

# FINANCIAL RATIOS

ROUND ALL ANSWERS TO TWO DECIMALS  
UNLESS REQUESTED OTHERWISE IN THE PROBLEM

## LIQUIDITY RATIOS (and Working Capital)

You want current and quick ratios to be > 1

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} \quad \#$$

$$\text{Quick Ratio} = \frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}} \quad \#$$

$$\text{Cash Ratio} = \frac{\text{Cash} + \text{Cash Equiv.} + \text{Investments}}{\text{Current Liabilities}} \quad \#$$

$$\text{Working Capital} = \text{Current Assets} - \text{Current Liabilities} \quad \$$$

## ASSET MANAGEMENT RATIOS

You want turnover ratios to be as high as possible

$$\text{Inventory Turnover Ratio} = \frac{\text{Sales (or Revenues)}}{\text{Inventory}} \quad \#$$

$$\text{Total Assets Turnover Ratio} = \frac{\text{Sales (or Revenues)}}{\text{Total Assets}} \quad \#$$

$$\text{Accounts Receivable Turnover Ratio} = \frac{\text{Sales (or Revenues)}}{\text{Accounts Receivable}^*} \quad \#$$

\* same as net receivables

## DEBT MANAGEMENT RATIOS

You want debt ratio to be low and TIE ratio to be high

$$\text{Debt Ratio} = \frac{\text{Total Debt}^*}{\text{Total Assets}} \quad \#$$

\* all payables plus long-term debt

$$\text{Times Interest Earned Ratio} = \frac{\text{Income from Operations}}{\text{Interest Expense}} \quad \#$$

## PROFITABILITY RATIOS

You want all profitability ratios to be high

$$\text{Profit Margin on Sales Ratio} = \frac{\text{Net Income}}{\text{Sales (or Revenues)}} \quad \%$$

$$\text{ROA} = \text{Return on Assets Ratio} = \frac{\text{Net Income}}{\text{Total Assets}} \quad \%$$

(ROA is sometimes called "Return on Investment")

$$\text{ROE} = \text{Return on Equity Ratio} = \frac{\text{Net Income}}{\text{Stockholders' Equity}} \quad \%$$

## MARKET PERFORMANCE RATIOS

You want EPS to be high; P/E depends on the industry

$$\text{EPS} = \text{Earnings Per Share} = \frac{\text{Net Income}}{\text{\# of Shares Issued}} \quad \$$$

$$\text{P/E Ratio} = \text{Price Earnings Ratio} = \frac{\text{Stock Price}}{\text{Earnings Per Share}} \quad \#$$

$$\text{Market to Book Ratio} = \frac{\text{Market Stock Price}}{\text{Book Value Per Share}^*} \quad \#$$

\* book value per share is calculated by dividing stockholders' equity by the number of shares issued.

# Ratio Analysis

## SAMPLE BALANCE SHEET

### ASSETS

#### Current Assets

Cash	\$ 100
Accounts Receivable	200
Pre-Paid Expenses	100
Inventory	150
Supplies	50
Total Current Assets	600

#### Long-Term Assets

Equipment	650
Less: Accumulated Depreciation	(500)
Total Long-Term Assets	9,400

Total Assets \$ 10,000

### LIABILITIES AND OWNERS' EQUITY

#### Current Liabilities

Accounts Payable*	\$ 900
Other Payables*	550
Total Current Liabilities	1,600

#### Long-Term Liabilities

Long-Term Debt*	4,500
Other LT Liabilities	1,000
Total Long-Term Liabilities	5,500

#### Stockholders' Equity

Common Stock	2,000
Retained Earnings	900
Total Stockholders' Equity	2,900

Total Liabilities & Stockholders' Equity \$ 10,000

\* Included in Total Debt

## SAMPLE INCOME STATEMENT

Sales (or Revenues)	\$ 1,000
Cost of Goods Sold	300
Gross Profit	700
Operating Expenses:	
Expense #1	25
Expense #2	50
Interest Expense	125
Income from Operations	500
Unusual Items: Gains or (Losses)	(100)
Income Before Taxes	400
Income Tax Expense	100
Net Income	<u>\$ 300</u>

## 4-1 Sales Forecasting

### OBJECTIVES

- *Understand the steps involved in preparing a sales forecast.*
- *Explore several techniques used for sales forecasting.*

### ESTIMATING SALES

A sales forecast will be a key part of your company's financial planning process. A sales forecast is a prediction of the amount of future sales your company expects to achieve over a certain period of time. Think of a sales forecast as a tool to help evaluate the health of an established company or the feasibility of a new business venture.

#### Preparing a Sales Forecast

Sales forecasts for established companies are usually based on past sales performance. A forecast also takes into account such factors as the current economy, sales trends, company goals and capabilities, and what the competition is currently doing. There are four general steps in preparing a sales forecast:

1. **Analyzing current conditions.** Analyze the current company and market conditions. Do this through market research and by updating your SWOT analysis chart to analyze strengths, weaknesses, opportunities, and threats.
2. **Reviewing past sales.** Review your company's past sales figures. You can usually use past sales to project future sales. Sales often show seasonal variations. For example, you would sell more skis and sleds in the winter and more shorts and sandals in the summer. If you do not have past sales data because you are starting a new business, you will need to research general sales history for your industry. You can obtain this information from industry associations and by asking similar businesses outside your area.
3. **Making educated predications about the future.** Is there something in the future that could cause a change in your future sales? Will you need more or less promotion, or perhaps different types of promotion? Will you need more employees to accommodate these changes? Should you increase or decrease prices?
4. **Estimating your future sales for a specific time period.** Ask yourself if these sales will bring in more income than you expect to spend. Will these sales be enough to make a profit?

#### Sales Forecasting Techniques

There are many methods for estimating sales. Often, more than one technique is used to help make predictions as accurate as possible. This is because most techniques cannot take into account all of the factors that can impact sales.

If you plan to work with a bank to help finance your new business venture, you will probably want to make multiple sales forecasts. For example, make one that represents a best-case scenario, one for a worst-case scenario, and one in between. This will lend more credibility to your business plan. Here are some common forecasting techniques:

- **Full Capacity.** This technique is pretty simple: you forecast selling as many products (or performing as many jobs) as you can. Often a young entrepreneur who is going to school has only so much time to devote to the business. For example, if you can spend 10 hours a week making candles, and you can make 20 candles an hour, your full capacity for a week would equal 200 candles. If it turns out that you can't sell all you can make, you'll need to adjust your forecast.
- **Observational Data.** One of the best ways to forecast sales is to observe your competitors' customers. For example, if you are opening a restaurant, you could sit in the restaurants your target customers frequent that are near your desired location. You could note such things as the number of customers who ate in the restaurant, how much they spent, and what they ate. This data would help you forecast your own sales.
- **Industry Standards.** To make a proper sales forecast, you will need to know how sales are estimated in your particular industry. For example, consultants, technicians, and designers are usually paid by the hour. In contrast, sales forecasts for retail stores are sometimes based on sales per square foot. (So, for a retail store's sales forecast, you would need to find out the annual sales per square foot for similar types and sizes of stores, in locations similar to yours. You would average the results, and then multiply that dollar figure by the estimated floor space of your business.)
- **Industry/Seasonal Cycles.** Keep in mind the particular buying phases that apply to your industry. For example, some retail businesses do about 50 percent of their annual sales from the end of October to the end of December. Fireworks companies, on the other hand, do almost all of their business around July 4th. So vary your monthly sales estimates based on appropriate market cycles.
- **Team Effort.** Many businesses find that getting multiple groups of people involved in the forecasting process is helpful. You get a broader perspective on issues when you ask customers, salespeople, sales support, and company executives to all provide feedback.

- **Number of Customers versus Distance.** This technique is used primarily by businesses in which the customer must visit a physical store to make purchases. Examples include a hair or nail salon, a dry-cleaning business, and a car-wash. You would determine the number of households living within one mile of your business location that use your product/service. Then estimate how much they will spend for these items per year. Estimate what percentage of money they will spend with you as compared with your competitors. You can use this technique with other distances, such as five miles and ten miles. Estimated sales figures usually get lower as the distance increases.
- **Market Share.** If the main portion of your goods is sold via the Internet or by catalog, you first estimate your market share in terms of customers in your shipping range. Then calculate how often and how much the people in your market share might buy from you per year.
- **Proportional Scaling.** You should estimate sales separately for each product or service you sell. For each item, first estimate the quantity you think you will be selling six months from now. Then calculate the total of all sales per day. Next, multiply the sales per day by the number of days per month that you will be open for business. This determines the total sales per month. Using this as your goal for month 6, build up estimated monthly figures gradually, from little or no sales when the business first opens in month 1 to that monthly figure you calculated for month 6. Then gradually scale up your sales for months 7 through 12.

