Chapter Overview

LESSON 4.1 The Demand Curve: This lesson explains the law of demand and introduces the concepts of demand schedule and demand curve.

LESSON 4.2 Elasticity of Demand: In addition to introducing the concept, this lesson explains the relevance of elasticity of demand. Factors that influence elasticity of demand are also discussed.

LESSON 4.3 Changes in Demand: This lesson identifies the determinants of demand and explains how a change in each will affect the demand curve. The distinction between money price and time price is addressed.

Consider

Ask students to consider the questions posed on this page as they study Chapter 4. After studying all three lessons, students should be able to answer the questions. The content related to each question can be found on the pages indicated below.

- Why are newspapers sold in vending machines that allow you to take more than one copy? See page 103—Diminishing Marginal Utility.
- How much do you eat when you can eat all you want? See page 103—Diminishing Marginal Utility.
- What economic principle is behind the saying, “Been there, done that”? See page 103—Diminishing Marginal Utility.
- Why do higher cigarette taxes cut smoking by teenagers more than by other age groups? See page 115—An Application: Teenage Smoking.

POINT YOUR BROWSER

Remind students that they can find additional resources for this chapter at econxtra.swlearning.com.

- Xtra! Study Tools
- Net Bookmarks
- Xtra! Quiz Prep
- econ@pps
- Ask the Xpert!
- CNN Videos
- Graphing Workshop

Teaching Resources for Chapter 4

- Activities and Projects Masters
- Spanish Resources
- Small Business School Video
- Econ Connection Interactive Tutorial CD
- ExamView® CD
- Workbook Instructor's Edition
- Chapter Test Instructor’s Edition
- NCEE Standards and Correlation
- Personal Finance Guide

- Social Studies Skill Review
- Instructor’s Resource CD
  - PowerPoint slides
  - Lesson Plans
  - Video Discussion Guide

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Demand

The Demand Curve 4.1
Elasticity of Demand 4.2
Changes in Demand 4.3

POINT YOUR BROWSER

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Objectives

- Explain the law of demand.
- Interpret a demand schedule and a demand curve.

Overview

The primary building blocks of a market economy are demand and supply. Consumers demand goods and services that maximize their utility, and producers supply goods and services that maximize their profit. As a consumer in the United States' market economy, you demand all kinds of goods and services. You buy less of a good when its price increases and more of it when the price decreases. This section draws on your experience as a consumer to help you understand demand, particularly the demand curve.

Key Terms

- demand
- law of demand
- marginal utility
- law of diminishing marginal utility
- demand curve
- quantity demanded
- individual demand
- market demand

In the News

**Demand Rising Slowly For Digital HDTV**

Officials at the most recent National Association of Broadcasters Exposition (NAB) say that sales of digital, high-definition television (HDTV) sets are slowly gaining momentum. Little by little, consumers are learning about the new technology's clearer picture and better sound quality versus standard analog TV. However, there are a few obstacles to demand for this product. One obstacle is the limited availability of digital programming for HDTVs. Another is the relatively high cost. Although a small number of consumers will buy the newest technologies regardless of price, most people have learned that if you wait a bit for new electronics products, the prices will come down. For example, big-screen TVs started out selling at $4,000 to $5,000, and then a year later sold for less than half that price. A 27-inch set that cost $700 to $800 five years ago sells for $180 today. Because they know the law of demand, consumer electronics marketers plan their strategies to sell to the early adopters at a higher price, and then begin lowering the price to increase the quantity demanded.

**Think About It**

Why do most consumers wait to purchase new consumer electronics products such as HDTVs?

Content Standards in Economics

A complete list of the NCEE Standards appears on page 000 of this Teacher's Edition. The following standards are addressed in Lesson 4.1.

- Standard 1: Scarcity
- Standard 2: Marginal Cost/Benefit
- Standard 4: Role of Incentives
- Standard 7: Markets—Price and Quantity Determination
- Standard 8: Role of Price in Market System
Law of Demand

Hold up a cell phone and ask your students why most young people want to own and use a cell phone of their own. Then tell them to imagine that they own a cell phone but they are required to pay a set per-minute price for the time they spend talking. Ask them to make a table that shows how many minutes they believe they would talk on their phone each month if they were required to pay 20 cents per minute. Progressively lower the per-minute charge until it is only half-a-cent per minute. Point out that they have created a demand schedule for their demand for cell phone use, and that as the price declined they were willing to purchase (demand) more minutes. This example demonstrates the law of demand.

Think Critically Through Visuals

Direct students to focus their attention on the photograph on page 100. Ask for a volunteer to answer the question posed in the caption.

