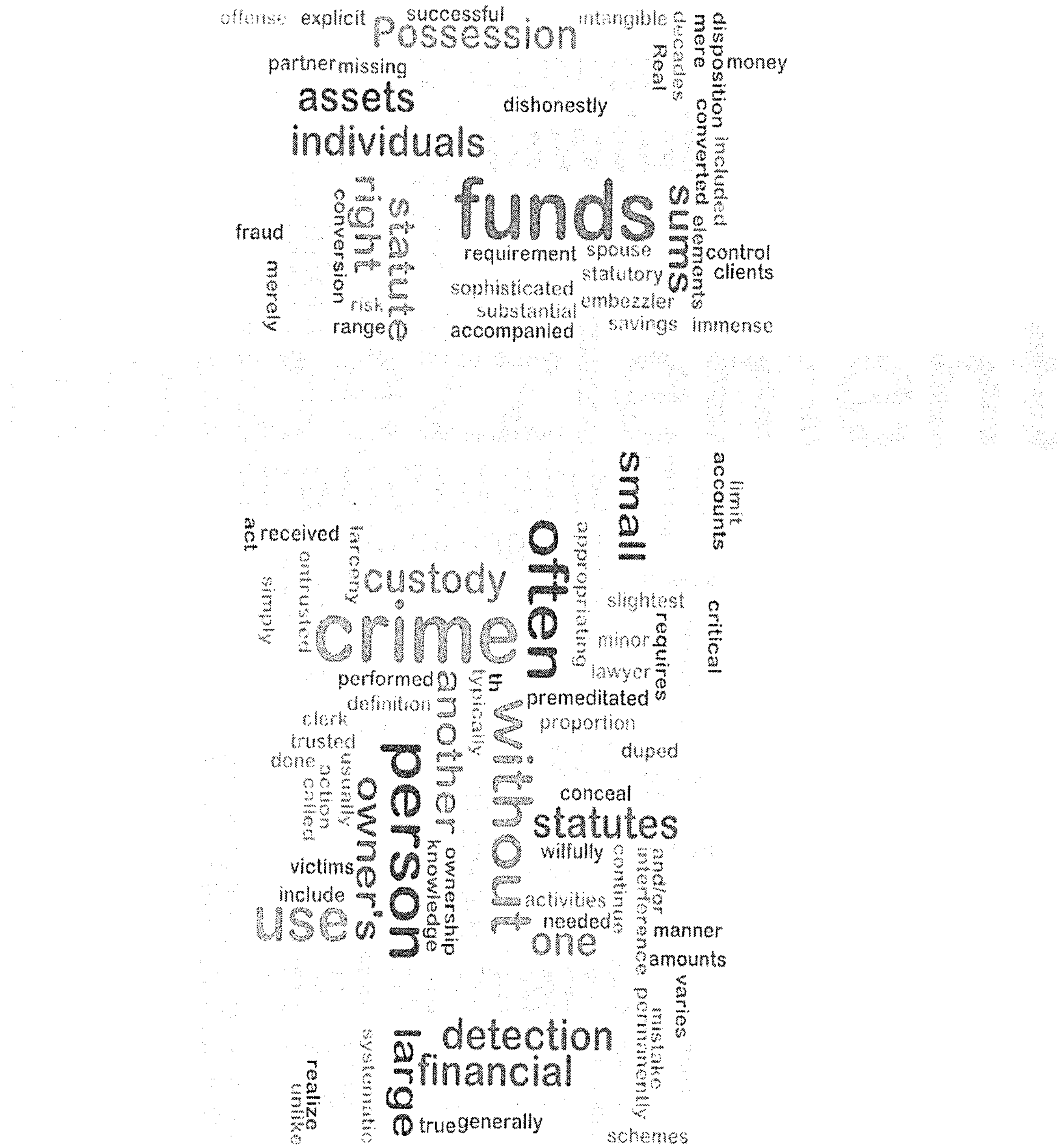
Chapter 21 Financial Statements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Learning Outcomes

21-1 The Balance Sheet

1. Prepare a balance sheet.
2. Prepare a vertical analysis of a balance sheet.
3. Prepare a horizontal analysis of a balance sheet.

21-2 Income Statements

1. Prepare an income statement.
2. Prepare a vertical analysis of an income statement.
3. Prepare a horizontal analysis of an income statement.

21-3 Financial Statement Ratios

1. Find and use financial ratios.

Financial Statement Fraud

A financial statement (or **financial report**) is a formal record of the financial activities of a business, person, or other entity. Financial statements are *extremely* important reports. They show how a business is doing and are very useful internally for a company's stockholders and to its board of directors, its managers, and some employees, including labor unions. Externally, they are important to prospective investors, to government agencies responsible for taxing and regulating, to lenders such as banks and credit rating agencies, and to investment analysts and stockbrokers. For a business enterprise, all the relevant financial information, presented in a structured and easy to understand manner, will be included in the financial statements. These statements show the financial wealth of a company (how much it owes and owns), but unfortunately, they can be manipulated.

According to a study by the Committee of Sponsoring Organizations of the Treadway Commission (COSO), fraudulent financial reporting by U.S. public companies has significant negative consequences for investors and executives. The study examined nearly 350 alleged accounting fraud cases investigated by the Securities and Exchange Commission (SEC) over a 10-year period. It showed the following:

- Financial fraud affects companies of all sizes, with the median company having assets and revenues just under $100 million.
- The median fraud was $12.1 million. More than 30 of the fraud cases each involved misstatements/ misappropriations of $500 million or more.
- The SEC named the chief executive officer (CEO) and/ or chief financial officer (CFO) as being involved in 89 percent of the fraud cases. Within two years of the completion of the SEC investigation, about 20 percent of CEOs/CFOs had been indicted. Over 60 percent of those indicted were convicted.
- Twenty-six percent of the firms engaged in fraud changed auditors during the period examined compared to a 12 percent rate for no-fraud firms.

- Initial news in the press of an alleged fraud resulted in an average 16.7 percent abnormal stock price decline for the fraudulent company in the two days surrounding the announcement.
- News of an SEC or Department of Justice investigation resulted in an average 7.3 percent abnormal stock price decline.
- Companies engaged in fraud often experienced bankruptcy, delisting from a stock exchange, or material asset sales at rates much higher than those experienced by other firms.

The message is clear. The impact of fraudulent financial reporting is devastating to both investors and the financial markets in general. And unfortunately, not only do the company, its employees, and executives pay dearly for the practice of fraudulent financial reporting—but society as a whole pays as well.

The financial condition of a business must be monitored at all times. The owner of a business, investors, and creditors need to know the financial condition of the business before they can make decisions and plans. Lending institutions consider the overall financial health of a business before lending money. The stockholders of incorporated businesses expect to receive periodic reports on the financial condition of the corporation. Many companies or organizations hire an auditor once a year to determine this condition. Two financial statements, the *balance sheet* and the *income statement*, are normally prepared as part of this analysis. The balance sheet describes the condition of a business at some exact point in time, whereas the income statement shows what the business did over a period of time.

21-1 The Balance Sheet

Learning Outcomes

1. Prepare a balance sheet.
2. Prepare a vertical analysis of a balance sheet.
3. Prepare a horizontal analysis of a balance sheet.

1 Prepare a balance sheet.

The **balance sheet** is a type of financial statement that indicates the worth or financial condition of a business *as of a certain date*. It does not give any historical background about the company or make future projections, but rather shows the status of the company on a given date. On that date, it answers these questions:

How much does the business own? What are its *assets?*

How much does the business owe? What are its *liabilities*?

How much is the business worth? What is its *equity?*

Assets are properties owned by the business. They include anything of monetary value and things that could be exchanged for cash or other property. **Current assets** are assets that are normally turned into cash within a year. **Plant and equipment** are assets that are used in transacting business and are more long-term in nature. These types of assets can be further subdivided as follows:

Liabilities are amounts that the business owes. **Current liabilities** are those that must be paid shortly. **Long-term liabilities** are those that will be paid over a long period of time—a year or more. These types of liabilities can be further subdivided as follows:

Balance sheet:

financial statement that indicates the worth or financial condition of a business as of a certain date.

Assets:

properties or anything of monetary value owned by the business.

Current assets:

assets that are normally turned into cash within a year.

Plant and equipment:

assets used in transacting business.

Cash:

a current asset of money in the bank or cash on hand.

Accounts receivable:

a current asset that is the money owed by customers.

Notes receivable:

a current asset that is a promissory note owed to the business.

Merchandise inventory:

a current asset that is the value of merchandise on hand.

Office supplies:

value of supplies such as stationery, pens, file folders, and computer storage devices.

Business equipment:

value of equipment such as tools, display cases,and machinery owned by the business.

Office furniture and equipment:

value of office furniture and equipment such as computers, printers, and copiers owned by the business.

Buildings:

value of buildings and structures owned by the business.

