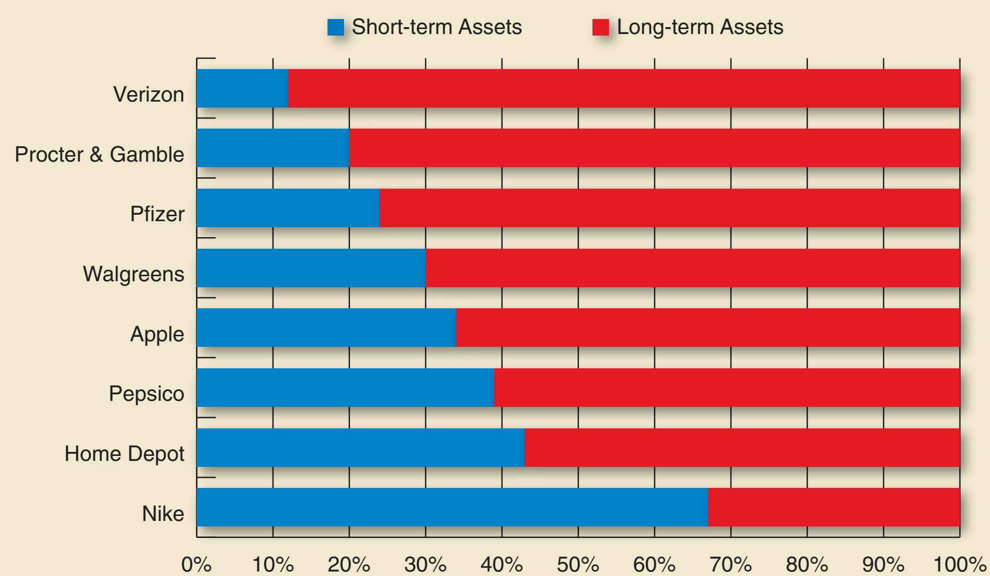
Some assets that a company invests in are used quickly. For instance, a retail clothing store hopes to sell its spring and summer merchandise before purchasing more inventory for the fall and winter. Other assets are acquired for long-term use. Buildings are typically used for several decades. The relative proportion of short-term and long-term investments depends on the type of business and the strategic plan that the company adopts. For example, Nike has relatively few long-term assets because it outsources most of the production of its products to other companies.

The graph in **Exhibit 1.3** compares the relative proportion of short-term and long-term assets held by Nike and seven other companies, several of which are featured in later chapters. Nike has adopted a business model that requires very little investment in long-term resources. A majority of its investments are short-term assets. In contrast, **Verizon**, **PepsiCo**, and **Procter & Gamble** all rely heavily on long-term investments. These companies hold relatively small proportions of short-term assets. This mix of long-term and short-term assets is described in more detail in Chapter 2.

Real Companies *and* **Institutions** *are highlighted in bold, blue font.*

EXHIBIT 1.3 Relative Proportion of Short-Term and Long-Term Assets



Financing Activities

Investments in resources require funding, and **financing activities** refer to the methods companies use to fund those investments. *Financial management* is the planning of resource needs, including the proper mix of financing sources.

Companies obtain financing from two sources: equity (owner) financing and creditor (nonowner) financing. *Equity financing* refers to the funds contributed to the company by its owners along with any income retained by the company. One form of equity financing is the cash raised from the sale (or issuance) of stock by a corporation. *Creditor* (or debt) *financing* is funds contributed by nonowners, which create *liabilities*. **Liabilities** are obligations the company must repay in the future. One example of a liability is a bank loan. We draw a distinction between equity and creditor financing for an important reason: creditor financing imposes a legal obligation to repay, usually with interest, and failure to repay amounts borrowed can result in adverse legal consequences such as bankruptcy. In contrast, equity financing does not impose an obligation for repayment.

Exhibit 1.4 compares the relative proportion of creditor and equity financing for Nike and other companies. PepsiCo uses liabilities to finance 86% of its resources. In contrast, **Walgreens Boots Alliance, Inc.**, relies more heavily on its equity financing, receiving 57% of its financing from creditors. Procter & Gamble has the lowest proportion of creditor financing in this sample of companies with just 54% of its assets financed by nonowners.

equals the amount of income retained in the company. The change in retained earnings links consecutive balance sheets through the income statement. Nike's retained earnings decreased from $6,907 million at May 31, 2017, to $3,517 million at May 31, 2018. This decrease is explained by net income of $1,933 million, less dividends of $1,265 million and other reductions of $4,058 million. The category titled "other changes" refers to changes in equity that are not recorded in income and is discussed in Chapter 11.

Statement of Cash Flows

FYI Cash is critical to operations because it is necessary for purchasing resources and paying bills.

The **statement of cash flows** reports net cash flows from operating, investing, and financing activities over a period of time. Nike's statement of cash flows for fiscal year ended May 31, 2018, is shown in a reduced format in **Exhibit 1.10**. The statement reports that the cash balance increased by $441 million during the fiscal year. Operating activities provided $4,955 million (a cash inflow), investing activities provided $276 million (a cash inflow), and financing activities used $4,835 million (a cash outflow). These changes increased Nike's ending balance of cash to $4,249 million.

EXHIBIT 1.10 Statement of Cash Flows ($ millions)

NIKE
Statement of Cash Flows
For Year Ended May 31, 2018 ← Reports amounts over a period of time

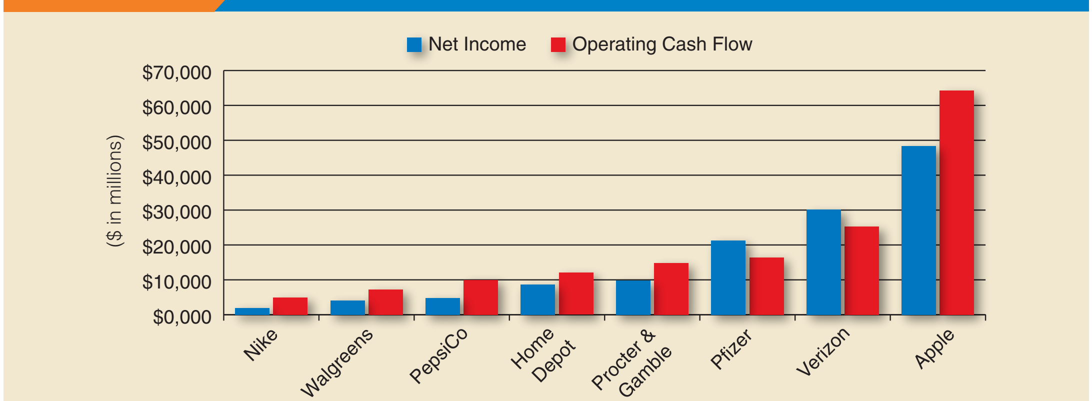
Operating cash flows	$4,955	← Net cash flow from operating
Investing cash flows	276	← Net cash flow from investing
Financing cash flows	(4,835)	← Net cash flow from financing
Effect of exchange rate changes	45	
Net increase (decrease) in cash	441	
Cash, May 31, 2017	3,808	← Cash amounts per balance sheet
Cash, May 31, 2018	$4,249	← Cash amounts per balance sheet

FYI Common formatting for U.S. financial statements includes:
- Dollar sign next to first and last amount listed in a column
- Single underline before a subtraction or addition; double underline after a major total
- Assets listed in order of liquidity, which is nearness to cash
- Liabilities listed in order of due dates

Operating cash flow is the amount of cash generated from operating activities. This amount usually differs from net income due to differences between the time that revenues and expenses are recorded, and the time that the related cash receipts and disbursements occur. For example, a company may report revenues for goods sold to customers this period, but not collect the payment until next period. Consistent with most companies, Nike's operating cash flows of $4,955 million do not equal its net income of $1,933 million. **Exhibit 1.11** compares net income and operating cash flows for Nike and several other companies. The exhibit shows that there is large variation across companies in the amount of net income and operating cash flows.