Answer

Answers will vary. Possible answer: The quantity of dogs demanded would decrease since the price/cost of owning a dog has increased.

Law of Demand

How many 12-inch pizzas will people buy each week if the price is $12? What if the price is $9? What if it’s $6? The answers reveal the relationship between the price of pizza and the quantity purchased. Such a relationship is called the demand for pizza.

Demand indicates how much of a product consumers are both willing and able to buy at each possible price during a given period, other things remaining constant. Because demand pertains to a specific period—a day, a week, a month—you should think of demand as the desired rate of purchase per time period at each possible price. Also, notice the emphasis on willing and able. You may be able to buy a rock concert ticket for $50 because you can afford one. However, you may not be willing to buy one if the performers do not interest you.

This relation between the price and the quantity demanded is an economic law. The law of demand says that quantity demanded varies inversely with price, other things constant. Thus, the higher the price, the smaller the quantity demanded. The lower the price, the greater the quantity demanded.

Demand, Wants, and Needs

Consumer demand and consumer wants are not the same thing. You know that wants are unlimited. You may want a new Mercedes-Benz SL500 roadster convertible, but the $95,000 price tag is likely beyond your budget. (The quantity you demand at that price is zero.) Nor is demand the same as need. You may have outgrown your winter coat and so need a new one. But if the price is $200, you may decide your old coat will do for now. If the price drops enough—say, to $100—then you become both willing and able to buy a new coat.

Substitution Effect

What explains the law of demand? Why, for example, is more of a product demanded when the price falls? The explanation begins with unlimited wants and needs. Many goods and services are capable of satisfying your particular wants. For example, you can satisfy your hunger by eating pizza, tacos, burgers, chicken, sandwiches, salads, or hundreds of other items. Similarly, you can satisfy your desire for warmth in winter with warm clothing, a home-heating system, a trip to Hawaii, or in other ways. Some ways of satisfying your wants will be more appealing than others. A trip to Hawaii is more fun than wearing warm clothing. In a world without scarcity, everything would be free, so you would always choose the most attractive alternative. Scarcity, however, is a reality, and the degree of scarcity of one good relative to another helps determine each good’s relative price.

Notice that the definition of demand includes the other-things-constant assumption. (A Latin phrase you may
hearing for “other things constant” is *ceteris paribus.* Among the “other things” assumed to remain constant are the prices of other goods. For example, if the price of pizza declines while other prices remain constant, pizza becomes relatively cheaper. Consumers are more willing to purchase pizza when its relative price falls. People tend to substitute pizza for other goods. This is called the substitution effect of a price change. On the other hand, an increase in the price of pizza, other things constant, causes consumers to substitute other goods for the now higher-priced pizza, thus reducing their quantity demanded.

Remember that the change in the relative price—the price of one good relative to the prices of other goods—causes the substitution effect. If all prices changed by the same percentage, there would be no change in relative prices and no substitution effect.

**Income Effect**

A fall in the price of a product increases the quantity demanded for a second reason. What if you take home $36 a week from a Saturday job, and your money income is $36 per week. Your *money income* is simply the number of dollars you receive per period, in this case $36 per week. Suppose you spend all your income on pizza, buying four a week at $9 each. What if the price drops to $6? At that price you can now afford six pizzas a week.

Your money income remains at $36 per week, but the decrease in the price has increased your *real income*—that is, your income measured in terms of how many goods and services it can buy. The price reduction, other things constant, increases the purchasing power of your income, thereby increasing your *ability* to purchase pizza and, indirectly, other goods. The quantity of pizza you demand likely will increase because of this *income effect of a price change.* You may not increase your quantity demanded to six pizzas, but you can now afford six.

If you purchase five pizzas a week when the price drops to $6, you would have $6 left to buy other goods. Thus, the income effect of a lower price increases your real income and thereby increases your *ability* to purchase pizza and other goods. Because of the *price effect* of a price increase, other things constant, consumers typically increase their quantity demanded as the price decreases. Conversely, an increase in the price of pizza, other things constant, reduces real income, thereby reducing the ability to purchase pizza. Because of the income effect of a price increase, consumers typically reduce their quantity demanded as the price increases.

**Diminishing Marginal Utility**

After a long day of school, studies, and sports, you are starved, and so you visit a local pizzeria. That first slice tastes great and puts a serious dent in your hunger. The second is not quite as good as the first. A third is just fair. You don’t even consider a fourth slice. The satisfaction you derive from each additional slice of pizza declines as your consumption increases. Your experience with pizza reflects the law of diminishing marginal utility. For example, the additional satisfaction you get from a second slice of pizza is your marginal utility of that slice.

The marginal utility you derive from each additional slice of pizza declines as your consumption increases. Your experience with pizza reflects the law of diminishing marginal utility.

