

**When you finish this appendix,
you should:**

1. Understand the components of an operating statement (profit and loss statement).
2. Know how to compute the stockturn rate.
3. Understand how operating ratios can help analyze a business.
4. Understand how to calculate markups and markdowns.
5. Understand how to calculate return on investment (ROI) and return on assets (ROA).
6. Understand the important new terms (shown in orange).

Appendix

B

Marketing
Arithmetic

Marketing students must become familiar with the essentials of the language of business. Business people commonly use accounting terms when talking about costs, prices, and profit. And using accounting data is a practical tool in analyzing marketing problems.

The operating statement

An **operating statement** is a simple summary of the financial results of a company's operations over a specified period of time. Some beginning students may feel that the operating statement is complex, but as we'll soon see, this really isn't true. *The main purpose of the operating statement is to determine the net profit figure—and present data to support that figure.* This is why the operating statement is often referred to as the *profit and loss statement*.

Exhibit B-1 shows an operating statement for a wholesale or retail business. The statement is complete and detailed so that you will see the framework throughout the discussion, but the amount of detail on an operating statement is *not* standardized. Many companies use financial statements with much less detail than this one. They emphasize clarity and readability rather than detail. To really understand an operating statement, however, you must understand its components.

Only three basic components

The basic components of an operating statement are *sales*, which come from the sale of goods and services; *costs*, which come from the making and selling process; and the balance, called *profit or loss*, which is just the difference between sales and costs. So there are only three basic components in the statement: sales, costs, and profit or loss. Other items on an operating statement are there only to provide supporting details.

Time period covered may vary

There is no one time period an operating statement covers. Rather, statements are prepared to satisfy the needs of a particular business. This may be at the end of each day or at the end of each week. Usually, however, an operating statement summarizes results for one month, three months, six months, or a full year. Since the time period does vary, this information is included in the heading of the statement as follows:

SMITH COMPANY
Operating Statement
For the (Period) Ended (Date)

Also, see Exhibit B-1.

Management uses of operating statements

Before going on to a more detailed discussion of the components of our operating statement, let's consider some of the uses for such a statement. As Exhibit B-1 shows, it presents a lot of information in a clear and concise manner. With this information, a manager can easily find the relationship between net sales and the cost of sales, the gross margin, expenses, and net profit. Opening and closing inventory figures are available—as is the amount spent during the period for the purchase of goods for resale. Total expenses are listed to make it easier to compare them with those listed on previous statements—and to help control these expenses.

All this information is important to a company's managers. Assume that a particular company prepares monthly operating statements. A series of these statements is a valuable tool for directing and controlling the business. By comparing results from one month to the next, managers can uncover unfavourable trends in the sales, costs, or profit areas of the business—and take any needed action.

Exhibit B-1 An Operating Statement (profit and loss statement)

SMITH COMPANY OPERATING STATEMENT FOR THE YEAR ENDED DECEMBER 31, 199X		
Gross sales		\$540,000
Less: Returns and allowances		<u>40,000</u>
Net sales		\$500,000
Cost of sales:		
Beginning inventory at cost	\$ 80,000	
Purchases at billed cost	\$310,000	
Less: Purchase discounts	<u>40,000</u>	
Purchases at net cost	\$270,000	
Plus freight-in	20,000	
Net cost of delivered purchases	<u>\$290,000</u>	
Cost of products available for sale	\$370,000	
Less: Ending inventory at cost	<u>70,000</u>	
Cost of sales		<u>\$300,000</u>
Gross margin (gross profit)		\$200,000
Expenses:		
Selling expenses:		
Sales salaries	\$ 60,000	
Advertising expense	20,000	
Delivery expense	<u>20,000</u>	
Total selling expense	\$100,000	
Administrative expense:		
Office salaries	\$ 30,000	
Office supplies	10,000	
Miscellaneous administrative expense	<u>5,000</u>	
Total administrative expense	\$ 45,000	
General expense:		
Rent expense	\$ 10,000	
Miscellaneous general expenses	<u>5,000</u>	
Total general expense	<u>\$ 15,000</u>	
Total expenses		<u>\$160,000</u>
Net profit from operation		<u>\$ 40,000</u>

A skeleton statement—essential details

Let's refer to Exhibit B-1 and begin to analyze this seemingly detailed statement to get first-hand knowledge of the components of the operating statement.