## 4-2 Cost of Doing Business

### **OBJECTIVES**

- *Understand the importance of good recordkeeping.*
- *Define and provide examples of fixed expenses.*
- *Explain how variable expenses are calculated.*
- *Define economies of scale.*

### **RECORDKEEPING**

Entrepreneurs need to know exactly how much money is coming in to and going out of the business. In fact, one of the major reasons that businesses fail is the owner's lack of financial management skill. This includes not keeping good financial records. The more you know about recordkeeping, the more you increase your odds of being a successful entrepreneur.

Having business accounts at a local bank is important for an entrepreneur. You'll be able to discuss your savings and checking accounts directly with a bank representative. As a bank customer, when you apply for a loan, your application will typically receive preferential treatment over a non-customer's application. Your money is obviously much safer in a bank than in your purse or wallet. Money in a bank account is insured, in case the bank goes out of business. The Federal Deposit Insurance Corporation (FDIC), created in 1933, is an independent agency of the federal government that insures savings, checking, and other types of deposit accounts. As an entrepreneur you'll certainly need a checking account when you start your business.

### **BUSINESS DOCUMENTS**

When you start a business, you need to establish recordkeeping procedures. These procedures will typically involve receipts, purchase orders, and invoices.

#### **Receipts**

A receipt is the detailed written proof of a purchase. When you make a sale, always give the customer a receipt and always keep a copy for yourself. Write down the date, customer name, what the customer purchased, and how the customer paid. Be sure to get a receipt when your business pays for goods or services. When merchandise is shipped to you, the receipt, or packing slip, is usually in one of the packages. Check to see that the shipment includes all the items on the receipt. The receipt will be helpful if you have a problem with the order or need to return merchandise. Save copies of all receipts.

#### **Purchase Orders**

A purchase order (often referred to as a PO) is a detailed written record of a business's request for supplies or inventory. When purchasing supplies, write up a purchase order that contains a description of what you are ordering, from whom, at what price, and who is taking the order. Also, be sure to date and number the purchase order. Give the supplier the purchase order number when you place the order. The purchase order system is highly reliable. A purchase order clearly states what you want to buy. The seller has a document that clearly states what you want. There is no confusion. Another advantage of this system is that it helps you record your business's purchases. Employees who make purchases from suppliers know that they must prepare a purchase order. They also know that the owner must sign the purchase order before it is sent to the supplier. The PO system helps prevent unauthorized purchases.

**Sales Invoices**

You use a purchase order when you buy supplies or inventory. But what should you use when you sell goods or services? A sales invoice is an itemized list of goods delivered or services rendered and the amount due. If your business offers credit terms, you agree to let the customer pay you later. When payment is due, you need to send the customer an invoice. The invoice contains much of the same information included on a receipt. It also includes the date when the payment should be made, to whom the check should be made out (for example, your business name), and your business mailing address. Depending on your business, the invoice may include additional information, such as the amount the customer will be charged for a late payment. Once you receive the customer's payment, write or stamp "Paid" on the invoice. File all invoices, either by invoice number (in numerical order) or by customer name (in alphabetical order).

**THE COST OF DOING BUSINESS**

**Fixed Expenses**

A business tries to earn a profit by selling products or providing services. Every sale has related expenses, so a business can only make a profit if the selling price for its product or service is greater than all of the expenses associated with that product or service. For example, if you owned a business called Matt's Hats and you paid a wholesaler \$6 for every hat you sold, you would have to charge more than \$6 for a hat to make a profit. Besides paying for the hats, you would have other expenses—rent, utilities, and the other expenses of operating your business. Today, you will examine how an entrepreneur can determine the actual cost of each product sold.

**What Are Fixed Expenses?**

After you start your business, you will have to pay certain expenses regularly. Monthly expenses typically include rent, Internet access, salaries, and utilities (gas and electricity). An expense of this type is called a fixed expense—an expense that isn't affected by the number of items a business produces. The business will incur fixed expenses no matter how many products it sells. For example, if the rent for your space at Matt's Hats is \$500 per month, it will remain \$500 even if in September your business makes and sells twice as many items as it produced and sold in August.

Another way of looking at fixed expenses is that they are ongoing expenses a business must pay to be able to operate. The important thing to remember is that fixed expenses don't include expenses directly related to the products the business sells.

**Common Fixed Expenses**  
**I SAID U R + "Other FXs"**

- Insurance
- Salaries
- Advertising
- Interest
- Depreciation
- Utilities (gas, electric, phone)
- Rent
- Other Fixed eXpenses**

An easy way to remember eight of the most common fixed expenses is to remember the phrase: **I SAID U R + "Other FXs"**

**Depreciation**

Depreciation is an accounting method of spreading the total cost of the equipment a business buys over the number of years it will be used. There are several depreciation methods a company can use. One of the most common ways of determining depreciation is the straight-line method of depreciation. The entrepreneur estimates how long the equipment will last and then figures what it could be sold for at the end of its business life (this is often referred to as the equipment's disposal value or salvage value). Next, to find the total depreciation, the entrepreneur subtracts the disposal value of the equipment from its actual cost. Then he or she divides that number by the estimated number of years during which the equipment will be used. The amount calculated per year is the depreciation expense.

For example, suppose a manufacturer buys a \$25,000 machine. The manufacturer estimates that the business will use the machine for five years and then will sell it for an estimated \$4,000 (this would be the disposal value). The total depreciation is \$21,000 (the cost of the machine minus the disposal value). Using the straight-line method of depreciation, you would divide the total depreciation by the number of years the machine was used:

<b>Cost</b>	-	<b>Disposal Value</b>	=	<b>Total Depreciation</b>	÷	<b>Years Used</b>	=	<b>Depreciation Expense</b>
\$25,000	-	\$4,000	=	\$21,000	÷	5 years	=	\$4,200

## Fixed Expenses Can Change

The word "fixed" doesn't mean the expense will never change. It means only that an expense doesn't change in response to sales. For example, if Matt's Hats needs air conditioning, its electric bills will likely be higher in the summer than they are in the winter. The electric bills will fluctuate based on the season. However, they will not change according to sales. The business might even have more sales in the winter, when the electric bills are lower.

Here's another example. Suppose you are an automobile dealer. If you pay your sales manager \$5,000 per month in salary, you will have to pay that same amount whether the business sells one automobile or a thousand. This is a fixed expense. Now let's say that you decide to give the manager a raise to \$6,000. Your business's fixed expenses will increase by \$1,000 per month, but this figure has no direct bearing on the number of automobiles your business will sell.

## Variable Expenses

As you now know, fixed expenses don't vary with the amount of product sold. Most businesses have another type of expense, referred to as a variable expense. This is an expense that changes based on the amount of product or service a business sells.

For example, if Matt's Hats pays its hat supplier \$6.00 per hat, the \$6.00 is a variable expense. If Matt's Hats sells 500 hats in November, the total variable expense is \$3,000 (500 x \$6.00). If, in December, it sells 600 hats, the total variable expense will be \$3,600 (600 x \$6.00). Although the variable expense per hat remained at \$6.00, the total of the variable expense changed due to the difference in the number of sales.

The two types of variable expenses are:

- Cost of Goods Sold (COGS). For manufacturing and merchandising (retailing and wholesaling) businesses, the variable expense that is associated with each unit of sale is called the cost of goods sold. This includes the cost of materials and labor used to make the product or provide the service.
- Other Variable Expenses. These can include such expenses as commissions for salespeople, shipping and handling charges, or packaging.

Returning to the example of Matt's Hats: Suppose you have purchased hats from a wholesaler for \$6.00 per hat. Because you are buying a finished product (the hats), no labor or other materials are involved. Your cost of goods sold per unit is \$6.00.

<b>Matt's Hats Cost of Each Hat</b>		
Cost of Goods Sold		
Cost of Hat	\$6.00	
Labor & Materials	<u>\$2.50</u>	
Total Cost of Goods Sold		\$8.50
Other Variable Expenses		
Shipping	\$1.00	
Handling	<u>\$0.25</u>	
Total Other Variable Expenses		<u>\$1.25</u>
Total Variable Expenses		\$9.75

Let's say Matt's Hats prints interesting designs on hats you buy from a wholesaler. You would still have a variable expense for each hat of \$6.00, but you also have printing expenses – labor and materials (ink). The cost of labor and materials is other variable expenses added to your cost of goods sold. In this case they add another \$2.50 per hat. You also have to pay shipping (\$1.00) and handling (\$0.25).

Knowing the variable expenses, you can calculate how much profit your business makes on each unit sold. Your goal would be to sell enough units each month to pay your variable and fixed expenses and have profit left over.

## Economies of Scale

Check the prices of paper towels at your local supermarket. The price of three single rolls will be greater than the price of a three-pack of the same brand. The supermarket is offering you a lower price if you purchase a larger quantity of product. Typically in business, the price per unit declines as you buy larger amounts.