Both cash flow and net income are important for making business decisions. They each capture different aspects of firm performance and together help financial statement users better understand and assess a company's past, present, and future business activities.

EXHIBIT 1.11 Comparison of Net Income to Operating Cash Flows



ADIDAS Statement of Cash Flows (€ millions) For Year Ended December 31, 2017	
Cash flow from operations	€1,648
Cash flow from investing	(680)
Cash flow from financing	(769)
Effect of exchange rates on cash	(111)
Net increase (decrease) in cash	88
Cash, beginning of year	1,510
Cash, end of year	€1,598

b. Adidas reported revenues of €21,218 million (which is approximately equivalent to $28,644 million) compared to Nike's $36,397 million. Adidas reported net income of €1,100 million ($1,485 million) compared to Nike's $1,933 million. Adidas' operations produced cash flow of €1,648 million ($2,225 million) while Nike's cash flow from operations was $4,955 million. Hence, based on revenues, Nike is a larger company indicated by its substantially larger sales revenue. Its total assets of $22,536 million are also greater than Adidas' total assets of €14,522 million (or $19,605 million). Nike's operating cash flows and income are also larger than those of Adidas.

Chapter-End Review

SOLUTION

a. $\text{ROE} = \dfrac{1{,}100}{[(6{,}435 + 6{,}455)/2]} = 0.171 \text{ or } 17.1\%$

b. $\text{Debt-to-equity} = \dfrac{8{,}087}{6{,}435} = 1.26$

c. One additional benefit to using ratios to analyze financial information is that ratios can be computed for amounts denominated in any currency. Thus, we can compare Adidas and Nike without translating euros into dollars. Adidas' ROE of 17.1% is almost identical to Nike's of 17.4%. This means that both companies earned a very similar return for their stockholders in 2017.

Adidas' debt-to-equity ratio is 1.26 compared to Nike's 1.30. This means that Nike relies slightly more on debt, but again the companies are quite similar. A similar debt-to-equity ratio indicates a similar level of risk associated with an investment in either company.

income (or net loss) amount comes from the income statement. Dividends during the period are reflected in the retained earnings balance from the adjusted trial balance.

EXHIBIT 3.10 Statement of Stockholders' Equity

NATURAL BEAUTY SUPPLY, INC.
Statement of Stockholders' Equity
For Month Ended December 31, 2018

	Contributed Capital	Earned Capital	Total Equity
Balance, November 30, 2018	$20,000	$ 30	$20,030
Net income	—	650	650
Common stock issued	—	—	—
Cash dividends	—	(50)	(50)
Balances, December 31, 2018	$20,000	$630	$20,630

FYI Financial statements are most commonly prepared for annual and quarterly accounting periods. A request for a bank loan is an example of a situation that can lead to financial statement preparation for a non-accounting period.

Balance Sheet The balance sheet reports a company's assets, liabilities, and equity. The assets and liabilities for Natural Beauty Supply's balance sheet at December 31, 2018, shown in **Exhibit 3.11**, come from the adjusted trial balance in **Exhibit 3.8**. The amounts reported for Common Stock and Retained Earnings in the balance sheet are taken from the statement of stockholders' equity for December (**Exhibit 3.10**).

EXHIBIT 3.11 Balance Sheet

NATURAL BEAUTY SUPPLY, INC.
Balance Sheet
December 31, 2018

Assets			Liabilities	
Cash		$ 6,825	Accounts payable	$ 4,400
Accounts receivable		2,250	Interest payable	110
Other receivables		30	Wages payable	480
Inventory		7,300	Taxes payable	350
Prepaid insurance		1,540	Gift card liability	600
Security deposit		2,000	Current liabilities	5,940
Current assets		19,945	Notes payable	11,000
Fixtures and equipment	$18,000		Total liabilities	16,940
Less: Accumulated depreciation	375		**Equity**	
Fixtures and equipment, net		17,625	Common stock	20,000
			Retained earnings	630
Total assets		$37,570	Total liabilities and equity	$37,570

Statement of Cash Flows The statement of cash flows is formatted to report cash inflows and outflows by the three primary business activities:

- *Cash flows from operating activities* Cash flows from the company's transactions and events that relate to its primary operations.
- *Cash flows from investing activities* Cash flows from acquisitions and divestitures of investments and long-term assets.
- *Cash flows from financing activities* Cash flows from issuances of and payments toward equity, borrowings, and long-term liabilities.

The net cash flows from these three sections yield the change in cash for the period.

In analyzing the statement of cash flows, we should not necessarily conclude that the company is better off if cash increases and worse off if cash decreases. It is not the cash change that is most important, but the reasons for the change. For example, what are the sources of the cash inflows?

FYI The income statement, statement of stockholders' equity, and statement of cash flows report on periods of time. These statements illustrate the accounting period concept—the concept that useful statements can be prepared for arbitrary time periods within a company's life span. The purpose of adjusting entries is to obtain useful statements for specific time periods.

NIKE Statement of Cash Flows For the Year Ended May 31, 2018 ($ millions)	
Operating cash flows	$4,955
Investing cash flows	276
Financing cash flows	(4,835)
Effect of exchange rate changes	45
Net increase in cash and cash equivalents	441
Cash and equivalents, beginning of year	3,808
Cash and equivalents, end of year	$4,249

Supplemental Disclosures

When the indirect method is used in the statement of cash flows, three separate supplemental disclosures are required: (1) two specific operating cash outflows—cash paid for interest and cash paid for income taxes, (2) a schedule or description of all noncash investing and financing transactions, and (3) the firm's policy for determining which highly liquid, short-term investments are treated as cash equivalents. If the direct method is used, a reconciliation of net income to cash flows from operating activities is also required. A firm's policy regarding cash equivalents is placed in the financial statement notes. The other disclosures are reported either in the notes or at the bottom of the statement of cash flows.

One World Café Case Illustration One World Café incurred $200 of interest expense, which was paid in cash. It also reported income tax expense of $17,000 and reported a decrease in income taxes payable of $1,500 ($4,500 − $3,000). Thus, One World Café paid $18,500 ($17,000 + $1,500) in income taxes during 2018. It also had the noncash investment in plant assets costing $5,000, which was financed with notes payable. One World Café would provide the following disclosure:

Supplemental cash flow information	
Cash payments for interest	$ 200
Cash payments for income taxes	18,500
Noncash transaction—investment in plant assets financed with notes payable	5,000

eLectures MBC

5

LO5 Compute and interpret ratios that reflect a company's liquidity and solvency using information reported in the statement of cash flows.

ANALYZING FINANCIAL STATEMENTS

Cash is a special resource for companies because of its flexibility. At short notice, it can be used to fulfill obligations and to take advantage of investment opportunities. When companies run short of cash, their suppliers may be reluctant to deliver and lenders may be able to take over control of decision making. In Chapter 2, we introduced the current ratio, which compares the level of current assets to the level of current liabilities at a point in time. But the statement of cash flows gives us the opportunity to compare a company's ongoing cash generating activities to its obligations and to its investment opportunities.

Interpreting Indirect Method Cash from Operations

We want to interpret the cash flows from operations presented using the indirect method.