Land:

value of the grounds or land owned by the business.

Liabilities:

amounts that the businessowes.

Current liabilities:

debts that must be paid within a short amount of time.

Long-term liabilities:

debts that are paid over a long period of time.

Accounts payable:

a current liability for merchandise or services that have not been paid for.

Notes payable:

promissory notes that are owed.

Wages payable:

salaries a business owes its employees.

Mortgage payable:

a long-term liability for the building and land the business owns.Owner's equity or stockholder's

In addition to its debts to creditors, a firm is considered to owe its investors. This "debt," expressed as **owner's equity**, also called stockholder's equity, is the amount of clear ownership or the owner's rights to the properties. It is the difference between assets and liabilities. For instance, if a business has assets of $175,000 and liabilities of $100,000, the owner's equity is $ 175,000 — $ 100,000, or $75,000. Other words used to mean the same thing as owner's equity are **capital, proprietorship, and net worth**.

equity:

the difference between the company's assets and the liabilities.

Capital, proprietorship, or net worth:

other terms for owner's equity.

The money amounts used in this chapter are for illustrative purposes and are unrealistically low and simplistic. Real-life examples will have much larger amounts and situations will be much more complex. We will focus on the concepts that are being presented.

A balance sheet (see **Figure 21-1**) lists the assets, liabilities, and owner's equity of a business on a specific date, using the basic accounting equation of business:

Basic Accounting Equation

$$\text{Assets} = \text{liabilities} + \text{owner 'sequity}$$
$$A = L + OE$$

Figure 21-1
Move It Fitness Balance Sheet Template

How to Prepare a balance sheet

1. Find and record the *total assets*, working by asset category.
   a. List the *current assets* and draw a single line underneath the last entry.
   b. Add the entries and record the *total current assets*, drawing a single line underneath the total.
   c. Repeat step 1(a) for *plant and equipment assets* and step 1(b) for *total plant and equipment assets.*
   d. Add the category totals and draw a double line underneath the grand total.
   Total assets = total current assets + total plant and equipment

Find and record the *total liabilities*, working by liability category.

a. Repeat step 1(a) for *current liabilities* and step 1(b) for *total current liabilities*.
b. Repeat step 1(a) for *long-term liabilities* and step 1(b) for *total long-term liabilities*.
c. Add the category totals and draw a single line underneath the total.
   Total liabilities = total current liabilities + total long-term liabilities

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Find and record the *total owner's equity*.

a. List the equity entries and draw a single line underneath the last entry.
b. Add the entries and draw a single line underneath the total.

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Find and record the *total liabilities and owner's equity:* Add the total liabilities to the total owner's equity and draw a double line underneath the grand total.

Total liabilities and owner's equity = total liabilities + total owner's equity

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Confirm that the double line grand totals from step 1 and step 4 are the same.

Total Assets = total liabilities + owner's equity

Did You Know? Single Underline versus Double Underline

One way of distinguishing totals and subtotals on financial statements is by the type of underline used. A single underline indicates the result of addition or subtraction that is a subtotal. The double underline indicates the result of addition or subtraction that is a grand total.

Another convention for indicating the total is to make the entry bold type. **In this text, we will use the traditional single underline for subtotals and double underline for grand totals**.

Example 1

Prepare a balance sheet, using **Figure 21-1** as a guide, for Move It Fitness for December 31, 2015. The company assets are: cash, $1,973; accounts receivable, $2,118; merchandise inventory, $18,476; equipment, $18,591. The liabilities are: accounts payable, $2,317; wages payable, $684; mortgage note payable, $15,286. The owner's capital is $22,871.

The completed balance sheet is shown in **Figure 21-2** .

Try Stop & Check 1–4.

Figure 21-2 Completed Balance Sheet

Tip When Are Dollar Signs Appropriate?

Writing a dollar sign for every monetary amount makes the balance sheet more difficult to read. Ordinarily, dollar signs are included for the first amount in a list of values and for the totals. Even subtotals generally do not include the dollar sign. Another advantage of this convention is that it makes totals easier to locate. **In this text the dollar sign will be placed on the first entry in a list to be added or subtracted and in the grand total (not subtotals)**.

Stop & Check

See **Example 1** .

1. Find total current assets if The 7th Inning has $43,518 in cash; $3,988 in accounts receivable; and $96,532 in merchandise inventory.
2. Datatech, Inc., has $15,817 in accounts payable; $9,892 in wages payable; and $418,250 for its mortgage note. If owner's equity totals $45,986, find total liabilities and owner's equity.
3. Prepare a balance sheet for Rayco, Inc., for December 31, 2015. The company assets are: cash, $105,095; accounts receivable, $6,503; merchandise inventory, $190,014; equipment, $32,507. The liabilities are: accounts payable, $6,007; wages payable, $4,761; mortgage note payable, $281,017. The owner's capital is $42,334.
4. Prepare a balance sheet for Rayco, Inc., for December 31, 2016. The company assets are: cash, $114,975; accounts receivable, $8,918; merchandise inventory, $187,915; equipment, $29,719. The liabilities are: accounts payable, $6,832; wages payable, $5,215; mortgage note payable, $279,409. The owner's capital is $50,071.

2 Prepare a vertical analysis of a balance sheet.

A **vertical analysis** of a balance sheet shows the ratio of each item on the balance sheet to the *total assets*. To find these ratios, we use the percentage formula $R = \frac{P}{B}$. Each item on the balance sheet is a portion *P* and the total assets amount is the base *B*. Their ratio *R* is expressed as a percent.

Vertical analysis
the ratio of each item on the balance sheet to total assets.

For instance, if total assets are $50,000, a liability of $5,000 is 10% of total assets.

$$R = \frac{P}{B} = \frac{\text{liability}}{\text{total assets}} = \frac{\$5,000}{\$50,000} = 0.1 = 10\%$$

How to Prepare a vertical analysis of a balance sheet

1. Prepare a balance sheet of assets, liabilities, and owner's equity.
2. Create an additional column labeled *percent:* For each item, divide the amount of the item by the total assets then multiply by 100% to record the result as a percent.

$$\text{Percent of total assets} = \frac{\text{amount of item}}{\text{total assets}} \times 100\%$$

Tip Using Full Calculator Displays

In this text full calculator displays will be shown as appropriate and rounding is only made on the final answer. It will not change the final answer if your calculator displays shows more or fewer digits.

Example 2

Prepare a vertical analysis of the balance sheet for Move it Fitness shown in **Figure 21-2** .

For each item, divide the amount of the item by the total assets.

Try Stop & Check 1–2.

Tip Checking Calculations

The percent values for all the assets should add up to 100%. The percent values for all the liabilities plus the percent value for the owner's equity should add up to 100%. Minor discrepancies may occur due to rounding.

Figure 21-3

Vertical Analysis of Move It Fitness Balance Sheet

Tip Watch the Base!

Be careful to use the total assets as the base when figuring each percent. Look what happens to the percent for *Wages payable* in **Figure 21-3** if the total liabilities is used for the base instead of total assets:

Comparing balance sheets from two years may reveal important trends in a business's operations. A **comparative balance sheet** is shown in **Figure 21-4**. Note that data for the most recent year are entered in the first columns.

Comparative balance sheet
a balance sheet that includes data from two or more years.

How to Prepare a vertical analysis of a balance sheet

1. Prepare a vertical analysis of the balance sheet for a company for two comparable business periods such as years.
2. Represent both sets of data on the same statement by showing the data for the most current period to the left of the data for the earlier period.

Example 3

Move It Fitness reported the following assets for 2016: cash, $2,184; accounts receivable, $4,308; merchandise inventory, $17,317; equipment, $14,203. Liabilities for the same period are: accounts payable, $1,647; wages payable, $894; mortgage note payable, $12,715. The owner's capital is $22,756. Complete a comparable balance sheet for Move It Fitness for 2015 and 2016.

Use the balance sheet in **Figure 21-3** as the data for 2015. Complete the balance sheet and vertical analysis for 2016. Then show both sets of data on the same statement.

Try Stop & Check 1–2.

Figure 21-4 Vertical Analysis of Move It Fitness Comparative Balance Sheet

Stop & Check

See **Example 2** .

1. Prepare a vertical analysis of the Rayco, Inc., balance sheet for December 31, 2015, from **Exercise 3** in the Stop and Check on page **759**.
2. Prepare a vertical analysis of the Rayco, Inc., balance sheet for December 31, 2016, from **Exercise 4** in the Stop and Check on page 759.

See **Example 3** .

3. Prepare a comparative balance sheet for Rayco for December 2015 and 2016 using information from **Exercises 3** and **4** on page **759**.
4. From the comparative balance sheet for Rayco, Inc., in **Exercise 3** , in which year did Rayco have the greater total assets?

