CHAPTER 12 | Monopolistic Competition: The Competitive Model in a More Realistic Setting

Chapter Summary and Learning Objectives

12.1 Demand and Marginal Revenue for a Firm in a Monopolistically Competitive Market (pages 402–404)

Explain why a monopolistically competitive firm has downward-sloping demand and marginal revenue curves. A firm competing in a monopolistically competitive market sells a differentiated product. Therefore, unlike a firm in a perfectly competitive market, it faces a downward-sloping demand curve. When a monopolistically competitive firm cuts the price of its product, it sells more units but must accept a lower price on the units it could have sold at the higher price. As a result, its marginal revenue curve is downward sloping. Every firm that has the ability to affect the price of the good or service it sells will have a marginal revenue curve that is below its demand curve.

12.2 How a Monopolistically Competitive Firm Maximizes Profit in the Short Run (pages 404–407)

Explain how a monopolistically competitive firm maximizes profit in the short run. A monopolistically competitive firm maximizes profits at the level of output where marginal revenue equals marginal cost. Price equals marginal revenue for a perfectly competitive firm, but price is greater than marginal revenue for a monopolistically competitive firm. Therefore, unlike a perfectly competitive firm, which produces where \( P = MC \), a monopolistically competitive firm produces where \( P > MC \).

12.3 What Happens to Profits in the Long Run? (pages 407–412)

Analyze the situation of a monopolistically competitive firm in the long run. If a monopolistically competitive firm is earning economic profits in the short run, entry of new firms will eliminate those profits in the long run. If a monopolistically competitive firm is suffering economic losses in the short run, exit of existing firms will eliminate those losses in the long run. Monopolistically competitive firms continually struggle to find new ways of differentiating their products as they try to stay one step ahead of other firms that are attempting to copy their success.

12.4 Comparing Perfect Competition and Monopolistic Competition (pages 412–414)

Compare the efficiency of monopolistic competition and perfect competition. Perfectly competitive firms produce where price equals marginal cost and at minimum average total cost. Perfectly competitive firms achieve both allocative and productive efficiency. Monopolistically competitive firms produce where price is greater than marginal cost and above minimum average total cost. Monopolistically competitive firms do not achieve either allocative or productive efficiency. Consumers face a trade-off when buying the product of a monopolistically competitive firm: They are paying a price that is greater than marginal cost, and the product is not being produced at minimum average cost, but they benefit from being able to purchase a product that is differentiated and more closely suited to their tastes.

12.5 How Marketing Differentiates Products (pages 414–416)

Define marketing and explain how firms use it to differentiate their products. Marketing refers to all the activities necessary for a firm to sell a product to a consumer. Firms use two marketing tools to differentiate their products: brand management and advertising. Brand management refers to the actions...
of a firm intended to maintain the differentiation of a product over time. When a firm has established a successful brand name, it has a strong incentive to defend it. A firm can apply for a trademark, which grants legal protection against other firms using its product’s name.

12.6 What Makes a Firm Successful? (pages 416–418)
Identify the key factors that determine a firm’s success. A firm’s owners and managers control some of the factors that determine the profitability of the firm. Other factors affect all the firms in the market or are the result of chance, so they are not under the control of the firm’s owners. The interactions between factors the firm controls and factors it does not control determine its profitability.

Chapter Review

Chapter Opener: Starbucks: The Limits to Growth through Product Differentiation (page 401)
Since the first Starbucks coffee shop opened in 1971, the firm has grown into a worldwide company. But the growth has been in the number of shops, rather than the size of the shops themselves. Neighborhoods often have three or more coffeehouses, so Starbucks faces competition from other firms. The coffeehouse market is monopolistically competitive because there are many firms selling differentiated products, and there are no barriers to new firms entering the industry. In 2008 and 2009, Starbucks closed approximately 900 stores as competition and a weak economy reduced sales.

12.1 Demand and Marginal Revenue for a Firm in a Monopolistically Competitive Market (pages 402–404)
Learning Objective: Explain why a monopolistically competitive firm has downward-sloping demand and marginal revenue curves.

Monopolistic competition is a market structure in which barriers to entry are low and many firms compete by selling similar, but not identical, products. Because their products are differentiated, monopolistically competitive firms can raise their prices without losing all their customers. A price increase will, however, cause some customers to switch to another similar product, so a monopolistically competitive firm faces downward-sloping demand and marginal revenue curves. Monopolistically competitive firms have only limited control over their prices because they face competition from many firms selling similar products.

Study Hint
Spend some time studying Figure 12-3 on page 404 in the textbook to aid in your understanding of the downward-sloping demand and marginal revenue curves that a monopolistically competitive firm faces. For a monopolistically competitive firm, there is no guarantee lower prices will increase quantity demanded enough to raise revenue. When a decrease in price raises revenue, marginal revenue is positive. This is where the marginal revenue curve lies above the x-axis. When a decrease in price reduces revenue, marginal revenue is negative. This is where the marginal revenue curve falls below the x-axis.
Extra Solved Problem 12-1
Supports Learning Objective 12.1: Explain why a monopolistically competitive firm has downward-sloping demand and marginal revenue curves.

Suppose that the following table represents the demand for pizza at Luigi’s Italian Restaurant. Use this table to answer the questions below.

