\$69,250.

It is possible to have negative retained earnings. Reinvested profits before fiscal 2008 were actually losses. Losses flow through to retained earnings, just as profits flow through. In fiscal 2008 the company started to turn a profit and retained earnings became positive. In 2009 they earned more money. Negative retained earnings simply means that a company lost money in the past.

- g. Book Value is the total amount of common equity. Total value of common equity is the sum of common stock and retained earnings, the combination of the direct investment made by shareholders and the indirect investment made by shareholders.

The problem does not provide the value of common stock in 2007. We do know, however, that there were no new common shares issued in 2007, so the value of the common stock in 2007 is the same as it was in 2008. Book Value per Share is calculated by dividing the value of common equity (book value) by the number of shares outstanding at the end of the fiscal year.

	<u>2007</u>	<u>2008</u>	<u>2009</u>
Common Shares	\$410,000	\$410,000	\$500,000
Retained Earnings	<u>-\$69,250</u>	<u>\$ 61,000</u>	<u>\$230,150</u>
Total Common Equity	<u>\$340,750</u>	<u>\$471,000</u>	<u>\$730,150</u>
	20,000	20,000	21,000
Book Value/Share	\$17.04	\$23.55	\$34.77

The book value per share for 2007 shows the historic contribution by shareholders. For 2007, shareholders have contributed \$17.04. The common shareholders have directly invested \$410,000, and indirectly invested a loss of \$69,250. Similar concepts appear for 2008 and 2009.

2-12 LG 2: Determining Free Cash Flow

a.
$$\begin{aligned} \text{FCFO} &= \text{EBIT} \times (1 - T) + \text{Amortization} \\ &= \$338,000 \times (1 - .40) + \$117,000 \\ &= \$202,800 + \$117,000 \\ &= \$319,800 \end{aligned}$$

b.		<u>2008</u>	<u>2009</u>
	Amortization expense (from income statements)		\$117,000
	Net fixed assets (from balance sheet)	\$280,000	\$369,750

Investment in gross fixed assets (CAPEX):

$$\begin{aligned} &= (\text{Net fixed assets 2009} - \text{net fixed assets 2008}) + \text{Amortization expense 2009} \\ &= (\$369,750 - \$280,000) + \$117,000 \\ &= \$89,750 + \$117,000 \\ &= \$206,750 \end{aligned}$$

c. Change in non-cash working capital:

$$\begin{aligned} &= \text{Change in non-cash current assets} - \text{Change in non-financing current liabilities} \\ &= (\$894,600 - \$590,000) - (\$231,200 - \$238,000) \\ &= \$304,600 - (-\$6,800) \\ &= \$311,400 \end{aligned}$$

d.
$$\begin{aligned} \text{FCF} &= \text{FCFO} - \text{CAPEX} - \text{Change in non-cash working capital} \\ &= \$319,800 - \$206,750 - \$311,400 \\ &= -\$198,350 \end{aligned}$$

2-13 LG 1: Understanding Financial Statements

a.
$$\$8,510,000 - \$7,610,000 = \$900,000$$

b.	Funds invested =	<u>\$900,000</u>
	Decrease in current liabilities =	(\$ 5,000)
	Increase in Long-term debt =	\$500,000
	Increase in Preferred Equity =	\$ 25,000
	Increase in Common Stock =	\$ 50,000
	Reinvested profits =	<u>\$330,000</u>
		<u>\$900,000</u>

c.
$$\$6,200,000 - \$5,600,000 + \$550,000 = \$1,150,000$$

d.	Retained earnings, beg of 2008	\$430,000
	+ NIAT for 2008	565,500
	- Total dividends for 2008	<u> ?</u>
	= Retained earnings, end of 2008	\$760,000

Solve for ?. It equals \$235,500

e. $(\$1,450,000 - \$1,400,000)/(41,250 - 40,000) = \$40/\text{share}$

f. 2007: $(\$1,400,000 + 430,000)/40,000 = \45.75
 2008: $(\$1,450,000 + 760,000)/41,250 = \53.58

2-14 LG 1, 2: Free Cash Flow versus Net Income

$$\text{FCF} = \text{FCFO} - \text{CAPEX} - \text{Change in non-cash working capital}$$

$$\begin{aligned} \text{FCFO} &= \text{EBIT} \times (1 - T) + \text{Amortization} \\ &= \$1,170,000 \times (1 - .35) + \$550,000 \\ &= \$760,500 + \$550,000 \\ &= \$1,310,500 \end{aligned}$$

Investment in gross fixed assets (CAPEX):

$$\begin{aligned} &= (\text{Net fixed assets 2008} - \text{net fixed assets 2007}) + \text{Amortization expense 2008} \\ &= (\$6,200,000 - \$5,600,000) + \$550,000 \\ &= \$600,000 + \$550,000 \\ &= \$1,150,000 \end{aligned}$$

Change in non-cash working capital:

$$\begin{aligned} &= \text{Change in non-cash current assets} - \text{Change in non-financing current liabilities} \\ &= (\$1,960,000 - \$1,710,000) - (\$625,000 - \$630,000) \\ &= \$250,000 - (-\$5,000) \\ &= \$255,000 \end{aligned}$$

$$\begin{aligned} \text{FCF} &= \text{FCFO} - \text{CAPEX} - \text{Change in non-cash working capital} \\ &= \$1,310,500 - \$1,150,000 - \$255,000 \\ &= -\$94,500 \end{aligned}$$

Montague Corporation's free cash flow for the 2008 fiscal year is -\$94,500. The firm's net income after tax for 2008 is \$565,500, a difference of \$660,000. From a profits perspective, Montague Corporation is in a very favourable financial situation. From a cash perspective, however, the opposite is true. Free cash flow is the amount of cash available to make payments to creditors and investors. For this reason, free cash flow presents a truer picture of Montague's financial situation. Despite a profit of \$565,500 in 2008, Montague Corporation has a negative cash flow of \$94,500 and thus has no free cash flow to distribute to creditors or shareholders.

2-15 LG 1: Changes in Shareholders' Equity

- a. Net income for 2008 = change in retained earnings + dividends paid
Net income for 2008 = $(\$1,500,000 - \$1,000,000) + \$200,000 = \$700,000$
- b. New shares issued = outstanding shares 2008 – outstanding shares 2007
New shares issued = $1,500,000 - 500,000 = 1,000,000$
- c.
$$\frac{\text{Value of Shares Sold}}{\text{Number of shares sold}} = \frac{\$5,000,000}{1,000,000} = \$5.00$$
- d.
$$\frac{\text{Value of Shares Sold}}{\text{Number of shares sold}} = \frac{\$1,000,000}{500,000} = \$2.00$$

2-16 LG 1: Reviewing the Balance Sheet

- a. The missing balance sheet account is current liabilities. The amount of current liabilities can be determined using the basic balance sheet equation:
$$\text{Assets} = \text{Liabilities} + \text{Equity}$$

$$\text{Assets} = \$200,000 + \$525,000 + \$65,000$$
$$= \$790,000$$

$$\$790,000 = ? + \$250,000 + \$175,000$$
$$\$790,000 = ? + \$425,000$$
$$? = \$365,000$$

Current liabilities total \$365,000
- b. The common shares account would increase by \$40,000 ($5,000 \times \8). Retained earnings would increase by \$82,500 ($\$105,000 - \$22,500$) since the company did not pay out all of its net income in dividends. Therefore, the total of common equity on the balance sheet would increase by \$122,500 ($\$40,000 + \$82,500$).
- c. If Alpha Company repaid \$25,000 of long-term debt during 2009, the amount of long-term debt on the company's balance sheet would decrease by \$25,000.
- d. For any change in liability or equity accounts there must also be a corresponding change in asset accounts or other liability or equity accounts. An increase in common equity accounts would be offset with an increase in assets or a decrease in liability accounts. Similarly, a decrease in long-term debt would need to be offset by a decrease in asset accounts, such as cash, or an increase in another liability or equity account. For example, the firm may use short-term financing to fund the repayment of long-term debt or the firm may issue new common shares or use a portion of the firm's retained earnings.