Similarly, as a business grows, it may be able to negotiate better prices from suppliers because it is purchasing larger quantities of goods. The cost reduction made possible by spreading costs over a larger volume is called an economy of scale. Two of the most common ways to gain an economy of scale are:

- Spreading fixed expenses over as much output as possible. If you have a monthly rent of \$500 and you have \$10,000 in monthly sales, 5% of your sales is being used for rent ( $\$500 \div \$10,000$ ). If you can increase sales to \$20,000, you will be paying only 2.5% of your monthly sales in rent ( $\$500 \div \$20,000$ ). Typically, as your fixed expenses per unit decrease, your profit increases.
- Getting better deals from suppliers. You can get discounts from suppliers if you buy in quantity. (A discount for buying greater quantities is called a volume discount.) Typically, as your cost of goods sold per unit decreases, your profit increases. For example, normally Matt's Hats purchases 100 hats at a time at a price of \$6.00 per hat. If Matt's Hats purchased 200 hats at a time, the price per hat would be reduced to \$5.75 because of the volume discount.

### 4-3 Economics of One Unit of Sale

#### OBJECTIVES

- *Define a unit of sale and explain how to calculate the economics of one unit of sale.*
- *Explain the importance of the break-even point and calculate a break-even analysis.*

### THE ECONOMICS OF ONE UNIT OF SALE

Entrepreneurs need to know their businesses are profitable. One important way to examine profitability is to look at how much profit the business makes every time it sells one item. But what exactly is the business selling? In some cases, this is easy to figure out. If you sell shoes, you would figure your profit from each pair of shoes. But what happens if you make buttons? Would it make sense to figure your profit based on a single button?

#### WHAT IS A UNIT OF SALE?

This is where the concept of one unit of sale comes in. A unit of sale is what a customer actually buys from you. It's the amount of product (or service) you use to figure your operations and profit. The unit of sale is really the basic building block of your business.

- If you were a retailer who sold athletic shoes, your unit of sale would be a single pair of shoes. But if you were a wholesaler and only sold a minimum of five pairs at a time, your unit of sale would be five pairs of shoes. The smallest unit a customer can actually buy from you isn't a single pair of shoes – it's a carton containing five pairs. So your unit of sale would be five pairs of shoes packed in a carton.
- If you were a manufacturer of buttons and sold them to other manufacturers, wholesalers, or large retail chain stores in cartons containing 1,000 boxes of 100 buttons each, your unit of sale would be one carton containing the 1,000 boxes. That's what your customer is actually purchasing.
- Figuring out a unit of sale for a service business is usually based on how a customer is charged. For example, if you run a hair salon, a unit of sale might be one haircut. If you run a lawn-mowing company, your unit of sale might be mowing one lawn. But, because lawns are different sizes, you might have different rates for different sizes of lawns or you might charge by the hour.

The easiest way to think about a unit of sale is to ask yourself this question: What is it your customer is actually buying from you? That is your unit of sale.

### THE ECONOMICS OF ONE UNIT OF SALE

Entrepreneurs use their profits to pay themselves, to expand their businesses, and to start other businesses. Entrepreneurs want to know how much the business earns on the products it sells. To do this, they study the economics of one unit of sale (EOU). The basic formula is:  $\text{Selling Price} - \text{Expenses} = \text{Profit (Loss)}$

The next step is to analyze the expenses involved in the economics of one unit of sale in more detail. This will enable you to see the profitability of your company more accurately. To calculate the economics of one unit of sale, subtract the variable expenses for a unit from the selling price for the unit. Remember that the variable expenses vary directly as a result of sales. The result is the contribution margin. This is the amount per unit that a product contributes toward the company's profitability *before* the fixed expenses are subtracted.

$$\text{Selling Price} - \text{Variable Expenses} = \text{Contribution Margin}$$

Now you will examine the economics of one unit of sale and the contribution margin in more detail. You will see how EOU are calculated for the four types of businesses.

**EOU for a Manufacturing Business**

Suppose a manufacturing business makes high school class rings and sells them wholesale for \$40 each. We want to look at the economics of one unit based on a single ring. The materials used to produce a ring cost \$3. Each requires one hour of labor at \$15 per hour. So the cost of goods sold per unit would be \$18 (\$3 + \$15). There are no commissions, and the expense of shipping and handling a single ring is \$1.

In this example, the contribution margin per unit is \$21. The manufacturer uses this information to make business decisions. One possibility would be to see if a new, less expensive supplier could be found. This would decrease the cost of materials per unit from \$3. Often manufacturers look at a single item as if that were the unit of sale. It can be a useful exercise, but they sell very large quantities of product. A manufacturer could then look at the unit of sale as 12 rings or 120 rings or even a larger number. If they do this, they are acting like wholesale businesses, which are described next.

<b>Manufacturing Business Economics of One Unit One Unit of Sale = 1 Ring</b>			
Selling Price (per Unit)			\$40
Variable Expenses			
<u>Cost of Goods Manufactured and Sold</u>			
Materials	\$3		
Labor (\$15 per Hour)	<u>15</u>		
Cost of Goods Sold		\$18	
<u>Other Variable Expenses</u>			
Commissions	\$0		
Shipping and Handling	<u>1</u>		
Other Variable Expenses		<u>1</u>	
Total Variable Expenses			<u>19</u>
Contribution Margin (per Unit)			<u>\$21</u>

<b>Wholesaling Business Economics of One Unit One Unit of Sale = 12 Rings in a Carton</b>			
Selling Price (per Unit)			\$1,200
Variable Expenses			
<u>Cost of Goods Sold</u>			
Rings (12)	<u>\$480</u>		
Cost of Goods Sold		\$480	
<u>Other Variable Expenses</u>			
Commissions	\$0		
Shipping and Handling	<u>16</u>		
Other Variable Expenses		<u>16</u>	
Total Variable Expenses			<u>496</u>
Contribution Margin (per Unit)			<u>\$704</u>

**EOU for a Wholesaling Business**

The method used to calculate the EOU for a wholesaling business is similar to that of a manufacturing business. The difference is that the wholesaler buys finished products from a manufacturer, so its cost of goods sold per unit doesn't include labor.

In this example, the wholesaler buys rings from a manufacturer at \$40 each. The wholesaler packages the rings in quantities of 12 per shipping carton. Shipping and handling for the carton is \$16. Each carton with 12 rings is sold to a retailer for \$1,200. The contribution margin per unit for the wholesaler is \$704. This might seem high in comparison with the \$21 contribution

margin per unit for the manufacturer, but remember that the wholesaler's unit of sale is a carton of 12 rings, while the manufacturer's unit of sale is a single ring. The wholesaler's contribution for a single ring would be \$58.66 (\$704 ÷ 12). The wholesaler's contribution margin per ring is still more than twice that of the manufacturer.

**EOU for a Retailing Business**

Using the same ring example, let's look at a retail business. The retailer purchases the rings for \$1,200 for a carton of 12 rings and then sells the rings one at a time. The unit of sale therefore is one ring. The retailer's cost of goods sold per unit is \$100 (\$1,200 ÷ 12 rings). Like the wholesaler, the retailer buys finished products, so there is no labor expense. The retailer pays his salesperson a 15% commission on the sale of each ring. The ring is sold to high schools from a catalog and then shipped to each student purchaser. The price of shipping and handling is \$7. The retailer sells each ring for \$200.

<b>Retailing Business Economics of One Unit One Unit of Sale = 1 Ring</b>			
Selling Price (per Unit)			\$200
Variable Expenses			
<u>Cost of Goods Sold</u>			
Rings (1)	<u>\$100</u>		
Cost of Goods Sold		\$100	
<u>Other Variable Expenses</u>			
Commissions	\$30		
Shipping and Handling	<u>7</u>		
Other Variable Expenses		<u>37</u>	
Total Variable Expenses			<u>137</u>
Contribution Margin (per Unit)			<u>\$63</u>

These examples using class rings show a typical method of distribution. A product is produced by a manufacturer and sold to a wholesaler, who then sells the product to a retailer. The retailer then sells it to the ultimate user, the consumer.

**EOU for a Business Selling More Than One Product**

A business selling a variety of products would typically create a separate EOU for each product to determine whether it is profitable. However, when there are many similar products, you can develop a “typical EOU” using the average selling price per unit and the average cost per unit.

**EOU for a Service Business**

Manufacturing, wholesale, and retail businesses have one thing in common: they sell products. A service business typically doesn’t sell products. Because of this, a different method of determining an EOU must be used. Sometimes figuring out what a unit of sale is for a service business is difficult. It might be one tutoring lesson, one lawn-mowing job, or one income-tax preparation. It could also be one hour of consulting, or a three-hour block of time.

Cost of Goods Sold (COGS) does not apply, because no goods are actually being sold. Instead, you would use Cost of Services Sold (COSS) when calculating an EOU. In the typical service business, you would calculate the cost of services sold by multiplying the number of hours the service takes to perform by the hourly wage of the person providing it.