<table>
<thead>
<tr>
<th>Price</th>
<th>Quantity</th>
<th>Total Revenue</th>
<th>Marginal Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>$26</td>
<td>30</td>
<td>$780</td>
<td>-</td>
</tr>
<tr>
<td>24</td>
<td>60</td>
<td>1,440</td>
<td>$22</td>
</tr>
<tr>
<td>22</td>
<td>90</td>
<td>1,980</td>
<td>18</td>
</tr>
<tr>
<td>20</td>
<td>120</td>
<td>2,400</td>
<td>14</td>
</tr>
<tr>
<td>18</td>
<td>150</td>
<td>2,700</td>
<td>10</td>
</tr>
<tr>
<td>16</td>
<td>180</td>
<td>2,880</td>
<td>6</td>
</tr>
<tr>
<td>14</td>
<td>210</td>
<td>2,940</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>240</td>
<td>2,880</td>
<td>-2</td>
</tr>
<tr>
<td>10</td>
<td>270</td>
<td>2,700</td>
<td>-6</td>
</tr>
</tbody>
</table>

a. What is Luigi’s marginal revenue?

b. Is Luigi’s a perfectly competitive firm or a monopolistically competitive firm? Explain.

SOLVING THE PROBLEM

Step 1: Review the chapter material.

This problem is about demand and marginal revenue, so you may want to review the section “Demand and Marginal Revenue for a Firm in a Monopolistically Competitive Market,” which begins on page 402 in the textbook.

Step 2: Answer question (a) by calculating Luigi’s marginal revenue.

To calculate marginal revenue, first find total revenue by multiplying the price by the quantity demanded at that price. Then calculate the marginal revenue by dividing the change in total revenue by the change in quantity. For example, at a price of $22, total revenue is: $22 \times 90 = $1,980. If Luigi cuts his price from $22 to $20, then his marginal revenue equals: ($2,400 – $1,980)/(120 – 90) = $14.
Step 3: Answer question (b) by determining whether this is a monopolistically or perfectly competitive firm.

To determine whether Luigi’s is a perfect competitor or a monopolistic competitor, consider its marginal revenue. A perfectly competitive firm faces a horizontal demand curve that is also its marginal revenue curve, while a monopolistically competitive firm faces downward-sloping demand and marginal revenue curves. The marginal revenue in the table above decreases as the quantity increases, so Luigi’s is a monopolistically competitive firm.

How a Monopolistically Competitive Firm Maximizes Profit in the Short Run (pages 405–407)

As with firms in other markets, a monopolistically competitive firm will maximize profits by producing the level of output where marginal revenue (MR) is equal to marginal cost (MC). Because the MR curve lies below the firm’s demand curve, the firm will maximize profits where price (P) exceeds MC:

\[ P > MC \]

Like firms in perfectly competitive industries, profit is calculated as total revenue minus total cost. When measuring profit on a graph,

\[ \text{Profit} = (P - ATC) \times Q \]

As with competitive markets, if the price is greater than average total cost, profit is positive. When price is less than average total cost, profit is negative.

Study Hint

Review the table and graphs in Figure 12-4 on page 405 in the textbook for an example of a monopolistically competitive firm that makes a profit in the short run. Notice that the profit-maximizing quantity is where \( MR = MC \), but the price the firm charges is determined by the demand curve. This implies that, unlike a perfectly competitive firm, a monopolistically competitive firm produces where price is greater than marginal cost.

What Happens to Profits in the Long Run? (pages 407–412)

When firms in a market are earning economic profits, entrepreneurs have an incentive to enter the market and establish new firms. As a result of this entry of new firms, the demand curve of an established firm shifts to the left and becomes more elastic. Entry will continue until the typical firm’s demand curve is tangent to its ATC curve. In the long run, the typical firm’s price will equal its average total cost and the firm will break even.

Economic losses will lead some firms to exit the market. As a result, the demand curve for a firm remaining in the market shifts to the right and becomes less elastic. The exit of firms continues until the
typical firm can charge a price equal to its average total cost. In the long run, firms that remain in the industry will experience zero economic profit.

Study Hint
See Figure 12-5 on page 408 in the textbook for an illustration of how the entry of competing firms eliminates positive profits in the long run. In perfectly competitive markets, positive profits encourage entry and market supply shifts to the right as a result. In monopolistically competitive markets, positive profits still encourage firms to enter the market, but entry affects each firm’s demand curve by shifting demand to the left and making demand more elastic (flatter).

12.4 Comparing Perfect Competition and Monopolistic Competition (pages 412–414)
Learning Objective: Compare the efficiency of monopolistic competition and perfect competition.

There are two important differences between the long-run equilibrium in a perfectly competitive industry and in a monopolistically competitive industry. Unlike perfectly competitive firms, monopolistically competitive firms charge a price greater than marginal cost, and they do not produce at minimum average total cost. Because price is greater than marginal cost, allocative efficiency is not achieved; and because price is greater than minimum average total cost, productive efficiency is not achieved. Monopolistically competitive firms also have excess capacity because they could produce at a lower average cost by increasing output. Despite these apparent inefficiencies, consumers benefit from purchasing products that are differentiated.

Extra Solved Problem 12-4
Supports Learning Objective 12.4: Compare the efficiency of monopolistic competition and perfect competition.

Luigi’s Italian Restaurant has the demand and revenue schedules below from Extra Solved Problem 12-1. Assume that the marginal costs for Luigi’s are as given in the last column of the table.