2-17 LG 1: Understanding Financial Statements

- a. We know the firm typically pays out 40% of its earnings as dividends to preferred and common shareholders. This equals \$72,920 in 2008 ($\$182,300 \times 40\%$). Of this amount, 30% is paid to preferred shareholders and 70% is paid to common shareholders. The total dividends paid to common shareholders in 2008 is \$51,044 ($\$72,920 \times 70\%$). Therefore:

R/E, beginning 2008	\$214,000
+ NIAT	+ \$182,300
- Preferred Dividends	- \$ 21,876
- Common Dividends	- <u>\$ 51,044</u>
R/E, end 2008	\$ 323,380

- b. Book value per share = $\frac{\text{common shares} + \text{retained earnings}}{\text{\# of common shares outstanding}}$

$$2007: \frac{\$185,000 + \$214,000}{27,850} = \$14.33$$

$$2008: \frac{\$346,000 + \$323,380}{85,332} = \$7.84$$

- c. Investment in fixed assets = Change in net fixed assets + Amortization expense
 $= \$3,200,000 - \$2,450,000 + \$125,000$
 $= \$875,000$

- d. EAC: For 2007, use the following formula [EPS \times common shares outstanding]
 $\$1.80 \times 27,850 = \$50,130$

For 2008, use part of the process from part a:

NIAT	\$182,300
- Preferred Dividends	<u>\$ 21,876</u>
EAC	\$160,424

- e. $\frac{\text{Value of shares sold}}{\text{Number of shares sold}}$

$$2007: \text{Preferred shares: } \frac{\$65,000}{10,000} = \$6.50$$

$$\text{Common shares: } \frac{\$185,000}{27,850} = \$6.64$$

2008: No new preferred shares were issued in 2008

$$\text{Common shares: } \frac{\$346,000 - \$185,000}{85,332 - 27,850} = \$2.80$$

f. Dividends per share (DPS) = $\frac{\text{Common share dividends}}{\text{\# of common shares outstanding}}$

$$\text{DPS (2008)} = \frac{\$51,044}{85,332} = \$0.60$$

g. Price earnings (P/E) = $\frac{\text{Current market price}}{\text{Earnings per share}}$

$$\text{EPS} = \frac{\text{EAC}}{\text{\# of common shares outstanding}}$$

$$\text{EPS (2008)} = \frac{\$182,300 - \$21,876}{85,332} = \$1.88$$

$$\text{P/E (2008)} = \frac{\$56.40}{\$1.88} = 30$$

h. Market to book value = $\frac{\text{Current market price}}{\text{Book value per share}}$

$$2008: \frac{\$56.40}{\$7.84} = 7.19$$

2-18 LG 2: Classifying Inflows and Outflows

Item	Change (\$)	I/O	Item	Change (\$)	I/O
Cash	+ 100	<u>N</u>	Accounts receivable	-700	<u>I</u>
Accounts payable	-1,000	<u>O</u>	Net income	+ 600	<u>I</u>
Line of credit	+ 500	<u>I</u>	Amortization	+ 100	<u>I</u>
Long-term debt	-2,000	<u>O</u>	Repurchase of shares	+ 600	<u>O</u>
Inventory	+ 200	<u>O</u>	Cash dividends	+ 800	<u>O</u>
Fixed assets	+ 400	<u>O</u>	Sale of shares	+1,000	<u>I</u>

2-19 LG 1, 2: Finding Dividends Paid

$$\begin{aligned} \text{Dividends paid} &= \text{Net profit after taxes} - \text{Changes in retained earnings balance} \\ &= \$186,000 - (\$812,000 - \$736,000) \\ &= \$186,000 - \$76,000 \\ &= \$110,000 \end{aligned}$$

2-20 LG 2: Preparing a Statement of Cash Flows

a. (1) Prepare Statement of Sources and Uses of Cash:

Keith Corporation
Statement of Sources and Uses of Cash
Between 2007 and 2008

Account (1)	<u>Account balance</u>		<u>Change</u>	<u>Classification</u>	
	2008 (2)	2007 (3)	[(2) - (3)] (4)	Source (5)	Use (6)
Assets					
Cash	\$1,500	\$1,000	+ \$500		\$ 500
Marketable securities	1,800	1,200	+ 600		600
Accounts receivable	2,000	1,800	+ 200		200
Inventories	2,900	2,800	+ 100		100
Gross fixed assets	29,500	28,100	+1,400		1,400
Accumulated amortization	14,700	13,100	+1,600	\$1,600	
Liabilities					
Accounts payable	1,600	1,500	+ 100	100	
Line of credit	2,800	2,200	+ 600	600	
Accruals	200	300	- 100		100
Long-term debt	4,000	5,000	- 1,000		1,000
Shareholders' Equity					
Common shares	11,000	10,000	+ 1,000	1,000	
Retained earnings	3,400	2,800	+ 600	600	
				Totals	<u>\$3,900</u> <u>\$3,900</u>

(2) Prepare Statement of Cash Flows

Keith Corporation
Statement of Cash Flows
For the Year Ended December 31, 2008 (\$000)

Cash Flow from Operating Activities

Net income after tax	\$ 1,400	
Amortization	1,600	
Increase in accounts receivable	(200)	
Increase in inventory	(100)	
Increase in accounts payable	100	
Decrease in accruals	<u>(100)</u>	
Cash provided by operating activities		\$ 2,700

Cash Flow from Investment Activities

Increase in gross fixed assets	(\$1,400)	
Cash used in investment activities		(1,400)

Cash Flow from Financing Activities

Increase in line of credit	\$ 600	
Change in long-term debt	(1,000)	
Change in shareholders' equity*	1,000	
Dividends paid	<u>(800)</u>	
Cash used by financing activities		(200)
Net Increase in Cash and Marketable Securities		\$1,100
Cash and marketable securities at beginning of year		<u>2,200</u>
Cash and marketable securities at end of year		<u>\$3,300</u>

* Exclusive of retained earnings, which are reflected in net income after taxes and dividends.

** Dividends calculated as NIAT less change in retained earnings.

- b.** Keith Corporation's primary sources of funds were net income after taxes and the tax shield from amortization expense. The major uses of funds include the purchase of fixed assets, the payment of dividends, and an increase in marketable securities. The firm is apparently experiencing growth as evidenced by the increase in current asset and current liability accounts.

- c.** $FCFO = EBIT \times (1 - T) + \text{Amortization}$
 $= \$2,720 \times (1 - .3365) + \$1,600$
 $= \$1,805 + \$1,600$
 $= \$3,405$

$$FCF = FCFO - CAPEX - \text{Change in non-cash working capital}$$
$$= \$3,405 - \$1,400 - \$300$$
$$= \$1,705$$

2-21 LG 2: Preparing a Statement of Cash Flows

a.