When companies use the indirect method to present their cash flows from operating activities, it is difficult to interpret the numbers presented to adjust net income to cash from operating activities. For instance, in **Exhibit 4.11**, One World Café reports $6,000 for the change in accounts receivable. Does that mean that the company received cash payments of $6,000 from its customers? It does not! Every item in the reconciliation has to be interpreted relative to the net income at the top. Net income includes revenue of $390,000, and the adjustment addition of

Analysis Tools

Operating Cash Flow to Capital Expenditures (OCFCX)

$$\textbf{Operating cash flow to capital expenditures} = \frac{\textbf{Operating cash flow}}{\textbf{Annual capital expenditures}}$$

Free Cash Flow (FCF)

Free cash flow = Operating cash flow − Net capital expenditures

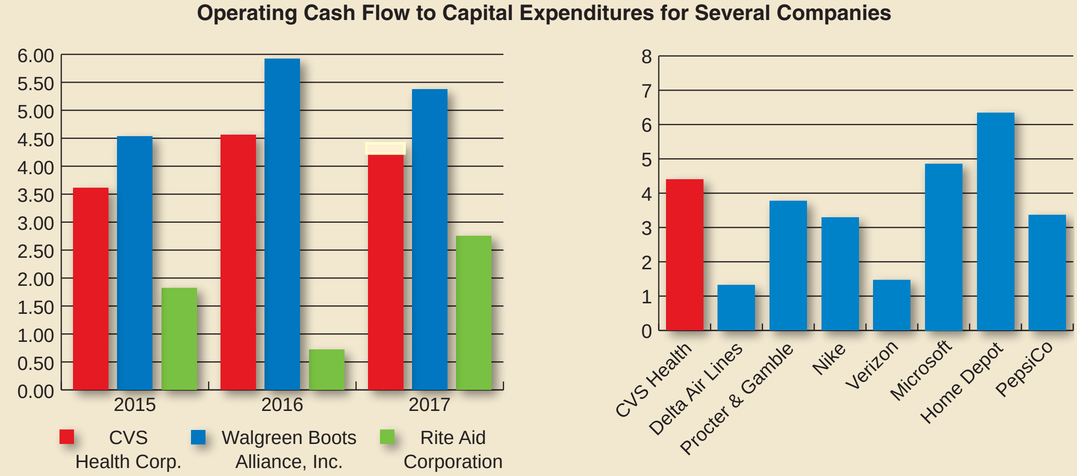
Applying the Operating Cash Flow to Capital Expenditures Ratio and Free Cash Flow to CVS Health Corporation

	OCFCX	FCF
2015:	$\frac{\$8{,}539}{\$2{,}367} = 3.61$ or 361%	\$8,529 − \$2,332 = \$6,197
2016:	$\frac{\$10{,}141}{\$2{,}224} = 4.56$ or 456%	\$10,141 − \$2,187 = \$7,954
2017:	$\frac{\$8{,}007}{\boxed{\$1{,}918}} = \boxed{4.17 \text{ or } 417\%}$	\$8,007 − \$1,885 = \$6,122

Guidance Operating cash flows to capital expenditures ratios that exceed 1.0 (or free cash flows that are positive) mean that the company can make its capital investments without obtaining additional financing or reducing its cash balances. The excess cash could be used to reduce borrowing, make acquisitions, or it could be returned to shareholders. CVS Health Corporation's ratios are quite steady across these years, and the company has used this stability to return an average of $6.5 billion per year to shareholders in the form of dividends and share repurchases. However, the planned merger with Aetna will require an amount of cash that far exceeds the free cash flow generated by its current operations, necessitating new borrowing and the use of common stock to fund part of the purchase price.

CVS Health Corporation in Context

Operating Cash Flow to Capital Expenditures for Several Companies



Takeaways OCFCX remained relatively steady over the last three years for CVS Health, and its OCFCX is slightly lower than Walgreens Boots and higher than Rite Aid. Like CVS Health, Walgreens Boots and Rite Aid have used the additional cash flow to acquire other businesses, pay dividends and repay long-term debt. But CVS Health's proposed merger with Aetna would require it to issue "approximately $45.0 billion of new debt." We can see that CVS Health's OCFCX is in the middle of the focus companies' levels. These companies can use the cash in excess of capital expenditures to make acquisitions or to return cash to shareholders in the form of dividends or common stock repurchases.

4. Sold equipment for $14,000 cash that originally cost $46,000 and had $27,000 accumulated depreciation.
5. Issued bonds payable at face value for cash.
6. Acquired a patent with a fair value of $25,000 by issuing 250 shares of preferred stock at par value.
7. Declared and paid a $50,000 cash dividend.
8. Issued 3,000 shares of common stock for cash at $8 per share.
9. Recorded depreciation of $16,000 on buildings and $23,000 on equipment.

REQUIRED

a. Compute the change in cash and cash equivalents that occurred during 2018.
b. Prepare a 2018 statement of cash flows using the indirect method.
c. Prepare separate schedules showing (1) cash paid for interest and for income taxes and (2) noncash investing and financing transactions.
d. Compute its (1) operating cash flow to current liabilities ratio, (2) operating cash flow to capital expenditures ratio, and (3) free cash flow.

LO2, 3, 4
Homework MBC

P4-53. Preparing a Statement of Cash Flows (Direct Method)
Refer to the data for Rainbow Company in Problem 4-52.

REQUIRED

a. Compute the change in cash that occurred in 2018.
b. Prepare a 2018 statement of cash flows using the direct method. Use one cash outflow for "cash paid for wages and other operating expenses." Accounts payable relate to inventory purchases only.
c. Prepare separate schedules showing (1) a reconciliation of net income to net cash flow from operating activities and (2) noncash investing and financing transactions.

LO3, 4
Apple Inc.
NASDAQ :: AAPL

P4-54. Interpreting Cash Flow Information
The 2017 cash flow statement for **Apple Inc.** is presented below (all $ amounts in millions):

APPLE INC.
Consolidated Statement of Cash Flows
Year Ended September 30, 2017

Cash and cash equivalents, beginning of the year	$ 20,484
Operating activities	
Net income	48,351
Adjustments to reconcile net income to cash generated by operating activities:	
Depreciation, and amortization	10,157
Share-based compensation expense	4,840
Other... Deferred income tax expense	5,966
Changes in operating assets and liabilities:	(166)
Accounts receivable, net	(2,093)
Inventories	(2,723)
Vendor nontrade receivables	(4,254)
Other current and noncurrent assets	(5,318)
Accounts payable	9,618
Deferred revenue	(626)
Other current and noncurrent liabilities	(154)
Cash generated by operating activities	63,598
Investing activities	
Purchases of marketable securities	(159,486)
Proceeds from maturities of marketable securities	31,775
Proceeds from sales of marketable securities	94,564
Payments made in connection with business acquisitions, net	(329)
Payments for acquisition of property, plant and equipment	(12,451)
Payments for acquisitions of intangible assets	(344)
Payments for strategic investments, net	(395)
Other	220
Cash used in investing activities	(46,446)

continued

LO2, 3 Homework MBC

CVS Health Corporation
NYSE :: CVS
Walgreens Boots Alliance, Inc.
NASDAQ :: WBA

E5-27. Compute, Disaggregate, and Interpret Competitors' Rates of Return
Selected balance sheet and income statement information for the drug retailers **CVS Health Corporation** and **Walgreens Boots Alliance** follows. Assume an incremental tax rate of 35%.

($ millions)	CVS Health	Walgreens Boots
Sales revenue—2017	$184,765	$118,214
Interest expense—2017	1,062	728
Net income—2017	6,623	4,101
Total assets—2017	95,131	66,009
Total assets—2016	94,462	72,688
Stockholders' equity—2017	37,695	28,274
Stockholders' equity—2016	36,834	30,281

a. Compute the 2017 return on assets (ROA) for each company.
b. Disaggregate ROA into profit margin (PM) and asset turnover (AT) for each company.
c. Compute the 2017 return on equity (ROE) and return on financial leverage (ROFL) for each company.
d. Discuss any differences in these ratios for each company. Identify the factor(s) that drives the differences in ROA observed from your analyses in parts *a* through *c*.

LO2, 3 Homework MBC

Intel Corporation
NASDAQ :: INTC

E5-28. Compute, Disaggregate, and Interpret ROE
Selected fiscal year balance sheet and income statement information for the computer chip maker, **Intel Corporation**, follows ($ millions).