This law states that the more of a good an individual consumes per period, other things constant, the smaller the marginal utility of each additional unit consumed.

Diminishing marginal utility is a feature of all consumption. A second foot-long submarine sandwich at one meal would probably yield little or no marginal utility. You might still enjoy a second movie on Friday night, but a third one is probably too much to take.

Consumers make purchases to increase their satisfaction, or utility. In deciding what to buy, people make rough estimates about the marginal utility, or marginal benefit, they expect from the good or service. Based on this marginal benefit, people then decide how much they are willing and able to pay. Because of diminishing marginal utility, the change in total utility resulting in a one-unit change in consumption of a good is smaller the more a person consumes per period, the smaller the increase in total utility from consuming one more unit, other things constant.

**Law of Demand**

The income and substitution effects can be presented as the direct consequence of the *ceteris paribus* assumption. Holding other prices constant while changing the price of the good whose demand curve is being constructed results in a change in its opportunity cost because its relative price has changed. Holding money income constant while changing the price of the good results in a change in the purchasing power or real income of the person whose demand curve is being constructed. You should use examples to discuss how the demand for a particular good changes when the price of a substitute changes. Students may have trouble with this concept, but if concrete examples are used, it becomes clear. For example if Pepsi is on sale, those who normally purchase Coca-Cola may switch to Pepsi, causing the demand for Coca-Cola to decline (substitutes).

**Ask the Xpert!**

Direct students to econxtra.swlearning.com to hear an expert answer the question, "Why do consumers buy less of an item when its price rises?"
utility, you would not be willing to pay as much for a second slice of pizza as for the first. This is why it takes a decrease in price for you to increase your quantity demanded. Suppose pizza sells for $2 a slice. How many slices will you buy? You will increase consumption as long as the marginal benefit you expect from another slice exceeds the price. You stop buying more when your expected marginal benefit is less than the price. Simply put, you aren’t willing to pay $2 for something that’s worth less to you. What if the price of pizza drops from $2 to $1 a slice? You buy more if the marginal benefit of another slice exceeds $1. The law of diminishing marginal utility helps explain why people buy more when the price decreases. Diminishing marginal utility has wide applications. Restaurants depend on the law of diminishing marginal utility when they offer all-you-can-eat specials—and no doggie bags. The deal is all you can eat now, not all you can eat now and for as long as the doggie bag holds out. After a long winter, that first warm day of spring is something special and is the cause of “spring fever.” The fever is cured by many warm days like the first. By the time August rolls around, most people get much less marginal utility from yet another warm day.

Law of Demand
Consider using an example from the school cafeteria menu to illustrate the law of demand.

Think Critically Through Visuals
Direct students to econxtra.swlearning.com. Remind them to click on the link for Lesson 4.1 to find the appropriate link for the NET Bookmark on this page. Students’ answers should demonstrate an understanding of the law of diminishing marginal utility. For example, they might point out that the pricing of the ticket package (“five days for the price of two”) or hotel rooms (“fourth night free”) show that Universal understands this law.

Team Work
Organize students into groups of four or five. Set a time limit for each of the three components of this activity. Remind students that their group is to come up with the list of products such as lattes, slices of pizza, etc. After the list is established, individuals are to work independently as they apply the law of diminishing marginal utility to each item. The activity should end with group members sharing their answers with each other.

Checkpoint
Invite a student to answer the checkpoint that appears on page 105.
For some goods, the drop in marginal utility after the first unit is dramatic. For example, a second copy of the same daily newspaper would likely provide you with no marginal utility. In fact, the design of newspaper vending machines relies on the fact that you will not want to take more than one.

More generally, the expressions “Been there, done that” and “Same old, same old” convey the idea that, for many activities, things start to get old after the first time. Your marginal utility, or marginal benefit, declines.

Demand Schedule and Demand Curve

Demand can be expressed as a demand schedule and as a demand curve. Panel (a) of Figure 4.1 shows a hypothetical demand schedule for pizza. When you describe demand, you must specify the units being measured and the period considered. In this example, the price is for a 12-inch regular pizza and the period is a week. The schedule lists possible prices, along with the quantity demanded at each price.

At a price of $15, for example, consumers demand 8 million pizzas per week. As you can see, the lower the price the greater the quantity demanded, other things constant.

Demand Schedule and Demand Curve for Pizza

<table>
<thead>
<tr>
<th>Price per Pizza</th>
<th>Quantity Demanded per Week (millions)</th>
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<tbody>
<tr>
<td>$15</td>
<td>8</td>
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<tr>
<td>12</td>
<td>14</td>
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<tr>
<td>9</td>
<td>20</td>
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<tr>
<td>6</td>
<td>26</td>
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<tr>
<td>3</td>
<td>32</td>
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</table>

Market demand curve $D$ shows the quantity of pizza demanded, at various prices, by all consumers.