Technica, Inc.
Statement of Cash Flows for 2008

Cash Flow from Operating Activities

Net income after tax	\$ 42,900	
Amortization	<u>30,000</u>	
Net cash from operations		\$72,900
Decrease in accounts receivable	8,100	
Increase in inventories	(32,000)	
Increase in accounts payable	8,000	
Decrease in accruals	(1,000)	<u>(16,900)</u>
Cash provided by operating activities		<u>56,000</u>

Cash Flow from Investment Activities

Increase in gross fixed assets	(\$15,000)	
Cash used in investment activities		(15,000)

Cash Flow from Financing Activities

Decrease in line of credit	(\$ 3,000)	
Decrease in long-term debt	(10,000)	
Repurchase of common shares	(9,800)	
Dividends paid	(20,000)	
Cash used by financing activities		<u>(42,800)</u>

Net Decrease in Cash and Marketable Securities	(\$1,800)	
Cash and marketable securities, Beginning of period		<u>24,000</u>
Cash and marketable securities, End of period		<u>22,200</u>

b. While cash decreased by \$1,800 during the year, at \$22,200, the company still appears to have plenty of cash given the level of current liabilities. Cash and marketable securities are almost 30% of current liabilities and 16.1% of current assets. The primary sources of funds were net income and the tax shield from amortization, a very positive position. The major use was an increase in inventory. The firm also acquired additional fixed assets, paid dividends, repaid debt, and repurchased common shares. The firm appears to be in a very liquid position; however, creditors may wonder why the firm has repurchased shares and paid dividends. It seems that more of the positive cash flow from operations is being returned to the common shareholders.

c.
$$\begin{aligned} \text{FCFO} &= \text{EBIT} \times (1 - T) + \text{Amortization} \\ &= \$80,000 \times (1 - .38714) + \$30,000 \\ &= \$49,029 + \$30,000 \\ &= \$79,029 \end{aligned}$$

Technica's free cash from operations for 2008 was \$79,029.

$$\begin{aligned}
 \text{FCF} &= \text{FCFO} - \text{CAPEX} - \text{Change in non-cash working capital} \\
 &= \$79,029 - \$15,000 - \$16,900 \\
 &= \$47,129
 \end{aligned}$$

Technica's free cash flow for 2008 was \$47,129.

2-22 LG 3: Capital Gains

a. Capital gain: Asset X = \$2,250 - \$2,000 = \$ 250
 Asset Y = \$35,000 - \$30,000 = \$5,000

b. Tax on sale of asset:
 Asset X = $(\$250 \times .50) \times .206 = \$ 25.75$
 Asset Y = $(\$5,000 \times .50) \times .206 = \515.00

2-23 LG 3: Capital Gains

a. and b.

Asset	Sale Price (A)	Purchase Price (B)	Costs (C)	Capital Gain A - (B+C) (D)	Tax D x .5 x .261
A	\$ 3,800	\$ 3,000	\$ 400	\$ 400	\$ 52.2
B	12,360	12,000	360	0	0
C	81,000	62,000	1,000	18,000	2,349
D	45,460	41,000	460	4,000	522
E	18,125	16,500	125	1,500	195.75

2-24 LG 3: Loss Carryforward/Carryback

Year	Net Income	Taxable Capital Gain	Taxable Income	Taxes (28%)
1	\$25,000	\$2,000	\$27,000	\$7,560
2	80,000	2,500	82,500	23,100
3	45,000	4,000	49,000	13,720
4	70,000	1,500	71,500	20,020
5	75,000	0	75,000	21,000
6	-224,000	8,500	-215,500	0
				<u>\$85,400</u>

The company should have paid taxes of \$85,400 over this period. After taking into account loss carryback and carryforward adjustments, the situation is very different as shown below:

<u>Year</u>	<u>Net Income</u>	<u>Taxable Capital Gain</u>	<u>Taxable Income</u>	<u>Taxes (28%)</u>
1	\$25,000	\$2,000	\$27,000	\$7,560
2	80,000	0	80,000	\$22,400
3	0	0	0	\$0
4	0	0	0	\$0
5	0	0	0	\$0
6	-34,000	4,000	-30,000	\$0
				<u>\$29,960</u>

The net operating loss of \$224,000 in Year 6 can be carried back to reduce net income for the previous three years. Net income can be reduced to zero for years 3, 4 and 5. This leaves \$34,000 to be carried forward and applied to reduce future operating income. Similarly, the capital loss of \$25,000 in year 5 can be carried back to reduce capital gains in the previous three years. The capital gains for years 2, 3 and 4 can be reduced to zero. This leaves \$9,000 to be carried forward. Since it is best to apply capital losses to capital gains sooner than later, the \$9,000 is applied to the capital gain in year 6, reducing it to \$8,000.

By carrying backward and forward capital and non-capital losses, the company saves \$55,440 (\$85,400 - \$29,960) in taxes over this time period.

2-25 LG 3: Loss Carryforward/Carryback

a.

	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>
Taxable income	-\$497,000	-\$430,000	\$482,407	\$521,000
Carryforward credit			<u>482,407</u>	<u>444,593</u>
Adjusted profit			0	76,407
Taxes paid (35%)			0	26,742

2007 taxable income: \$521,000/1.08

The operating loss in 2005 reduces the 2007 taxable income to 0, resulting in total taxes of \$0. Of the 2005 operating loss, \$14,593 remains and can be carried forward. The remaining operating loss in 2005 and the operating loss of 2006 are used to reduce the taxable income in 2008 but do not cover the entire amount. The carryforward credit equals \$444,593 and results in an adjusted profit of \$76,407. Total taxes for 2008 are therefore \$26,742.

- b. An operating loss of \$80,000 in 2009 could be applied to taxable income in 2008. A carryback credit of \$76,407 would make the adjusted profit equal to zero and Stanley's would receive a tax refund of \$26,742. A carryforward credit of \$3,593 would remain.
- c. The net capital loss of \$20,000 in 2009 can be carried back and applied to reduce any capital gains in 2006, 2007, or 2008. Since there were no capital gains

reported in 2006, the loss is applied to the net capital gain of \$15,000 in 2007. This reduces the capital gain to 0 and the company will receive a tax refund equal to \$2,625 ($\$15,000/2 \times 35\%$). There are \$5,000 of unrecovered losses remaining which are applied to the capital gain in 2008. This reduces the capital gain to \$25,000 of which \$12,500 is taxable. This results in a tax refund of \$875 ($(\$15,000 - \$12,500) \times 35\%$).

2-26 LG 4: Calculate UCC and CCA

<u>Year</u>	<u>UCC - beginning of year</u>	<u>CCA</u>	<u>UCC - end of year</u>
2008	\$200,000	\$30,000	\$170,000
2009	\$170,000	\$51,000	\$119,000
2010	\$119,000	\$35,700	\$ 83,300
2011	\$ 83,300	\$24,990	\$ 58,310
2012	\$ 58,310	\$17,493	\$ 40,817

To determine the amount of CCA the company could claim in 2027 (year 20), the book value at the beginning of year 20 must be calculated:

$$\text{UCC (Book value)}_{\text{Beg Yr N}} = \text{UCC} \times (1 - d/2) \times (1 - d)^{N-2}$$

$$\begin{aligned} \text{UCC (Book value)}_{\text{Beg Yr 20}} &= \$200,000 \times (1 - 0.30/2) \times (1 - 0.30)^{20-2} \\ &= \$200,000 \times 0.85 \times 0.001628414 \\ &= \$276.83 \sim \$277 \text{ (rounded)} \end{aligned}$$

Therefore, the maximum CCA the company could claim in 2027 is \$83 ($\$277 \times 30\%$).