As a first step, suppose we take all the items that have dollar amounts extended to the third, or right-hand, column. When we focus on these items only, the operating statement looks like this:

Gross sales	\$540,000
Less: Returns and allowances	<u>40,000</u>
Net sales	500,000
Less: Cost of sales	<u>300,000</u>
Gross margin	200,000
Less: Total expenses	<u>160,000</u>
Net profit (loss)	<u>\$40,000</u>

Is this a complete operating statement? The answer is *yes*. This skeleton statement differs from Exhibit B-1 only in supporting detail. All the basic components are included. In fact, the only items we must list to have a complete operating statement are:

Net sales.....	\$500,000
Less: Costs.....	<u>460,000</u>
Net profit (loss)	<u>\$ 40,000</u>

These three items are the essentials of an operating statement. All other subdivisions or details are just useful additions.

Meaning of sales

Now let's define the terms in the skeleton statement.

The first item is sales. What do we mean by sales? The term **gross sales** is the total amount charged to all customers during some time period. However, there is always some customer dissatisfaction, or just plain errors in ordering and shipping goods. This results in returns and allowances, which reduce gross sales.

A **return** occurs when a customer sends back purchased products. The company either refunds the purchase price or allows the customer dollar credit on other purchases.

An **allowance** occurs when a customer is not satisfied with a purchase for some reason. The company gives a price reduction on the original invoice (bill), but the customer keeps the goods and services.

These refunds and price reductions must be considered when the firm computes its net sales figure for the period. Really, we're only interested in the revenue the company manages to keep. This is **net sales**—the actual sales dollars the company receives. All reductions, refunds, cancellations, and so forth made because of returns and allowances are deducted from the original total (gross sales) to get net sales. This is shown below:

Gross sales.....	\$540,000
Less: Returns and allowances.....	<u>40,000</u>
Net sales.....	<u>\$500,000</u>

Meaning of cost of sales

The next item in the operating statement—**cost of sales**—is the total value (at cost) of the sales during the period. We'll discuss this computation later. Meanwhile, note that after we obtain the cost of sales figure, we subtract it from the net sales figure to get the gross margin.

Meaning of gross margin and expenses

Gross margin (gross profit) is the money left to cover the expenses of selling the products and operating the business. Firms hope that a profit will be left after these expenses are subtracted.

Selling expense is commonly the major expense below the gross margin. Note that in Exhibit B-1, **expenses** are all the remaining costs subtracted from the gross margin to get the net profit. The expenses here are the selling, administrative, and general expenses. (Note that the cost of purchases and cost of sales are not included in this total expense figure—they were subtracted from net sales earlier to get the gross margin. Note, also, that some accountants refer to cost of sales as cost of goods sold.)

Net profit—at the bottom of the statement—is what the company earned from its operations during a particular period. It is the amount left after the cost of sales

and the expenses are subtracted from net sales. *Net sales and net profit are not the same.* Many firms have large sales and no profits—they may even have losses! That's why understanding costs—and controlling them—is important.

Detailed analysis of sections of the operating statement

The cost of sales section includes details that are used to find the cost of sales (\$300,000 in our example).

In Exhibit B-1, you can see that beginning and ending in-

ventory, purchases, purchase discounts, and freight-in are all necessary to calculate costs of sales. The cost of sales section of the operating statement looks like this:

Cost of sales:		
Beginning inventory at cost		\$ 80,000
Purchases at billed cost	\$310,000	
Less: Purchase discounts	<u>40,000</u>	
Purchases at net cost	270,000	
Plus: Freight-in	<u>20,000</u>	
Net cost of delivered purchases		<u>290,000</u>
Cost of goods available for sale		370,000
Less: Ending inventory at cost		<u>70,000</u>
Cost of sales		<u>\$300,000</u>

Cost of sales is the cost value of what is *sold*—not the cost of goods on hand at any given time.

Inventory figures merely show the cost of goods on hand at the beginning and end of the period the statement covers. These figures may be obtained by physically counting goods on hand on these dates, or they may be estimated from perpetual inventory records that show the inventory balance at any given time. The methods used to determine the inventory should be as accurate as possible, because these figures affect the cost of sales during the period—and net profit.

