



# Chapter 27 Pricing Math

- Section 27.1 Calculating Prices
- Section 27.2 Calculating Discounts

# Calculating Prices

## Key Terms

gross profit  
maintained  
markup

## Objectives

- Explain how a firm's profit is related to markup
- Use the basic formula for calculating a retail price
- Calculate dollar and percentage markup based on cost or retail

# Calculating Prices

## Objectives

- Calculate markdown in dollars
- Calculate maintained markup in dollar and percent

# Calculating Prices

## Graphic Organizer

Insert the basic formula for calculating a retail price in the middle circle. Use the other circles to record each formula you encounter in this chapter.



## Profit and Markup

### gross profit



The difference between sales revenue and the cost of goods sold.

Profit is the amount left over from revenue after the costs of the merchandise and expenses have been paid. The markup is the same as gross profit.

**Gross profit** ◀ is the difference between sales revenue and the cost of goods sold. Expenses must be deducted to get the net (actual) profit.

# Basic Markup Calculations

The most basic pricing formula is the one for calculating retail price. It states that retail price is a combination of cost and markup:

- $\text{Cost ( C )} + \text{Markup (MU)} = \text{Retail Price (RP)}$

# Percentage Markup

In most businesses, markup is generally expressed as a percentage. Most business choose to base the markup on retail price because:

- The markup seems smaller.
- Future markdowns and discounts are calculated on a retail basis.

# Percentage Markup

The steps to calculate the percentage markup are:

- Determine the dollar markup:  **$RP - C = MU(\$)$**
- To change the dollar markup to the percentage markup, divide it by the retail price.

$$\mathbf{MU(\$) \div RP = MU(\%) \text{ on retail}}$$

- Change the decimal to a percentage.

# Markup Equivalents Table

Markup on Retail	Markup on Cost	Markup on Retail	Markup on Cost
4.8%	5.0%	25.0%	33.3%
5.0	5.3	26.0	35.0
6.0	6.4	27.0	37.0
7.0	7.5	27.3	37.5
8.0	8.7	28.0	39.0
9.0	10.0	28.5	40.0
10.0	11.1	29.0	40.9
10.7	12.0	30.0	42.9
11.0	12.4	31.0	45.0
11.1	12.5	32.0	47.1
12.0	13.6	33.3	50.0
12.5	14.3	34.0	51.5
13.0	15.0	35.0	53.9
14.0	16.3	35.5	55.0
15.0	17.7	36.0	56.3
16.0	19.1	37.0	58.8
16.7	20.0	37.5	60.0
17.0	20.5	38.0	61.3
17.5	21.2	39.0	64.0
18.0	22.0	39.5	65.5
18.5	22.7	40.0	66.7
19.0	23.5	41.0	70.0
20.0	25.0	42.0	72.4
21.0	26.6	42.8	75.0
22.0	28.2	44.4	80.0
22.5	29.0	46.1	85.0
23.0	29.9	47.5	90.0
23.1	30.0	48.7	95.0
24.0	31.6	50.0	100.0

The markup equivalents table lists markup percentages based on retail and the equivalent percentages based on cost.

## Cost Method of Pricing

The cost method of pricing is used when marketers know only the cost of an item and its markup.

- Determine the dollar markup on cost. Multiply the cost by the percentage markup on cost in decimal form:

$$C \times MU(\%) = MU(\$)$$

## Cost Method of Pricing

- Add the dollar markup to the cost to get the retail price:

$$C + MU(\$) = RP$$

You can convert the markup on retail to the markup on cost and apply it to the cost of the item to arrive at the markup in dollars.

# Retail Method of Pricing

To use the retail method:

- Determine what percentage of the retail price is equal to cost. This is a matter of subtracting the known retail markup percent from 100 percent, which represents the retail price.

$$\mathbf{RP (\%) - MU(\%) = C(\%)}$$

## Retail Method of Pricing

- To determine the retail price, divide the cost by the decimal equivalent of the percentage calculated in Step 1.
- Calculate the dollar markup.

$$\mathbf{RP - C = MU(\$)}$$

## Retail Method of Pricing

- Check your work by multiplying the retail price you calculated by the percentage markup on retail given originally. The answer will match the dollar markup you calculated in Step 3.

$$\mathbf{RP \times MU(\%) = MU(\$)}$$

# Calculations for Lowering Prices

Let's look at the steps used in calculating markdowns, maintained markups, and the actual sale prices derived from these calculations.



# Markdowns

The steps for calculating the sale price (SP) are as follows:

- Multiply the retail price by the percentage markdown:

$$\mathbf{RP \times MD(\%) = MD(\$)}$$

- Subtract the markdown from the retail price.

$$\mathbf{RP - MD(\$) = SP}$$

# Markdowns

Another way to arrive at the same answer is to consider what percentage of the original price will equal the sale price.

## **maintained markup**



The difference between an item's final sale price and its cost.