2-27 LG 4: Calculate UCC and CCA

$$\text{UCC (Book value)}_{\text{Beg Yr N}} = \text{UCC} \times (1 - d/2) \times (1 - d)^{N-2}$$

At 10%:

$$\begin{aligned} \text{UCC (Book value)}_{\text{Beg Yr 10}} &= \$500,000 \times (1 - 0.10/2) \times (1 - 0.10)^{10-2} \\ &= \$500,000 \times 0.95 \times 0.43046721 \\ &= \$204,471.92 \sim \$204,472 \text{ (rounded)} \end{aligned}$$

At 20%:

$$\begin{aligned} \text{UCC (Book value)}_{\text{Beg Yr 10}} &= \$500,000 \times (1 - 0.20/2) \times (1 - 0.20)^{10-2} \\ &= \$500,000 \times 0.90 \times 0.16777216 \\ &= \$75,497.47 \sim \$75,497 \text{ (rounded)} \end{aligned}$$

At 30%:

$$\begin{aligned} \text{UCC (Book value)}_{\text{Beg Yr 10}} &= \$500,000 \times (1 - 0.30/2) \times (1 - 0.30)^{10-2} \\ &= \$500,000 \times 0.85 \times 0.05764801 \\ &= \$24,500.40 \sim \$24,500 \text{ (rounded)} \end{aligned}$$

The maximum amount of CCA that can be claimed on the asset in the tenth year for each of the CCA rates is:

At 10%: $\$204,472 \times 10\% = \$20,447$

At 20%: $\$75,497 \times 20\% = \$15,099$

At 30%: $\$24,500 \times 30\% = \$7,350$

As the CCA rate increases, the book value of the asset in year 10 declines rapidly. The asset is depreciating at a faster rate. As a result, the amount of CCA that can be claimed on the asset also declines.

2-28 LG 4: Impact of Asset Transactions

To determine the UCC of the asset pool after the sale, subtract the lesser of the original cost of the asset or proceeds of the assets disposed of during the year from the current UCC:

i) Current UCC	\$1,300,000
Less: proceeds from sale	<u>1,000,000</u>
UCC after sale	\$300,000

CCA will be claimed on the positive UCC balance of \$300,000.

ii) Current UCC	\$1,300,000
Less: proceeds from sale	<u>1,300,000</u>
UCC after sale	\$0

The firm will not claim any CCA on this asset class.

iii) Current UCC	\$1,300,000
Less: proceeds from sale	<u>1,500,000</u>
UCC after sale	-\$200,000

Since the UCC balance is negative, this would become a recapture assuming no other assets are acquired before the end of the year.

iv) Current UCC	\$1,300,000
Less: proceeds from sale	<u>1,500,000</u>
UCC after sale	-\$200,000

Since the UCC balance is negative, this would become a recapture assuming no other assets are acquired before the end of the year. The firm will have a capital gain of \$300,000 ($\$1,800,000 - \$1,500,000$).

2-29 LG 4: Impact of Asset Transactions

- a. To determine the net addition to the asset class during 2008, first subtract the lesser of the original cost or proceeds of the asset disposed of during the year from the cost of the asset acquired during the year. Now add one-half of this net

amount to the UCC balance at the beginning of the year. This becomes the UCC used to calculate CCA for the year of the addition and disposal of assets.

During 2008, A Corp purchased an asset for \$128,000. From this, subtract \$80,000 (the lesser of the original cost of the asset sold or the proceeds from the sale) to get \$48,000. One-half of this amount is added to the UCC at the beginning of year 2008 to determine the UCC after the addition and disposal of assets:

$$\begin{aligned} \text{UCC} &= \$850,000 + \$24,000 \\ &= \$874,000 \end{aligned}$$

The maximum CCA the company could claim on this asset class for 2008 is \$218,500 ($\$874,000 \times 25\%$).

- b. i) To determine the UCC at the beginning of 2009, the CCA claimed in 2008 is subtracted from the UCC for 2008 (after the addition and disposal of assets) and the other half of the net addition is added back to the asset class.

$$\begin{aligned} \text{UCC}_{\text{Beg}2009} &= \$874,000 - \$218,500 + \$24,000 \\ &= \$679,500 \end{aligned}$$

ii) The CCA the company could claim for 2009 is \$169,875 ($\$679,500 \times 25\%$).

iii) $\text{UCC End } 2009 = \$679,500 - \$169,875 = \$509,625$

There are now nine years to go.

$$\text{UCC End } 2018 = \$509,625(1-0.25)^9 = \$38,265$$

2-30 LG 4: Calculating CCA and Tax Shield

a.	<u>Year</u>	<u>UCC - beginning of year</u>	<u>CCA</u>	<u>UCC - end of year</u>
	1	\$175,000	\$7,000	\$168,000
	2	\$168,000	\$13,440	\$154,560
	3	\$154,560	\$12,365	\$142,195
	4	\$142,195	\$11,376	\$130,819

b.	<u>Year</u>	<u>CCA</u>	<u>Tax Savings (CCA × Tax rate)</u>
	1	\$7,000	\$1,820
	2	\$13,440	\$3,494
	3	\$12,365	\$3,215
	4	\$11,376	\$2,958

- c. Tax shield from CCA is the tax savings that result from the company being able to claim CCA. The amount of CCA the company can claim reduces the firm's taxable income and so the firm pays less taxes.

2-31 LG 4: Calculating UCC, ITC, and CCA

a. Incremental cost = cost of asset – proceeds from sale – investment tax credit
 = \$175,000 - \$22,000 - \$17,500
 = \$135,500

b. $UCC (Book\ value)_{Beg\ Yr\ 10} = \$233,000 \times (1 - 0.08/2) \times (1 - 0.08)^{10-2}$
 = \$233,000 × 0.96 × 0.513218873
 = \$114,796.80 ~ \$114,797 (rounded)

c. The UCC at the beginning of the year is the sum of the net additions during the year plus the UCC at the beginning of year 10. To calculate the net additions, subtract the lesser of the original cost or the proceeds from the disposed assets from the cost of the assets acquired during the year. Since CCA cannot be claimed on the ITC portion of the UCC, the dollar amount of ITC must also be subtracted. One-half of this net amount, to take into account that the half-year rule applies to net additions as well, is added to the beginning UCC.

Net additions = \$175,000 - \$17,500 - \$22,000 = \$135,500
 \$135,500/2 = \$67,750

UCC = \$114,797 + \$67,750 = \$182,547

<u>Year</u>	<u>UCC - beginning of year</u>	<u>CCA</u>	<u>UCC - end of year</u>
1	\$182,547	\$14,604*	\$235,693**
2	\$235,693	\$18,855	\$216,838
3	\$216,838	\$17,347	\$199,491
4	\$199,491	\$15,959	\$183,532

*Note the half-year rule is not used in this analysis because it was already incorporated into the calculation of the beginning UCC: one-half of the net additions was added to the beginning UCC balance rather than the full amount.

**To calculate the UCC at the end of the first year, the other half of the net addition is added back after calculating the CCA for the year. UCC at the end of year 1 (the beginning of year 2) is calculated as: \$182,547 - \$14,604 + \$67,750.

2-32 LG 5: Calculating Taxes

Top Notch Textiles

Taxable income \$457,400

Federal taxes payable:
 \$457,400 @ 20.5% \$93,767

Provincial taxes payable:
 \$457,400 @ 12% \$54,888

Total taxes payable **\$148,655**

Anderson Auto Parts

Taxable income \$457,400

Federal taxes payable:

\$400,000 @ 11.5% \$46,000

\$57,400 @ 20.5% 11,767

Total federal taxes payable \$57,767

Provincial taxes payable:

\$400,000 @ 5.5% \$22,000

\$57,400 @ 12% 6,888

Total provincial taxes payable \$28,888

Total taxes payable **\$86,655**

Difference in taxes payable = \$148,655 - \$86,655 = \$62,000

As a CCPC, Anderson Auto Parts qualifies for a tax deduction, the small business reduction. The first \$400,000 of a CCPC's active business income is taxed at a federal rate of 11.5%, a reduction of 16.5% from the net federal rate of 28 percent. The provincial rates are also lower but vary from province to province. In this case, the first \$400,000 of Anderson's income was taxed at 5.5% with the remainder taxed at 12%, while Top Notch Textiles' entire income was taxed at 12%. The federal and provincial tax deductions result in a tax savings of \$62,000 for Anderson Auto Parts.