<b>Service Business</b>			
<b>Economics of One Unit</b>			
<b>One Unit of Sale = 1 Hair-Styling Job</b>			
Selling Price (per Unit)			\$55
Variable Expenses			
<u>Cost of Services Sold</u>			
Materials (Shampoo, etc.)	\$5		
Labor (\$30 per Hour)	<u>30</u>		
Cost of Goods Sold		\$35	
<u>Other Variable Expenses</u>			
Commissions	\$0		
Shipping and Handling	<u>0</u>		
Other Variable Expenses		<u>0</u>	
Total Variable Expenses			<u>35</u>
Contribution Margin (per Unit)			<u>\$20</u>

Sometimes, to perform the service, you must use supplies. For example, if you were cutting hair, you might need hair gel, shampoo, conditioner, or other products. These would be variable expenses because they are directly related to the services being sold. For example, Joan Barry has her own hair-styling business. She calculates an EOU based on each haircut. She estimates it takes her one hour to complete a hair-styling job. She values her time at \$30 per hour. She estimates that each job requires about \$5 worth of supplies (shampoo, conditioner, gel, and so on). She charges \$55 to style a customer’s hair.

In this case, Joan is both the person providing the hair styling and the owner of the business. She will earn \$30 as the hair stylist (hourly wage) and \$20 as the entrepreneur (contribution margin). If she could hire someone else to do the hair styling for \$30 per hour, she would still receive the contribution margin of \$20. Even better, if she could hire a stylist at \$20 per hour, she would then have a contribution margin of \$30 per styling job. By hiring additional stylists she would be able to increase the business’s volume and also increase her profits. This is how you grow a business!

**BREAK-EVEN ANALYSIS**

**What Is a Break-Even Point?**

Think about this: what would happen if all your expenses (fixed and variable) were exactly equal to your sales? There would be neither a profit nor a loss. The profit would be zero. That is what's called the break-even point, because the business has sold exactly enough units to cover expenses. A break-even analysis is an examination of a company’s sales and expenses that identifies the break-even point for the business. A break-even analysis examines how many units of a product (or hours of a service) a business must sell to pay all its expenses.

**Break-Even Analysis**

You use break-even analysis to determine how many units of a product a business must sell to pay all its expenses. Let's use Matt's Hats as an example of how to carry out a break-even analysis. Matt's Hats bought 1,000 hats at \$6 each. It sold the hats at \$10 each. So the total sales revenue was \$10,000.

**Total Sales Revenue: 1,000 hats x \$10 per hat = \$10,000**

In this example:

- The unit of sale for Matt's Hats is one hat.
- The selling price per hat is \$10.
- The cost of goods sold is \$6. Matt's Hats didn't have any variable expenses other than the cost of goods sold.



This means that Matt's Hats had a contribution margin of \$4 per hat.

$$\begin{aligned} \text{Selling Price} - \text{Variable Expenses} &= \text{Contribution Margin} \\ \$10 - \$6 &= \$4 \end{aligned}$$

Let's say Matt's Hats has operating expenses (or fixed expenses) of \$3,000. Using this information, Matt can calculate how many hats Matt's Hats has to sell each month to cover operating expenses. These are its break-even units – the number of units of sale a business needs to sell to arrive at the break-even point (where the bottom line is zero). Matt's Hats needs to sell 750 hats per month to pay its operating expenses and break even. Here's how to calculate break-even units:

$$\begin{aligned} \text{Operating Expenses} \div \text{Gross Profit per Unit} &= \text{Break Even Units} \\ \$3,000 \div \$4 &= 750 \text{ Hats} \end{aligned}$$

If Matt's Hats sells fewer than 750 hats, it will lose money. If it sells more than 750, it will earn a profit. If it sells exactly 750, the company will cover its expenses and will have neither profit nor loss.

It usually takes time for a new business to increase sales enough to make a profit. Until then, it has to have enough cash to cover its losses as the business grows. A break-even analysis and realistic sales forecast can help a business estimate how long it will take to make a profit. When planning a business, you should use break-even analysis to find how much product or service must be sold before the business becomes profitable. Sales and expenses can change frequently. When they do, it's a good idea to perform a break-even analysis to make sure your business remains profitable.

### 4-4 Income Statement

#### OBJECTIVES

- *Explain the importance of an income statement.*
- *Understand the parts of an income statement.*
- *Prepare an income statement.*

Financial statements are important when you are trying to raise capital for your business. The financial statements you prepare for your business plan are pro forma financial statements and are based on projections. The income statement, cash flow statement, and balance sheet all tell you something different about the condition of your business.

### INCOME STATEMENT

One of the most important documents for a business is an income statement. An income statement is a financial document that summarizes a business's income and expenses over a given time period and shows whether the business made a profit or took a loss. That's why it's also called a profit and loss statement. If a business's sales are greater than its expenses, the income statement will show a profit. If sales are less than expenses, the income statement will show a negative number, a loss.

#### When to Prepare an Income Statement

Because income statements show how a business is performing, they are prepared periodically. Most small-business owners should create both a monthly income statement and a quarterly income statement. Companies also prepare income statements on an annual basis that show how the company performed during the year. A business can choose to use a calendar year accounting period (January 1-December 31) or a fiscal year accounting period. A fiscal year is the 12-month period chosen by the business (for example, July 1-June 30).

#### Differences in Income Statements

Income statements can vary in wording, but they all include the same basic information: revenue, expenses, and net income or loss. However, a significant difference in income statements is how businesses show their variable expenses. Based on the type of business, variable expenses will appear under these headings:

- Cost of Goods Manufactured and Sold. Manufacturing companies track the cost of both labor and materials. The two are added to arrive at the cost of the products they are selling.
- Cost of Goods Sold. Merchandising businesses (both wholesale and retail companies) keep track of the cost of their beginning inventory, the cost of any additional inventory they purchase, and the cost of their ending inventory. This allows them to calculate the cost of inventory sold during this period.
- Cost of Services Sold. Service companies track materials involved in providing their services. Sometimes they include the cost of labor if the service can be easily broken down into segments.

**MANUFACTURING BUSINESS**

*Ann Waverly sells T-shirts that she prints with her own designs and messages. Ann's is a manufacturing business because she buys supplies and converts those supplies into a new product. Ann needs to prepare an income statement for March. As a manufacturing business, Ann will use Cost of Goods Manufactured and Sold in her income statement. Her statement is shown below. If you have a manufacturing business, your income statement will be similar to Ann's.*

**Ann's T-Shirts  
Income Statement  
For Month Ended March 31, 20--**

<b>REVENUE</b>		
Gross Sales	\$ 7,500	
Sales Returns	<u>30</u>	
Net Sales		\$ 7,470
<b>COST OF GOODS MANUFACTURED AND SOLD</b>		
Materials		
T-Shirts	\$ 1,494	
Inks/Paints	<u>249</u>	
Total Materials		\$ 1,743
Labor	<u>2,490</u>	
Cost of Goods Manufactured and Sold		<u>4,233</u>
<b>GROSS PROFIT</b>		<b>\$ 3,237</b>
<b>OPERATING EXPENSES</b>		
Advertising	\$ 100	
Insurance	200	
Interest	300	
Rent	400	
Salaries	400	
Telephone	<u>200</u>	
Total Expenses		<u>1,600</u>
<b>PRE-TAX PROFIT</b>		<b>\$ 1,637</b>
Taxes (15%)		246
<b>NET PROFIT</b>		<b><u>\$ 1,391</u></b>

**MERCHANDISING BUSINESS**

*Matt Washington has a summertime business. He sells hats on the boardwalk near the beach. He stores his hats in a large locker he rents from a local merchant. He runs the business from his parents' home and makes a contribution toward their utilities. Matt needs to prepare an income statement for August. Because he has a retail business (selling hats purchased from a wholesaler), Matt uses Cost of Goods Sold to categorize his variable expenses. Below is a sample income statement for Matt's Hats and illustrates the six parts of a typical income statement. If you have a merchandising business (wholesaling or retailing), your income statement will be similar to Matt's.*

**Matt's Hats  
Income Statement  
For Month Ended August 31, 20--**

<b>REVENUE</b>		
Gross Sales	\$ 4,800	
Sales Returns	<u>400</u>	
Net Sales		\$ 4,400
<b>COST OF GOODS SOLD</b>		
Beginning Inventory	\$ 1,200	
Add: Purchases	<u>600</u>	
Total		\$ 1,800
Less: Inventory, August 31	<u>480</u>	
Cost of Goods Sold		<u>1,320</u>
<b>GROSS PROFIT</b>		<b>\$ 3,080</b>
<b>OPERATING EXPENSES</b>		
Advertising	\$ 100	
Insurance	200	
Rent	150	
Telephone	100	
Utilities	<u>100</u>	
Total Expenses		<u>650</u>
<b>PRE-TAX PROFIT</b>		<b>\$ 2,430</b>
Taxes (15%)		365
<b>NET PROFIT</b>		<b><u>\$ 2,065</u></b>

**SERVICE BUSINESS**

*Joan Barry styles clients' hair in their homes. She brings all her equipment on appointments and styles hair for both men and women. She also cuts children's hair. Many of her customers work during the day and appreciate Joan's willingness to come in the evening or on weekends. Often she styles an entire family's hair in one appointment. Joan's income statement is shown below. If you have a service business, your income statement may be similar to Joan's. However, many service companies, particularly those that don't use materials in their service, won't use a cost of services sold section. The net profit in an income statement like this would represent the profit for the entrepreneur's labor.*

**Joan Barry Hair Styles  
Income Statement  
For Month Ended September 30, 20--**

<b>REVENUE</b>		
Sales		\$ 6,900
<b>COST OF SERVICES SOLD</b>		
Materials (Hair Styling Supplies)	\$ 160	
Labor (160 Jobs)	<u>4,000</u>	
Cost of Goods Sold		<u>4,160</u>
<b>GROSS PROFIT</b>		<b>\$ 2,740</b>
<b>OPERATING EXPENSES</b>		
Advertising	\$ 400	
Insurance	200	
Interest	300	
Rent	200	
Telephone	200	
Utilities	<u>100</u>	
Total Expenses		<u>1,400</u>
<b>PRE-TAX PROFIT</b>		<b>\$ 1,340</b>
Taxes (15%)		201
<b>NET PROFIT</b>		<b><u>\$ 1,139</u></b>

**4-5 Cash Flow Statement**

**OBJECTIVES**

- Understand how cash flow affects entrepreneurs.
- Demonstrate a burn-rate calculation.