<table>
<thead>
<tr>
<th>Price</th>
<th>Quantity</th>
<th>Total Revenue</th>
<th>Marginal Revenue</th>
<th>Marginal Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>$26</td>
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<tr>
<td>22</td>
<td>90</td>
<td>1,980</td>
<td>18</td>
<td>4</td>
</tr>
<tr>
<td>20</td>
<td>120</td>
<td>2,400</td>
<td>14</td>
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<td>23</td>
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<tr>
<td>12</td>
<td>240</td>
<td>2,880</td>
<td>-2</td>
<td>31</td>
</tr>
<tr>
<td>10</td>
<td>270</td>
<td>2,700</td>
<td>-6</td>
<td>40</td>
</tr>
</tbody>
</table>
a. Compare Luigi’s profit-maximizing condition with that of the perfectly competitive firm’s profit-maximizing condition. Explain the inefficiency caused by Luigi’s being a monopolistically competitive firm.

b. What do customers gain by participating in industries that are monopolistically competitive?

SOLVING THE PROBLEM

Step 1: Review the chapter material.
This problem is about perfect competition versus monopolistic competition, so you may want to review the section “Comparing Perfect Competition and Monopolistic Competition,” which begins on page 412 in the textbook.

Step 2: Determine the profit-maximizing quantity for Luigi’s and the profit-maximizing quantity if Luigi’s was a perfectly competitive firm.
Luigi’s will maximize profit where marginal revenue equals marginal cost. Marginal revenue and marginal cost equal $10 per pizza when 150 pizzas are produced and sold. Note that at the quantity of 150 pizzas, a price of $18 will be charged, which is greater than the marginal revenue and marginal cost of $10. A perfectly competitive firm will produce where marginal cost equals price. Price and marginal cost both equal $16 per pizza when 180 pizzas will be produced.

Step 3: Compare the profit-maximization condition for Luigi’s and the perfectly competitive firm, while being sure to note the inefficiency that arises due to monopolistic competition.
As a monopolistic competitor, Luigi’s charges a price of $18 per pizza, which is higher than the perfectly competitive price of $16. Luigi’s also produces only 150 pizzas, while a perfectly competitive firm that was producing where price equals marginal cost would produce 180 pizzas. We can conclude that Luigi’s, as a monopolistically competitive firm, has excess capacity and charges a price greater than its marginal cost.

Step 4: Discuss the gains to consumers that buy from monopolistically competitive firms.
Although consumers pay a higher price and cannot purchase as many units of the good when it is produced in a monopolistically competitive industry, they get to choose from a variety of products when making their consumption choices. The willingness of consumers to pay higher prices for differentiated goods indicates that consumers value these goods enough to be willing to pay the higher prices.

12.5 How Marketing Differentiates Products (pages 414–416)

Learning Objective: Define marketing and explain how firms use it to differentiate their products.

Firms can differentiate their products through marketing. Marketing refers to all the activities necessary for a firm to sell a product to a consumer. Firms use two marketing tools to differentiate their products:

1. Brand management refers to the actions of a firm intended to maintain the differentiation of a product over time. Economic profits are earned when a firm introduces a new product, but this leads to the entry of firms producing similar products and the profits are eliminated. Firms use brand management to delay the time when they will no longer be able to earn profits.
2. Advertising shifts the demand curve for a product to the right and makes the demand curve more inelastic. Successful advertising allows the firm to sell more at every price. Advertising also increases costs. If the increase in revenue from advertising exceeds the costs, profits will rise.

Once a firm, such as Coca-Cola or Apple, has established a brand name, it has an incentive to defend it. Firms can apply for a trademark. A trademark grants legal protection against other firms using a product’s name. If firms do not prevent the unauthorized use of their trademarks, they may no longer be entitled to legal protection. Firms will spend substantial amounts to ensure that they do not lose legal protection for their trademarks.

**Extra Solved Problem 12-5**

*We Came. We Marketed. We Sold.*

Supports Learning Objective 12.5: Define marketing and explain how firms use it to differentiate their products.

The 3Com Corporation was incorporated in 1979 and specializes in providing computer network devices such as routers and network switches. Among 3Com’s clients are businesses that want to improve the communication and security capabilities of their computer systems. 3Com is not a household name in the manner of McDonald’s or Microsoft, but marketing is an important part of the company’s success. It faces stiff competition from other computer service providers, such as Cisco Systems, and uses advertising and trademarks to influence its customers. 3Com’s advertising efforts are aimed primarily at computer network managers; for example, an advertising agency developed a two-page ad for 3Com titled, “We Came. We Saw. We Routed.” Ads such as these are placed in publications most likely to be seen by the target audience. It would be less effective for 3Com to place ads in People or Time magazines, as few of their readers are computer network managers, than it would be to advertise in business publications. The importance of establishing and maintaining 3Com’s trademarks is indicated by the guidelines the firm’s legal experts issue to employees. The following is a sample of these guidelines for over 40 company and product trademarks:

**Always Use a Trademark as an Adjective, Followed by the Appropriate Description(s)**

If not, the trademark could become generic…make sure that 3Com and the ® symbol (3Com®) precedes a trademark mention of the product or service.

**Correct:** The 3Com® NBX® business telephone has powerful call-processing features.

**Incorrect:** NBX® has powerful call-processing features.


[http://www.langstaffcommunications.com/Portfolio/Advertising/advertising.html](http://www.langstaffcommunications.com/Portfolio/Advertising/advertising.html)

a. Define marketing and explain the importance of marketing to firms.

b. Explain how 3Com Corporation uses marketing to differentiate its products.