2-33 LG 5: Calculating Taxes

a. Tax calculations using Table 2.7

Net income before taxes:	\$92,500	
Federal taxes	<u>x .115</u>	10,638
Net income before taxes	\$92,500	
Provincial taxes (Nova Scotia)	<u>x .05</u>	<u>4,625</u>
Total taxes	\$15,263	

b. After-tax income: \$92,500 - \$15,263 = \$77,237

2-34 LG 5: Calculating Taxes

<u>Income Before Taxes</u>	<u>≤ \$400,000 (17%)</u>	<u>> \$400,000 (34.5%)</u>	<u>Total Taxes</u>	<u>After-tax Income</u>
\$10,000	\$1,700		\$1,700	\$8,300
\$80,000	\$13,600		\$13,600	\$66,400
\$300,000	\$51,000		\$51,000	\$249,000

\$500,000	\$68,000	\$34,500	\$102,500	\$397,500
\$1,500,000	\$68,000	\$379,500	\$447,500	\$1,052,500
\$10,000,000	\$68,000	\$3,312,000	\$3,380,000	\$6,620,000

2-35 LG 5: Calculating Taxes

			<u>Part a</u>		<u>Part b</u>
Taxable income			<u>\$465,000</u>		<u>\$465,000</u>
<u>Taxes:</u>					
On first	\$400,000	@ 16%	\$ 64,000	@ 14.7%	\$ 58,800
On next	\$65,000	@ 32.5%	<u>21,125</u>	@ 36.5%	<u>23,725</u>
Total taxes			<u>\$ 85,125</u>		<u>\$ 82,525</u>
Net income after taxes			<u>\$379,875</u>		<u>\$382,475</u>

2-36 LG 5: Calculating Taxes

	<u>Solution for</u>		<u>Solution for</u>
	<u>Part a</u>		<u>Part b</u>
Taxable Income	\$1,238,000		\$1,238,000
Taxes @ 30.5%	<u>377,590</u>	@32.5%	<u>402,350</u>
Net income after tax	<u>\$ 860,410</u>		<u>\$ 835,650</u>

2-37 LG 3, 5: Calculating Taxes

		<u>Solution for</u>		<u>Solution for</u>
		<u>Part a</u>		<u>Part b</u>
Taxable Income*		<u>\$774,300</u>		<u>\$774,300</u>
<u>Taxes:</u>				
On first	\$400,000 @ 17%	\$ 68,000	@16.5%	\$ 66,000
On remaining	\$374,300 @ 32.5%	<u>121,648</u>	@34.5%	<u>129,134</u>
Total taxes		<u>\$189,648</u>		<u>\$195,134</u>
Net income after taxes**		<u>\$778,952</u>		<u>\$773,466</u>
Average tax rate		<u>\$189,648</u>		<u>\$195,134</u>
		\$774,300		\$774,300
		= 24.49%		= 25.20%

* Taxable income = \$3,200,000 - \$2,500,000 + (\$148,600 × 50%). Note the dividends are not included in taxable income.

** Net income after taxes = Taxable income – taxes + dividends + ½ capital gain

c.		<u>Ontario</u>		<u>Newfoundland</u>
	Taxable income	\$774,300		\$774,300
	Total taxes @ 32.5%	<u>251,648</u>	@ 34.5%	<u>267,134</u>
	Net income after taxes	<u>\$716,952</u>		<u>\$701,466</u>
	Average tax rate	32.50%		34.50%

2-38 LG 3: Interest versus Dividend Expense

a.	EBIT	\$40,000
	Less: Interest expense	<u>10,000</u>
	Earnings before taxes	\$30,000
	Less: Taxes (38%)	<u>11,400</u>
	Earnings after taxes*	<u>\$18,600</u>

* This is also earnings available to common shareholders.

b.	EBIT	\$40,000
	Less: Taxes (38%)	<u>15,200</u>
	Earnings after taxes	\$24,800
	Less: Preferred dividends	<u>10,000</u>
	Earnings available for common shareholders	<u>\$14,800</u>

- c. The interest expense is deducted from before-tax income reducing the earnings before tax. This has the effect of a tax shield – it reduces the amount of taxes the firm must pay.

The preferred share dividends are deducted from after-tax income and do not serve as a tax break. The firm has no interest expense so the firm pays taxes on the EBIT of \$40,000. With the preferred dividends, the firm pays \$3,800 more taxes – this is also the difference in the earnings available to common shareholders.

2-39 LG 2: Cash Flow

Earnings after taxes	\$50,000
Plus: Amortization	<u>30,000</u>
Cash flow from operations	\$80,000

2-40 LG 3: Tax Deductibility of Expenses

$$\text{After-tax cost} = \$475,000 \times (1 - 0.441) = \$265,525$$

2-41 LG 3: Tax Deductibility of Expenses

- a. The tax system provides a "subsidy," a tax break associated with expenses that are deductible for tax purposes. The "subsidy" is equivalent to Laytin's marginal tax rate, in this case 38.6%. The expense is \$3,675,000, so the tax system provides a "subsidy" of \$1,418,550, calculated as: $(\$3,675,000 \times 0.386 = \$1,418,550)$.
- b. The "true" cost to the company is: $\$3,675,000 - \$1,418,550 = \$2,256,450$

2-42 LG 2, 3, 4: Amortization, Cash Flow, and Taxes

a. Cash flow from operations:

Sales revenue	\$400,000
Less: Total costs before amortization, interest, and taxes	290,000
Amortization expense	18,000
Interest expense	<u>15,000</u>
Earnings before taxes	\$ 77,000
Less: Taxes at 18.1%	<u>13,937</u>
Net income after taxes	\$ 63,063
Plus: Amortization	<u>18,000</u>
Cash flow from operations	<u>\$ 81,063</u>

Amortization expense = $\$180,000/10$ years = \$18,000 per year

- b. Amortization and other non-cash charges serve as a tax shield against income, increasing annual cash flow.
- c.
$$\begin{aligned}\text{FCFO} &= \text{EBIT} \times (1 - T) + \text{Amortization} \\ &= \$92,000 \times (1 - .181) + \$18,000 \\ &= \$75,348 + \$18,000 \\ &= \$93,348\end{aligned}$$
- d.
$$\begin{aligned}\text{Taxable income} &= \text{EBT} + \text{Amortization} - \text{CCA} \\ &= \$77,000 + 18,000 - 32,130 \\ &= \$62,870\end{aligned}$$

To calculate CCA, calculate the UCC at the beginning of year 3:

$$\begin{aligned}\text{UCC (Book value)}_{\text{Beg Yr 3}} &= \$180,000 \times (1 - 0.30/2) \times (1 - 0.30)^{3-2} \\ &= \$180,000 \times 0.85 \times 0.7 \\ &= \$107,100\end{aligned}$$

$$\text{CCA} = \$107,100 \times 30\% = \$32,130$$

- e. Taxes owing: $\$62,870 \times 16\% = \$10,059$

2-43 LG 4: Calculate Taxes

To calculate the XYZ Corp.'s total taxes payable, the amount of CCA the company can claim must be determined.

$$\text{ITC} = \$1,300,000 \times 10\% = \$130,000$$

$$\text{Cost of the asset} = \$1,300,000 - \$130,000 = \$1,170,000$$

One-half of this amount is added to the UCC at the beginning of the year to get \$3,585,000 (\$3,000,000 + \$585,000). This is the amount of UCC the company can claim CCA on in 2008. The CCA the company can claim is \$1,075,500 (\$3,585,000 × 30%). The amount of CCA is subtracted from \$2.2 million to get taxable income of \$1,124,500.