Balance sheet information ($ millions)	2017	2016	2015
Total assets	$123,249	$113,327	$101,459
Total shareholders' equity	69,019	66,226	61,085
Income statement information ($ millions)	**2017**	**2016**	**2015**
Sales revenue	$62,761	$ 59,387	$ 55,355
Interest expense	637	725	345
Net income	9,601	10,316	11,420

a. Calculate Intel's return on equity (ROE) for fiscal years 2017 and 2016.
b. Calculate Intel's return on assets (ROA) and return on financial leverage (ROFL) for each year. Is financial leverage working to the advantage of Intel's shareholders? Use an incremental tax rate of 35%.
c. Use the DuPont formulation in the Business Insight on page 230 to analyze the variations in Intel's ROE over this period. How does this analysis differ from your answers to *a* and *b* above?

LO2, 3 Homework MBC

E5-29. Return on Investment, Financial Leverage, and DuPont Analysis
The following tables provide information from the recent annual reports of HD Rinker, AG.

Balance sheets (€ millions)	2019	2018	2017	2016
Total assets	€6,108	€6,451	€7,173	€6,972
Total liabilities	5,970	4,974	4,989	5,097
Total shareholders' equity	138	1,477	2,184	1,875

Income statements (€ millions) 52 weeks ended	2019	2018	2017
Sales revenue	€10,364	€9,613	€8,632
Earnings before interest and income taxes	1,473	1,459	887
Interest expense	246	208	237
Earnings before income taxes	1,227	1,251	650
Income tax expense	377	446	202
Net earnings	€ 850	€ 805	€ 448

a. Calculate HD Rinker's return on equity (ROE) for fiscal years 2019, 2018, and 2017.

($ thousands)	2017	2016	2015
Accounts receivable	$1,153,988	$1,136,593	$1,169,469
Allowance for doubtful accounts	25,378	21,376	24,370
Accounts receivable, net	1,128,610	1,115,217	1,145,099

Activity in the allowance for doubtful accounts for the past three fiscal years is as follows:

($ thousands)	2017	2016	2015
Balance at beginning of year	$21,376	$24,370	$26,283
Charged to income	17,568	9,165	5,813
Deductions[a]	13,566	12,159	7,726
Allowance at end of year	25,378	21,376	24,370

[a] Includes write-offs, recoveries of previous write-offs, and currency translation adjustments.

Mattel's revenues were $4,881,951 thousand and $5,456,650 thousand for fiscal years 2017 and 2016, respectively.

REQUIRED

a. What amount did Mattel report as accounts receivable, net in its December 31, 2017, balance sheet?

b. Prepare journal entries to record bad debts expense and write-offs of uncollectible accounts in fiscal 2017. (Assume that Deductions did not include recoveries or foreign currency adjustments.) Post these entries to T-accounts. Now suppose Mattel experienced a $350 thousand recovery of a previously written-off receivable. How should the company record this recovery?

c. Compute the ratio of allowance for doubtful accounts to gross accounts receivable for fiscal 2016 and 2017.

d. Compute Mattel's accounts receivable turnover and average collection period for 2017 and 2016.

e. What might be the cause of the changes that you observe in parts c and d?

LO4
The GAP, Inc.
NYSE :: GPS

P6-46. Accounting for Product Returns

In its income statement for the first quarter of fiscal year 2018, **The Gap, Inc.**, reported net sales of $3,783 million and cost of goods sold and occupancy expenses of $2,356 million, resulting in a gross profit of $1,427 million. In its footnotes, The Gap reports that "We also record an allowance for estimated returns based on our historical return patterns and various other assumptions that management believes to be reasonable, which are presented on a gross basis on our Condensed Consolidated Balance Sheet."

When The Gap accounts for estimated sales returns, it makes two entries. First, it reduces sales revenue by the returns' expected sales price and recognizes a sales return allowance as a liability for the same amount. Then, The Gap reduces cost of goods sold by the returns' expected cost and recognizes a right of return merchandise asset for that same amount.

At the end of the first quarter of fiscal year 2018, The Gap reported a sales return allowance liability of $93 million and a right of return merchandise asset of $38 million.

REQUIRED

a. What was the estimated gross profit margin on the items The Gap expected to be returned following the first quarter of fiscal year 2018? How does that compare with the gross profit margin reported in the income statement for the first quarter of fiscal year 2018? What might account for the difference?

b. Suppose The Gap sells 100 units of an item for $50 each, and its gross profit on each unit is $20. Further, suppose The Gap expects that 10 of the units will be returned. What entries will be made to record the sale of 100 units (for cash) and the expected returns? What entry is made when ten customers subsequently return the items and receive a cash refund? Assume that the units are undamaged and can be sold to other customers.

LO2
Homework MBC
Take-Two Interactive Software, Inc.
NASDAQ :: TTWO

P6-47. Analyzing Unearned Revenue Changes

Take-Two Interactive Software, Inc. (TTWO) is a developer, marketer, publisher, and distributor of video game software and content to be played on a variety of platforms. There is an increasing demand for the ability to play these games in an online environment, and TTWO has developed this capability in many of its products. In addition, TTWO maintains servers (or arranges for servers) for the online activities of its customers.

continued from previous page

In millions	2017	2016
5.75% senior notes due 2041	133	133
5.3% senior notes due 2043	750	750
5.125% senior notes due 2045	3,500	3,500
Capital lease obligations	670	648
Other	43	23
Total debt principal	27,170	27,726
Debt premiums	28	33
Debt discounts and deferred financing costs	(196)	(228)
	27,002	27,531
Less:		
Short-term debt (commercial paper)	(1,276)	(1,874)
Current portion of long-term debt	(3,545)	(42)
Long-term debt	$22,181	$25,615

CVS also discloses that its interest expense was $1.04 billion in 2017, after deducting capitalized interest of $8 million. It paid interest of $1.07 billion.

REQUIRED

a. What was the average interest rate on CVS debt in 2017?

b. Does your computation in part *a* seem reasonable given the disclosure relating to specific bond issues? Explain.

c. Why can the amount of interest paid be different from the amount of interest expense recorded in the income statement?

LO3, 4 **P9-54. Recording and Assessing the Effects of Bond Financing (with Accrued Interest)**

Petroni, Inc., which closes its books on December 31, is authorized to issue $800,000 of 9%, 20-year bonds dated March 1, 2019, with interest payments on September 1 and March 1.

REQUIRED

Assuming that the bonds were sold at 100 plus accrued interest on July 1, 2019, prepare the necessary journal entries, post the journal entries to their respective T-accounts, and record each transaction in the financial statement effects template.

a. The bond issuance.

b. Payment of the semiannual interest on September 1, 2019.

c. Accrual of bond interest expense at December 31, 2019.

d. Payment of the semiannual interest on March 1, 2020. (The firm does not make reversing entries.)

e. Retirement of $200,000 of the bonds at 101 on March 1, 2020 (immediately after the interest payment on that date).

LO3, 4 **P9-55. Preparing an Amortization Schedule and Recording the Effects of Bonds**

On December 31, 2018, Kasznik, Inc., issued $720,000 of 11%, 10-year bonds for $678,708, yielding an effective interest rate of 12%. Semiannual interest is payable on June 30 and December 31 each year. The firm uses the effective interest method to amortize the discount.

REQUIRED

a. Prepare an amortization schedule showing the necessary information for the first two interest periods. Round amounts to the nearest dollar.

b. Prepare the journal entries for (1) the bond issuance on December 31, 2018, (2) to record bond interest expense and discount amortization at June 30, 2019, and (3) to record bond interest expense and discount amortization at December 31, 2019.

c. Post the journal entries from part *b* to their respective T-accounts.

d. Record each of the transactions from part *b* in the financial statement effects template.

BUSINESS INSIGHT

It is possible that reported earnings declines but Basic EPS increases. Indeed, of all the public firms that filed with the SEC in the years 2015–2017, this occurred almost 800 times. Notably, Signet Jewelers had a decline in earnings of almost 5% and an increase in Basic EPS of 8%. A similar relation held for IBM in the years 2012–2014. Often this is due to reductions in the number of shares due to share repurchases.