Demand for Servings of French Fries at Mel’s Diner

<table>
<thead>
<tr>
<th>Price per Pizza</th>
<th>Quantity Demanded per Day</th>
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<tbody>
<tr>
<td>$1.25</td>
<td>50</td>
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<td>1.00</td>
<td>75</td>
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<td>.75</td>
<td>150</td>
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<td>.50</td>
<td>350</td>
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</tbody>
</table>

Discuss how it demonstrates the law of demand and can be used to construct a demand curve for sales of french fries at Mel’s Diner. Ask students to discuss what might happen to sales of other food items at Mel’s Diner if he charged only $.50 for french fries. (Answer: People might demand fewer of them as they substituted french fries for the alternative food items.)

Curriculum Connection—History

In the decade of the 1930s, the United States and most other nations experienced the Great Depression. During these years, unemployment rates reached 25 percent in the United States, and many people who were still employed worked for low wages. Ask students to describe what must have happened to demand for goods and services during these years.
The sum of the individual demand curves. The market demand curve is the horizontal

**Ethics in Action**

Have students work in pairs
to discuss the ethical issue
featuring on this page and develop
an answer to the questions
presented there.

**Answers to Think Critically**

Answers will vary. Possible answers: Some students will say that the men should not be punished because they had no way of knowing how many people would show up and how they would behave. Other students will say the men should be punished because they could have predicted high demand based on the people’s needs and the price.

**Think Critically Through Visuals**

Direct students to focus their attention
on Figure 4.2—Market Demand for
Pizzas on page 107. Point out that the
market demand curve is the horizontal
sum of the individual demand curves.

**Main Idea**

*Standard 8: Role of
Price in Market System*

Prices send signals and
provide incentives to buy-
ers and sellers. When supply
or demand changes, market prices
adjust, affecting incentives.

**CHECKPOINT**

Invite a student to answer the
checkpoint that appears on
page 107.

**Answer**

The demand schedule and demand
curve show the quantity of a good
demanded at a certain price.

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**The Wall Street Journal**

**Reading It Right**

What’s the relevance of the fol-
lowing statement from The Wall Street Journal: “Few things are as
gratifying to American consumers as finding a good bargain….

The psychology of this is simple: It feels good to pay less.”

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**Ethics in Action**

**Demand Can Be Deadly**

Misjudging demand can have an enormous effect on a company’s sales or profits, but it can have more devastating, even tragic, effects as well. On a quiet Sunday morning in Bangladesh, at least 30 women and children were killed and hundreds more injured in a stampede, as thousands of poor people scrambled for clothes being handed out as charity. The clothes were being distributed by a business-
man in conjunction with the Islamic Eid Al-Fitr festival. The Associated Press reported that the stampede happened outside an aban-
doned jute mill in a village in northern Bangladesh. Those in charge woefully under-
estimated the response to the news of the giveaway—they failed to predict what the demand for the clothing would be at a price of
$0. Consequently, they were totally unpre-
pared for the more than 10,000 people who showed up to get the free clothes. Two men in charge of distributing the clothes were arrested for possible negligence.

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**Think Critically**

Analyze this situation. Do you think the two
men, attempting to be charitable, should be
punished for underestimating the demand
and not preparing for the crowds? Why or
why not?
The market demand curve is simply the sum of the individual demand curves for all consumers in the market. Unless otherwise noted, this book will focus on market demand curves for all consumers in the market.

**CHECKPOINT**

What do a demand schedule and demand curve show?

**CHECKPOINT**

What do a demand schedule and demand curve show?

**Main Idea**

Role of Price in Market System: Market Demand for Pizzas

**Figure 4.2**

- (a) Hector
- (b) Brianna
- (c) Chris
- (d) Market demand for pizzas

Prices send signals and provide incentives to buyers. When demand changes, market prices adjust, affecting buyers’ incentives. For example, at a price of $8 per pizza, Hector demands 2 per week, Brianna demands 1, and Chris demands none. Market demand at a price of $8 is $2 + $1 + $0 = 3 pizzas per week. At a lower price of $4, Hector demands 3, Brianna demands 2, and Chris demands 1. Market demand at a price of $4 is 6 pizzas. The market demand curve $D$ is the horizontal sum of individual demand curves $d_H$, $d_B$, and $d_C$. 

**CHECKPOINT**

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What do a demand schedule and demand curve show?
4.1 Assessment

Key Concepts

1. Answers will vary. Students may point out that most of the students who want to own a sports car are not able to afford one. When nothing is purchased there is no demand.