**SOLVING THE PROBLEM:**

**Step 1:** Review the chapter material.

This problem is about how firms differentiate products, so you may want to review the section “How Marketing Differentiates Products,” which begins on page 414 in the textbook.
Step 2: Define marketing and explain the importance of marketing to firms.
Marketing refers to all the activities necessary for a firm to sell a product to a consumer. To earn profits, monopolistically competitive firms must differentiate their products. These firms use two marketing tools to do this: brand management and advertising.

Step 3: Explain how 3Com Corporation uses marketing to differentiate its products.
3Com Corporation uses brand management, including extensive use of trademarks and advertising, to differentiate its products. 3Com Corporation focuses its marketing strategies on its customers; for example, computer network managers.

Extra Solved Problem 12-6

The Marketing Power of Oprah (or at least her best friend, Gayle)
Supports Learning Objective 12.6: Identify the key factors that determine a firm’s success

In August 2009, Oprah Winfrey and her best friend, Gayle King, attended the funeral service of Eunice Shriver in Hyannis, Massachusetts. While in town, Oprah and Gayle sampled a chicken pot pie that had been delivered to Oprah at her hotel. The following week, Gayle spent several minutes on her XM satellite radio show singing the praises of the pie that had been produced by the Centerville Pie Company in Centerville, Massachusetts. Within days of Gayle’s endorsement, sales of pies from the Centerville Pie Company rose from 30 per day to over 100 per day. While additional orders came in from all over the country, the Centerville Pie Company had no system for sending pies through the mail, and the company was even unable to accept credit card payments. For a company that opened its doors only five months earlier, the growth in demand, while welcome, presented additional challenges. Despite 12-hour workdays for the company’s owners and employees, the company stated on its Web site in September 2009 that there was a 10-day wait for their pot pies, and pies were still only available for pickup directly from the store. As the owner of the Centerville Pie Company, Laurie Bowen, stated, “Bigger isn’t always better . . . I just don’t want the quality to suffer because of the quantity.”

www.centervillepies.com

a. What factors have contributed to the success of the Centerville Pie Company?

b. Which of these factors was under the company’s control and which were not?

SOLVING THE PROBLEM

Step 1: Review the chapter material.
This problem is about the factors that make a firm successful, so you may want to review the section “What Makes a Firm Successful” that begins on page 416 in the textbook.
Step 2: Answer part (a) by determining what affected the profitability of the Centerville Pie Company.
According to its owner, The Centerville Pie Company focuses on making quality pies. The quality of its pies differentiates its product from competing products. Although this focus on quality may increase the average cost of production relative to competing firms, the higher quality helps to keep customer demand high. The focus on quality coupled with the public endorsement from Oprah’s best friend increased the demand for pies at the Centerville Pie Company. Whether the company is ultimately “successful” depends on its ability to respond to the sudden increase in demand without losing the quality that differentiates its product from the products of its competitors.

Step 3: Answer part (b) by considering what factors the Centerville Pie Company can control and what factors are outside of its control.
The Centerville Pie company can control its own costs and the quality of the pies it produces. However, it cannot control the words of Gayle King on her radio show. Gayle’s endorsement of Centerville Pie Company pies created value relative to competitors that the company itself did not directly control.

Key Terms

**Brand management** The actions of a firm intended to maintain the differentiation of a product over time.

**Marketing** All the activities necessary for a firm to sell a product to a consumer.

**Monopolistic competition** A market structure in which barriers to entry are low and many firms compete by selling similar, but not identical, products.

Self-Test

*(Answers are provided at the end of the Self-Test.)*

**Multiple-Choice Questions**

1. Which of the following are characteristics of monopolistic competition?
   a. high barriers to entry
   b. few firms compete
   c. firms sell similar, but not identical, products
   d. all of the above

2. Why does a monopolistically competitive firm have a downward-sloping demand curve?
   a. because its customers only buy goods that are being discounted from their original prices
   b. because changing the price will affect the quantity sold
   c. because the firm is a price taker, like a wheat farmer
   d. because the firm’s level of output produced depends on its cost structure
3. Refer to the graph below. According to this graph, what will happen if Starbucks increases the price of caffè lattes?

![Graph of Demand]

a. It will not lose any customers.
b. It will lose all of its customers.
c. It will lose some, but not all, of its customers.
d. It will gain customers.

4. For what type of market structure is demand curve the same as marginal revenue?
   a. monopolistic competition
   b. perfect competition
   c. both monopolistic and perfect competition
   d. neither monopolistic nor perfect competition

5. If marginal revenue slopes downward, which of the following is true?
   a. The firm must decrease its price to sell a larger quantity.
   b. The firm must increase its price to sell a larger quantity.
   c. The firm must decrease its price if it wants to continue selling the same quantity.
   d. The firm is unable to adjust price when the quantity sold changes.

6. Which of the following measures is conceptually the same as price?
   a. marginal revenue
   b. total revenue
   c. average revenue
   d. none of the above

7. Which of the following terms best describes the additional revenue associated with selling an additional unit of output?
   a. price
   b. average revenue
   c. marginal revenue
   d. total revenue
8. When a monopolistically competitive firm decreases price, good and bad things happen. Which of the following is considered a good thing for the firm?
   a. the price effect
   b. the output effect
   c. the revenue effect
   d. all of the above

9. When a monopolistically competitive firm decreases price, good and bad things happen. Which of the following is considered a bad thing for the firm?
   a. the price effect
   b. the output effect
   c. the revenue effect
   d. all of the above

10. Refer to the table below. What is the average revenue associated with the sixth unit of output produced and sold?

<table>
<thead>
<tr>
<th>Caffé Lattes Sold per Week (Q)</th>
<th>Price (P)</th>
<th>Total Revenue (TR= Px Q)</th>
<th>Average Revenue</th>
<th>Marginal Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>$4.00</td>
<td>$16.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>3.50</td>
<td>17.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>3.00</td>
<td>18.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   a. $3.00
   b. $2.00
   c. $0.50
   d. None of the above; there is insufficient information to answer the question.