Taxable income	\$1,124,500
Federal taxes:	
\$400,000 @ 11.5%	\$46,000
\$724,500 @ 20.5 %	148,523
Less: ITC*	<u>-130,000</u>
Net federal taxes payable	\$64,523
Provincial taxes:	
\$400,000 @ 8%	\$32,000
\$724,500 @ 11.4%	<u>82,593</u>
Total provincial taxes payable	\$114,593
Total taxes payable	<u>\$179,116</u>

*The dollar amount of the ITC can be used to reduce federal taxes payable.

2-44 LG 4: Impact of Asset Sales

a.			Maximum	
	<u>Year</u>	<u>UCC - beginning of year</u>	<u>CCA</u>	<u>UCC - end of year</u>
	2008	\$100,000	\$10,000	\$90,000
	2009	\$ 90,000	\$18,000	\$72,000
b.		(i)	(ii)	(iii)
	UCC _{BS}	\$72,000	\$72,000	\$72,000
	<u>Asset sold</u>			
	Original cost	\$100,000	\$100,000	\$100,000
	Proceeds	\$60,000	\$95,000	\$120,000
	Capital gain			\$20,000
	Recapture		\$23,000	\$28,000
	Terminal loss	\$12,000		

2-45 LG 4: Calculate Taxes

- a. First, determine the amount of CCA the company can claim.

$$\text{ITC} = \$140,000 \times 10\% = \$14,000$$

$$\text{UCC} = \$140,000 - \$14,000 = \$126,000$$

The maximum CCA Laiken can claim in 2008 is \$12,600 ($\$126,000 \times 20\%/2$). Since this is the first year the company has owned the asset, only one-half of the maximum CCA can be claimed.

$$\text{Taxable income before CCA deduction} = \$17,000/36.5\% = \$46,575$$

$$\text{Taxable income after CCA deduction} = \$46,575 - \$12,600 = \$33,975$$

Taxable income	\$33,975
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Federal taxes @ 20.5%	\$6,965
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Less: ITC*	<u>-6,965</u>
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Net federal taxes payable	\$0
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Provincial taxes @ 16%	<u>\$5,436</u>
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Total taxes payable	<u>\$5,436</u>
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*The dollar amount of ITC can be used to reduce federal taxes payable. Since the total amount of the ITC was not used in this year, the remainder (\$7,035) can be carried back 3 years or carried forward 20 years to reduce federal taxes payable.

The total tax savings realized from the purchase of the asset is \$11,564 ($\$17,000 - \$5,436$). The tax savings were the result of two things: the savings on federal taxes from the ITC of \$6,965 and the tax savings associated with CCA of \$4,599 ($\$12,600 \times 36.5\%$). The summation of these tax savings is \$11,564.

b.	<u>Before purchase</u>		<u>After purchase</u>
Taxable income	\$427,000		\$414,400
Federal taxes:			
\$400,000 @ 11.5%	\$46,000		\$46,000
\$27,000 @ 20.5%	5,535	\$14,400 @ 20.5 %	2,952
Less: ITC	<u>0</u>		<u>-14,000</u>
Net federal taxes payable	\$51,535		\$34,952
Provincial taxes:			
\$400,000 @ 5%	\$20,000		\$20,000
\$27,000 @ 16%	<u>4,320</u>	\$14,400 @ 16%	<u>2,304</u>
Total provincial taxes payable	<u>\$24,320</u>		<u>\$22,304</u>
Total taxes payable	<u>\$75,855</u>		<u>\$57,256</u>

The tax savings associated with the purchase of the asset is \$18,599 (\$75,855 - \$57,256). The tax savings were the result of two things: the savings on federal taxes from the ITC of \$14,000 and the tax savings associated with CCA of \$4,599 (\$12,600 × 36.5%). The summation of these tax savings is \$18,599.

2-46 LG 4: Calculate Taxes

- a. Calculate the book value at the beginning of 2011:

$$\begin{aligned} \text{UCC (Book value)}_{\text{Beg Yr 4}} &= \$30,000 \times (1 - 0.30/2) \times (1 - 0.30)^{4-2} \\ &= \$30,000 \times 0.85 \times 0.49 \\ &= \$12,495 \end{aligned}$$

If the sale price was \$35,000, there is a capital gain of \$5,000, of which \$2,500 is taxable. Taxes on the capital gain will be \$550 (\$2,500 × 22%).

The sale of the asset results in a negative UCC balance:
 $\$12,495 - \$30,000 = -\$17,505$.

There is a recapture of \$17,505 which the firm must include as taxable income. Taxes on the recapture will be \$3,851 (\$17,505 × 22%) for total taxes of \$4,401.

- b. If the sale price is \$5,000, the sale of the asset results in a positive UCC balance:
 $\$12,495 - \$5,000 = \$7,495$

There is a terminal loss of \$7,495. The firm will receive a tax savings of \$1,649 (\$7,495 × 22%) from the terminal loss.

2-47 LG 3, 4, 5: Capital Gains and Taxes

- a. Yes, there is a capital gain associated with the sale of the machinery. Logan Company sold the asset for a price greater than the original cost. The net capital gain is:

$$\begin{aligned} &\$125,000 - \$80,000 - \$2,500 = \$42,500 \\ \text{Taxable portion: } &\$42,500/2 = \$21,250 \end{aligned}$$

- b. Taxable income = EBT + Amortization – CCA + ½ Capital gain

The CCA the company can claim is based on the sum of the beginning UCC plus the net additions to the asset class. To calculate the net additions, subtract the lesser of the original cost or the proceeds from the sale of the disposed asset from the cost of the asset acquired during the year. To account for the half-year rule, add one-half of this amount to the UCC at the beginning of the year.

$$\text{UCC (Book value)}_{\text{Beg Yr 9}} = \$80,000 \times (1 - 0.30/2) \times (1 - 0.30)^{9-2}$$

$$= \$80,000 \times 0.85 \times 0.0823543$$

$$= \$5,600.09 \sim \$5,600$$

$$\text{Net additions} = \$250,000 - \$80,000 = \$170,000$$

$$\$170,000/2 = \$85,000$$

$$\text{UCC} = \$5,600 + \$85,000$$

$$= \$90,600$$

The amount of CCA that can be claimed is \$27,180 ($\$90,600 \times 30\%$).

Taxable income:

$$\$456,000 + \$41,000 - \$27,180 + \$21,250 = \$491,070$$

c. Taxable income \$491,070

$$\$400,000 @ 14.5\% \quad 58,000$$

$$\$91,070 @ 30.5\% \quad \underline{27,776}$$

$$\text{Total taxes} \quad \underline{\underline{\$85,776}}$$

d. NIAT = Taxable income – Taxes + Dividends + $\frac{1}{2}$ Capital gain
 = \$491,070 - \$85,776 + \$35,000 + \$21,250
 NIAT = \$461,544

2-48 LG 3, 4, 5: Comprehensive Tax Problem

Determine the amount of CCA to claim on Class 3 and Class 10 in 2008:

Class 3:

$$\text{ITC} = \$20,000 \times 10\% = \$2,000$$

$$\text{Cost of asset} = \$20,000 - \$2,000 = \$18,000$$

$$\text{Net addition to asset class} = \$18,000 - \$93,000$$

$$= -\$75,000$$

One-half of this amount is added to the UCC at the beginning to get \$27,500 [$\$65,000 + (-\$37,500)$]. The CCA that can be claimed on Class 3 in 2008 is \$1,375 ($\$27,500 \times 5\%$).