3 Prepare a horizontal analysis of a balance sheet.

Another way to analyze information on a comparative balance sheet is to compare item by item in a **horizontal analysis** . While a vertical analysis compares each item to total assets, a horizontal analysis compares the same item for two different years, recording both the amount of increase (or decrease) and the increase (or decrease) as a percent of the earlier year's amount.

Horizontal analysis

a balance sheet analysis that compares the same item for two different years.

How to Prepare a horizontal analysis of a comparative balance sheet

1. Prepare a balance sheet for two or more years: Record each year's amounts in separate columns.
2. Create an additional column labeled *amount of increase (decrease):* For each yearly item,
   a. Subtract the smaller amount from the larger amount and record the difference.
   b. If the earlier year's amount is larger than the later year's amount, record the difference from step 2(a) as a decrease by using parentheses or a negative (minus) sign.

3. Create an additional column labeled *percent increase (decrease):* For each yearly item, divide the amount of increase (decrease) by the earlier year's amount, multiply by 100%, and record the difference as a percent.

$$\text{Percent increase (decrease)} = \frac{\text{amount of increase (decrease)}}{\text{earlier year's amount}} \times 100\%$$

Example 4

Prepare a horizontal analysis for Move It Fitness using the yearly amounts in **Figure 21-5** .

Cash: $2,184 − $1,973 = $211 (increase)

$$\frac{\$211}{\$1{,}973} = 0.1069437405(100\%) = 10.7\% \text{ (increase)}$$

Accounts receivable: $4,308 − $2,118 = $2,190 (increase)

$$\frac{\$2{,}190}{\$2{,}118} = 1.033994334 = 103.4\% \text{ (increase)}$$

Inventory: $18,476 − $17,317 = $1,159 (decrease)

$$\frac{\$1{,}159}{\$18{,}476} = 0.0627300281 = 6.3\% \text{ (decrease)}$$

Equipment: $18,591 − $14,203 = $4,388 (decrease)

$$\frac{\$4{,}388}{\$18{,}591} = 0.2360281857 = 23.6\% \text{ (decrease)}$$

Total assets: $41,158 − $38,012 = $3,146 (decrease)

$$\frac{\$3{,}146}{\$41{,}158} = 0.0764371447 = 7.6\% \text{ (decrease)}$$

Accounts payable: $2,317 − $1,647 = $670 (decrease)

$$\frac{\$670}{\$2{,}317} = 0.2891670262 = 28.9\% \text{ (decrease)}$$

Wages payable: $894 − $684 = $210 (increase)

$$\frac{\$210}{\$684} = 0.3070175439 = 30.7\% \text{ (increase)}$$

Mortgage note payable: $15,286 − $12,715 = $2,571 (decrease)

$$\frac{\$2{,}571}{\$15{,}286} = 0.1681931179 = 16.8\% \text{ (decrease)}$$

Total liabilities: $18,287 − $15,256 = $3,031 (decrease)

$$\frac{\$3{,}031}{\$18{,}287} = 0.1657461585 = 16.6\% \text{ (decrease)}$$

B. Pierson, capital: $22,871 − $22,756 = $115 (decrease)

$$\frac{\$115}{\$22{,}871} = 0.0050282017 = 0.5\% \text{ (decrease)}$$

Total liabilities and owner's equity:

$41,158 − $38,012 = $3,146 (decrease)

$$\frac{\$3{,}146}{\$41{,}158} = 0.0764371447 = 7.6\% \text{ (decrease)}$$

Tip Showing Negative Values

Negative values can be shown by enclosing the value in parentheses or by preceding the value with a negative sign. **In this text negative values on financial statements will be enclosed in parentheses**.

If the horizontal analysis has been made properly, the amount of change for any *total* should equal the sum of the increases minus all decreases in the category. Also, the total liabilities and owner's equity amount of change should equal the total assets amount of change. The percent of change for the total is *not* the sum of the percents of increases and the difference of percents of decreases. This is because the base is different for each entry.

Figure 21-5 Horizontal Analysis of Move it Fitness Comparative Balance Sheet

Tip Working with Decreases and Negative Values

If the later year is *always* entered first, a decrease is indicated in the calculator display with a minus sign.

$$17317 \boxed{-} 18476 \boxed{=} \Rightarrow -1159$$

To find percent decrease, do not clear the calculator. The percent decrease will also be a negative value.

$$\boxed{\div} 18476 \boxed{=} \boxed{\times} 100 \boxed{=} \Rightarrow \text{-6.2730 or } -6.3\%$$

Tip Which Year Is the Base in the Percent of Increase?

In a horizontal analysis, the *earlier* year is always the base year in calculating percent increase or decrease. It is possible to have a 0% change if there is no dollar change in the amounts.

Stop & Check

See **Example 4** .

1. Use the 2015 and 2016 data on the comparative balance sheet prepared for Rayco, Inc., in Stop and Check **Exercise 3** on p. **762** and calculate the amount of increase (or decrease) for each category in the sheet.
2. Use the 2015 and 2016 increases or decreases in **Exercise 1** to compute the percent of increase (or decrease) based on total assets.

- Use the information for Rayco from **Exercises 2** and **3** on page **762** to prepare a horizontal analysis of the balance sheet for 2015 and 2016.

- What was Rayco's percentage growth in total assets from 2015 to 2016?

21-1 Section Exercises

Skill Builders

See **Example 1** .

1. Prepare a balance sheet for Miss Muffins' Bakery for December 31, 2017. The company assets are: cash, $1,985; accounts receivable, $4,219; merchandise inventory, $2,512. The liabilities are: accounts payable, $3,483; wages payable, $1,696. The owner's capital is $3,537.
2. Expand the balance sheet for **Exercise 1** to include figures for 2016. The company assets are: cash, $1,762; accounts receivable, $3,785; merchandise inventory, $2,036. The liabilities are: accounts payable, $3,631; wages payable, $1,421. The owner's capital is $2,531.
3. Prepare the balance sheet for O'Dell's Nursery for December 31, 2017. The company assets are: cash, $8,917; accounts receivable, $7,521; merchandise inventory, $17,826. The liabilities are: accounts payable, $10,215; wages payable, $3,716. The owner's capital is $20,333.
4. Expand the balance sheet for **Exercise 3** for 2016. The company assets are: cash, $12,842; accounts receivable, $5,836; merchandise inventory, $18,917. The liabilities are: accounts payable, $8,968; wages payable, $2,582. The owner's capital is $26,045.

See **Examples 2** and **3** .

5. Complete the vertical analyses on the comparative balance sheet for Miss Muffins' Bakery for 2017. (Use parentheses to indicate decreases.) Use **Exercise 1** .
6. Use **Exercises 1** and **2** to complete the vertical analyses on the comparative balance sheet for Miss Muffins' Bakery for 2016.

7. Complete the vertical analyses on the comparative balance sheet for O'Dell's Nursery for 2017.
8. Use **Examples 3** and **4** to complete the vertical analyses on the comparative balance sheet for O'Dell's Nursery for 2016.

See **Example 4** .

9. Use **Exercises 1** and **2** to complete the horizontal analyses showing differences in dollar amounts and percents on the comparative balance sheet for Miss Muffins' Bakery.

- Complete the horizontal analyses showing differences in dollar amounts and percent increases (decreases) on the comparative balance sheet for O'Dell's Nursery.

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To find the percent of total debt compared to total assets, divide the total liabilities by the total assets and write in percent form. Find the total debt to total assets for Miss Muffins' Bakery for 2017. Use **Exercise 1** .

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Use the formula in **Exercise 11** to find the percent of total debt compared to total assets for Miss Muffins' Bakery for 2016. Use **Exercise 2** .

21-2 Income Statements

Learning Outcomes

1. Prepare an income statement.
2. Prepare a vertical analysis of an income statement.
3. Prepare a horizontal analysis of an income statement.

Another important financial statement, the **income statement** , shows the net income of a business *over a period of time*. (Remember, the balance sheet shows the financial condition of a business at a specific time.)

Among the many terms on an income statement are the following:

Income statement
a financial statement of the net income of a business over a period of time.

Total sales
earnings from the sale of goods or the performance of services.

Sales returns or allowances
refunds or adjustments for unsatisfactory merchandise or services.

Net sales
total sales minus sales returns or allowances.

Cost of goods sold (COGS)
cost to the business for merchandise or goods sold.

Gross profit or gross margin
net sales minus the cost of goods sold.

Operating expenses
overhead or cost incurred in operating a business.

Net income or net profit
gross profit or gross margin minus the operating expenses.

1 Prepare an income statement.

Calculating the cost of goods sold is an important part of preparing an income statement. Reviewing some of the concepts in **Chapter 18**, the cost of goods sold is the difference between the cost of goods available for sale and the cost of ending inventory. The cost of goods available for sale is the cost of the beginning inventory plus the cost of purchases. There are various ways to find the cost of ending inventory.