11. Refer to the table below. What is the marginal revenue associated with the sixth unit of output produced and sold?

<table>
<thead>
<tr>
<th>Caffé Lattes Sold per Week (Q)</th>
<th>Price (P)</th>
<th>Total Revenue (TR= Px Q)</th>
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<tr>
<td>4</td>
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</tr>
<tr>
<td>5</td>
<td>3.50</td>
<td>17.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>3.00</td>
<td>18.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   a. $3.00
   b. $2.00
   c. $0.50
   d. none of the above
12. Refer to the graph below. A decrease in price from $3.50 to $3.00 per cup results in a gain and a loss of revenue. Which area represents the loss of revenue?

![Graph showing price and quantity change]

a. area A  
b. area B  
c. Areas A and B both represent revenue losses.  
d. an area not shown

13. Refer to the graph below. A decrease in price from $3.50 to $3.00 per cup results in a gain and a loss of revenue. Which area represents the revenue gain?

![Graph showing price and quantity change]

a. area A  
b. area B  
c. Both shaded areas represent revenue gains.  
d. an area not shown

14. If a firm has the ability to affect the price of the good or service it sells, what is the relationship between its marginal revenue curve and its demand curve?

a. The firm will have a marginal revenue curve that is above its demand curve.  
b. The firm will have a marginal revenue curve that is below its demand curve.  
c. The firm will have a marginal revenue curve that is the same as its demand curve.  
d. The firm will have an upward-sloping marginal revenue curve and a downward-sloping demand curve.
15. Refer to the graph below. The loss in revenue from decreasing price is greater than the gain in revenue from increasing price whenever

![Graph showing Price (dollars per cup) vs. Quantity (café lattes per week)]

a. marginal revenue is positive.
b. marginal revenue is negative.
c. marginal revenue equals demand.
d. demand has a negative slope.

16. Which of the following types of firms use the marginal revenue equals marginal cost approach to maximize profits?
   a. perfectly competitive firms
   b. monopolistically competitive firms
   c. both perfectly competitive and monopolistically competitive firms
   d. neither perfectly competitive nor monopolistically competitive firms

17. What is marginal cost?
   a. the cost per unit of output produced
   b. the increase in total cost resulting from producing one more unit of output
   c. the impact of additional output on total fixed cost
   d. the cost of production that is independent of the level of output produced
18. Refer to the graph below. In order to maximize profit, what price should the firm charge?

![Graph showing price and quantity with MC, ATC, and MR curves]

a. $18  
b. $15  
c. $8  
d. $4

19. Refer to the graph below. Assume that the firm is producing 600 units. What should the firm do in order to maximize profit?

![Graph showing price and quantity with MC, ATC, and MR curves]

a. The firm should increase output, because at 600 units, price is above marginal cost.  
b. The firm should maintain output at 600 units, because at this output level, marginal revenue is greater than marginal cost, marginal cost is minimized, and price is the highest.  
c. The firm should increase the level of output, because at 600 units, marginal revenue is greater than marginal cost.  
d. The firm should increase the level of output until it reaches the minimum average total cost.
20. Refer to the graphs below. Assuming both firms are producing 5 cups per week, which firm is maximizing profits?

![Graph showing two firms producing 5 cups per week]

a. the firm on the left  
b. the firm on the right  
c. both firms  
d. neither firm

21. Refer to the graph below. Assume that the firm represented by the cost and demand curves below is maximizing profit. Which area represents the formula: \((P - ATC) \times Q\)?

![Graph showing the area calculation]

a. area A  
b. area B  
c. area A + area B  
d. area B – area A
22. Refer to the graph below. Assume that the firm represented by the cost and demand curves below is maximizing profit. The value of profits is

![Graph showing cost and demand curves with points A and B]

- a. $17.50.
- b. $12.50.
- c. $5.00.
- d. None of the above; that information cannot be obtained from this graph.

23. Refer to the table below. When is average total cost minimized?

<table>
<thead>
<tr>
<th>Cups Sold per Week (Q)</th>
<th>Price (P)</th>
<th>Total Revenue (TR)</th>
<th>Marginal Revenue (MR)</th>
<th>Total Cost (TC)</th>
<th>Marginal Cost (MC)</th>
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- a. at 1 unit of output
- b. at 5 units of output
- c. at 6 units of output
- d. at 10 units of output
24. Refer to the table below. What level of output should be produced in order to maximize profit?