CHAPTER-END REVIEW

GuidedExamples MBC

Petroni Corporation reported net income of $1,750 million in 2018. The weighted average number of common shares outstanding during 2018 was 760 million shares. Petroni paid $40 million in dividends on preferred stock, which was convertible into 10 million shares of common stock.

1. Calculate Petroni's basic earnings per share for 2018.
2. Calculate Petroni's diluted earnings per share for 2018.
3. What EPS numbers should Petroni report on its 2018 income statement?

The solution to this review problem can be found on page 578.

APPENDIX 11A: Dilutive Securities: Accounting for convertible securities, stock options, and restricted stock

eLectures MBC

LO7 Analyze the accounting for convertible securities, stock rights, stock options, and restricted stock.

7

Convertible Securities

Convertible securities are debt and equity securities that provide the holder with an option to convert those securities into other securities. Convertible debentures, for example, are debt securities that give the holder the option to convert the debt into common stock at a predetermined conversion price. Preferred stock can also contain a conversion privilege.

To illustrate, assume 5,000 shares of preferred stock were issued at a stated value of $100 per share, with each share convertible into 12 shares of $5 par value common stock. The appropriate journal entry would be:

Cash (+A)	500,000	
Preferred stock (stated value) (+SE)		500,000

Now assume that 2,000 shares are converted to (2,000 × 12) = 24,000 shares of common stock. The appropriate journal entry is:

Preferred stock (stated value) (−SE)	200,000	
Common stock (par $5) (+SE)		120,000
Additional paid-in capital (+SE)		80,000

Conversion privileges offer an additional benefit to the holder of a security. That is, debtholders and preferred stockholders carry senior positions as claimants in bankruptcy, and carry a fixed-interest or dividend yield. With a conversion privilege, they can enjoy the residual benefits of common shareholders should the company perform well.

A conversion option is valuable and yields a higher price for the securities than they would otherwise command. However, conversion privileges impose a cost on common shareholders. That is, the higher market price received for convertible securities is offset by the cost imposed on the subordinate (common) securities. Conversion of these securities into common shares dilutes the ownership percentage of existing holders of the firm's common stock.

Accounting for the issuance of a convertible security is straightforward: the conversion option is *not* valued on the balance sheet unless it is detachable from the security (and, thus, separately saleable). Instead, the convertible preferred stock or convertible debt is recorded just like preferred stock or debt that does not have a conversion feature.

E14-17. Automatic versus Manual Processing

LO2 Office Depot NYSE :: ODP Homework MBC

Assume **Office Depot** processes 2,500,000 photocopies per month at its service center. Approximately 50% of the photocopies require collating. Collating is currently performed by high school and college students who are paid $10 per hour. Each student collates an average of 5,000 copies per hour. Management is contemplating the lease of an automatic collating machine that has a monthly capacity of 6,000,000 photocopies, with lease and operating costs totaling $3,000, plus $0.05 per 1,000 units collated.

REQUIRED

a. Determine the total costs of collating 1,000,000 and 2,000,000 per month:
   1. With student help.
   2. With the collating machine.

b. Determine the monthly volume at which the automatic process becomes preferable to (costs less than) the manual process.

E14-18. High-Low Cost Estimation

LO3 YRC Worldwide NASDAQ :: YRCW Homework MBC

Assume the local **YRC Worldwide** delivery service hub has the following information available about fleet miles and operating costs:

Year	Miles	Operating Costs
Year 1	695,000	$219,500
Year 2	855,000	267,500

REQUIRED

Use the high-low method to develop a cost-estimating equation for total annual operating costs.

E14-19. Scatter Diagrams and High-Low Cost Estimation

LO3, 4 Pearle Vision BIT :: LUX Homework MBC

Assume the local **Pearle Vision** has the following information on the number of sales orders received and order-processing costs.

Month	Sales Orders	Order-Processing Costs
1	3,300	$ 90,970
2	1,650	55,412
3	4,840	132,770
4	3,080	90,090
5	2,530	76,752
6	1,320	47,410
7	2,200	68,750

REQUIRED

a. Use information from the high- and low-volume months to develop a cost-estimating equation for monthly order-processing costs.

b. Plot the data on a scatter diagram. Using the information from representative high- and low-volume months, develop a cost-estimating equation for monthly order-processing costs.

c. What factors might have caused the difference in the equations developed for requirements (*a*) and (*b*)?

E14-20. Scatter Diagrams and High-Low Cost Estimation

LO3, 4 Coles County Highway Department Homework MBC

From April 1 through October 31, **Coles County Highway Department** hires temporary employees to mow and clean the right-of-way along county roads. The County Road Commissioner has asked you to help her in determining the variable labor cost of mowing and cleaning a mile of road. The following information is available regarding current-year operations:

the break-even price per ticket. How much will the association lose if this price is charged and only 1,500 tickets are sold?

c. City Hospital has a contract with the city to provide indigent health care on an outpatient basis for $125 per visit. The patient will pay $10 of this amount, with the city paying the balance ($115). Determine the amount the city will pay if the hospital has 5,000 patient visits.

d. A civic organization is engaged in a fund-raising program. On Civic Sunday, it will sell newspapers at $2.50 each. The organization will pay $1.75 for each newspaper. Costs of the necessary permits, signs, and so forth are $750. Determine the amount the organization will raise if it sells 3,000 newspapers.

e. Christmas for the Needy is a civic organization that provides Christmas presents to disadvantaged children. The annual costs of this activity are $10,000, plus $20 per present. Determine the number of presents the organization can provide with $30,000.

LO3, 5
Newell Brands
NASDAQ :: NWL
Homework MBC

E15-21. Alternative Production Procedures and Operating Leverage
Assume Sharpie, a brand of **Newell Brands**, is planning to introduce a new executive pen that can be manufactured using either a capital-intensive method or a labor-intensive method. The predicted manufacturing costs for each method are as follows:

	Capital Intensive	Labor Intensive
Direct materials per unit	$10.00	$12.00
Direct labor per unit	$ 4.00	$12.00
Variable manufacturing overhead per unit	$ 5.00	$ 2.00
Fixed manufacturing overhead per year	$1,800,000	$500,000

Sharpie's market research department has recommended an introductory unit sales price of $100. Selling costs under either method are predicted to be $250,000 per year, plus $4 per unit sold.

REQUIRED

a. Determine the annual break-even point in units if Sharpie uses the
1. Capital-intensive manufacturing method.
2. Labor-intensive manufacturing method.

b. Determine the annual unit volume at which Sharpie is indifferent between the two manufacturing methods.

c. Management wants to know more about the effect of each alternative on operating leverage.
1. Explain operating leverage and the relationship between operating leverage and the volatility of earnings.
2. Compute operating leverage for each alternative at a volume of 100,000 units.
3. Which alternative has the higher operating leverage? Why?

LO3, 5
Willamette Valley Fruit Company
Homework MBC

E15-22. Contribution Income Statement and Operating Leverage
Willamette Valley Fruit Company started as a small cannery-style operation in 1999. The company now processes, on average, 20 million pounds of berries each year. Flash-frozen berries are sold in 30 pound packs to retailers. Assume $\boxed{650,000}$ packs were sold for $75 each last year. Variable costs were $42 per pack and fixed costs totaled $14,250,000.

REQUIRED

a. Prepare a contribution income statement for last year.

b. Determine last year's operating leverage.

c. Calculate the percentage change in profits if sales decrease by 10%.

d. Management is considering the purchase of several new pieces of packaging equipment. This will increase annual fixed costs to $15,500,000 and reduce variable costs to $40 per crate. Calculate the effect of this acquisition on operating leverage and explain any change.