How to Prepare an income statement

1. Find and record *net sales.*
   a. Record *total sales.*
   b. Record *sales returns and allowances.*
   c. Subtract sales returns and allowances from gross sales.
      Net sales = total sales — sales returns and allowances

2. Find and record *cost of goods sold.*
   a. Record cost of beginning inventory.
   b. Record cost of purchases.
   c. Record cost of ending inventory.
   d. Add cost of beginning inventory and cost of purchases and subtract cost of ending inventory.
      Cost of goods sold = cost of beginning inventory + cost of purchases − cost of ending inventory

3. Find and record *gross profit.*
   Gross profit = net sales − cost of goods sold

4.

   Find and record *total operating expenses*. List the operating expenses and add the entries.
5. Find and record *net income*.

   Net income = gross profit — operating expenses

Example 1

Complete the portion of the income statement shown for Green Zone Organics using the information given.

Gross sales: \$25,283; returns and allowances: \$492; cost of beginning inventory: \$5,384; cost of purchases: \$18,923; cost of ending inventory: \$5,557; total operating expenses: \$3,750

Try Stop & Check 1–4.

Did You Know?

Not all income statements look alike. Some use a two-column format like **Figure 21-6** . Others use a one- column format like **Figure 21-7** . The main thing is to be sure all of the major components are included and the document is easy to follow.

When expanding to an income statement with a vertical or horizontal analysis, the singlecolumn format is used. **In this text the income statements that follow will use a single-column format**.

Figure 21-6 Income Statement for Green Zone Organics

Stop & Check

See **Example 1** .

1. Find the gross profit and net income for Cedar Rapids American Auto, Inc. for the year ending December 31, 2016, if the company had net sales of $5,385,920; cost of goods sold of $2,073,587; and operating expenses of $498,507.
2. Prepare an income statement for Cedar Rapids American Auto, Inc. for 2016.

- For 2016 Amaya's Soul Food Catering had gross sales of $597,341; sales returns and allowances of $10,514; beginning inventory cost of $38,917; cost of purchases, $261,053; and year-end inventory of $42,013. Find the net sales, cost of goods sold, and gross profit.

- Amaya's Soul Food Catering had the following 2016 operating expenses: salary, $90,500; insurance, $12,200; utilities,$7,582; maintenance, $1,077; rent, $18,400; and depreciation, $2,700. Find the total operating expenses and net income using the data from **Exercise 3** . Prepare an income statement to show financial information for 2016.

2 Prepare a vertical analysis of an income statement.

Just as you do with a vertical analysis of a balance sheet, to make a **vertical analysis of an income statement** you use the percentage formula $R = \frac{P}{B}$, in which each entry on the income statement is a portion or percentage *P*, net sales is the base *B*, and their ratio *R* is expressed as a percent.

Vertical analysis of an income statement: comparison of each entry in an income statement to net sales.

How to Prepare a vertical analysis of an income statement

1. Prepare an income statement.
2. Create an additional column labeled *percent of net sales:* For each item, divide the amount of the item by the net sales and record the result as a percent.

$$\text{Percent of net sales} = \frac{\text{amount of item}}{\text{net sales}} \times 100\%$$

Example 2

Figure 21-7 is an income statement for The 7 th Inning. Complete a vertical analysis of the statement.

The 7th Inning Income Statement For the Year Ending December 31,2016

Figure 21-7 The 7th Inning Income Statement

For each item, divide the amount by the net sales and record the result as a percent. For instance,

$$\text{Gross sales:}\frac{\text{gross sales}}{\text{net sales}} \times 100\%=\frac{\$846,891}{\$839,056}(100\%) = 1.009337875\ (100\%) = 100$$

The completed vertical analysis is shown in **Figure 21-8** .

Figure 21-8 The 7th Inning Income Statement

Try Stop & Check 1–3.

Tip What Is the Base on a Vertical Analysis of an Income Statement?

As with balance sheets, each item on the income statement is expressed as a percent of a base figure. For income statements,*net sales is the base.*

Global Marketplace international Financial reporting Standards

It is important to have a common global language for companies that have dealings across international boundaries. The International Financial Reporting Standards (IFRS) has attempted to develop standards for the European Union and it now has been adopted by almost 100 countries, including Canada. The United States has not adopted these standards but does concur with many of the standards.

Tip Use the Memory Function and the percent Key.

On a 4-function or basic calculator:

Enter the net sales into memory.

$$\boxed{\text{AC}}\ 839056\ \boxed{\text{M+}}$$

Divide each entry by net sales and use the percent key.

$$\boxed{\text{CE/C}}\ 846891\ \boxed{\div}\boxed{\text{MRC}}\ \boxed{\%} \quad \Rightarrow 1100.9337875$$
$$\boxed{\text{CE/C}}\ 7835\ \boxed{\div}\boxed{\text{MRC}}\ \boxed{\%} \quad \Rightarrow 10.93378749$$

Continue by dividing each item by the net sales, which is stored in memory.

On the TI BA II Plus there are 10 memory locations for storing numbers. To store a number that is in your calculator display, press $\boxed{\text{STO}}$, then assign a location by pressing a number from $\boxed{\text{STO}}$. Then you can clear the calculator to begin a different calculation. To recall the stored number, press [RCL] and the assigned number location.

On the TI-84 Plus, there is also a storage key labeled $\boxed{\text{STO}}$. In assigning a memory location, assign a letter by using the $\boxed{\text{ALPHA}}$ key and a letter. The letters are written in green, above and to the right of certain keys. The [RCL] function is located as a second function above the $\boxed{\text{STO}}$ key.

An income statement can also contain information for more than one year. These statements are called **comparative income statements** and show a horizontal analysis of the two years' data.

Comparative income statement:
income statement showing two or more years of data and a horizontal analysis of the data.

Figure 21-9 Vertical Analysis of the Aspen Lakes Extreme Comparative Income Statement

Try Stop & Check 4.

Stop & Check

See **Example 2** .

1. Complete a vertical analysis of the income statement for Cedar Rapids American Auto, Inc. found in **Exercise 2** on page **769**.
2. In 2015, Cedar Rapids American Auto, Inc. had net sales of $4,103,370; cost of goods sold totaled $1,992,500; and total operating expenses were $503,719. Prepare a comparative income statement with a vertical analysis of 2015 and 2016.
3. Complete a vertical analysis of the income statement for Amaya's Soul Food Catering found in **Exercises 3** and **4** on page **770**.

See **Figure 21-9** .

4. In 2015, Amaya's Soul Food Catering had gross sales of $435,913; sales returns and allowances of $8,019; beginning inventory cost of $36,992; cost of purchases of $248,504; and ending inventory of $41,007. Expenses were salaries, $82,450; insurance, $12,200; utilities, $6,097; maintenance, $817; rent, $17,800; and depreciation, $2,300. Prepare a comparative income statement with a vertical analysis of 2015 and 2016.

3 Prepare a horizontal analysis of an income statement.

The horizontal analysis of an income statement is similar to the horizontal analysis of a balance sheet. Items on the statement are compared for more than one period. A **comparative income statement** is used for displaying more than one income period. The **horizontal analysis of an income statement** examines the increase or decrease of an item from one period to another.

Comparative income statement:
income statement that includes data from two or more years.

Horizontal analysis of an income statement:
comparison of like entries for two years. The amount of increase or decrease and the percent of increase or decrease are determined.

How to Prepare a horizontal analysis of a comparative income statement

1. Prepare an income statement for two or more years: Record each year's amounts in separate columns.
2. Create an additional column labeled *amount of increase (decrease).*For each yearly item,
   a. Subtract the smaller amount from the larger amount and record the difference.
   b. If the earlier year's amount is larger than the later year's amount, record the difference from step 2(a) as a decrease by using parentheses.

3. Create an additional column labeled *percent increase (decrease).* For each yearly item:

$$\text{Percent increase (decrease)} = \frac{\text{amount of increase (decrease)}}{\text{earlier year}} \times 100\%$$

Example 3

Prepare a horizontal analysis for the Comparative Income Statement for Aspen Lakes Extreme using the yearly amounts in **Figure 21-9** .

For each item, find the amount of increase or decrease by subtracting the smaller amount from the larger amount. For Aspen Lakes Extreme, the later year's amounts are all larger than the earlier year's amounts, so the difference of each amount is recorded as an increase in every case.

Next, find the percent increase by dividing the amount of increase by the earlier year's amount. For instance,

Try Stop & Check 1–4.