Class 10:

$$\text{ITC} = \$92,000 \times 10\% = \$9,200$$

$$\text{Cost of asset} = \$92,000 - \$9,200 = \$82,800$$

$$\text{Net addition to asset class} = \$82,800 - \$48,000$$

$$= \$34,800$$

One-half of this amount is added to the UCC at the beginning to get \$297,400 ($\$280,000 + \$17,400$). The CCA that can be claimed on Class 10 in 2008 is \$89,220 ($\$297,400 \times 30\%$).

The total amount of CCA the company can claim in 2008 is \$90,595.

Murray Corp. recorded capital gains in the disposal of its assets. The taxable portion of the capital gains must be added to taxable income. For Class 3, there is a capital gain of \$34,000 (\$127,000 - \$93,000). One-half, or \$17,000, is taxable. For Class 10, there is a capital gain of \$27,000 (\$75,000 - \$48,000). One-half, or \$13,500, is taxable. The total amount of taxable capital gains is \$30,500.

Taxable income = Sales – Expenses – Interest + Amortization – CCA + ½ capital gain + dividends received from a non-taxable company:

$$= \$1,260,000 - \$820,000 - \$109,100 + \$84,500 - \$90,595 + \$30,500 + \$95,000$$

$$= \underline{\$450,305}$$

Taxable income		\$450,305
Federal taxes on first \$400,000 @ 11.5%	\$46,000	
Federal taxes on next \$ 50,305 @ 20.5%	\$10,313	
less: ITC (as calculated above)	<u>-11,200</u>	
Net federal taxes payable	\$45,113	
Provincial taxes on first \$400,000 @ 1%	\$4,000	
Provincial taxes on next \$ 50,305 @ 12%	<u>\$6,037</u>	
Total Provincial taxes	<u>\$10,037</u>	
Total taxes payable		<u>\$55,150</u>
NIAT*		<u>\$705,655</u>

*NIAT = Taxable income – taxes payable + non-taxable dividends received + ½ capital gain

$$= \$255,305 - \$55,150 + \$280,000 + \$30,500$$

$$= \underline{\$705,655}$$

2-49 LG 1, 2: Understanding Financial Statements and Cash Flows

a. Statement of retained earnings

Retained Earnings balance (March 31, 2007)	\$ 80,000
Plus: Net income after taxes (for 2008)	106,000
Less: Cash dividends (paid in 2008)	<u>(76,000)</u>
Retained earnings balance (March 31, 2008)	<u>\$110,000</u>

b. Statement of Cash Flows

**Cline Custom Bicycles
Statement of Cash Flows
For the Year ended March 31, 2008**

<u>Cash Flow from Operating Activities</u>		
Net income after taxes	\$106,000	
Amortization	30,000	
Decrease in accounts receivable	30,000	
Increase in inventories	(140,000)	
Increase in accounts payable	<u>70,000</u>	
Cash provided by operations		\$ 96,000
 <u>Cash Flow from Investment Activities</u>		
Increase in gross fixed assets	<u>(\$40,000)</u>	
Cash used in investment activities		(40,000)
 <u>Cash Flow from Financing Activities</u>		
Increase in line of credit	\$ 20,000	
Decrease in long-term debt	(30,000)	
Dividends paid	<u>(76,000)</u>	
Cash used by financing activities		<u>(86,000)</u>
Net Decrease in Cash and Marketable Securities		(30,000)
Cash and marketable securities at beginning of year		<u>70,000</u>
Cash and marketable securities at end of year		<u>(\$40,000)</u>

c. The firm's problem lies partially in its inventory management. Its inventories increased \$140,000 (44%) during 2008. While part of this investment was covered through a reduction in accounts receivable (\$30,000) and an increase in accounts payable (\$70,000), the balance had to come from earnings and other sources. The firm paid out \$76,000 of its \$106,000 in earnings—about 72%—in dividends, retaining only \$30,000. Some financing (\$20,000) was obtained from the line of credit, but \$30,000 of long-term debt was repaid, probably on a scheduled basis. The net result of the large inventory build-up was a decrease in cash and marketable securities of \$30,000, which cuts the firm's liquidity, or the ability to pay its bills. In summary, the two key problems seem to be (1) a large inventory build-up and (2) a high dividend payout.

d. FCF = FCFO - CAPEX - Change in non-cash working capital

$$\begin{aligned}
 \text{FCFO} &= \text{EBIT} \times (1 - T) + \text{Amortization} \\
 &= \$180,000 \times (1 - .30) + \$30,000 \\
 &= \$126,000 + \$30,000 \\
 &= \$156,000 \\
 \text{FCF} &= \$156,000 - \$40,000 - \$40,000 \\
 &= \$76,000
 \end{aligned}$$

- e. Darrin should work to lower inventories and reduce his high dividend payout. If inventory must grow as it has, he needs to retain more earnings to internally finance this growth, and he may need to increase his line of credit or possibly obtain more long-term financing to finance these build-ups.

CHAPTER 2 CASE

Analyzing Sample Company

Part 1: Understanding Financial Statements

- a. Basic concept: Increase in Assets = Uses of funds
Increase in L and E = Sources of funds

From August 2007 to August 2008, assets increased by \$787,700. Sample invested a large amount in assets during the 2008 fiscal year. To do this, the company required financing. What were the sources of the funds?

The increase in liabilities and equity between 2007 and 2008 are the sources. The change in each of the liability and equity accounts are summarized below:

- 1) Current liabilities decreased by \$151,500 implying a use of funds. Sample required funds to pay off their current liabilities. (More detail could be provided here.)
 - 2) Long term debt increased by \$885,500. By issuing long-term debt, Sample raised money to invest in assets.
 - 3) The firm issued (sold) \$15,000 of preferred shares to raise funds.
 - 4) The value of common shares increased by \$10,000; common shares were sold.
 - 5) The increase in retained earnings of \$28,700 indicates the profits were reinvested, a source of funds.
- b. See the change in accumulated amortization on the balance sheet: \$53,800.
- c. The proceeds from the sale of shares divided by the number of shares: \$10/share.
- d. EPS:
$$\frac{\text{Earnings Available to Common S/H}}{\text{No. of common shares outstanding}}$$

First, determine the EAC for 2007 and 2008. EAC is the difference between NIAT and preferred dividends paid.

	<u>2007</u>	<u>2008</u>
NIAT	\$205,600	\$79,100
less: Preferred Dividends	(<u>\$12,000</u>)	(<u>\$13,500</u>)
EAC	\$193,600	\$65,600

Now calculate the EPS. EPS is EAC divided by the number of common shares outstanding.

EPS = $\frac{\text{EAC}}{\text{\# common shares}}$	<u>2007</u> $\frac{\$193,600}{122,300 \text{ shares}}$	<u>2008</u> $\frac{\$65,600}{123,100 \text{ shares}}$
EPS =	\$1.583	\$0.533

- e. In 2007, the problem states the total dividends paid were:

\$12,000 in preferred shares
\$36,690 in common shares
 \$48,690 total dividends

Dividends per share (DPS) are based on common dividends paid.

$$\frac{\text{Common Dividends}}{\text{No. of common shares outstanding}}$$

So, DPS in 2007 were: $\frac{\$36,690}{122,300 \text{ shares}} = \0.30

What about 2008? The company paid \$13,500 in preferred dividends, what about common dividends paid? The problem doesn't directly tell you how much the company paid in common share dividends. You have to figure it out by using NIAT and retained earnings.