LO4
TPG Tax & Accounting
Homework MBC

E15-23. Multiple Product Break-Even Analysis
TPG Tax & Accounting is a full-service CPA firm located in Apache Junction, Arizona. Assume that tax return services are classified into one of three categories: standard, complex, and full-service (includes end-of-year bookkeeping with tax return preparation). Assume that TPG's fixed costs (rent, utilities, wages, and so forth) totaled $180,000 last year. Additional information from the prior year follows.

Cash budget

The cash budget summarizes all cash receipts and disbursements expected to occur during the budget period.

EXHIBIT 21.8 Cash Budget

REI
Cash Budget
For the Second Quarter Ending June 30

	April	May	June	Quarter Total
Budgeted sales (Exhibit 21.4)	$190,000	$228,000	$250,000	$668,000
Cash balance, beginning	$ 15,000	$ 15,770	$ 44,850	$ 15,000
Collections on sales				
Cash sales (50% sales)	95,000	114,000	125,000	
Credit sales				
Current month (25% credit sales)	23,750	28,500	31,250	
Prior month (74% credit sales)	59,200*	70,300	84,360	
Total	177,950	212,800	240,610	631,360
Cash available for operations	192,950	228,570	285,460	646,360
Disbursements				
Purchases (Exhibit 21.5)				
Current month (20% purchases)	25,080	28,680	33,540	
Prior month (80% purchases)	84,000**	100,320	114,720	
Total	109,080	129,000	148,260	386,340
Selling expenses (Exhibit 21.6)	12,100	13,620	14,500	40,220
General & Administrative Expenses				
(Exhibit 21.7, excluding depreciation)	31,000	31,000	31,000	93,000
Taxes (Exhibit 21.3)	35,000			35,000
Total	(187,180)	(173,620)	(193,760)	(554,560)
Excess (deficiency) cash available over disbursements	5,770	54,950	91,700	91,800
Short-term financing***				
New loans	10,000			10,000
Repayments		(10,000)		(10,000)
Interest	—	(100)	—	(100)
Net cash from financing	10,000	(10,100)	—	(100)
Cash balance, ending	$ 15,770	$ 44,850	$ 91,700	$ 91,700

*April 1 accounts receivable.

**April 1 accounts payable.

***Loans are obtained in $1,000 increments at the start of the month to maintain a minimum balance of $15,000 at all times. Repayments are made ~~at the end of the month,~~ as soon as adequate cash is available. Assume interest of 12% per year (1% per month) is paid when the loan is repaid.

- Management estimates that one-half of all sales are for cash and the other half are on the company's credit card. (When sales are on bank credit cards, the collection is immediate, less any bank user fee; however, the budget assumes charges using REI's credit card are collected by the company from the customer.) Twenty-five percent of the credit card sales are collected in the month of sale, and 74% are collected in the following month. Bad debts are budgeted at 1% of credit sales. This resource flow is graphically illustrated as follows:

Sales
- 50% cash
- 50% credit
  - 25% collected in current month
  - 74% collected in next month
  - 1% uncollected

- The budget assumes payments for purchases are made 20% in the month purchased and 80% in the next month.
- Information on cash expenditures for selling expenses and for general and administrative expenses is based on budgets for these items. The monthly cash expenditures for general and administrative expenses are $31,000 rather than $33,000. The $2,000 difference relates to depreciation, which does not require use of cash.

- The budget assumes REI's income taxes are determined on the basis of predicted taxable income following IRS rules. Estimated tax payments are made during the month following the end of each quarter. Hence, the taxes payable on April 1 are paid during April.
- The cash budget shows cash operating deficiencies and surpluses expected to occur at the end of each month; this is used to plan for borrowing and loan payment.
- The budget assumes the cash maintenance policy for REI specifies that a minimum balance of $15,000 is to be maintained.
- The budget assumes REI has a line of credit with a bank, with any interest on borrowed funds computed at the simple interest rate of 12.0% per year, or 1.0% per month. All necessary borrowing is assumed to occur at the start of each month in increments of $1,000. Repayments including interest are assumed to occur as soon as adequate cash is available.
- The cash budget indicates REI needs to borrow $10,000 in April. The $10,000 plus interest is repaid in May.

If REI had any cash disbursements for dividends or capital expenditures, they would be included in the cash budget. These items, along with information on income taxes, would be shown in special budgets.

Budgeted Financial Statements

The preparation of the master budget culminates in the preparation of budgeted financial statements. **Budgeted financial statements** are pro forma statements that reflect the "as-if" effects of the budgeted activities on the actual financial position of the organization. That is, the statements reflect the results of operations assuming all budget predictions are correct. Spreadsheets that permit the user to immediately determine the impact of any assumed changes facilitate developing budgeted financial statements. The budgeted income statement can follow the functional format traditionally used for financial accounting or the contribution format introduced in Chapter 15. In either case, the balance sheet amounts reflect the corresponding budgeted entries.

Exhibit 21.9 presents the budgeted income statement for the quarter ending June 30. If all predictions made in the operating budget are correct, REI will produce a net income of $51,540 for the quarter. Almost every item on the budgeted income statement comes from one of the budget schedules.

EXHIBIT 21.9 Budgeted Income Statement

REI
Budgeted Income Statement
For the Second Quarter Ending June 30

Sales (Exhibit 21.4)		$668,000
Cost of goods sold:*		
Beginning inventory (Exhibit 21.3)	$157,000	
Purchases (Exhibit 21.5)	436,500	
Cost of merchandise available	593,500	
Ending inventory (Exhibit 21.5)	(192,700)	(400,800)
Gross profit		267,200
Other expenses:		
Bad debt (1% of credit sales)**	3,340	
Selling (Exhibit 21.6)	40,220	
General and administrative (Exhibit 21.7)	99,000	(142,560)
Income from operations		124,640
Interest expense (Exhibit 21.8)		(100)
Net income from operations		124,540
Allowance for income taxes***		(73,000)
Net income		$ 51,540

*Also computed at sales × 0.6

**$668,000 × 0.5 credit sales × 0.01 bad debts

***Provided by accounting

continued from previous page

DEWALT
Manufacturing Cost Budget
For First Quarter

	Drills	Saws	Total
Variable manufacturing overhead			
Direct labor hours	130,000	126,000	
Variable manufacturing overhead rate	× $1.50	× $1.50	
Total variable overhead	$ 195,000	$ 189,000	384,000
Fixed manufacturing overhead			214,000
Total			$9,918,000

e.

DEWALT
Cash Budget
For First Quarter

Cash balance, beginning		$ 1,800,000
Collections on sales		
Current quarter's sales ($11,000,000 × 0.50)	$5,500,000	
Previous quarter's sales ($8,400,000 × 0.50)	4,200,000	9,700,000
Cash available from operations		11,500,000
Less budgeted disbursements		
Materials (purchases budget)	5,794,000	
Labor (manufacturing cost budget)	3,576,000	
Manufacturing overhead (manufacturing cost budget) ([$384,000 + 214,000] − 156,000 noncash)	442,000	
Selling and administrative ($340,000 − $90,000 depreciation)	250,000	(10,062,000)
Cash balance, ending		$ 1,438,000

f.

DEWALT
Contribution Income Statement
For First Quarter

Sales (sales budget)		$11,000,000
Less variable costs of goods sold		
Drills (60,000 × $85.00)	$5,100,000	
Saws (40,000 × $99.50)	3,980,000	(9,080,000)
Contribution Margin		1,920,000
Less fixed costs		
Manufacturing overhead	214,000	
Selling and administrative expenses	340,000	(554,000)
Net income		$ 1,366,000

Chapter-End Review

SOLUTION

2 *a.* The marketing department is asked to provide an estimate as to how much it will spend on print ads during the next fiscal year.

1 *b.* The marketing department provides a budget amount for print ads for the next fiscal year that includes the expected expenditures plus 10% to account for uncertainty.

4 *c.* Tristan Renken owns and operates a food truck that sells Mexican food along the beaches in Chicago. Tristan only operates the food truck during the summer and developed a budget to estimate how much he will make during the upcoming summer season.