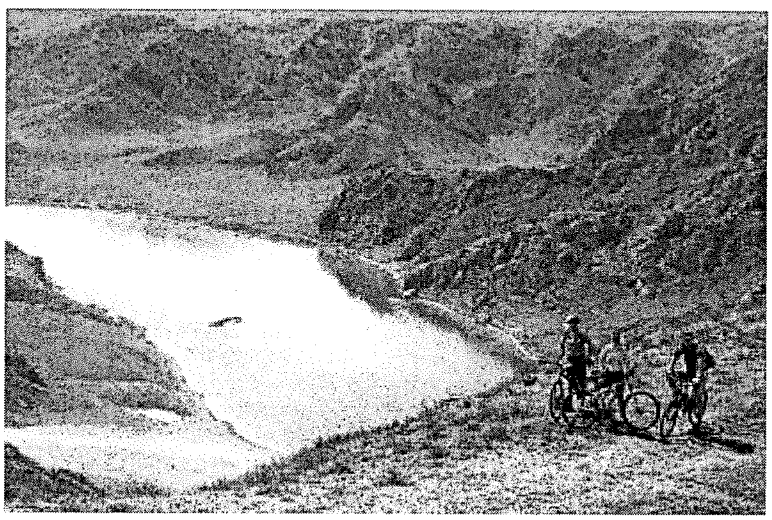

Figure 21-10 Horizontal Analysis of the Aspen Lakes Extreme Comparative Income Statement

Stop & Check

See **Example 3** .

1. Prepare a horizontal analysis of the Cedar Rapids American Auto, Inc. comparative income statement for 2015 and 2016. See pages 769 and 772.
2. Prepare a horizontal analysis of Amaya's Soul Food Catering comparative income statement for 2015 and 2016. See pages 770 and 772.
3. What number is used as the base when calculating percentages on a vertical analysis of an income statement?
4. What number is used as the base when calculating percentages on a horizontal analysis of an income statement?

21-2 Section Exercises

Skill Builders

See **Example 1**

1. Complete the income statement for Sitha Ross' Oriental Groceries for the years 2016 and 2017.

2.

Complete the portion for July 31, 2015, of the income statement shown for Miss Muffins' Bakery using the given information: gross sales, \$32,596; returns and allowances, \$296; cost of beginning inventory, \$16,872; cost of purchases, \$33,596; cost of ending inventory, \$21,843; total operating expenses, \$1,894. Compute net sales, cost of goods sold, gross profit, and net income.

3. Use the information recorded for Miss Muffins' Bakery for the month ending July 31, 2016, to extend the income statement for **Exercise 2** : gross sales, \$35,403; returns and allowances, \$342; cost of beginning inventory, \$17,403; cost of purchases, \$27,983; cost of ending inventory, \$22,583; total operating expenses, \$3,053. Compute net sales, cost of goods sold, gross profit, and net income.

Applications

See **Example 2** .

4. Extend the income statement for Sitha Ross' Oriental Groceries to include a vertical analysis for 2016 and for 2017.

5. Extend the income statement for Miss Muffins' Bakery to include a vertical analysis for 2015 and 2016.

6. *See* ***Example 3*** . Extend the income statements for Sitha Ross' Oriental Groceries to include the amounts of increase or decrease and the percents of increase or decrease for a horizontal analysis.

21-3 Financial Statement Ratios

Learning Outcomes

1. Find and use financial ratios.

Financial statements organize and summarize information about the financial condition of a business. Using data from financial statements, **financial ratios** give businesses a way to evaluate their business compared to its past performance and compared to other similar businesses. Financial ratios are used by lending institutions and stockholders to determine the financial wellbeing of a business.

Financial ratio
an analysis of financial data to compare a business's performance with past performance orwith other similar businesses.

1 Find and use financial ratios

Cash flow is an aspect of a business's operation. A business must know if it has enough cash on hand or cash coming in to pay its bills as they come due. Financial ratios that show a comparison between a business's cash on hand to its financial obligations that are due within the next few months are called **liquidity ratios** . These ratios are of interest to short-term creditors.

Liquidity ratio
a financial ratio that shows how well a business can be expected to meet its short-term financial obligations.

Current Ratio It is important to know whether a business has enough assets to cover its liabilities. The **working capital** of a business is the current assets minus current liabilities. But that amount alone does not tell much about the relative financial condition of the business. Look at the following information about Aaron's Air Conditioning and Zelda's Zeppelins.

Working capital
current assets minus current liabilities.

Working capital = current assets −current liabilities

Both companies have the same working capital, but Zelda's *owes* almost as much as it *owns.* To compare these companies, we need to use ratios. A commonly used ratio in business is the **current ratio** (also called the **working capital ratio**), which is the ratio of current assets to current liabilities.

Current ratio or working capital ratio

the ratio of current assets to current liabilities. It indicates a company's ability to meet its obligations when they are due.

$$\text{Current ratio} = \frac{\text{current assets}}{\text{current liabilities}}$$

The current ratio for Aaron's Air Conditioning, for example, is the ratio of \$11,000 to \$5,000.

$$\text{Aaron's current ratio} = \frac{\text{Aaron's current assets}}{\text{Aaron's current liabilities}} = \frac{\$11,000}{\$5,000}$$

This ratio expresses the fact that Aaron's has \$11,000 in current assets for \$5,000 of current liabilities. If we write this ratio in decimal form, we have an equivalent ratio whose denominator is 1.

$$\frac{\$11,000}{\$5,000} = 2.2 = \frac{2.2}{1}$$

Thus, Aaron's current ratio is 2.2 to 1, telling us that Aaron's has \$2.20 in current assets for every \$1 in current liabilities.

The current ratio for Zelda's Zeppelins is the ratio of \$615,000 to \$609,000. Writing Zelda's current ratio in decimal form, we are able to see the usefulness of current ratio as a way of comparing businesses.

$$\text{Zelda's current ratio} = \frac{\text{Zelda's current assets}}{\text{Zelda's current liabilities}} = \frac{\$615,000}{\$609,000} = 1.01 = \frac{1.01}{1}$$

This ratio tells us that Zelda's has $1.01 in current assets for every $1 in current liabilities. Because Aaron's ratio is 2.2 to 1, we see that for every $1 of current liability, Aaron's has more than twice as much in current assets as does Zelda's. There are many financial ratios we might calculate, but the basic process is the same for all.

How to Calculate a financial ratio

1. Write one amount as the numerator of a fraction and a second amount as the denominator.
2. Write the fraction in decimal form (or, for some ratios, in percent form).

Example 1

Find the current ratio of a business whose current assets are $18,000 and whose current liabilities are $12,000.

Write the ratio of current assets to current liabilities in decimal form.

$$\text{Currentratio} = \frac{\text{currentassets}}{\text{currentliabilities}} = \frac{\$18{,}000}{\$12{,}000} = 1.5$$

The current ratio is 1.5,or 1.5 to 1.

Try Stop & Check 1.

Many lending companies consider a current ratio of 2 to 1 (1) to be the minimum acceptable current ratio for approving a loan to a business. The business in the preceding example, for instance, may find it difficult to get a loan because its current ratio is 1.5 to 1.

Acid-Test Ratio Another ratio used to evaluate the financial condition of a business is the **acid-test ratio** , sometimes called the quick ratio. Instead of using all of the current assets of a business, the acid-test ratio uses only the **quick current assets** , those assets that can be readily exchanged for cash: marketable securities, accounts receivable, and notes receivable. Merchandise inventory is a current asset, but it is not included because a loss would probably occur if a business were to make a quick sale of all merchandise.

Acid-test ratio or quick ratio

the ratio of quick current assets to current liabilities.

Quick current assets

assets that can be readily exchanged for cash, such as marketable securities, accounts receivable, or notes receivable.

$$\text{Acid-test ratio (quick ratio)} = \frac{\text{quick current assets}}{\text{current liabilities}}$$

Tip What's a Good Acid-Test Ratio?

If the acid-test ratio is 1:1, the business is in a satisfactory financial condition and has the ability to meet its obligations. If the ratio is significantly *less* than 1:1 (such as 0.85:1), the business is in poor financial condition; and if the ratio is significantly *more* than 1:1 (such as 1.15:1), the business is in good financial condition.

Example 2

Find the acid-test ratio if the balance sheet shows the following

amounts:

Cash = $17,342

Marketable securities = $0

Receivables = $10,345

Current liabilities = $26,345

$$\text{Acid-test ratio} = \frac{\$17,342 + \$10,345}{\$26,345} = \frac{\$27,687}{\$26,345} = 1.05 \text{ (nearest hundre}$$

The acid-test ratio is 1.05 to 1.

Try Stop & Check 2

Ratios to Net Sales Other useful ratios can be determined from an income statement. Two of the most important are the *operating ratio* and the *gross profit margin ratio*. These two are also called **ratios to net sales** . These ratios make comparisons possible between the major elements of the statement and net sales. These ratios are usually expressed in percent form, rather than decimal form, and they usually (but do not necessarily) cover one year.

Remember, the first amount in a ratio appears in the numerator and the second amount appears in the denominator. In both of the ratios to net sales, the denominator is the net sales.

The **operating ratio** indicates the amount of sales dollars that are used to pay for the cost of goods and operating expenses. A ratio of *less* than 1:1 is desirable. The lower the operating ratio, the more income there is to meet financial obligations.

Ratios to net sales
ratios that make comparisons to net sales.