**CASH FLOW STATEMENT**

An income statement provides a good picture of how well your business is doing. It shows your sales and your expenses. What it does not show is the amount of cash you have on hand. Cash for a business is like gasoline for an automobile – without it, the business does not have the necessary fuel to operate. Size doesn't matter. A compact car or an 18-wheel semi cannot go anywhere on an empty tank. Similarly, it doesn't matter if a business is small or large – if it doesn't have enough cash to pay its bills as they come due, the creditors can force the business to close its doors. For example, the income statement for September might show a net income of \$3,000, but that's not necessarily the amount of cash you received. If some of your sales were made on credit, you may not get the money from those customers until October or later.

A company must have sufficient cash on hand to continue to do business. You must also continue to pay your suppliers, to pay for items you have purchased on credit, and to repay any loans you may have. If you are constantly short of cash, you could lose your business. To ensure that you have enough money to operate, you must track your business's cash flow. Cash flow is the money received minus what is spent over a specified period of time. The cash flow equation is:

$$\text{Cash Inflow} - \text{Cash Outflow} = \text{Net Cash}$$

To monitor cash flow, a business prepares a cash flow statement. This is a financial document that records inflows and outflows of cash when they actually occur. Besides preparing an income statement every month, a successful entrepreneur also prepares a cash flow statement. Like income statements and other financial statements, the format and headings for a cash flow statement may vary. Below, you can see a typical cash flow statement prepared for Matt's Hats for August.

**Matt's Hats  
Cash Flow Statement  
Month Ended August 31, 20--**

<b>BEGINNING CASH BALANCE</b>	\$ 430	
<b>CASH INFLOW</b>		
Sales	4,400	
<b>AVAILABLE CASH</b>		<b>\$ 4,830</b>
<b>CASH OUTFLOW</b>		
Cash Purchases of Inventory	\$ 600	
Insurance Paid	200	
Interest Paid	300	
Rent Paid	200	
Telephone Paid	200	
Utilities Paid	75	
Total Cash Outflow		1,575
<b>NET CASH</b>		<b><u>\$ 3,255</u></b>

**Reading a Cash Flow Statement**

- Beginning Cash Balance. Matt started the month with \$430 in cash.
- Cash Inflow. Matt received \$4,400. Matt sells his hats on the boardwalk and only accepts cash payment. If Matt extended credit to his customers, he would show their payments as cash inflow. If Matt had any investments that increased in value, that would also be shown in this section.
- Total Available Cash. The beginning cash balance and the cash inflow for the month show the company's total available cash. In Matt's case, this is \$4,830 (\$430 + \$4,400 = \$4,830).
- Cash Outflow. This section notes the cash spent on purchases of additional inventory of hats (\$600). The cash outflow section also includes money Matt spent on operating expenses. The total cash spent in August was \$1,575.

- **Net Cash.** The last section shows the net change in cash flow. This tells the entrepreneur whether the business had a positive or negative cash flow that month. As you can see below, Matt's Hats had a positive net cash flow of \$3,255 for the month of August.

### **Ways to Keep Cash Flowing**

Here are five ways to avoid being caught without enough cash to pay your bills:

- **Collect Cash as Soon as Possible.** When making a sale, try to convince the customer to use cash rather than credit.
- **Pay Bills Close to the Due Date.** Always note the due date on your bills. Plan your payment to reach the creditor just before or on the due date. However, be careful not to send the payment so that it arrives after the due date.
- **Keep Track of Your Cash.** Check the cash balance every day. Always know how much you have. Keep track of the money your business earns and spends each day. Make sure you get and keep receipts for every purchase you make. You don't want to be surprised by a lack of cash.
- **Lease Equipment.** Often, a large down payment is required when you buy equipment. The down payment reduces your cash on hand. When feasible, don't buy equipment; lease it.
- **Keep Inventory to a Minimum.** Minimize the amount of inventory you stock unless it's part of your competitive advantage to offer customers a wide selection. Avoid large purchases of slow-moving inventory. Inventory ties up cash in two ways: the cash you use to purchase the inventory and the cash you spend in storing it.

### **Cash Flow Is Cyclical**

Many businesses have sales that are based on the time of year. For example, Matt sells hats in the summertime on the boardwalk and beach. Matt closes his business in the winter. If you were operating an ice cream stand, your sales during the summer months would be higher than in the winter. If you were selling scarves and gloves, your sales would almost certainly be higher in the cold weather. Cash flow is cyclical for many businesses, meaning that it varies according to the time of year. Other examples of businesses with cyclical cash flow are flower shops, bridal shops, and college book stores. Each of these businesses must carefully monitor cash flow in the months of low sales. Remember, you will have monthly expenses (fixed expenses) regardless of whether the month is typically high-sales or low-sales.

### **The Burn Rate**

Most new businesses try to start with a surplus of cash. However, most new businesses also spend more money than they earn while getting off the ground. The question most beginning entrepreneurs need to know is: **How long can I afford to lose money?**

The rate at which a company spends cash to cover overhead costs without generating a positive cash flow is called the burn rate. It is typically expressed in terms of cash spent per month. A burn rate of \$10,000 monthly means that the business is spending that every month to cover rent and other operating expenses. Use the burn rate to calculate how long a company can go without revenue. If a business has, say \$20,000 in cash and a burn rate of \$2,000 a month, it can stay in business for 10 months without making any sales.

$$\text{Cash on Hand} \div \text{Burn Rate} = \text{Number of Months before Cash Runs Out}$$
$$\$20,000 \div \$2,000 = 10 \text{ months}$$

**4-6 The Balance Sheet****OBJECTIVES**

- *Identify the purpose and components of a balance sheet.*
- *Explain how balance sheets are prepared.*
- *Provide two methods used to analyze balance sheets.*

**THE BALANCE SHEET**

We just finished talking about two important financial statements: the income statement and the cash flow statement. Now, we will introduce another very important financial statement: the balance sheet.

A balance sheet is a financial statement that summarizes the assets and liabilities (debts) of a business. It shows how much a business is worth at a particular time. A balance sheet is like a snapshot of a business on a specific date. An income statement is more like a movie, reflecting changes in the business over a period of time.

A balance sheet answers the questions: What does the company own? To whom does it owe money? How much is the business worth? The balance sheet focuses on the fundamental accounting equation:

$$\text{Assets} = \text{Liabilities} - \text{Owner's Equity}$$

Let's examine each of the terms in this equation:

- Assets. Everything owned by the business that has a monetary value is an asset. This could include such things as cash, inventory, equipment, and supplies.
- Liabilities. Any outstanding bill or loan that must be repaid is a liability.
- Owner's Equity. The value of the business on a specific date is referred to as the owner's equity. It's the value of the business if all the assets were sold and all the liabilities were paid.

The balance sheet shows you the value of your business on a specific date. For example, if you decided to close down your business, your first step would be to sell all your assets. The next step would be to payoff all your liabilities (debts). Any money remaining would be yours to keep. It's the value of your business, your owner's equity.

**Assets Are Owned**

Assets are the items of value owned by a business: cash, inventory, furniture, machinery, and so on. On a typical balance sheet, assets are usually classified as either current assets or long-term assets.

- Current Assets. Short-term assets that can be converted into cash within one year are current assets. These include cash, inventory, marketable securities, and money owed the business by its customers (called accounts receivable). Accounts receivable is the amount of money owed to a business by its customers for credit sales.
- Long-Term Assets. Assets that usually take longer than one year to turn into cash are long-term assets. Examples of long-term assets are equipment, computers, furniture, machinery, buildings, and long-term investments.