The net cost of delivered purchases must include freight charges and purchase discounts received, since these items affect the money actually spent to buy goods and bring them to the place of business. A **purchase discount** is a reduction of the original invoice amount for some business reason. For example, a cash discount may be given for prompt payment of the amount due. We subtract the total of such discounts from the original invoice cost of purchases to get the *net* cost of purchases. To this figure we add the freight charges for bringing the goods to the place of business. This gives the net cost of *delivered* purchases. When we add the net cost of delivered purchases to the beginning inventory at cost, we have the total cost of goods available for sale during the period. If we now subtract the ending inventory at cost from the cost of the goods available for sale, we get the cost of sales.

One important point should be noted about cost of sales. The way the value of inventory is calculated varies from one company to another—and can cause big differences in the cost of sales and the operating statement. (See any basic accounting textbook for how the various inventory valuation methods work.)

Cost of sales for a manufacturer

Exhibit B-1 shows how the managers of a wholesale or retail business arrive at their cost of sales. Such a business *purchases* finished products and resells them. In a manufacturing company, the purchases section of this operating statement is replaced by a section

Exhibit B-2 Cost of Sales Section of an Operating Statement for a Manufacturing Firm

Cost of sales:		
Finished products inventory (beginning)	\$ 20,000	
Cost of production (Schedule 1)	<u>100,000</u>	
Total cost of finished products available for sale	\$120,000	
Less: Finished products inventory (ending)	<u>30,000</u>	
Cost of sales		\$ 90,000
Schedule 1, Schedule of Cost of Production		
Beginning work in process inventory		\$ 15,000
Raw materials:		
Beginning raw materials inventory	\$ 10,000	
Net cost of delivered purchases	<u>80,000</u>	
Total cost of materials available for use	\$ 90,000	
Less: Ending raw materials inventory	<u>15,000</u>	
Cost of materials placed in production	\$ 75,000	
Direct labour		20,000
Manufacturing expenses:		
Indirect labour	\$4,000	
Maintenance and repairs	3,000	
Factory supplies	1,000	
Heat, light, and power	<u>2,000</u>	
Total manufacturing expenses	\$ 10,000	
Total manufacturing costs		\$105,000
Total work in process during period		\$120,000
Less: Ending work in process inventory		<u>20,000</u>
Cost of production		\$100,000

called cost of production. This section includes purchases of raw materials and parts, direct and indirect labour costs, and factory overhead charges (such as heat, light, and power) that are necessary to produce finished products. The cost of production is added to the beginning finished products inventory to arrive at the cost of products available for sale. Often, a separate cost of production statement is prepared, and only the total cost of production is shown in the operating statement. See Exhibit B-2 for an illustration of the cost of sales section of an operating statement for a manufacturing company.

Expenses

Expenses go below the gross margin. They usually include the costs of selling and the costs of administering the business. They do not include the cost of sales—either purchased or produced.

There is no right method for classifying the expense accounts or arranging them on the operating statement. They can just as easily be arranged alphabetically or according to amount, with the largest placed at the top and so on down the line. In a business of any size, though, it is clearer to group the expenses in some way and use subtotals by groups for analysis and control purposes. This was done in Exhibit B-1.

Operating statements vary in detail

The statement presented in Exhibit B-1 contains all the major categories in an operating statement, together with a normal amount of supporting detail. Further detail can be added to the statement under any of the major categories without changing

the nature of the statement. The amount of detail normally is determined by how the statement will be used. A shareholder may be given a sketchy operating statement; whereas the one prepared for internal company use may have a lot of detail.

Computing the stockturn rate

A detailed operating statement can provide the data needed to compute the **stockturn rate**—a measure of the number of times the average inventory is sold during a year. Note that the stockturn rate is related to the *turnover during a year*—not the length of time covered by a particular operating statement.

The stockturn rate is a very important measure because it shows how rapidly the firm's inventory is moving. Some businesses typically have slower turnover than others. But a drop in turnover in a particular business can be very alarming. It may mean that the firm's assortment of products is no longer as attractive as it was. Also, it may mean that the firm will need more working capital to handle the same volume of sales. Most businesses pay a lot of attention to the stockturn rate in an effort to get faster turnover (and lower inventory costs).

Three methods, all basically similar, can be used to compute the stockturn rate. Which method is used depends on the data available. These three methods—which usually give approximately the same results—are shown next.*

- (1)
$$\frac{\text{Cost of sales}}{\text{Average inventory at cost}}$$
- (2)
$$\frac{\text{Net sales}}{\text{Average inventory at selling price}}$$
- (3)
$$\frac{\text{Sales in units}}{\text{Average inventory in units}}$$

Computing the stockturn rate will be illustrated only for Formula 1, since all are similar. The only difference is that the cost figures used in Formula 1 are changed to a selling price or numerical count basis in Formulas 2 and 3. Note: Regardless of the method used, you must have both the numerator and the denominator of the formula in the same terms.