2. Answers will vary. Students may point out that many consumers would substitute the relatively less-expensive burgers for the relatively more-expensive burgers.

3. Answers will vary. Students may point out that at the lower price more people could afford to purchase tickets than at the higher price. In effect, their real income increased.

4. Answers will vary. Students may point out that the second taco is worth less to Joe than the first because he will not pay $1.50 to buy it. This shows that the utility he receives from tacos diminishes as he receives more of them within a particular period of time.

5. Answers will vary. Students may point out that demand is the entire relationship between the price of tickets and the quantity demanded, while the quantity demanded is the specific relationship between a price of $8 and the average number of tickets purchased (285) at that price.

6. Answers will vary. Students may point out that per day market demand for school lunches is made up of all meals that would be purchased by students and teachers at every possible price.

Graphing Exercise

7. The answer includes a graph. Students’ graphs should look similar to the one shown here. An Excel spreadsheet containing this graph along with supporting data is available on the Instructor’s Resource CD.

Think Critically

8. Answers will vary. Students may point out that many customers will substitute shoes from the competing store because of their lower price.

9. Answers will vary. Students may point out that the first television sets were quite expensive. Although many people wanted to own one, they often were not able to afford a television set.

Key Concepts

1. Many students would like to own an expensive sports car. Is this considered demand? Why or why not?

2. Why would demand for one fast food restaurant’s hamburgers grow if the price of the hamburgers at the fast food restaurant across the street increased by $0.50?

3. How would the income effect of a price change be demonstrated by a $10 reduction in the price of tickets to a concert that resulted in a sell-out crowd?

4. Joe is willing to pay $1.50 for one taco after basketball practice but chooses not to purchase a second taco for the same price. How does this illustrate the law of diminishing marginal utility?

5. On Saturday nights, lots of people attend movies at the State Theater. The number who attend depends at least in part on the price of tickets. At the current price of $8 per ticket, an average of 285 tickets are sold each Saturday night. What is the demand and what is the quantity demanded in this example?

6. What is the market demand per day for lunches in the cafeteria at your school?

Graphing Exercise

7. The owners of a local shoe store surveyed their customers to determine how many pairs of running shoes they would buy each month at different prices. The results of the survey appear in the demand schedule below. Use these data to construct a demand curve for running shoes. Explain how your graph demonstrates the law of diminishing marginal utility.

Demand for Running Shoes

<table>
<thead>
<tr>
<th>Price</th>
<th>Quantity Demanded</th>
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<tbody>
<tr>
<td>$70</td>
<td>40</td>
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<tr>
<td>$60</td>
<td>50</td>
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<tr>
<td>$50</td>
<td>60</td>
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<tr>
<td>$40</td>
<td>70</td>
</tr>
<tr>
<td>$30</td>
<td>80</td>
</tr>
</tbody>
</table>

Think Critically

8. Marketing Nancy is the sales manager of the shoe store. The owner has told her that she must set a price that allows the store to sell at least 50 pairs of running shoes next month. What price should she set? If another local store has a big sale and lowers its price for running shoes by 25 percent, will Nancy’s employer reach the sales goal? Why or why not?

9. History When television sets first became available to consumers in the late 1940s, many people wanted one. Still, very few sets were sold at first. Explain why people’s desire to own televisions did not result in a great demand for this product.
Objectives

Compute the elasticity of demand, and explain its relevance.
Discuss the factors that influence elasticity of demand.

Overview

Knowing the law of demand is useful, but a demand curve can provide even more information. It can tell how sensitive quantity demanded is to a change in price. For example, a fast-food restaurant would like to know what will happen to its total revenue if it introduces a dollar menu. The law of demand indicates that a lower price increases quantity demanded, but by how much? A firm’s success or failure depends on how much it knows about the demand for its product. This section measures how sensitive quantity demanded is to a change in price.

Elasticity of Demand

4.2

In the News

Super Bowl of Avocados

Super Bowl Sunday is the biggest single day of avocado consumption in the United States, thanks to the serving up of bowls and bowls of the zesty green dip known as guacamole. More than 40 million pounds of avocados are smashed, mashed, whipped, and eaten with blue and white corn chips, flour tortillas, tacos, and chunks of bread during Super Bowl festivities, according to the California Avocado Commission. California growers sold a record 400 million pounds of avocados for a very profitable $398 million (nearly a dollar a pound) in the 2001–2002 season. California is home to 86 percent of the nation’s crop, and 46 percent of the state’s avocados come from San Diego County. The more than 6,000 avocado growers see a huge potential for growth in the market. Until fairly recently, the avocado, originally from southern Mexico, was either unknown or considered odd and exotic in most of the United States. But the expanding popularity of California cuisine and the spread of Hispanic populations over the years have opened a host of new markets for avocado growers. Today only 18 percent of the population, mainly in the Southwest, eat nearly half of all avocados sold in the United States. Avocados are consumed in nearly 45 percent of U.S. homes, but in the West the portion is 80 percent.