**Liabilities Are Owed**

Liabilities are all sums of money owed by the business. One of the most common types of liability is accounts payable, which represents the amount of money a business owes to its suppliers for purchases made on credit. Other liabilities include bills owed for telephone, utilities, insurance, and taxes. Liabilities include such debts as short-term bank loans, mortgages, and loans from families or friends. On a typical balance sheet, liabilities are classified as either current liabilities or long-term liabilities.

- Current Liabilities. Short-term debts that must be repaid within one year are current liabilities. These include debts to suppliers for credit purchases (accounts payable), bank loans, and state sales taxes collected from customers and owed to the state.
- Long-Term Liabilities. Debts that usually take longer than one year to repay are long-term liabilities. The money owed on a mortgage, for example, is a long-term liability.

## PREPARING BALANCE SHEETS

Balance sheets are divided into two sections. All the assets of the business are in the first section and the liabilities of the business and the owner's equity are included in the second section. Think of this second section as the creditors of the business, those to whom the business owes money, having the first claim on the assets. The owner receives any money remaining after all of the debts have been paid.

There are two formats for a balance sheet: one-column and two-column. Most large companies use the one-column format. For simplicity, we will focus on the one-column format in this example.

Matt Washington has been very successful over the past eight years. Matt's Hats now has a store that is famous for its large selection. Matt is preparing the annual balance sheet. The accounting period for Matt's Hats is the calendar year.

**Matt's Hats  
Balance Sheet  
December 31, 20--**

**ASSETS**

**Current Assets**

Cash	\$ 25,000	
Accounts Receivable	20,000	
Inventory	<u>100,000</u>	
<b>Total Current Assets</b>		<b>\$ 145,000</b>

**Long-Term Assets**

Equipment	\$ 20,000	
Building	<u>135,000</u>	
<b>Total Long-Term Assets</b>		<b><u>\$ 155,000</u></b>

<b>Total Assets</b>		<b><u>\$ 300,000</u></b>
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**LIABILITIES & OWNER'S EQUITY**

**Current Liabilities**

Accounts Payable	\$ 40,000	
Bank Loans	25,000	
Sales Tax Payable	<u>5,000</u>	
<b>Total Current Liabilities</b>		<b>\$ 70,000</b>

**Long-Term Liabilities**

Mortgage Payable	<u>70,000</u>	
<b>Total Long-Term Liabilities</b>		<b><u>\$ 70,000</u></b>

<b>Total Liabilities</b>		<b>\$ 140,000</b>
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**Owner's Equity**

Matt Washington, Capital	<u>\$ 160,000</u>	
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<b>Total Liabilities &amp; Owner's Equity</b>		<b><u>\$ 300,000</u></b>
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### **BALANCE SHEET NARRATIVE**

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Below is a brief narrative of what is happening in each section of Matt's Hats balance sheet on the previous page.

#### **Current Assets**

The first step in preparing the income statement is to determine the value of the company's assets. Matt's Hats has cash on hand of \$25,000 and the value of the inventory is \$100,000. Inventory is the value of the goods a business has available for sale. Matt's Hats, for example, has a wide variety of hats available for sale. Customers owe the business \$20,000 for sales made to them on credit (this is Matt's accounts receivable). Cash, inventory, and accounts receivable are classified as current asset accounts.

#### **Long-Term Assets**

Matt's Hats owns its own building, which is worth \$135,000. The company also has equipment for printing designs on baseball caps. The equipment is valued at \$20,000. The building and the equipment are the only long-term assets owned by Matt's Hats.

#### **Current Liabilities**

Next, Matt Washington has to determine the company's total liabilities. It has short-term bank loans of \$25,000. The company also owes \$40,000 to its merchandise suppliers for the inventory items purchased on credit, so the accounts payable total on the balance sheet is \$40,000. The company also owes the state \$5,000 for sales taxes it collected. So the company's sales tax payable is \$5,000. These are the company's current liabilities.

#### **Long-Term Liabilities**

Matt's Hats has a mortgage loan on its building. The company owes the mortgage company \$70,000 on the loan, so its mortgage payable is \$70,000. This is Matt's only long-term liability.

#### **Owner's Equity**

The final step is to determine the owner's equity. Owner's equity is calculated by subtracting the total liabilities from the total assets. The owner's equity account for Matt's Hats, shown on the balance sheet as Matt Washington, Capital, has a balance of \$160,000. The word "capital" in accounting refers to the investment or ownership value of the business. Because Matt is the sole owner of the business, this account reflects the value of the business to Matt.

$$\begin{aligned} \text{Total Assets} - \text{Total Liabilities} &= \text{Owner's Equity} \\ \$300,000 - \$140,000 &= \$160,000 \end{aligned}$$

Not all businesses have all these accounts; however, the procedure for preparing the balance sheet (starting with assets and moving through liabilities to determine the owner's equity) will be similar to the procedure just outlined.

**ANALYZING BALANCE SHEETS**

A business usually prepares one balance sheet at the beginning of its fiscal year and another at the end. Comparing the beginning balance sheet to the ending one is an excellent way to determine whether the business is succeeding. For example, if the ending balance sheet shows that the owner's equity account has increased, it means that the business has gained value.

Another method used to analyze balance sheets is often called a same-size balance sheet analysis. A percentage change column is added to a comparative balance sheet. This column provides a quick method of analyzing all the changes in the two balance sheets.

**COMPARATIVE BALANCE SHEET**

On the next page is a comparative balance sheet for Matt's Hats. The balance sheet on the right side was prepared on December 31 last year. The balance sheet on the left side was prepared December 31, one year later. Compare the two balance sheets to see what has changed after one year.

**Matt's Hats  
Comparative Balance Sheet**

	December 31, This Year	December 31, Last Year
<b>ASSETS</b>		
<b>Current Assets</b>		
Cash	\$ 20,000	\$ 25,000
Accounts Receivable	25,000	20,000
Inventory	<u>125,000</u>	<u>100,000</u>
Total Current Assets	\$ 170,000	\$ 145,000
<b>Long-Term Assets</b>		
Equipment	\$ 25,000	\$ 20,000
Building	<u>135,000</u>	<u>135,000</u>
Total Long-Term Assets	<u>\$ 160,000</u>	<u>\$ 155,000</u>
<b>Total Assets</b>	<b><u>\$ 330,000</u></b>	<b><u>\$ 300,000</u></b>
<b>LIABILITIES &amp; OWNER'S EQUITY</b>		
<b>Current Liabilities</b>		
Accounts Payable	\$ 30,000	\$ 40,000
Bank Loans	20,000	\$ 25,000
Sales Tax Payable	<u>2,000</u>	<u>5,000</u>
Total Current Liabilities	\$ 52,000	\$ 70,000
<b>Long-Term Liabilities</b>		
Mortgage Payable	<u>70,000</u>	<u>70,000</u>
Total Long-Term Liabilities	<u>\$ 70,000</u>	<u>\$ 70,000</u>
<b>Total Liabilities</b>	\$ 122,000	\$ 140,000
<b>Owner's Equity</b>		
Matt Washington, Capital	<u>\$ 208,000</u>	<u>\$ 160,000</u>
<b>Total Liabilities &amp; Owner's Equity</b>	<b><u>\$ 330,000</u></b>	<b><u>\$ 300,000</u></b>

Despite having less cash at the end of the period, the comparative balance sheet contains very favorable financial information for Matt's Hats. The company has increased the amount of inventory it has available for sale, and it is owed more money from credit sales to customers. The company has reduced all of its current liabilities. Amounts owed for bank loans, accounts payable, and sales tax payable all decreased. Remember: Assets - Liabilities = Owner's Equity.

By reducing liabilities, Matt Washington has increased his owner's equity, the value of his business. He reduced his liabilities by paying off some of the company's debt. Paying off debt is one of the smartest things a business can do with extra cash.

**SAME-SIZE BALANCE SHEET ANALYSIS**

Below is a comparative balance sheet for Matt's Hats, with an added column. This column shows all the changes from last year to this year as a percentage of last year's amounts. For example, accounts receivable grew from \$20,000 last year to \$25,000 this year. That's a 25% growth.

The same-size balance sheet analysis statement provides a quick way to see how the business is performing. (Note that any value set in parentheses is a negative percentage.) A quick look at the percentages shows that Matt's Hats has increased both its inventory and its accounts receivable by 25%. This reflects favorably on the business. Reducing all the current liabilities, especially the accounts payable, by 25% is another example of a good business strategy. The wise business decisions made by Matt are reflected in the 30% increase in his owner's equity.