Operating ratio
the cost of goods sold plus the operating expenses divided by net sales.

$$\text{Operating ratio} = \frac{\text{cost of goods sold} + \text{operating expenses}}{\text{net sales}}$$

Another important category of financial ratios is **profitability ratios**. A profitability ratio shows the relationship between the sales and the gross and net profit. Stockholders and investors have a keen interest in these ratios.

The gross **profit margin ratio** shows the average spread between cost of goods sold and the selling price. The desirable gross profit margin ratio varies with the type of business. For example, a jewelry store might expect to have a ratio of 0.6 to 1 because there is a high rate of markup in jewelry. An auto parts store may, however, have a ratio of 0.25 to 1.

profitability ratio
a ratio comparing profits and sales.

$$\text{Gross profit margin ratio} = \frac{\text{gross profit from sales}}{\text{net sales}} = \frac{\text{net sales - cost of goods sold}}{\text{net sales}}$$

Example 3

Based on the income statement in **Figure 21-11**, find the operating ratio and the **gross profit margin ratio** for Vincent's Gift Shop. Express results in percent form, rounded to the nearest tenth of a percent.

Gross profit margin ratio
the ratio of the gross profit from sales to the net sales.

Figure 21-11 Income Statement for Vincent's Gift Shop

$$\text{Operating ratio} = \frac{\text{cost of goods sold} + \text{operating expenses}}{\text{net sales}}$$

$$= \frac{\$126{,}371 + \$17{,}643}{\$173{,}157} = 0.8316960908 \text{ or } 83.2\%$$

The operating ratio is 0.832 to 1 or 83.2%.

$$\text{Gross profit margin ratio} = \frac{\text{net sales} - \text{cost of goods sold}}{\text{net sales}}$$

$$= \frac{\$173{,}157 - \$126{,}371}{\$173{,}157} = 0.2701941013 \text{ or } 27.0\%.$$

The gross profit margin ratio is 0.270 to 1 or 27.0%.

Try Stop & Check 3–6.

Other Financial Ratios Many other comparisons can be made using data found on the balance sheet, income statement, and other financial documents that are useful in analyzing various aspects of the business. For instance, the **asset turnover ratio** compares the net sales to the average total assets. This comparison shows the average return in sales for each $1 invested in assets. The asset turnover ratio and the inventory turnover ratios that were introduced in **Chapter 18** are examples of **efficiency ratios**. An efficiency ratio is a measure of how effectively a business uses its assets to generate sales. The **total debt to total assets ratio** compares the total liabilities to the total assets. This comparison shows total indebtedness of the company for each $1 in assets and is an example of a **leverage ratio**. A leverage ratio is a financial ratio that examines the business's indebtedness.

Asset turnover ratio

the ratio of the net sales to the average total assets.

Efficiency ratio

a financial ratio that measures a business's ability to effectively use its assets to generate sales.

Total debt to total assets ratio

ratio of the total liabilities to the total assets.

Leverage ratio

a financial ratio that examines a business's indebtedness.

The calculations for determining these ratios are the same as for determining any ratio. The amount in the numerator is divided by the amount in the denominator to give a decimal equivalent. This decimal equivalent can be interpreted as a comparison of the decimal equivalent to 1, or it can be interpreted as a percent by multiplying the decimal equivalent by 100%. Ratios are commonly expressed as decimals to the nearest hundredth.

$$\text{Asset turnover ratio} = \frac{\text{net sales}}{\text{average total assets}}$$

$$\text{Total debt to total assets ratio} = \frac{\text{total liabilities}}{\text{total assets}}$$

Interpreting Financial Ratios A business needs to track its own progress over several periods of time to make sound business decisions and to compare its results to industry standards. A business uses financial ratios to make internal decisions or to distribute to stockholders, lenders, and prospective investors or buyers to show the financial status of the business. In **Table 21-1** you will see some possible interpretations of financial ratios. Keep in mind, just as one statistic does not give a total picture, one ratio does not give a complete profile of a business's financial status.

Table 21-1 Financial Ratio Analysis

Example 4

Arsella would like to apply for a loan to expand Vincent's Gift Shop. The business's current assets are $58,482, its average total assets are $210,580, and total (current) liabilities are $32,289. Other information about the business can be found in **Example 3** . Analyze the financial condition of the business using information given in **Table 21-1** . Should Arsella plan to expand the business at this time?

Solution

$$\text{Current ratio} = \frac{\text{current assets}}{\text{current liabilities}} = \frac{\$58{,}482}{\$32{,}289} = 1.81$$

$$\text{Acid-test ratio} = \frac{\text{quick current assets}}{\text{current liabilities}} = \frac{\$58{,}482 \text{ - } \$34{,}579}{\$32{,}289} = 0.74$$

$$\text{Operating ratio} = \frac{\text{COGS} + \text{operating expenses}}{\text{net sales}} = \frac{\$126{,}371 + \$17{,}643}{\$173{,}157} = 0.83$$

$$\text{Gross profit margin ratio} = \frac{\text{gross profit}}{\text{net sales}} = \frac{\text{net sales - COGS}}{\text{net sales}}$$

$$= \frac{\$173{,}157 \text{ - } \$126{,}371}{\$173{,}157} = 0.27$$

$$\text{Asset turnover ratio} = \frac{\text{net sales}}{\text{average total assets}} = \frac{\$173{,}157}{\$210{,}580} = 0.82$$

$$\text{Total debt to total assets ratio} = \frac{\text{total liabilities}}{\text{total assets}} = \frac{\$32{,}289}{\$210{,}580} = 0.15$$

Conclusion

The current ratio, operating ratio, gross profit margin ratio, and total debt to total assets ratio demonstrate a business with a healthy financial status. The acid-test ratio may indicate a potential cash flow problem, and the asset turnover ratio shows that inventory turnover is within the industry average.

Arsella should proceed cautiously in making a decision to expand. This decision should include an analysis of the local economic forecast and the cost of making a loan including repayment terms.

Try Stop & Check 7

Tip Total Assets and Average Total Assets

In the asset turnover ratio, the divisor is average total assets. This is not necessarily the same as the total assets. In many cases it is the average of the total assets of two or more years.

Shareholder Ratios The financial ratios that we have examined to this point deal with the performance and financial condition of the company. These ratios provide information for managers and creditors, but an investor evaluating a company as a potential investment needs to be able to determine whether the price of a company's stock is reasonable from the basis of its financial position. **Shareholder ratios** translate the overall results of business operations so that they can be compared in terms of a share of stock. A company's earnings per share and **book value per share** are used to calculate shareholder ratios. Earnings per share is the amount of income earned during a period per share of common stock. Book value per share is the amount of equity attributable to each share of common stock. The **price-to-earnings (P/E) ratio** is the amount that someone buying the company stock is paying for each dollar of annual earnings. You may recall from **Chapter 15** that while P/E ratios change every day as the stock price fluctuates, they are best viewed over time. As a general rule, the P/E ratio of a company should be comparable to a company's growth rate and with P/E ratios of other companies in the industry sector. The **price-to-book ratio** , by comparison, is a measure of how much someone buying the company stock is paying for each dollar's worth of equity.

Shareholder ratio
translates the overall results of business operations so that they can be compared in terms of a share of stock.

Earnings per share
the amount of income earned during a period per share of common stock.

Book value per share
the amount of equity attributable to each share of common stock.

price-to-earnings (P/E) ratio
the amount that someone buying the company stock is paying for each dollar of annual earnings.

Price-to-book ratio
measures how much someone buying the company stock is paying for each dollar's worth of equity.

$$\text{Earnings per share} = \frac{\text{net income for a period}}{\text{number of shares outstanding}}$$

$$\text{Book value per share} = \frac{\text{owner'sequity for a period}}{\text{number of shares outstanding}}$$

$$\text{Price-earnings ratio} = \frac{\text{stock price per share}}{\text{earnings per share}}$$

$$\text{Price-to-book ratio} = \frac{\text{stock price per share}}{\text{book value per share}}$$

Example 5

Progeny Plastics Inc. is a public company with 1,000,000 shares of stock outstanding. As of the year's end the stock was selling for $36.12 per share and had total net income of $1,854,180 and total owner's equity of $8,241,100. Calculate the earnings per share and book value per share, then use them to calculate the P/E ratio and price-to-book ratio for Progeny Plastics. What will these two ratios tell you about investing in the company?

$$\text{Earnings per share} = \frac{\text{net income for a period}}{\text{number of shares outstanding}} = \frac{\$1{,}854{,}180}{1{,}000{,}000} = \$1.85$$

$$\text{Book value per share} = \frac{\text{owner's equity for a period}}{\text{number of shares outstanding}} = \frac{\$8{,}241{,}100}{1{,}000{,}000} = \$8.24$$

$$\text{Price-earnings ratio} = \frac{\text{stock price per share}}{\text{earnings per share}} = \frac{\$36.12}{\$1.85} = 19.52$$

$$\text{Price-to-book ratio} = \frac{\text{stock price per share}}{\text{book value per share}} = \frac{\$36.12}{\$8.24} = 4.38$$

Try Stop & Check 8–9

An investor buying stock in Progeny Plastics would be paying $19.52 for each $1 of earnings. Similarly, an investor would pay $4.38 for each dollar of equity in the company. While there is no absolute way of determining the ideal price-to-earnings (P/E) ratio or price-to-book ratio, investors often look to these ratios as a guide to investing, relative to a similarly situated company within the overall context of the market sector.