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<tr>
<th>Cups Sold per Week (Q)</th>
<th>Price (P)</th>
<th>Total Revenue (TR)</th>
<th>Marginal Revenue (MR)</th>
<th>Total Cost (TC)</th>
<th>Marginal Cost (MC)</th>
<th>Average Total Cost (ATC)</th>
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a. 1 unit of output  
b. 5 units of output  
c. 6 units of output  
d. 10 units of output

25. Refer to the graphs below. Which firm is a monopolistic competitor operating in the long run?

a. the firm on the left  
b. the firm on the right  
c. both firms  
d. neither firm

26. How does the entry of new coffeehouses affect the profits of existing coffeehouses?

a. Entry will increase the profits of existing coffeehouses by shifting the market demand curve for coffee to the right.  
b. Entry will increase the profits of existing coffeehouses by shifting each of their individual demand curves to the right.  
c. Entry will decrease the profits of existing coffeehouses by shifting each of their individual demand curves to the left and making the demand curves more elastic.  
d. Entry will not affect the profits of existing coffeehouses.
27. Suppose you invest $200,000 in a business. The return you could earn each year on a similar investment using that money is 10 percent, or $20,000. In an economic sense, the $20,000 is
a. an economic cost.
b. economic profit.
c. an accounting cost.
d. both economic profit and accounting profit.

28. Refer to the graphs below. Which graph depicts a situation in which some firms will exit the industry?

a. the graph on the left
b. the graph in the middle
c. the graph on the right
d. none of the above

29. Refer to the graphs below. Which graph best depicts the relationship between price and average total cost in the long run for a monopolistically competitive firm?

a. the graph on the left
b. the graph in the middle
c. the graph on the right
d. none of the above
30. Refer to the graphs below. Which graph best depicts the profit or loss situation for a monopolistically competitive firm in the long run?

![Graphs showing profit or loss situations for monopolistically competitive firms in the long run.]

a. the graph on the left  
b. the graph in the middle  
c. the graph on the right  
d. none of the above

31. Refer to the graphs below. Which graph best depicts a firm in a monopolistically competitive industry that has an incentive to exit the industry in the long run?

![Graphs showing incentives for firms to exit monopolistically competitive industries in the long run.]

a. the graph on the left  
b. the graph in the middle  
c. the graph on the right  
d. none of the above
32. Refer to the graphs below, which represent the situations facing typical firms in three different monopolistically competitive industries. Which graph best represents the situation where new firms are likely to enter the industry?

a. the graph on the left  
b. the graph in the middle  
c. the graph on the right  
d. none of the above

33. Refer to the graph below. Assuming the computer industry is monopolistically competitive, which set of demand and marginal revenue curves for a typical firm is more consistent with long-run equilibrium in the computer industry?

a. \( D_1 \) and \( MR_1 \)  
b. \( D_2 \) and \( MR_2 \)  
c. \( D_1 \) and \( MR_2 \)  
d. \( D_2 \) and \( MR_1 \)

34. Is zero economic profit inevitable in the long run for a monopolistically competitive firm?

a. Yes; there is nothing the firm can do to avoid zero economic profit in the long run.  
b. No; a firm could try to continue making a profit in the long run by producing a product identical to those of competing firms.  
c. No; a firm could try to continue making a profit in the long run by reducing production costs and improving its products.  
d. No; a firm could try to continue making a profit in the long run by simply offering goods that are cheaper to produce, even if they have less value than those offered by competing firms.
35. Refer to the graphs below. Which points on the graph coincide with productive efficiency?

![Graphs showing price and cost relations with points A, B, and C on the right graph.]

a. point A on both graphs 
b. point B on the graph on the right 
c. point C on the graph on the right 
d. points A, B, and C on the graph on the right

36. Refer to the graph below. Which level of output indicates excess capacity?

![Graph showing price and cost relations with points A, B, and C on the graph.]

a. $Q_1$ 
b. $Q_2$ 
c. both $Q_1$ and $Q_2$ 
d. neither $Q_1$ nor $Q_2$

37. Which type of efficiency is achieved by a monopolistically competitive firm in the long run?

a. allocative efficiency 
b. productive efficiency 
c. both allocative and productive efficiency 
d. neither allocative nor productive efficiency

38. What trade-offs do consumers face when buying a product from a monopolistically competitive firm?

a. Consumers pay a lower price but also have fewer choices. 
b. Consumers pay a price greater than marginal cost but also have choices more suited to their tastes. 
c. Consumers pay a higher price but are happy knowing that the industry is highly efficient. 
d. Consumers pay a price as low as the competitive price but have difficulty finding and buying the product.
39. What is the term given to all the activities necessary for a firm to sell a product to a consumer?
   a. brand management
   b. advertising
   c. marketing
   d. product differentiation

40. What is the term given to the actions of a firm intended to maintain the differentiation of a product over time?
   a. brand management
   b. advertising
   c. marketing
   d. campaigning

41. Which of the following statements is correct?
   a. Brand names can be easily protected, especially as time goes by.
   b. Legally enforcing trademarks can be difficult.
   c. Establishing franchises is the best strategy to protect a firm’s brand name.
   d. all of the above

42. Refer to the figure below. Which of the following terms is missing in the box on the right?

   a. brand management
   b. marketing
   c. profitability
   d. demand
Short Answer Questions

1. Describe how Starbucks has used brand management to differentiate its products.


2. What is the most important characteristic that perfectly competitive and monopolistically competitive firms have in common?


3. Why is it not possible for a monopolistically competitive firm to produce at minimum average total cost in long-run equilibrium?


4. How do consumers benefit from monopolistic competition?


5. The job of some of Coca-Cola’s employees is to visit restaurants and bars and order mixed drinks. What motivation would Coca-Cola have to encourage their employees to “drink on the job?”