**Matt's Hats**  
**Same-Size Balance Sheet**

<b>ASSETS</b>	<b>December 31, This Year</b>	<b>December 31, Last Year</b>	<b>% Change</b>
<b>Current Assets</b>			
Cash	\$ 20,000	\$ 25,000	(20.0)
Accounts Receivable	25,000	20,000	25.0
Inventory	<u>125,000</u>	<u>100,000</u>	25.0
Total Current Assets	\$ 170,000	\$ 145,000	17.2
<b>Long-Term Assets</b>			
Equipment	\$ 25,000	\$ 20,000	25.0
Building	<u>135,000</u>	<u>135,000</u>	0.0
Total Long-Term Assets	<u>\$ 160,000</u>	<u>\$ 155,000</u>	3.2
<b>Total Assets</b>	<b><u>\$ 330,000</u></b>	<b><u>\$ 300,000</u></b>	10.0
<b>LIABILITIES &amp; OWNER'S EQUITY</b>			
<b>Current Liabilities</b>			
Accounts Payable	\$ 30,000	\$ 40,000	(25.0)
Bank Loans	20,000	25,000	(20.0)
Sales Tax Payable	<u>2,000</u>	<u>5,000</u>	(60.0)
Total Current Liabilities	\$ 52,000	\$ 70,000	(25.7)
<b>Long-Term Liabilities</b>			
Mortgage Payable	<u>70,000</u>	<u>70,000</u>	0.0
Total Long-Term Liabilities	<u>\$ 70,000</u>	<u>\$ 70,000</u>	0.0
<b>Total Liabilities</b>	\$ 122,000	\$ 140,000	(12.8)
<b>Owner's Equity</b>			
Matt Washington, Capital	<u>\$ 208,000</u>	<u>\$ 160,000</u>	30.0
<b>Total Liabilities &amp; Owner's Equity</b>	<b><u>\$ 330,000</u></b>	<b><u>\$ 300,000</u></b>	10.0

**4-7 Financial Ratios****OBJECTIVES**

- *Recognize financial ratios used to analyze the financial condition of a business.*
- *Discuss how ratios aid in financial decision making.*

**UNDERSTANDING FINANCIAL RATIOS**

How do entrepreneurs know if a company is healthy? They often rely on information from financial records. But it's not always easy to analyze these records, to see the relationships, patterns, and the trends they show. One of the most effective ways for entrepreneurs to analyze their financial statements is to use financial ratios. These are relationships between important financial data that are expressed as fractions or as percentages. Entrepreneurs calculate financial ratios by using the data from the financial statements. All financial ratios are calculated by dividing one number by another. An entrepreneur should not rely on just one or two ratios. Ratios are only indicators and each will shed light on a different aspect of the business.

**LIQUIDITY RATIOS**

No matter how profitable a company is, an important measure of its financial health is its ability to pay debts on time. To be able to finance short-term debt, a company should be in a favorable liquid position. That means it either has a good cash balance or other current assets than can be converted quickly to cash without substantial loss of their value. Commonly used liquidity ratios are the current ratio, the quick ratio, and the cash ratio.

**CURRENT RATIO**

A measure of the ability to meet current debt.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

The current ratio shows how well the company is prepared to pay current liabilities, those debts that will come due within a year. Of course it is expected that a business have more current assets than current liabilities. A strong position in most industries is a ratio of 2:1. Financial managers and investors will look at the current assets to determine how quickly they can be converted to cash and the value of the assets listed on the company's balance sheet to make sure it is an accurate reflection of an asset's real cash value.

**QUICK RATIO (ACID TEST RATIO):** A more precise liquidity measure that reduces the value of current assets by the value of the inventory.

$$\text{Quick Ratio} = \frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}}$$

Current assets cannot all be disposed of quickly in order to obtain cash to pay a company's short-term debts. Inventory is a particular problem in some industries. An inventory level is developed and maintained to meet customer needs over a period of time. If it must be liquidated quickly, prices may have to be reduced dramatically. By reducing the value of current assets by the value of the inventory, the quick ratio provides a more specific value of available current assets to cover the liabilities. The quick ratio does not have to be as high as the current ratio since the current assets used are highly liquid. A ratio of 1:1 may be acceptable in many industries.

**CASH RATIO:** The cash ratio is an indicator of a company's liquidity that further refines both the current ratio and the quick ratio by measuring the amount of cash, cash equivalents or invested funds there are to cover current liabilities.

$$\text{Cash Ratio} = \frac{\text{Cash} + \text{Cash Equivalents} + \text{Investments}}{\text{Current Liabilities}}$$

The cash ratio is the most stringent and conservative of the three short-term liquidity ratios. It only looks at the most liquid short-term assets of the company, which are those that can be most easily used to payoff current obligations. It also ignores inventory and receivables, as there are no assurances that these two accounts can be converted to cash in a timely matter to meet current liabilities.

**ASSET MANAGEMENT RATIOS**

Businesses use their assets to make money. Assets produce sales and sales generate profits. A company that can use assets efficiently by keeping their values low in relation to sales and profits is financially stronger than companies that require a higher value of assets for the same results. Asset management ratios compare the value of key assets to sales performance.

**INVENTORY TURNOVER RATIO:** Measures the efficiency of a company in maintaining inventory to generate sales.

$$\text{Inventory Turnover Ratio} = \frac{\text{Sales (or Revenues)}}{\text{Inventory}}$$

A company doesn't earn money on its inventory until it is sold. The more rapidly inventory is sold, the lower the amount of financing required. If a company can maintain low inventory levels and still have high sales volume, it is using inventory very efficiently. Some industries require a lower volume of inventory or have lower total inventory costs to generate sales. Other industries require a high inventory level or the cost of inventory is quite high. A business with a low ratio should be evaluated to see if the inventory is dated or obsolete or if there is another reason that it is not being converted to sales more quickly.

**TOTAL ASSETS TURNOVER RATIO:** Measures how efficiently all assets generate sales.

$$\text{Total Assets Turnover Ratio} = \frac{\text{Sales (or Revenues)}}{\text{Total Assets}}$$

The total assets turnover ratio is similar to the inventory turnover ratio except that it focuses on the efficient use of all company assets. By comparing the value of all current and fixed assets to sales, the company can determine if it has a reasonable amount of assets for the sales being produced. A low value suggests assets are not being used efficiently. Some businesses also calculate a fixed assets turnover ratio to examine the efficiency of land, buildings, and major equipment.

**ACCOUNTS RECEIVABLE TURNOVER RATIO:** Measures how quickly credit sales are converted to cash.

$$\text{Accounts Receivable Turnover Ratio} = \frac{\text{Sales (or Revenues)}}{\text{Accounts Receivable (or Net Receivables)}}$$

The accounts receivable turnover ratio identifies how quickly customer accounts are paid. Higher ratios mean that accounts receivable are collected quickly. Long collection periods usually result in losses when older accounts are not paid. Some companies use total credit sales rather than total sales to determine the accounts receivable turnover. Another related ratio is the average collection period ratio, determined by dividing accounts receivable by the average daily sales. This ratio identifies how many days on average it takes to collect accounts receivable. A smaller number of days demonstrates effective credit procedures.

**DEBT MANAGEMENT RATIOS**

Using debt to finance some parts of a business' operations allows owners to maintain control of the business with a lower level of investment. If debt is used effectively it is possible to get a higher rate of return on the use of the money than the actual cost of the debt. Using debt financing to increase the rate of return on assets is known as financial leverage. As long as a company can pay its debts when they come due, a high level of debt financing is not necessarily a problem. Stockholders like to see higher debt ratios as long as the firm is profitable because they provide higher potential earnings. Creditors on the other hand get concerned when debt ratios are high because they have fewer claims on assets if the business should fail.

**DEBT RATIO:** Measures how much of a company's assets are owned by creditors.

$$\text{Debt Ratio} = \frac{\text{Total Debt}^*}{\text{Total Assets}}$$

\* total debt includes all payables, short-term debt, and long-term debt.

The appropriate ratio is guided by the industry in which the company operates and the financial stability of the company. A stable company with a long operating history can carry a ratio where debt is greater than 50 percent of total assets. A new company, risky industry, or volatile economy may require a ratio where debt is one-third or one-fourth of the asset value.

Related debt management ratios are total debt divided by net worth, which provides a direct comparison of equity and debt financing levels; and long-term debt divided by total assets, which shows the extent to which the company's assets are financed by long-term debt.

**TIMES-INTEREST-EARNED RATIO (TIE)**: Shows how well-positioned the company is to pay interest on its debt.

$$\text{Times-Interest-Earned Ratio} = \frac{\text{Operating Income}}{\text{Interest Expense}}$$

A high times-interest-earned ratio means the company has a high margin of safety in being able to pay creditors. Operating income would have to decline significantly before the company would be at risk from its creditors. To be particularly cautious, the ratio could be calculated by using the total of interest and principal charges rather than just the interest. Most creditors are satisfied if interest payments are kept up to date, but to remove debt obligations a business needs adequate income to make full payments.

### PROFITABILITY RATIOS

All of the financial decisions and operations of a company ultimately result in bottom-line performance. Both financial managers and investors are interested in tracking improvement in profitability and comparing it to the profitability of competitors as well as the results that could be obtained from other possible investments.