It is important to both internal and external decisions for a business to look at business trends over an extended period of time. The most common type of analysis is to examine the percent of change for several successive operating time periods (normally years). This process is often referred to as a **trend analysis** . One way to analyze trends is to select one particular period (year) to be the reference or base in the percentage formula. The selected year (base year) is considered to be 100%. All other years are a percent of the base year. These percents are referred to as **index numbers** .

Trend analysis

an analysis of business trends over an extended period of time.

Index numbers

numbers that represent percent of change for several successive operating time periods (usually years) while keeping one selected year (base year) to represent the base or 100%.

How to Prepare a trend analysis

1. Select a base year to be represented by 100%.
2. Calculate the index number for each successive year using the variation of the percentage formula.

$$\text{Index number (rate)} = \frac{\text{yearly amount (portion)}}{\text{base year amount (base)}}$$

3. Express the index number to the nearest tenth of a percent.
4. Prepare a table of the base and index numbers.
5. Prepare a graph of the base and index numbers.

Example 6

The following data were collected by Stein Enterprises, Inc. Prepare a trend analysis of the net sales, the net income, and the total assets.

Figure 21-12 plots the trend analysis of net sales, net income, and total assets.

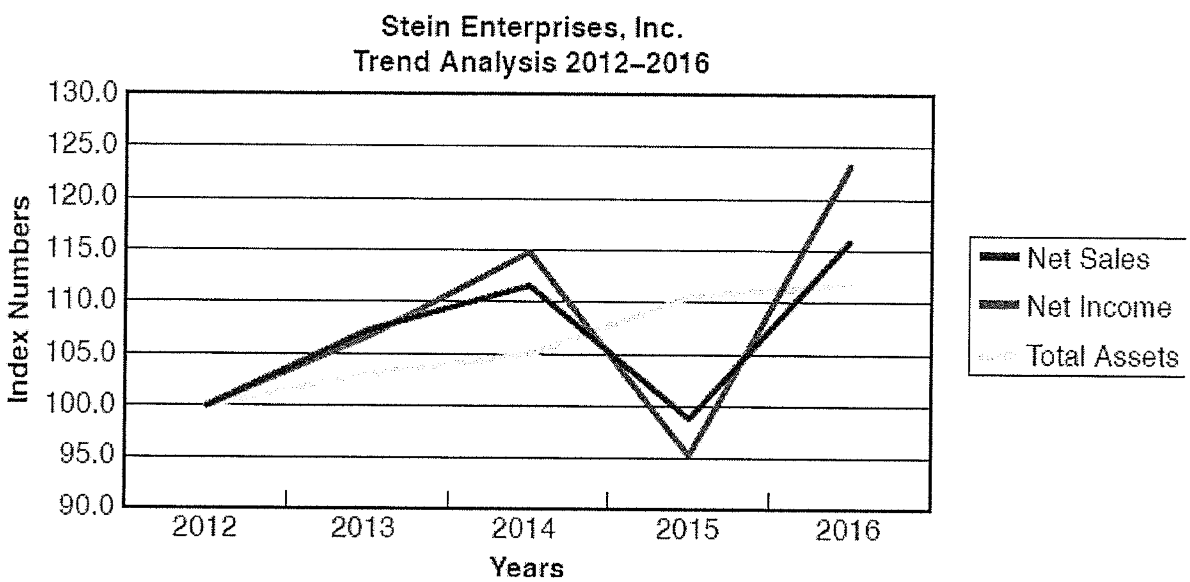

Figure 21-12 Trend Analysis of Net Sales, Net Income, and Total Assets.

Try Stop & Check 10.

Stop & Check

See **Example 1** .

1. Find the current ratio for Cannon Motors if the current assets are $897,584 and current liabilities are $683,777. Round to tenths.

See **Example 2.**

2. Calculate the acid-test ratio for Johnson's Furniture if the balance sheet shows: cash, $297,518; marketable securities, $10,000; receivables, $143,812; and current liabilities, $86,950. Round to tenths.

See **Example 3** .

3. Find the operating ratio for Cedar Rapids American Auto, Inc., for 2016. This income statement was prepared as **Exercise 2** on page **772**.
4. Interpret the ratio found for Cedar Rapids American Auto, Inc.
5. Find the debt ratio at the end of 2015 for Rayco, Inc. This balance sheet was prepared as **Exercise 3** on page **759**.
6. Interpret the debt ratio found for Rayco, Inc.

See **Example 4** .

7. Kelli Drewery plans to apply for a loan to renovate Sugaree's Specialty Cakes. The business has current assets of $62,415, its average total assets are $174,400, and its total (current) liabilities are $43,717. Sugaree's ending inventory for the year was $12,592 and net sales for the year were $215,413.Operating expenses were $23,897 and cost of goods sold was $62,518. Should Kelli plan to renovate at this time?

21-3 Section Exercises

Skill Builders

See **Example 1** .

1. What is the current ratio for Denmark, Inc., which has current assets of $148,947 and current liabilities of $103,537?

See **Example 2** .

2. Find the acid-test ratio for Carley's business if the balance sheet shows the following amounts: cash, $32,981; receivables, $12,045; marketable securities, $0; current liabilities, $22,178.

See **Example 3** .

3. Find the gross profit margin ratio if The Premier Eatery had net sales of $392,054 and its cost of goods sold was $179,515.

See **Example 4** .

4. Proud Larry's Grill reported net sales of $289,512 and had average total assets of $145,753. Find its asset turnover ratio.

Applications

See **Example 1** .

5. Find the current ratio for George's business and the current ratio for Jose's business, given the following information:

See **Example 4** .

6. Find the operating ratio for Chaney's Pharmacy if the annual cost of goods sold is $315,842, the operating expenses are $62,917, and net sales are $597,064.

See **Example 3** .

7. Find the operating ratio for Sol's Dry Goods if the income statement for the month shows net sales, $15,500; cost of goods sold, $7,500; gross profit, $8,000; operating expenses, $3,500; net income, $4,500. Express results to the nearest tenth of a percent.
8. Find the gross profit margin ratio for Sol's Dry Goods in **Exercise 7** to the nearest tenth of a percent.

See **Example 5** .

Blaw's Knifeworks, Inc. is a public company with 1,650,000 shares of stock outstanding. At year's end, the stock price was $23.17 per share and the company had total net income of $2,118,534. Total owner's equity at end of year was $9,524,000.

9. Calculate the shareholder ratios of earnings per share and book value per share for Blaw's Knifeworks.
10. Calculate the P/E ratio and the price-to-book ratio for Blaw's Knifeworks.

Chapter 21 Summary

Chapter 21 Exercise Set

1. Complete the following balance sheet for Fawcett's Plumbing Supplies.
2. Complete the following balance sheet for Rooter Green Construction Company.
3.

Complete the vertical analysis and horizontal analysis of the comparative balance sheet for Seymour's Organics, LLC. Express percents to the nearest tenth of a percent.

-

Complete the vertical analysis and the horizontal analysis of the comparative balance sheet for Miller's Life Coaching. Exrpress percents to the nearest tenth of a percent.

-

Complete the vertical analysis and horizontal analysis of the comparative balance sheet for Seymour's Organics, LLC. Express percents to the nearest tenth of a percent.

•

Complete the vertical analysis and the horizontal analysis of the comparative balance sheet for Miller's Life Coaching. Exrpress percents to the nearest tenth of a percent.

•

Complete the following income statement and vertical analysis. Express percents to the nearest tenth of a percent.

•

Complete the following income statement and vertical analysis. Express percents to the nearest tenth of a percent.

•

Complete the following horizontal analysis of a comparative income statement. Express percents to the nearest tenth of a percent.

•

Complete the following horizontal analysis of a comparative income statement. Express percents to the nearest tenth of a percent.

Find the current ratio for each of the following businesses. Round answers to the nearest hundredth.