Think About It

What if in the following season the growers reduce the price of avocados from approximately $1 a pound to 90 cents a pound? Based on the expanding market predictions, would the total revenue probably be less than $398 million, remain the same, or be more than $398 million? Explain your answer.

Key Terms

- elasticity of demand
- total revenue

Focus

To introduce elasticity, hold up a piece of elastic and a piece of rope of equal lengths. Explain that the rope represents the amount of a cancer-curing drug that will be sold and the elastic represents the amount of a brand of laundry soap that will be sold. Have two students pull on the ends of the rope and point out that the length does not change. Have two other students pull on the ends of the elastic and point out that the length changes. The rope is inelastic and so is the amount of the drug sold. The quantity demanded does not change if the price is lower—people who need the drug will buy the amount they need regardless of price. The fact that the length changes shows that the other band is elastic. The same is true of the demand for the laundry soap. People will demand more at lower prices as they substitute this brand for more expensive ones.

Objectives

Remind students to read the lesson objectives to help focus their attention before reading the lesson.

Key Terms

Direct students use each of the key terms in a separate sentence or short paragraph that helps demonstrate the meaning of the term.

In the News

Instruct students to read the passage and write down their answers. Point out that their answers might change after they finish studying Lesson 4.2.

Answers to Think About It

Answers will vary. Possible answer: It depends on the elasticity of demand for avocados. If the demand for avocados is elastic, meaning demand changes with price, there will be an increase in revenue. If the demand for avocados is inelastic, there will be a decrease in revenue.

Visual Presentation

Use the PowerPoint presentation on the Instructor’s Resource CD as an adjunct to your lecture. The presentation also can be used for review.

Content Standards in Economics

A complete list of the NCEE Standards appears on page 000 of this Teacher’s Edition. The following standards are addressed in Lesson 4.2:

- Standard 4: Role of Incentives
- Standard 7: Markets—Price and Quantity Determination
- Standard 8: Role of Price in Market System
Computing the Elasticity of Demand

Continue with the example about Mel’s Diner. Tell students that Mel decided to lower the price of his fries from $1.00 per serving to 75 cents (a 25 percent change in price). As a result, the quantity of fries demanded increased from 75 to 150 servings per day (a 100 percent change in the quantity demanded). In this example, a 25 percent change in price resulted in a 100 percent change in the quantity demanded. The elasticity of demand for Mel’s fries in this example is 4 (100 ÷ 25 = 4). A value of 4 indicates demand that is quite elastic. Products that are easily substituted, such as fries, almost always have demand that is elastic. An alternative example is demand for insulin that is used to control diabetes. If the price of a month’s supply of this medication decreased from $20 to $15 (a 25 percent decrease) the amount purchased might increase by only 1.0 percent because people who need this drug are already buying it at a price of $20. The new lower price would not cause them to buy more or cause other people who do not need the drug to purchase it. In this case the elasticity of demand would be 0.04 (0.01 ÷ 0.25 = 0.04). A value of 0.04 indicates demand that is very inelastic. Products that are necessary and cannot be substituted, such as insulin, almost always have demand that is inelastic.

The Demand for Pizza

Use Figure 4.3—The Demand for Pizza to illustrate elasticity of demand. Direct students to the Graphing Workshop for Chapter 4 at econxtra.swlearning.com. Instruct students to click on See It: Demand, Price Elasticity, and Total Revenue to view the graph and listen to an explanation.

Elasticity Values

Does an elasticity of 1.7 indicate that consumers are sensitive to the price change? To offer some perspective, economists sort elasticity into three general categories. If the percentage change in quantity demanded exceeds the percentage change in price, the resulting elasticity exceeds 1.0. Such a demand is said to be elastic, meaning that a percentage change in price will result in a larger percentage change in the quantity demanded. Thus quantity demanded is considered relatively responsive to a change in price. The demand for pizza is elastic when the price falls from $12 to $9.

If the percentage change in quantity demanded just equals the percentage change in price, the resulting elasticity is 1.0, and this demand is called unit elastic. Finally, if the percentage change in quantity demanded is less than the percentage change in price, the resulting elasticity is less than 1.0 and demand is called inelastic. The Mackinac Center for Public Policy is an organization that supports economics education. It provides current estimates of the elasticity of demand for various products at its web site located at http://www.educationreport.org/1247. Ask students to investigate this site and find products that have either elastic or inelastic demand. Ask them to explain reasons for the types of demand for the products they choose.
elasticity lies between 0 and 1.0, and this demand is said to be inelastic.