You know the RE at the beginning of the year and at the end. Use this to determine if Sample paid common share dividends:

R/E, beg of 2008	\$592,800	
+ NIAT (2008)	79,100	= \$658,400
- Pref dividends	13,500	
- Common dividends	<u>?</u>	
R/E, end of 2008	\$621,500	

If Sample didn't pay common share dividends, R/E at the end of 2008 should have been \$658,400. R/E at the end of 2008 was \$621,500. Therefore, Sample paid common dividends of \$36,900. Total dividends were \$50,400 and DPS were \$0.30.

- f. Sale price of common shares:
$$\frac{\text{Proceeds from common share sales}}{\text{No. of common shares issued}}$$

Sample had 122,300 common shares outstanding on August 31, 2007. This means they sold 122,300 shares over their history to August 31, 2007 and raised \$42,600 of financing. The average selling price of common shares outstanding in 2008 was:

Funds Raised From the Sale of Common Shares
Number of Common Shares Outstanding

$$\frac{\$42,600}{122,300} = \$0.348 \text{ per share}$$

This analysis doesn't mean that every share was sold at the average price. Maybe some were sold for \$0.10, other for \$1.00. In 2008, Sample sold an additional 800 shares, raising \$10,000 in financing. The average share price for shares sold in 2008:

$$\frac{\$10,000}{800 \text{ share}} = \$12.50/\text{share}$$

- g. Use the same process as was used in part e above, but now we have to work backwards to get R/E at the beginning of the 2007 fiscal year:

R/E, beginning 2007	?
+ NIAT (2007)	+ \$205,600
- Preferred Dividends	- \$12,000
- Common Dividends	- <u>\$36,690</u>
R/E, end 2004	<u>\$592,800</u>

Retained Earnings, beginning of 2007 = ?

$$\begin{aligned} ? + \$205,600 - \$48,690 &= \$592,800 \\ ? + \$130,250 &= \$592,800 \\ ? &= \$435,890 \end{aligned}$$

- h. Book value is the value of common equity.

The total value of common equity is the sum of the common shares and retained earnings. Common shares is the direct investment made by shareholders. Retained earnings are the indirect investment made by shareholders. Remember, retained earnings are based on profits. Shareholders are entitled to receive all profits. Profits not paid out to shareholders as dividends are reinvested on behalf of the shareholders. Retained earnings are the running total of indirect investments made by shareholders.

	Book Value <u>2007</u>	Book Value <u>2008</u>
Common shares	\$42,600	\$52,600
Retained earnings	<u>\$592,800</u>	<u>\$621,500</u>
Common equity	\$635,400	\$674,100
 BV/Share	 \$5.20	 \$5.48

Book Value Per Share is calculated by dividing the value of common equity by the number of shares outstanding at the end of the fiscal year. It is \$5.20 in 2007 and \$5.48 in 2008.

- i. The tax benefit of amortization expense = Amortization expense × tax rate
 = \$53,800 × 25%
 = \$13,450

Part 2: Statement of Cash Flows

**Sample Company
 Cash Flow Statement
 As at June 30, 2008**

Cash Flow from Operating Activities

NIAT	\$79,100	
plus: Non-cash expenses	<u>53,800</u>	
Net cash from operations		\$132,900

Plus: Changes in Non-Cash Working Capital Accounts

Increase in accts receivable	-34,000	
Increase in inventory	-7,300	
Increase in prepaids	-700	
Decrease in accts payable	-156,100	
Decrease in income taxes payable	<u>-121,200</u>	
Cash from Non-Cash Working Capital		<u>-319,300</u>

Cash from Operating Activities -186,400

Cash Flow from Investing Activities

Increase in investments	-485,700	
Increase in buildings	-217,100	
Increase in furniture and fixtures	<u>-96,600</u>	

Cash from Investing Activities -799,400

Cash Flow from Financing Activities

Increase in line of credit	59,700	
Increase in long-term debt due in year	66,100	
Increase in bank loan	310,600	
Increase in other long-term liab	574,900	
Sale of preferred shares	15,000	
Sale of common shares	10,000	
Payment of preferred dividends	-13,500	
Payment of common dividends	<u>-36,900</u>	

Cash from Financing Activities 985,900

Increase in cash during year 100

Cash at beginnig of year 1,200

Cash at end of year \$1,300

In 2008, cash increased by \$100 to \$1,300. This very modest change, and the overall level of cash, masks a great deal of financial activity for Sample Company in 2008. Also, the low cash level indicates a major liquidity problem; current liabilities are almost \$500,000.

Cash flow from operating activities is negative which is never a good sign for a company. There are two reasons for the negative cash flow for Sample. First, net cash from operations is low for a company of this size - profits are low, as is amortization. This outcome is especially bad in a year when total assets increased by almost \$800,000. Second, the firm paid-off a large amount of current liabilities. The net impact is negative cash flow from operating activities.

The investment in fixed assets is greater than the amortization expenses meaning the company is growing assets to support increasing sales. This is always a positive sign. But, Sample Company has made a very large investment in the investments account. What is this account? This is a key answer for an analyst of the firm's operations to determine.

Given the first two results above, the cash used to invest in assets and repay current liabilities has come from both short and long-term debt and a little from the sale of preferred and common shares and reinvested profits. The combination of NIAT and the sale of preferred and common shares is \$104,100, but the firm paid almost half of this, \$50,400, in dividends. The net addition of new equity capital is modest. But, the company's creditors are showing a great deal of support and trust in the company given the large increase in both short and long-term loans.

Overall, the modest change in cash, \$100, masks a great deal of financial activity. The overall impact of the flow of cash is a swapping of short-term debt for long-term debt resulting in a very large increase in long-term debt, and a large increase in assets. Shareholders continue to receive dividends. The liquidity of Sample Company must be questioned, as the company has very little cash but a great deal of current liabilities. Also what is the "Investments" account, and how does it benefit the company?

Part 3: Calculation of Taxes

a. On their financial statements, Sample is using a 25% tax rate in both 2007 and 2008.

Their actual tax rate based on the information provided in the problem is shown below.

b.

	<u>2007</u>	<u>2008</u>	<u>2008-With</u>
<u>Capital Gain</u>			
EBT	\$274,000	\$105,500	
+ Amort	44,600	53,800	
- CCA	<u>36,120</u>	<u>71,485</u>	

EBT for Tax Calc	282,480	87,815	\$87,815
Other	<u>0</u>	<u>0</u>	<u>\$79,505</u> *
Taxable Income	<u>\$282,480</u>	<u>\$87,815</u>	<u>\$167,320</u>
<u>Federal Taxes:</u>			
0-\$400,000 20.5@ %	\$57,908	\$18,002	\$34,301
Provincial taxes @ 16%	<u>45,197</u>	<u>14,050</u>	<u>26,771</u>
Total taxes	<u>\$103,105</u>	<u>\$32,052</u>	<u>\$61,072</u>
NIAT	<u>\$179,375</u>	<u>\$235,138</u>	<u>\$230,607</u> **
Avg Tax Rate	36.50%	36.50%	36.50%

Notes:

* Ignore dividends for calculation of taxes, and only 50% of the capital gain is taxable.

** The dividends and other 50% of the capital gain is added to NIAT: \$167,320 - \$61,072 + \$79,505 + \$44,854 = \$230,607