# **Maintained Markup**

The difference between an item's final sale price and its cost is called the **maintained markup** ◀. Reductions in an item's price include:

- Employee discounts
- Damaged goods allowances
- Special sales events

# Maintained Markup

The maintained markup is calculated as follows:

- Calculate the new sale price.
- Subtract the cost from the sale price to determine the maintained markup in dollars (MM[\$]).

$$SP - C = MM(\$)$$

# Maintained Markup

- To determine the maintained markup percentage, divide the MM(\$ ) by the sale price.

$$\text{MM}(\$) \div \text{SP} = \text{MM}(\%)$$

# Calculating Discounts

## Key Terms

employee  
discounts

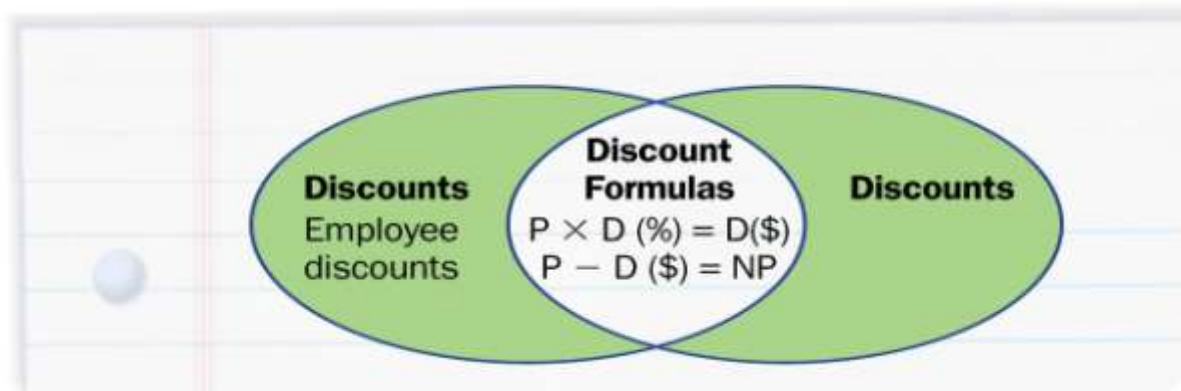
## Objectives

- Utilize a general procedure for figuring discounts
- Calculate discounts in dollars and percentages
- Calculate net amounts

# Calculating Discounts

## Graphic Organizer

In the center of this diagram, record the procedures for calculating discounts and the net amount payable. In the other circles, note examples of discounts.



# Discounts

There are two ways to calculate discounts and net amounts. The first way is to calculate the discount and then subtract the discount from the original price:

- Multiply the price (P) by the discount percentage (D[%]) to get the dollar amount of the discount (D[\$])

$$P \times D(\%) = D(\$)$$

# Discounts

- Subtract the discount from the price to get the net price (NP), which is the amount that the customer will actually pay.

$$P - D(\$) = NP$$

# Discounts

To calculate net amount due:

- Subtract the discount percent from 100 percent to get the net price's percentage equivalent (NPPE).

$$100\% - D(\%) = NPPE$$

- Then multiply the original price by that net price's equivalent to get the net price.

$$P \times NPPE = NP$$

# Employee Discounts

## employee discounts



Discounts offered by employers to their workers.

Discounts offered by employers to their workers are **employee discounts** 1. Employee discounts encourage workers to buy and use their company's products.

# Discounts from Vendors

Some common types of discount offered by manufacturers are:

- Cash or trade
- Quantity
- Seasonal
- Promotional

## **Discounts from Vendors**

A cash discount is offered to buyers to encourage them to pay their bills quickly, with dating terms such as 2/10, net 30.

Trade discounts are based on manufacturers' list prices.

# Discounts from Vendors

To figure 40% and 20% trade discounts for a wholesaler's invoice, you would do the following:

- Determine the first dollar discount

$$P \times D(\%) = D(\$)$$

- Determine the declining balance (DB)

$$P - D(\$) = DB$$

## Discounts from Vendors

- Determine the second discount off the declining balance

$$\mathbf{DB \times D(\%) = D(\$)}$$

- Determine the net price

$$\mathbf{DB - D(\$) = NP}$$

# Discounts from Vendors

Quantity discounts are offered to buyers for placing large orders. They encourage buyers to buy in bulk and purchase more merchandise. Remember that these discounts can be either:

- Cumulative
- Noncumulative

# Discounts from Vendors

Promotional discounts are given to businesses that agree to advertise or in some other way promote a manufacturer's products. It is calculated in the same way as a cumulative discount.

# Discounts from Vendors

To determine the percentage discount, follow these steps:

- Divide the dollar discount by the original price

$$D(\$) \div P = D(\%)$$

- Change the decimal to a percentage to find the percentage discount

## FOCUS on KEY POINTS

### Section 27.1

- Gross profit on an income statement is the same as gross margin or markup in pricing.
- To calculate a markdown, multiply the markdown percent by the retail price.
- Maintained markup is the difference between sale price and cost.

continued

## FOCUS on KEY POINTS

### Section 27.2

- The procedure for calculating discounts is to multiply the price by the discount percentage and then to subtract that amount from the original price to arrive at the net price.

continued

## FOCUS on KEY POINTS

### Section 27.2

- Cash discounts are offered to customers with dating terms such as 2/10, net 30. Trade discounts are often quoted in series, such as 40 percent and 20 percent.

continued

## FOCUS on KEY POINTS

### **Section 27.2**

- Quantity discounts may be quoted on a quantity price list that provides unit prices for specific quantities purchased. Promotional discounts are often granted in dollar amounts. Seasonal discounts have qualifying purchase date requirements.



This chapter has helped prepare you to meet the following DECA performance indicators:

- Explain factors affecting pricing decisions.
- Determine discounts and allowances that can be used to adjust base prices.
- Plan storage space.
- Provide legitimate responses to inquiries.
- Explain the nature of staff communication.