3 *d.* Top management hosts semi-annual meetings to discuss the budget and current performance vs. the budget. Management provides employees with tools to help gauge their own performance against the budgeted expectations.

INSTANT COMPUTING
Budgeted Contribution Income Statement
For Month of October

Sales (2,000 × $400)			$800,000
Less variable costs			
Variable cost of goods sold			
Direct materials (2,000 × $60)	$120,000		
Direct labor (2,000 × $40)	80,000		
Manufacturing overhead (2,000 × $20)	40,000	$240,000	
Selling and Distribution (2,000 × $45)		90,000	(330,000)
Contribution margin			470,000
Less fixed costs			
Manufacturing overhead		160,000	
Administrative		125,000	
Selling and Distribution		75,000	(360,000)
Net income			$110,000

INSTANT COMPUTING
Actual Contribution Income Statement
For Month of October

Sales (2,250 × $385)			$866,250
Less variable costs			
Cost of goods sold			
Direct materials	$139,500		
Direct labor	85,500		
Manufacturing overhead	43,875	$268,875	
Selling and Distribution		105,750	(374,625)
Contribution margin			491,625
Less fixed costs			
Manufacturing overhead		168,000	
Administrative		135,000	
Selling and Distribution		74,600	(377,600)
Net income (loss)			$114,025

Required

a. Prepare a performance report for Production that compares actual and allowed costs.
b. Prepare a performance report for Selling and Distribution that compares actual and allowed costs.
c. Determine the sales price and the net sales volume variances.
d. Prepare a report that summarizes the performance of Selling and Distribution.
e. Determine the amount by which Administration was over or under budget.
f. Prepare a report reconciling budgeted and actual net income. Your report should focus on the performance of each responsibility center.

CASES AND PROJECTS

LO1 **C22-42. Discretionary Cost Center Performance Reports**

TruckMax had been extremely profitable, but the company has been hurt in recent years by competition and a failure to introduce new consumer products. Three years ago, Tom Lopez became head of Consumer Products Research (CPR) and began a number of product development projects. Under his leadership the group had good ideas that led to the introduction of several promising products. Nevertheless, when financial results for Lopez's second year were reviewed, CPR's report revealed large unfavorable variances leading management to criticize Lopez for poor cost control. Management was quite concerned about cost control because profits were low, and the company's cash budget indicated that additional borrowing would be required to cover out-of-pocket costs. Because of his inability to exert proper cost control, Lopez was relieved of his responsibilities last year, and Gabriella Garcia became head of Consumer Products Research. Garcia vowed to improve the performance of CPR and scaled back CPR's development activities to obtain favorable financial performance reports.

comparable to "par" on a golf course. Just as the game of golf uses a handicap system to allow for differences in individual players' skills and scores, it could be necessary for management to interpret variances based on the circumstances that produced the variances. Accordingly, in one case, a given unfavorable variance could represent poor performance; in another case, it could represent good performance. The managers are just going to have to recognize these subtleties in standard cost systems and depend on upper management to be fair.

Human Resources Director—The key to employee productivity is employee satisfaction and a sense of accomplishment. A set of standards that can never be met denies managers of this vital motivator. The current standards would be appropriate in a laboratory with a controlled environment but not in the factory with its many variables. If we are to recapture our old "team spirit," we must give the managers a goal that they can achieve through hard work.

Required

Discuss the behavioral issues involved in Merit Inc.'s standard cost dilemma. Evaluate each of the three responses (pros and cons) and recommend a course of action.

LO8 **C22-45. Evaluating a Companywide Performance Report**

Mr. Chandler, the production supervisor, bursts into your office, carrying the company's prior year performance report and thundering, "There is villainy here, sir! And I shall get to the bottom of it. I will not stop searching until I have found the answer! Why is Mr. Richards so down on my department? I thought we did a good job last year. But Richards claims my production people and I cost the company $11,700! I plead with you, sir, explain this performance report to me." Trying to calm Chandler, you take the report from him and ask to be left alone for 15 minutes. The report is as follows:

DICKENS COMPANY, LIMITED
Performance Report
For the Prior Year

	Actual	Budget	Variance
Unit sales	9,000	7,500	
Sales	$526,500	$450,000	$ 76,500 F
Less manufacturing costs			
Direct materials	42,750	37,500	5,250 U
Direct labor	19,350	15,000	4,350 U
Manufacturing overhead	192,100	190,000*	2,100 U
Total	(254,200)	(242,500)	(11,700) U
Gross profit	272,300	207,500	64,800 F
Less selling and administrative expenses			
Selling (all fixed)	52,750	50,000	2,750 U
Administrative (all fixed)	54,785	50,000	4,785 U
Total	(107,535)	(100,000)	(7,535) U
Net income	$164,765	$107,500	$ 57,265 F
Performance summary			
Budgeted net income			$107,500
Sales department variances			
Sales revenue	$ 76,500 F		
Selling expenses	2,750 U	$ 73,750 F	
Administration department variances		4,785 U	
Production department variances		11,700 U	57,265 F
Actual net income			$164,765

*Includes fixed manufacturing overhead of $160,000.

Required

a. Evaluate the performance report. Is Mr. Richards correct, or is there "villainy here"?

b. Assume that the sales department is a profit center and that the production and administration departments are cost centers. Determine the responsibility of each for cost, revenue, and income variances, and prepare a report reconciling budgeted and actual net income. Your report should focus on the performance of each responsibility center.

- The organization began the year with net capital assets of $84,100,000 with a planned cost of capital of 6%.

Required

a. Prepare a balanced scorecard for IAA for November with calculated key performance indicators presented in two columns for planned performance and actual performance—include key financial, customer, and operating performance indicators.

b. Which of the evaluation areas you selected indicated success and which indicated failure?

c. Give some explanations of the successes and failures.

PROBLEMS

LO1 P23-31. Multiple Segment Reports

Worldwide Communications, Incorporated, sells telecommunication products throughout the world in three sales territories: Europe, Asia, and the Americas. For July, all $1,045,000 of administrative expense is traceable to the territories, except $200,000, which is common to all units and cannot be traced or allocated to the sales territories. The percentage of product line sales made in each of the sales territories and the assignment of traceable fixed expenses follow:

	Sales Territory			
	Europe	Asia	The Americas	Company
Handset sales	40%	35%	25%	100%
Switchboard sales	35%	35%	30%	100%
Automated switches sales	10%	15%	75%	100%
Fixed administrative expense	$350,000	$275,000	$220,000	$845,000
Fixed selling expense	$155,000	$175,000	$550,000	$880,000

The manufacturing takes place in one large facility with three distinct manufacturing operations. Selected product-line cost data follow.

	Handset	Switchboard	Automated Switches	Company
Variable costs	$ 15	$ 850	$ 1,950	
Depreciation and supervision	60,000	175,000	275,000	$ 585,000*
Other mfg. overhead (common)				650,000
Fixed administrative expense (common)				1,045,000
Fixed selling expense (common)				880,000

*Includes common costs of $75,000

The unit sales and selling prices for each product follow.

	Unit Sales	Selling Price
Handset	6,500	$ 25
Switchboard	1,500	1,900
Automated	2,500	3,500

Required

a. Prepare an income statement for July segmented by product line. Include a column for the entire firm.

b. Prepare an income statement for July segmented by sales territory. Include a column for the entire firm.

c. Prepare an income statement for July by product line for The Americas sales territory. Include a column for the territory as a whole. Products are manufactured in a single facility. Although depreciation and supervision are allocated by product line, those costs are not allocated by territory.

d. Discuss the value of multi-level segment reporting as a managerial tool. Compare and contrast the benefits of the reports generated in parts *a*, *b*, and *c*.