In summary, demand is elastic if greater than 1.0, unit elastic if equal to 1.0, and inelastic if between 0 and 1.0. Also, the measure of the price elasticity of demand usually is different at different points on a demand curve. Demand is almost always more elastic at higher prices and less elastic at lower prices. This is particularly true when the demand curve is a straight line that slopes down from left to right.

Elasticity expresses a relationship between two amounts: the percentage change in price and the resulting percentage change in quantity demanded. Because the focus is on the percentage change, you need not be concerned with how output or price is measured. For example, suppose the good in question is apples. It makes no difference in the elasticity formula whether you measure apples in pounds, bushels, or even tons. All that matters is the percentage change in quantity demanded.

Nor does it matter whether you measure price in U.S. dollars, Mexican pesos, French francs, or Zambian kwacha. All that matters is the percentage change in price.

**Elasticity and Total Revenue**

Knowledge of elasticity is especially valuable to producers, because it indicates the effect a price change will have on how much consumers spend on this product. Total revenue is price multiplied by the quantity demanded at that price. What happens to total revenue when price decreases? A lower price increases quantity demanded, which tends to increase total revenue. However, according to the law of demand, a lower price increases quantity demanded, which tends to increase total revenue.

The impact of a lower price on total revenue can be estimated using the product's price elasticity of demand. When the elasticity is greater than 1.0, or elastic, reducing the price by 5 percent will cause sales to grow by more than 5 percent. Thus the total revenue will increase. When the elasticity is equal to 1.0, or unit elastic, reducing the price by 5 percent will cause sales to grow by 5 percent. In this case, the price elasticity of demand usually is different at different points on a demand curve. Demand is almost always more elastic at higher prices and less elastic at lower prices. This is particularly true when the demand curve is a straight line that slopes down from left to right.

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**We Ate All the Big Fish**

“Fisherman used to go out and catch these phenomenally big fish,” said a fisheries biologist in Nova Scotia. “But they cannot find them anymore. They’re not there. We ate them.” He adds that about 90 percent of big fish—such as giant tuna, swordfish, and Chilean sea bass—are gone from the world’s oceans. In fact, at a UN summit meeting in 2002, 192 nations signed a declaration to try to restore fish to healthy levels by 2015. Chilean sea bass is a good example of what happened to the big fish. Eight to ten years ago, very few people had heard of this fish. There wasn’t much demand, and it was selling at $3 or $4 a pound. After several years of word-of-mouth and magazine advertising, and strong recommendations from food critics and TV chefs, Chilean sea bass became “the hot new fish.” All the publicity increased the demand, and the low price increased the quantity demanded. Suddenly, Chilean sea bass was featured on thousands of restaurant menus and sold in every supermarket. Fishermen couldn’t catch enough sea bass to keep up with the rising demand, though they tried. They were overfishing and not giving the fish enough time to replenish their populations. Today, Chilean sea bass sells for $18 to $20 a pound, and is on the menu of only upscale, “trendy” restaurants. The once inexpensive, great-tasting fish is now gone from most supermarkets. At $20 per pound, the quantity demanded has decreased considerably. Unfortunately, the species also is nearly gone from our oceans.

**Think Critically**

Suppose that at a price of $3 a pound, the quantity of Chilean sea bass demanded is 500,000 pounds, and at a price of $18 a pound, the quantity demanded is 100,000 pounds. At these prices and quantities, is the demand elastic, unit elastic, or inelastic?

**Computing the Elasticity of Demand**

Return to the example of Mel’s decision to lower the price of his french fries. Remind students that at a price of $1.00, Mel sold 75 servings per day. His total revenue from these sales was $75 (1.00 x 75 = $75). After he lowered the price of the fries to $.75, his sales grew to 150 servings per day. At the lower price his total revenue increased to $112.50 ($.75 x 150 = $112.50). When the price of a product with elastic demand is lowered, its total revenue will grow.

In the case of the lowered price for insulin, tell students to imagine that a drug store sold 1,000 vials per month at $20 each. The store’s total revenue at that price was $20,000 ($20 x 1,000 = $20,000). When the price was lowered to $15, the quantity sold increased by 1 percent to 1,010. The store’s total revenue fell to $15,150 ($15 x 1010 = $15,150). When the price of a product with inelastic demand is lowered its total revenue will fall.

**SPAN THE GLOBE**

Direct students to read the short passage titled “We Ate All the Big Fish” on this page. Ask students to answer the question and provide the calculation(s) used to determine the answer.