True/False Questions

T F 1. The marginal revenue curve lies below the demand curve for any firm that has the ability to affect the price of the product it sells.
T F 2. A firm’s profit equals the total quantity sold times the difference between the price of the product and total cost.
T F 3. Monopolistically competitive firms charge a price greater than marginal cost in both the short run and the long run.
T F 4. The market for coffeehouses, such as Starbucks, has many firms and the barriers to entering the market are low.
T F 5. Unlike perfectly competitive firms, monopolistically competitive firms earn long-run profits.
T F 6. When some firms exit a monopolistically competitive market, the demand curves of firms that remain become less elastic.
T F 7. Among the factors that make a firm successful but are not under its control is the ability to differentiate its product.
T F 8. The word “thermos” was originally a brand name that become so widely used that it is no longer subject to legal protection.
T F 9. Brand management refers to all activities necessary for a firm to sell a product to a consumer.
T F 10. Because consumers pay a price above marginal cost in a monopolistically competitive market, they are better off than they would be in a competitive market.
T F 11. Unlike perfectly competitive firms, monopolistically competitive firms have excess capacity.
T F 12. Because a monopolistically competitive firm has a downward-sloping demand curve, marginal revenue will always be lower than price.
T F 13. Monopolistically competitive firms will earn higher profit in the long run than perfectly competitive firms.
T F 14. Firms use brand management to postpone the time when they will no longer be able to earn economic profits.
T F 15. One motive for advertising is to make the demand for a product more elastic so that when price is lowered, there will be a greater increase in quantity demanded.

Answers to the Self-Test

Multiple-Choice Questions

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<th>Question</th>
<th>Answer</th>
<th>Comment</th>
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<tr>
<td>1</td>
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<td>Monopolistic competition is a market structure in which barriers to entry are low, and many firms compete by selling similar, but not identical, products.</td>
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<tr>
<td>2</td>
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<td>Because changing the price affects the quantity sold, a monopolistically competitive firm will face a downward-sloping demand curve, rather than the horizontal demand curve faced by a competitive firm.</td>
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<td>If Starbucks increases the price of café lattes, quantity demanded falls from 3,000 to 2,400 but quantity demanded does not fall to zero.</td>
</tr>
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<td>4</td>
<td>b</td>
<td>A perfectly competitive firm faces a horizontal demand curve and does not have to cut its price in order to sell a larger quantity. A monopolistically competitive firm, however, must cut its price to sell more, so its marginal revenue curve will slope downward and will be below its demand curve.</td>
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</table>
A monopolistically competitive firm must decrease its price to sell more. Therefore, its marginal revenue curve and demand curve are both downward sloping.

Price is revenue per unit, or average revenue. Average revenue is equal to total revenue divided by quantity. Because total revenue equals price multiplied by quantity, dividing by quantity leaves just price. Therefore, average revenue is always equal to price. This will be true for firms in any of the four market structures.

The firm’s marginal revenue is the change in total revenue when it sells one more unit of output.

When the firm decreases its price, one good thing and one bad thing happen. The good thing: It sells more units of the good; this is the *output effect*. The bad thing is that it receives less for each unit that it could have sold at the higher price; this is the *price effect*.

Average revenue equals price, which is $3.00 when six units are sold. Or, average revenue equals total revenue divided by output ($18.00/6 = $3.00).

Marginal revenue equals the change in total revenue divided by the change in output. As output increases from 5 to 6 units, the change in total revenue is $18.00 – $17.50 = $0.50, and the change in output is 6 – 5 = 1. Therefore, marginal revenue equals: $0.50/1 = $0.50.

Area A shows the loss of revenue from a price decrease. The firm is losing $0.50 for each of the caffè lattes that it used to sell for $3.50.

Area B shows the gain in revenue from the price cut = $3.00 × 1 = $3.00.

Every firm that has the ability to affect the price of the good or service it sells will have a marginal revenue curve that is below its demand curve. Only firms in perfectly competitive markets, which can sell as many units as they want at the market price, have marginal revenue curves that are the same as their demand curves.

Marginal revenue from the seventh through the tenth caffè latte is negative. This is because the additional revenue received from selling one more caffè latte is smaller than the revenue lost from receiving a lower price on the caffè lattes that could have been sold at the original price.

All firms use the same approach to maximize profits: Produce where marginal revenue is equal to marginal cost.

A firm’s marginal cost is the increase in total cost resulting from producing one more unit of output.

Marginal cost equals marginal revenue when 900 units of output are produced and sold. The price charged by the firm is determined by the demand curve, and consumers are willing to pay $15 for 900 units.

At 600 units of output, marginal revenue is $12 and marginal cost is $4. As long as $MR > MC$, the firm should continue to expand production.

Profit is maximized at the quantity where $MR = MC$. In both cases, the output level is set where marginal revenue equals marginal cost.

Profit = $(P – ATC) \times Q$, so area A represents profit.

$Profit = (P – ATC) \times Q = ($3.50/cup – $2.50/cup) \times 5 \text{ cups} = $5.00.$

When $Q = 6$, $ATC = $14.50/6 = $2.42.$

Profit is maximized where $MR = MC$. This occurs where $MR = MC = $1.50 and an output level of 5 cups.
25 a In the long run, when the demand curve is tangent to the average total cost curve, price is equal to average total cost, the firm is breaking even, and it no longer earns an economic profit.

26 c As new coffeehouses open, the firm’s demand curve will shift to the left. The demand curve will shift because the existing firms will sell fewer cups of coffee at each price now that there are additional coffeehouses in the area selling similar drinks. The demand curve will also become more elastic because consumers in the area now have additional coffeehouses from which to buy coffee, so existing firms will lose more customers if they raise their prices.