	Professional Division		
	Accounting Books Segment	Executive Books Segment	Management Books Segment
Sales	$105,000	$105,000	$97,500
Variable manufacturing expenses as a percentage of sales	60%	40%	50%
Other variable expenses as a percentage of sales	5%	5%	5%
Direct fixed expenses	$37,500	$55,100	$37,500
Allocated common fixed expenses	$ 3,000	$ 1,500	$ 4,500

The professional accounting books are sold to auditors and controllers. The current information on these markets is as follows:

	Accounting Books Segment		
	Auditors Market	Controllers Market	Total
Sales	$22,500	$82,500	$105,000
Variable manufacturing expenses as a percentage of sales	60%	60%	—
Other variable expenses as a percentage of sales	$\boxed{5\%}$	$\boxed{5\%}$	—
Direct fixed expenses	$11,250	$22,500	$33,750
Allocated common fixed expenses	$ 1,125	$ 1,500	$ 2,625

Required

a. Prepare an income statement segmented by product for the Professional Division. Include a column for the division as a whole.

b. Prepare an income statement segmented by market for the Accounting Books Segment of the Professional Division.

c. Evaluate which Accounting Books Segment the Professional Division should keep or discontinue in the short run.

d. What is the correct long-run decision? Explain fully, including any possible risks associated with your recommendation.

LO1 **P23-34. Segment Reports and Cost Allocations**

All Things Greek Inc. has three sales divisions. One of the key evaluation inputs for each division manager is the performance of his or her division based on division income. The division statements for August are as follows:

	Alpha	Beta	Gamma	Total
Sales	$250,000	$300,000	$275,000	$825,000
Cost of sales	139,500	165,000	158,250	462,750
Division overhead	39,000	45,000	41,250	125,250
Division expenses	(178,500)	(210,000)	(199,500)	(588,000)
Division contribution	71,500	90,000	75,500	237,000
Corporate overhead	(41,000)	(49,000)	(45,000)	(135,000)
Division income	$ 30,500	$ 41,000	$ 30,500	$102,000

The Gamma manager is unhappy that his profitability is the same as that of the Alpha Division and 74% that of the Beta Division when his sales are halfway between these two divisions. The manager knows that his division must carry more product lines because of customer demands, and many of these additional product lines are not very profitable. He has not dropped these marginal product lines because of idle capacity; all of the products cover their own variable costs. After analyzing the product lines with the lowest profit margins, the divisional controller for Gamma provided the following to the manager:

Mid-Chapter Review 2

SOLUTION

a. No.

	Current Sales	Proposed Sales
Selling price	$ 24.00	$ 13.50
Variable costs	(16.00)	(16.00)
Unit contribution margin	$ 8.00	$ (2.50)
Unit sales	× 200,000	× 100,000
Contribution margin	$1,600,000	$(250,000)

Currently, the division is making $250,000 on 200,000 posters ($1,600,000 − $1,350,000 fixed costs); but under the proposal, with a $250,000 negative contribution, it would revert to a break-even situation:

Current contribution margin		$1,600,000
Fixed costs	$1,350,000	
Loss on special order	250,000	(1,600,000)
Net income		$ 0

As a general rule, a project should never be undertaken if the contribution margin is negative.

b. What the Retail Division does with the posters after receiving them is of no concern to the Production Division. Hence, the Production Division would still object to a transfer price of $13.50. However, for the company, the proposal does have a contribution of $18 per unit ($44 − $16 − $10). Consequently, the order is desirable from the viewpoint of the company.

c. If the company believes in autonomous divisions, it should not require the Production Division to sell, nor should it dictate a higher transfer price. On the other hand, the company may want to create incentives to encourage (but not require) the two division managers to reach some compromise transfer price that would increase the contribution and profits of both divisions.

Mid-Chapter Review 3

SOLUTION

a.

$$\textbf{Return on investment} = \frac{\textbf{Investment center income}}{\textbf{Investment center asset base}}$$

$$\textbf{Engineering Division} = \$30{,}000 \div \$200{,}000 = 0.15 \text{ or } 15\%$$

$$\textbf{Construction Division} = \$50{,}000 \div \$250{,}000 = 0.20 \text{ or } 20\%$$

$$\textbf{Military Division} = \$22{,}000 \div \$100{,}000 = 0.22 \text{ or } 22\%$$

b. **Residual income = Investment center income − (Investment center asset base × Minimum return)**

$$\textbf{Engineering Division} = \$30{,}000 - (0.15 \times \$200{,}000) = \$0.00$$

$$\textbf{Construction Division} = \$50{,}000 - (0.15 \times \$250{,}000) = \$12{,}500$$

$$\textbf{Military Division} = \$22{,}000 - (0.15 \times \$100{,}000) = \$7{,}000$$

c. ROI ranks the Military Division first, the Construction Division second, and the Engineering Division third. Residual income ranks the Construction Division first, the Military Division second, and the Engineering Division third. Because the investments for each division are different, it is somewhat misleading to rank the divisions according to residual income. The Construction Division had the highest residual income, but it also had the largest investment. The Military Division's residual income was 56% of the Construction Division's income but only 40% of the investment of the Construction Division. This fact, along with the best ROI ranking, probably justifies the Military Division being evaluated as the best division of KBR.

	Old Compressor	New Compressor
Salaries	$60,000	$75,000
Supplies	12,000	7,500
Utilities	23,000	15,000
Cleaning and maintenance	35,000	10,000
Total cash expenditures	$130,000	$107,500

If the new compressor is purchased, Mitsubishi will sell the old compressor for its current salvage value of $60,000. If the new compressor is not purchased, the old compressor will be disposed of in five years at a predicted scrap value of $6,000. The old compressor's present book value is $85,000. If kept, the old compressor will require repairs one year from now predicted to cost $75,000.

Required

a. Use the total cost approach to evaluate the alternatives of keeping the old compressor and purchasing the new compressor. Indicate which alternative is preferred.

b. Use the differential cost approach to evaluate the desirability of purchasing the new compressor.

LO2 **Pinstripes Cleaning and Restoration**

P24-34. NPV Total and Differential Analysis of Replacement Decision

Assume **Pinstripes Cleaning and Restoration**, near Dallas, Texas, must either have a complete overhaul of its current dry-cleaning system or purchase a new one. Its cost of capital is 16%. The following cost projections have been developed:

	Old System	New System
Purchase cost (new)	$85,000	$90,000
Remaining book value	17,000	
Overhaul needed	25,000	
Annual cash operating costs	60,850	40,200
Current salvage value	$\boxed{12,000}$	
Salvage value in 5 years	4,500	10,000

If Pinstripes keeps the old system, it will have to be overhauled immediately. With the overhaul, the old system will have a useful life of five more years.

Required

a. Use the total cost approach to evaluate the alternatives of keeping the old system and purchasing the new system. Indicate which alternative is preferred.

b. Use the differential cost approach to evaluate the desirability of purchasing the new system.

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P24-35. NPV Differential Analysis of Replacement Decision

The management of Dusseldorf Manufacturing Company is currently evaluating a proposal to purchase a new, innovative drill press as a replacement for a less efficient piece of similar equipment, which would then be sold. The cost of the equipment, including delivery and installation, is $320,000. If the equipment is purchased, Dusseldorf will incur a $10,000 cost in removing the present equipment and revamping service facilities. The present equipment has a book value of $150,000 and a remaining useful life of 10 years. Because of new technical improvements that have made the present equipment obsolete, it now has a disposal value of only $70,500. Management has provided the following comparison of manufacturing costs:

	Present Equipment	New Equipment
Annual production (units)	500,000	500,000
Annual costs		
Direct labor (per unit)	$0.15	$0.08
Overhead		
Depreciation (10% of asset's book value)	$15,000	$32,000
Other	$84,600	$42,500

Additional information follows:

- Management believes that if the current equipment is not replaced now, it will have to wait 10 years before replacement is justifiable.
- Both pieces of equipment are expected to have a negligible salvage value at the end of 10 years.
- Management expects to sell the entire annual production of 500,000 units.
- Dusseldorf's cost of capital is 14%.