If the inventory level varies a lot during the year, you may need detailed information about the inventory level at different times in order to compute the average inventory. If it stays at about the same level during the year, however, it's easy to get an estimate. For example, using Formula 1, the average inventory at cost is computed by adding the beginning and ending inventories at cost and dividing by 2. This average inventory figure is then divided into the cost of sales (in cost terms) to get the stockturn rate.

For example, suppose that the cost of sales for one year was \$1,000,000. Beginning inventory was \$250,000 and ending inventory \$150,000. Adding the two inventory figures and dividing by 2, we get an average inventory of \$200,000. We next divide the cost of sales by the average inventory ($\$1,000,000 \div \$200,000$) and get a stockturn rate of 5. The stockturn rate was covered further in Chapter 18.

Operating ratios analyze the business

Many businesspeople use the operating statement to calculate **operating ratios**—the ratio of items on the operating statement to net sales—and compare these ratios from one time period to another. They can also compare their own operating ratios with those of competitors. Such competitive data are often available through trade associations. Each firm may report its results to a trade association, which then distributes summary results to its members. These ratios help managers control their

*Differences occur because of varied markups and nonhomogeneous product assortments. In an assortment of tires, for example, those with low markups might have sold much better than those with high markups. But with Formula 3, all tires would be treated equally.

operations. If some expense ratios are rising, for example, those particular costs are singled out for special attention.

Operating ratios are computed by dividing net sales into the various operating statement items that appear below the net sales level in the operating statement. The net sales is used as the denominator in the operating ratio because it shows the sales the firm actually won.

We can see the relationship between operating ratios and the operating statement if we think of there being another column to the right of the dollar figures in an operating statement. This column contains percentage figures—using net sales as 100 percent. This approach can be seen in the following table.

Gross sales	\$540,000	
Less: Returns and allowances	<u>40,000</u>	
Net sales	500,000	100%
Cost of sales	<u>300,000</u>	<u>60</u>
Gross margin	200,000	40
Expenses	<u>160,000</u>	<u>32</u>
Net profit	\$ 40,000	8%

The 40 percent ratio of gross margin to net sales in the above example shows that 40 percent of net sales dollars are available to cover sales expenses and administer the business—and provide a profit. Note that the ratio of expenses to sales added to the ratio of profit to sales equals the 40 percent gross margin ratio. The net profit ratio of 8 percent shows that 8 percent of the net sales dollar is left for profit.

The value of percentage ratios should be obvious. The percentages are easily figured, and much easier to compare than large dollar figures.

Note that because these operating statement categories are interrelated, only a few pieces of information are needed in order to calculate the others. In this case, for example, knowing the gross margin percent and net profit percent makes it possible to figure the expenses and cost of sales percentages. Furthermore, knowing just one dollar amount and the percentages lets you calculate all the other dollar amounts.

Markups

A **markup** is the dollar amount added to the cost of sales to get the selling price. The markup usually is similar to the firm's gross margin because the markup amount added onto the unit cost of a product by a retailer or wholesaler is expected to cover the selling and administrative expenses—and to provide a profit.

The markup approach to pricing was presented in Chapter 18, so it will not be discussed at length here. But a simple example illustrates the idea. If the owners of a retail store buy an article that costs \$1 when delivered to their store, they must sell it for more than this cost if they hope to make a profit. So they might add 50 cents onto the cost of the article to cover their selling and other costs and, hopefully, to provide a profit. The 50 cents is the markup.

The 50 cents is also the gross margin or gross profit from that item *if* it is sold. But note that it is *not* the net profit. Selling expenses may amount to 35 cents, 45 cents, or even 55 cents. In other words, there is no guarantee that the markup will cover costs. Furthermore, there is no guarantee that customers will buy at the marked up price. This may require markdowns, which are discussed later in this appendix.

Markup conversions

Often it is convenient to use markups as percentages instead of focusing on the actual dollar amounts. But markups can be figured as a percentage of cost *or* selling price. To have some agreement, *markup (percent)* will mean percentage of selling price unless stated otherwise. So the 50-cent markup on the \$1.50 selling price is a

markup of 33½ percent. On the other hand, the 50-cent markup is a 50 percent markup on cost.