27 a The annual opportunity cost of investing the funds in your own business is 10 percent of $200,000 or $20,000. This $20,000 is part of your profit in the accounting sense, and you would have to pay taxes on it. But in an economic sense, the $20,000 is a cost.

28 b Because price is less than average total cost in the graph in the middle, the firm is suffering losses. Firm losses will lead to the exit of some firms in the industry. In the graph on the left, the firm is making zero profit; and, in the graph on the right, the firm is making positive profit.

29 a In the long run, \( P = ATC \) and the firm earns zero economic profit.

30 b In the long run, a monopolistically competitive firm earns zero economic profit, or \( P = ATC \).

31 a The graph on the left shows a monopolistically competitive firm suffering losses, so there is an incentive for firms to exit.

32 c The graph on the right shows a monopolistically competitive firm earning profits, so there is an incentive for firms to enter.

33 b If the computer industry is monopolistically competitive, then in the long run the typical firm’s demand curve will be tangent to its average cost curve and economic profit will equal zero.

34 c Firms try to continue earning profits by reducing the cost of producing their products, by improving their products, or by convincing consumers that their products are different from what competitors offer. To stay one step ahead of its competitors, a firm must offer consumers goods or services that they perceive to have greater value than those offered by competing firms.

35 a At point A on both graphs, the firms produce where average total cost is at a minimum. When this happens, the firms are productively efficient.

36 a The monopolistically competitive firm has excess capacity equal to the difference between its profit-maximizing level of output and the productively efficient level of output.

37 d In a perfectly competitive market, both productive efficiency and allocative efficiency are achieved, but in a monopolistically competitive market, neither is achieved.

38 b Consumers face a trade-off when buying the product of a monopolistically competitive firm: They are paying a price that is greater than marginal cost and the product is not being produced at minimum average cost, but they benefit from being able to purchase a product that is differentiated and more closely suited to their tastes.

39 c Firms can differentiate their products through marketing. Marketing refers to all the activities necessary for a firm to sell a product to a consumer.

40 a The actions of a firm intended to maintain the differentiation of a product over time are called brand management.

41 b Legally enforcing trademarks can be difficult. Estimates are that each year U.S. companies lose hundreds of billions of dollars of sales worldwide as a result of
42. The factors under a firm’s control—the ability to differentiate its product and the ability to produce it at lower cost—combine with the factors beyond its control to determine the firm’s profitability.

Short Answer Responses

1. On page 401, the textbook explains that Starbucks offers consumers a coffeehouse where they can sit, relax, read, chat, and drink higher-quality coffee than is typically served in diners or donut shops. Company-owned coffeehouses (rather than franchise businesses) enable Starbucks to have greater control of the products sold and how they are marketed. Despite the success it has enjoyed, low entry barriers have enabled other firms to copy much of what Starbucks has done.

2. Low entry barriers are common to both market structures, so firms can easily enter and exit the industry. Ease of entry and exit ensures that firms earn zero economic profits in the long run.

3. The entry and exit of firms ensures that monopolistically competitive firms will earn zero economic profits in the long run. For this to be true, price must equal average total cost. This, in turn, requires a firm’s demand curve to be tangent to its average total cost curve. Because the firm’s demand curve is downward-sloping, this tangency must be to the left of the minimum point on the average total cost curve.

4. Although consumers pay a price that is greater than the marginal cost of production, they benefit from being able to purchase a product that is differentiated and more closely suited to their tastes.

5. Coca-Cola is very careful to protect its trademarked name. Some employees visit bars and restaurants to order “rum and Coke.” If they are served another cola, they will inform their legal department. The offending bar or restaurant will be contacted and warned to either serve Coca-Cola or to inform customers that they do not serve “rum and Coke.” Although such actions may seem petty, they serve the important purpose of protecting a valuable trademark. Firms that have not taken positive steps to protect their trademarks have lost legal protection of their brand names.

True/False Answers

1. T See the section “Marginal Revenue for a Firm with a Downward-Sloping Demand Curve” on page 402.

2. F A firm’s profit equals the total quantity sold times the difference between the price of the product and average total cost.

3. T The firm has downward-sloping demand and marginal revenue curves, and the marginal revenue curve lies below the demand curve. The firm will choose to produce where the marginal revenue intersects the marginal cost and then choose the price to charge by going up to the demand curve and charging the consumers’ willingness to pay at that quantity.

4. T See the Chapter Opener on page 401 in the textbook.

5. F Low barriers to entry mean firms will enter and exit until economic profit equals zero.

6. T When firms exit, the demand curves for remaining firms shift to the right and become less elastic.

7. F The ability to differentiate its product is under the firm’s control.

8. T See “Defending a Brand Name” beginning on page 416 in the textbook.
9. F This is the definition of marketing. See page 414 in the textbook.
10. F Production in monopolistically competitive markets is inefficient, but consumers may be better off because monopolistic competition offers a variety of differentiated products.
11. T Because the quantity a monopolistically competitive firm produces is less than the quantity at the minimum average total cost, the firm has excess capacity.
12. T See the section “Marginal Revenue for a Firm with a Downward-Sloping Demand Curve” on page 402 in the textbook.
13. F In the long run, both monopolistically competitive firms and perfectly competitive firms will earn zero economic profit.
14. T Product differentiation and brand management help firms maintain economic profit.
15. F One motive for advertising is to make the demand for a product less elastic so that if price is raised, quantity demanded will not fall as much as it would without advertising.