13. Stevens Gift Shop: cash, $2,345; accounts receivable, $5,450; government securities, $4,500; accounts payable, $6,748; notes payable, $7,457. Find the acid-test ratio. Round to the nearest hundredth.
14. Find the acid-test ratio for Edna Nunez and Company if the balance sheet shows cash, $23,500; marketable securities, $0; receivables, $12,300; current liabilities, $27,800. Round to the nearest hundredth.
15. Find the acid-test ratio for Central Office Supply: cash, $5,745; accounts receivable, $12,496; accounts payable, $10,475. Round to the nearest hundredth.
16. Find the acid-test ratio for Jefferson's Photo if the balance sheet shows cash, $6,700; marketable securities, $0; receivables, $12,756; current liabilities, $18,345. Round to the nearest hundredth.
17. Find the operating ratio and gross profit margin ratio for the following income statement:
18. Find the operating ratio for M. Ng's Grocery if the income statement for the month shows net sales, $23,500; cost of goods sold, $16,435; gross profit, $7,065; operating expenses, $3,100; net income, $3,965. Round to the nearest tenth of a percent.
19. Find the operating ratio for A to Z Sales if the income statement for the month shows net sales, $173,200; cost of goods sold, $138,400; gross profit, $34,800; operating expenses, $16,300; net income, $18,500. Round to the nearest tenth of a percent.
20. Find the gross profit margin ratio for the business in **Exercise 18** to the nearest tenth of a percent.
21. Find the gross profit margin ratio for the business in **Exercise 19** to the nearest tenth of a percent.
22. Find the operating ratio and the gross profit margin ratio for Molene Internet Store if the month's income statement shows net sales, $285,832; cost of goods sold, $198,530; gross profit, $87,302; operating expenses, $36,593; net income, $50,709. Round to the nearest tenth of a percent.

Chapter 21 Practice Test

1. Complete the horizontal analysis of the following comparative balance sheet. Express percents to the nearest tenth of a percent.

2. Find the current ratio to the nearest hundredth for 2017 for O'Toole's Hardware Store.
3. Find the acid-test ratio to the nearest hundredth for 2017 for O'Toole's Hardware Store.
4. Find the current ratio to the nearest hundredth for 2016 for O'Toole's Hardware Store.
5. Find the acid-test ratio to the nearest hundredth for 2016 for O'Toole's Hardware Store.

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Complete the horizontal analysis of the following comparative income statement.

7. Find the operating ratio for Mile Wide for 2015 and 2016.
8. Find the gross profit margin ratio for Mile Wide for 2015 and 2016.
9. Find the asset turnover ratio for Mile Wide for 2015 if its average total assets were $126,432.
10. Find the asset turnover ratio for Mile Wide for 2016 if its average total assets were $138,057.

Houston Technology, Inc. is a public company with 2,350,000 shares of stock outstanding. As of the year's end the stock was selling for $9.83 per share and had total net income of $1,290,000 and total owner's equity of $9,600,000.

11. Calculate the shareholder earnings per share and book value per share for Houston Technology, Inc.
12. Calculate the P/E ratio and the price-to-book ratio for Houston Technology, Inc.

Chapter 21 Critical Thinking

1. Use the formulas in the How To box: Prepare a Balance Sheet (p. **757**) to explain the formula:
   Total current assets + total plant and equipment = total liabilities + total owner's equity.
2. Explain how the formula Gross profit = net sales — cost of goods sold can be rearranged to find net sales.
3. If you have the formula: Net profit = gross profit ' operating expenses,and the net profit is $25,982 and operating expenses are $150,986, write an equation to find gross profit.
4. Explain how the formula

$$\text{Percent of net sales} = \frac{\text{amount of item}}{\text{net sales}}$$

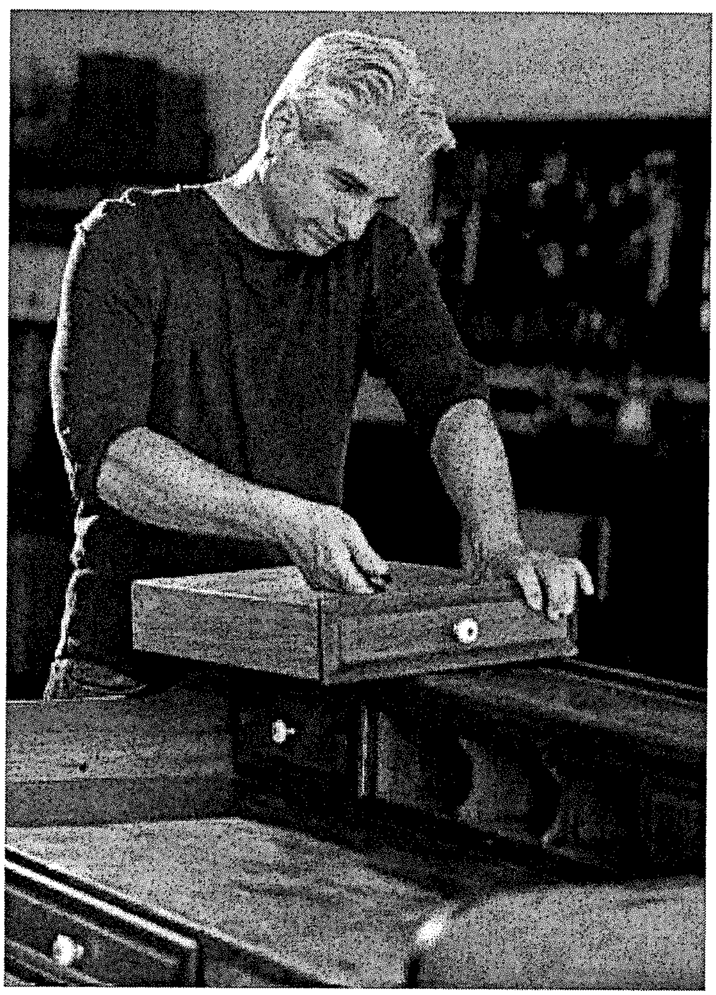
   can be rearranged to find the amount of the item.
5. Compare the formula in step 3 of the How To box: Prepare a Horizontal Analysis of a Comparative Income Statement (p. **772**) with the formula you would use to find the percent of sales tax if you know the amount of tax and the amount (price) of the item.
6. How do the two formulas in **Exercise 5** compare to the basic percentage formula $P = RB$?
7. Explain why the same formula $P = RB$ can be used to calculate an increase or a decrease
8. If a current ratio for a company equals 1, what is the relationship of the current assets to the current liabilities?
9. If the current ratio is less than 1, what is the relationship of the current assets to the current liabilities?
10. If a company has an acid-test ratio that is greater than 1, what is the relationship of the quick current assets to current liabilities?

11. An acquaintance approaches you with an investment opportunity, talking about the tremendous potential for growth. For a cash investment, he is willing to give an ownership interest in his business. Review of the balance sheet for the business reveals the following amounts: cash $1,782; no marketable securities; receivables $14,985; current liabilities $21,418; total liabilities $214,695; and total assets $198,468. The owner was quick to show you the previous year's income statement, which revealed net sales of $158,448 and gross profits of $28,557. Given this information, use financial ratio analysis to decide whether it would be a wise business decision to invest in this business.

Case Studies

21-1 Contemporary Wood Furniture

Charles Royston was checking the year-end balances for his wood furniture manufacturing and retail business and was concerned about the numbers. From what he remembered, his debts and accounts receivable were higher than the previous year. Rather than get worked up over nothing, he decided he would gather the information and make a comparison. For December 31, 2016, the business had current assets of: $1,844 cash, $11,807 accounts receivable, and $9,628 inventory. Plant and equipment totaled $158,700. Current liabilities were: accounts payable $13,446; wages payable $650; and property and taxes payable $4,124. Long-term debt totaled $92,800 and owner's equity $70,959. By comparison, for December 31, 2015, the business had current assets of: $3,278 cash; $6,954 accounts receivable; $17,417 inventory. Plant and equipment totaled $144,500. Current liabilities were: accounts payable $9,250; wages payable $1,110; property and taxes payable $3,650. Long-term debt totaled $75,800; and owner's equity $82,339.



1. Construct a comparative balance sheet for Contemporary Wood Furniture for year-end 2015 and 2016, including a vertical and horizontal analysis of the comparative balance sheet. Express percents to the nearest tenth of a percent.
2. Calculate the current ratio and the total debt to total assets ratio for 2015 and 2016.

3. Overall, what does your analysis mean? Is Charles correct to be ~~[illegible]~~ Concerned about these numbers?, Explain

- Overall, what does your analysis mean? Is Charles correct to be concerned about these numbers? Explain.

21-2 Metro Mix Studio: Financial Statements

The first year doing business in a new space as Metro Mix Studio, LLC, has gone better than the owner, Mark Meddings, could have ever expected. As a studio engineer, Mark specializes in the recording, mixing, and mastering of commercial-use drum and sound packs for use by other recording artists—and sales have been booming. After initially starting as a home-based business, Mark is now planning an expansion of his full-time professional recording studio in Minneapolis. But before he can do so he needs to secure a loan from a local bank, and the bank has asked Mark to provide year-end financial statements.

1. Create the financial statements for December 31, 2016; depict them in vertical format; and compute the current and acid test ratios. Based on the ratio analysis, is Mark correct to feel good about the financial condition of his recording studio?