Some retailers and wholesalers use markup conversion tables or spreadsheets to easily convert from cost to selling price, depending on the markup on selling price they want. To see the interrelationship, look at the two formulas below. They can be used to convert either type of markup to the other.

$$(4) \quad \text{Percent markup on selling price} = \frac{\text{Percent markup on cost}}{100\% + \text{Percent markup on cost}}$$

$$(5) \quad \text{Percent markup on cost} = \frac{\text{Percent markup on selling price}}{100\% - \text{Percent markup on selling price}}$$

In the previous example, we had a cost of \$1, a markup of 50 cents, and a selling price of \$1.50. The markup on selling price was 33½ percent, and on cost, it was 50 percent. Let's substitute these percentage figures, using Formulas 4 and 5, to see how to convert from one basis to the other. Assume, first of all, that we only know the markup on selling price and want to convert to markup on cost. Using Formula 5, we get:

$$\text{Percent markup on cost} = \frac{33\frac{1}{2}\%}{100\% - 33\frac{1}{2}\%} = \frac{33\frac{1}{2}\%}{66\frac{1}{2}\%} = 50\%$$

On the other hand, if we know only the percent markup on cost, we can convert to markup on selling price as follows:

$$\text{Percent markup on selling price} = \frac{50\%}{100\% + 50\%} = \frac{50\%}{150\%} = 33\frac{1}{2}\%$$

These results can be proved and summarized as follows:

$$\begin{array}{r} \text{Markup } \$0.50 = 50\% \text{ of cost, or } 33\frac{1}{2}\% \text{ of selling price} \\ + \quad \text{Cost } \$1.00 = 100\% \text{ of cost, or } 66\frac{1}{2}\% \text{ of selling price} \\ \hline \text{Selling price } \$1.50 = 150\% \text{ of cost, or } 100\% \text{ of selling price} \end{array}$$

It is important to see that only the percentage figures change while the money amounts of cost, markup, and selling price stay the same. Note, too, that when selling price is the base for the calculation (100 percent), then the cost percentage plus the markup percentage equal 100 percent. But when the cost of the product is used as the base figure (100 percent), the selling price percentage must be greater than 100 percent by the markup on cost.

Markdown ratios help control retail operations

The ratios we discussed above were concerned with figures on the operating statement. Another important ratio—the **markdown ratio**—is a tool many retailers use to measure the efficiency of various departments and their whole business. But

note that it is *not directly related to the operating statement*. It requires special calculations.

A **markdown** is a retail price reduction required because customers won't buy some item at the originally marked up price. This refusal to buy may be for a variety of reasons—soiling, style changes, fading, damage caused by handling, or an original price that was too high. To get rid of these products, the retailer offers them at a lower price.

Though markdowns are generally considered to be due to business errors—such as poor buying practices, and original markups that are too high—some retailers use markdowns as a way of doing business rather than as a way to correct errors. For example, a store that buys out overstocked fashions from other retailers may start by marking each item with a high price and then reduce the price each week until it sells. Regardless of the reason, markdowns are reductions in the original price—and they are important to managers who want to measure the effectiveness of their operations.

Markdowns are similar to allowances in that price reductions are made. Thus, in computing a markdown ratio, markdowns and allowances are usually added together and then divided by net sales. The markdown ratio is computed as follows:

$$\text{Markdown \%} = \frac{\$ \text{ Markdowns} + \$ \text{ Allowances}}{\$ \text{ Net sales}} \times 100$$

The 100 is multiplied by the fraction to get rid of decimal points.

Returns are *not* included when figuring the markdown ratio. Returns are treated as consumer errors, not business errors, and therefore are not included in this measure of business efficiency.

Retailers who use markdown ratios usually keep a record of the amount of markdowns and allowances in each department and then divide the total by the net sales in each department. Over a period of time, these ratios give management one measure of the efficiency of buyers and salespeople in various departments.

It should be stressed again that the markdown ratio is not calculated directly from data on the operating statement since the markdowns take place before the products are sold. In fact, some products may be marked down and still not sold. Even if the marked down items are not sold, the markdowns—that is, the reevaluations of their value—are included in the calculations in the time period when they are taken.

The markdown ratio is calculated for a whole department (or profit centre)—*not* for individual items. What we are seeking is a measure of the effectiveness of a whole department—not how well the department did on individual items.