**PROFIT MARGIN ON SALES RATIO**: Measures the profit generated by each dollar of sales.

$$\text{Profit Margin on Sales Ratio} = \frac{\text{Net Income}}{\text{Sales (or Revenues)}}$$

The main revenues of a business come from sales. The greater the return on sales, the more efficient is the business. A lower ratio may indicate there is pressure on prices so little margin is available for profit after expenses have been paid. To assist with that analysis, companies calculate the gross profit margin ratio which divides gross profit by net sales. Carrying a high level of debt with accompanying interest payments could also reduce the profit margin on sales. The effect of interest and taxes on profit margins can be determined by calculating the operating profit margin ratio. It is determined by dividing operating income by net sales. Operating income is the company's earnings before interest and taxes.

**RETURN ON TOTAL ASSETS (ROA)**: Ratio Measures the company's earnings on each dollar of assets. This ratio is sometimes called "Return on Investment".

$$\text{Return on Total Assets Ratio} = \frac{\text{Net Income}}{\text{Total Assets}}$$

This ratio is particularly meaningful to managers, creditors, and investors because it evaluates the efficiency of the assets of the company. Does the company have too much money invested in assets based on the profit or are the assets particularly effective in generating income? When managers make plans for capital investments, consideration of the contribution to this ratio will be very important. A similar important profitability ratio is the return on equity ratio.

**RETURN ON EQUITY RATIO (ROE)**: Measures how each dollar of investment by stockholders contributes to net income.

$$\text{Return on Equity Ratio} = \frac{\text{Net Income}}{\text{Stockholders' Equity}}$$

Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested. The ROE is especially useful for comparing the profitability of a company to that of other firms in the same industry.

### MARKET PERFORMANCE RATIOS

The final set of ratios examines the overall financial performance of the business in contributing to shareholder value. The results are usually examined over several years to see changes in the company's performance. These ratios are considered by both stockholders and the board of directors as important evidence of the effectiveness of executive leadership. Market performance ratios are most useful as a way to compare the financial performance of similar companies or of several companies being considered for investment purposes.

**EARNINGS PER SHARE (EPS):** Measures the amount of profit earned by each share of stock.

$$\text{Earnings Per Share} = \frac{\text{Net Income}}{\text{Number of Shares Issued}}$$

If the company issues preferred stock, the dividends paid to preferred stockholders are subtracted from net income before dividing by the number of shares of common stock issued. Preferred stockholders receive a specified dividend which affects the overall earnings for other stockholders.

**PRICE EARNINGS RATIO (P/E RATIO):** A measure of the strength of a company's earnings in affecting the price of its stock.

$$\text{Price Earnings Ratio} = \frac{\text{Market Stock Price}}{\text{Earnings Per Share}^*}$$

\* as calculated above.

When investors decide on the price to pay for a company's stock, an important consideration is the earnings they expect to receive on their investments. A company with a strong record of earnings is likely to command a higher price than one with poor earnings.

**MARKET TO BOOK RATIO:** The relationship between the value of stock as recorded on the company's balance sheet and its value determined by the stock price.

$$\text{Market to Book Ratio} = \frac{\text{Market Stock Price}}{\text{Book Value Per Share}^*}$$

\* book value per share is calculated by dividing stockholders' equity by the number of shares issued.

The book value of stock is calculated by dividing the stockholder equity by the number of shares issued. Market to book ratios are often greater than 1, meaning that investors are willing to pay more for stock than it is valued by the company. One of the reasons is that accounting valuations are conservative so the value of assets listed on the balance sheet is lower than their actual value. Also, a company has intangible assets such as goodwill that affect its market value.

## USE OF FINANCIAL RATIOS

Financial ratios should be used carefully because they are only general measures of a company's financial condition. Ratios calculated from only one set of a company's financial statements can be used to examine current relationships among key financial elements. For example, ratios can illustrate the proportion of assets and liabilities that are liquid versus long-term or the proportion of assets that are owned versus financed. That one-time analysis may point out strengths of the company's current financial position and performance and, more importantly, identify areas of concern if ratios indicate potential problems with some of the proportions. Those relationships are likely to change over time, so comparing ratios over several time periods provides a better picture of the company's financial condition. Another use of ratios is to compare specific aspects of the company's financial condition and performance with that of similar businesses. Examining industry trends in financial performance using financial ratios is an important part of financial analysis.

## DEVELOP A FINANCIAL ANALYSIS PLAN

Companies follow these steps to use financial ratios in financial planning:

1. Organize financial records and statements in order to access the information needed to calculate ratios.
2. Determine the key financial ratios needed to evaluate financial performance and develop financial goals. Consider the major areas of financial decisions (asset planning, asset financing, and asset management) as well as the categories of financial information needed (liquidity, asset management, debt management, profitability, and market performance).
3. Develop baseline data by calculating the first set of ratios. Because companies maintain historic financial records and financial statements, financial ratios for prior years can be calculated to serve as baseline information. Financial ratios can be calculated for several years to study the history of the company's financial performance.
4. Identify sources of comparative information in order to compare the company's financial performance with other companies. Comparison should be made with companies in the same industry and with a select group of companies that

have similar characteristics affecting financial performance, such as the corporate ownership structure, age of the company, company size defined by sales and assets, and geographic location of major operations and markets.

5. Identify benchmark companies to serve as financial performance targets. A benchmark company is a competitor that has historically demonstrated outstanding financial performance.
6. Run analyses and calculate ratios regularly. Once-a-year analysis might be misleading because the financial data such as cash flow, sales, inventory level, and accounts receivable and payable may change dramatically from quarter to quarter. Complete trend analysis where ratios are monitored over an extended period of time looking for trends that indicate improving or declining financial conditions.
7. Use the results of ratio analysis as one factor in establishing financial goals and implementing changes in business activities designed to improve financial performance.

### SOURCES OF COMPARATIVE INFORMATION

One of the uses of financial ratios is to compare specific aspects of a company's financial performance with other companies. Since most public corporations are required to publish financial statements at least annually, it is relatively easy to obtain comparative financial information. Investors also use financial statement information and financial ratios to evaluate companies in order to make sound investment decisions. Many companies serving investors collect and publish that information. Industry and trade associations frequently collect information from their members and provide comparative financial performance data. Often that information is provided only to members or to others for a fee. Some organizations make information available to the public for free.

### Chapter Summary

- Entrepreneurs have two types of business expenses to consider: fixed expenses and variable expenses. The fixed expenses of a business are expenses that are not affected by increases or decreases in the number of products a business sells. Common examples of fixed expenses are insurance, salaries, advertising, interest payments, depreciation, utilities, and rent. Depreciation is an accounting method of spreading the total cost of the equipment a business buys over the number of years it will be used. Despite being called "fixed," fixed expenses may vary from month to month. Variable expenses vary based on the amount of product or services a business sells in a given time period. Variable expenses are divided into two categories: cost of goods sold per unit (COGS) and other variable expenses. The cost of goods sold per unit includes the cost of the labor and materials used to make a product. Other variable expenses could include commissions, shipping and handling charges, and packaging.
- A unit of sale is what a customer actually buys from a business. It is the amount of product or service a business uses to figure out its operations and profit. The equation for the economics of one unit of sale is selling price minus expenses equals profits. To find the contribution margin per unit, subtract all variable expenses for the unit from the selling price.
- The break-even point is reached when costs and expenses are exactly equal to sales. At the break-even point, there is neither profit nor loss—the total at the bottom of the income statement is zero. To determine the break-even point perform a break-even analysis. This shows exactly how many units a business must sell to pay all its expenses. A start-up business needs to determine its break-even point to make sure it has enough money reserved to cover its losses early in the life of the company. When sales or expenses change, an entrepreneur should do a break-even analysis to make sure the company will remain profitable.
- An income statement includes sales and expense data as well as the net income or loss of a business. Income statements differ based on the type of business. Retailing and wholesaling use the category Cost of Goods Sold. Manufacturing companies use Cost of Goods Manufactured and Sold. Service businesses use Cost of Services Sold.
- A business must have sufficient cash to pay bills and debts. To assure that enough cash is on hand, entrepreneurs prepare cash flow statements, which record cash inflows and outflows when they occur. Because of their importance, cash flow statements should be prepared monthly. In the beginning months of a new business, it's common that more money is spent than earned. The rate at which a company spends cash to cover overhead costs without generating a positive cash flow is called the burn rate.
- A balance sheet is a financial statement that summarizes the assets and liabilities (debts) of a business. The balance sheet also shows the value of the business to the entrepreneur (owner's equity). The owner's equity is calculated by subtracting the total liabilities from the total assets. Entrepreneurs analyze balance sheets to help them determine how their businesses are performing. Comparative balance sheets and same-size balance sheet analysis statements are used by entrepreneurs to identify the changes in assets, liabilities, and owner's equity from one accounting period to another.
- An important tool for analyzing financial statements is financial ratios. Ratio analysis includes comparing relationships in current performance, making comparisons between current and past performance, and comparing the financial performance of the business with competitors' performance. Ratios calculated from a company's financial statements can be used to examine current relationships among key financial elements. Comparing ratios over several time periods provides a better picture of the company's financial condition. Another use of ratios is to compare specific aspects of the company's financial condition and performance with that of similar businesses.