Return on investment (ROI) reflects asset use

Another off-the-operating-statement ratio is **return on investment (ROI)**—the ratio of net profit (after taxes) to the investment used to make the net profit, multiplied by 100 to get rid of decimals. Investment is not shown on the operating statement. But it is on the

balance sheet (statement of financial condition), another accounting statement, which shows a company's assets, liabilities, and net worth. It may take some digging or special analysis, however, to find the right investment number.

Investment means the dollar resources the firm has invested in a project or business. For example, a new product may require \$4 million in new money—for inventory, accounts receivable, promotion, and so on—and its attractiveness may be judged by its likely ROI. If the net profit (after taxes) for this new product is expected to be \$1 million in the first year, then the ROI is 25 percent—that is, (\$1 million ÷ \$4 million) × 100.

There are two ways to figure ROI. The *direct* way is:

$$\text{ROI (in \%)} = \frac{\text{Net profit (after taxes)}}{\text{Investment}} \times 100$$

The *indirect* way is:

$$\text{ROI (in \%)} = \frac{\text{Net profit (after taxes)}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Investment}} \times 100$$

This way is concerned with net profit margin and turnover—that is:

$$\text{ROI (in \%)} = \text{Net profit margin} \times \text{Turnover} \times 100$$

This indirect way makes it clearer how to *increase* ROI. There are three ways:

- 1 Increase profit margin (with lower costs or a higher price).
- 2 Increase sales.
- 3 Decrease investment.

Effective strategic market planning and implementation can increase profit margins and/or sales. And careful asset management can decrease investment.

ROI is a revealing measure of how well managers are doing. Most companies have alternative uses for their funds. If the returns in a business aren't at least as high as outside uses, then the money probably should be shifted to more profitable uses.

Some firms borrow more than others to make investments. In other words, they invest less of their own money to acquire assets—what we called *investments*. If ROI calculations use only the firm's own investment, this gives higher ROI figures to those who borrow a lot—which is called *leveraging*. To adjust for different borrowing proportions—to make comparisons among projects, departments, divisions, and companies easier—another ratio has come into use. **Return on assets (ROA)** is the ratio of net profit (after taxes) to the assets used to make the net profit, times 100. Both ROI and ROA measures are trying to get at the same thing—how effectively the company is using resources. These measures became increasingly popular as profit rates dropped and it became more obvious that increasing sales volume doesn't necessarily lead to higher profits—or ROI or ROA. Inflation and higher costs for borrowed funds also force more concern for ROI and ROA. Marketers must include these measures in their thinking or top managers are likely to ignore their plans—and their requests for financial resources.

Questions and Problems

1. Distinguish between the following pairs of items that appear on operating statements: (a) gross sales and net sales, and (b) purchases at billed cost and purchases at net cost.
2. How does gross margin differ from gross profit? From net profit?
3. Explain the similarity between markups and gross margin. What connection do markdowns have with the operating statement?
4. Compute the net profit for a company with the following data:

Beginning inventory (cost)	\$ 150,000
Purchases at billed cost	330,000
Sales returns and allowances	250,000
Rent	60,000
Salaries	400,000
Heat and light	180,000
Ending inventory (cost)	250,000
Freight cost (inbound)	80,000
Gross sales	1,300,000

5. Construct an operating statement from the following data:

Returns and allowances	\$ 150,000
Expenses	20%
Closing inventory at cost	600,000
Markdowns	2%
Inward transportation	30,000
Purchases	1,000,000
Net profit (5%)	300,000

6. Compute net sales and percent of markdowns for the data given below:

Markdowns	\$ 40,000
Gross sales	400,000
Returns	32,000
Allowances	48,000

7. (a) What percentage markups on cost are equivalent to the following percentage markups on selling price? 20, 37½, 50, and 66%. (b) What percentage markups on selling price are equivalent to

the following percentage markups on cost? 33½, 20, 40, and 50.

8. What net sales volume is required to obtain a stockturn rate of 20 times a year on an average inventory at cost of \$100,000 with a gross margin of 25 percent?
9. Explain how the general managers of a department store might use the markdown ratios computed for their various departments. Is this a fair measure? Of what?
10. Compare and contrast return on investment (ROI) and return on assets (ROA) measures. Which would be best for a retailer with no bank borrowing or other outside sources of funds—that is, for a retailer who has put up all the money that the business needs?