**Think Critically**

The good is inelastic because the elasticity of demand is less than 1.0. The percentage change in quantity is 80 percent (400,000 ÷ 500,000) and the percentage change in price is 50 percent ($15 ÷ $3). Elasticity of demand is 0.16; it is calculated by dividing the percentage change in quantity by the percentage change in price. (0.80 ÷ 5.00 = 0.16).
Determinants of Demand Elasticity

To help students understand the determinants of demand elasticity, ask them to identify a popular musical group that they would be willing to pay to see. Tell them to assume that this group is going to give only one local concert before it disbands and never performs again. There are only 300 unsold tickets available for this concert. Ask them to discuss the elasticity of demand for these tickets. They should agree that the demand would be inelastic. Then ask them to change their assumptions. This time the group has contracted to perform at eight different locations within 50 miles of your school (this makes over 25,000 tickets available), and they have made public statements that they intend to perform at least this often every year for the foreseeable future. What would this do to the elasticity of demand for tickets to their concerts? Students should agree that the demand for the tickets will be much more elastic. Use these examples to lead into a discussion of factors that make demand either elastic or inelastic. When many items of a particular type are available, the demand for these items is much more likely to be elastic.

Think Critically Through Visuals

Direct students to focus their attention on the photograph on this page. Ask for a volunteer to answer the question posed in the caption.

Answer

Answers will vary. Some students may suggest that the demand for particular brands of sunglasses is elastic. When the price of one brand increases, consumers will substitute a different brand. The demand might be inelastic only if all brands of sunglasses increased in price.

Elasticity

So far you have explored the link between elasticity of demand and what happens to total revenue when the price changes. However, you have not yet considered why elasticity differs for different goods. Several characteristics influence the elasticity of demand.

Availability of Substitutes

As noted earlier, your individual wants can be satisfied in a variety of ways. A rise in the price of pizza makes other foods relatively cheaper. If close substitutes are available, an increase in the price of pizza will prompt some consumers to switch to substitutes. But if nothing else satisfies like pizza, the quantity of pizza demanded will not decline as much. The greater the availability of substitutes for a good and the more similar the substitutes are to the good in question, the greater that good’s elasticity of demand.

Determinants of Demand Elasticity

The number and similarity of substitutes depend on the definition of the good. The more broadly a good is defined, the fewer substitutes there are and the less elastic the demand. For example, everyone needs some sort of shoes, so the demand for shoes as a general category of product is quite inelastic. If the price of all shoes goes up 20 percent, most people will still buy shoes. If you consider one particular brand of shoes, however, the demand is sure to be elastic because there are many other brands of shoes you could buy instead. For example, if only one shoe manufacturer raises the price of its shoes by 20 percent, most consumers will substitute a different brand of shoes that have not increased in price.

Certain goods—many prescription drugs, for instance—have no close substitutes. The demand for such goods tends to be less elastic than for goods with close substitutes, such as Bayer aspirin. Much advertising is aimed at establishing in the consumer’s mind the uniqueness of a particular product—an effort to convince consumers “to accept no substitutes.”

Tell students that they operate a movie theater. On average, 500 people used to purchase $8 tickets at their theater every Saturday evening. Last month, they raised their price to $9 only to see the average number of tickets sold fall to 450. Ask students to calculate the elasticity of demand for these tickets and to state whether the demand is elastic or inelastic. What happened to the total revenue as a result of the price increase? (0.10 divided by 0.125 = 0.8, the demand is inelastic, total revenue increased from $4,000 to $4,050)
Share of Consumer’s Budget Spent on the Good

Recall that a higher price reduces quantity demanded in part because a higher price reduces the real spending power of consumer income. A demand curve reflects both the willingness and ability to purchase a good at alternative prices. Because spending on some goods represents a large share of the consumer’s budget, a change in the price of such a good has a substantial impact on the amount consumers are able to purchase.

An increase in the price of housing, for example, reduces consumers’ ability to purchase housing. The income effect of a higher price reduces the quantity demanded. In contrast, the income effect of an increase in the price of, say, paper towels is less significant because paper towels represent such a tiny share of any budget. The more important the item is as a share of the consumer’s budget, other things constant, the greater is the income effect of a change in price, so the more price elastic is the demand for the item. This explains why the quantity of housing demanded is more responsive to a given percentage change in price than is the quantity of paper towels demanded.

A Matter of Time

Consumers can substitute lower-priced goods for higher-priced goods, but finding substitutes usually takes time. For example, between 1973 and 1974, the OPEC oil cartel raised the price of oil sharply. The result was a 45-percent increase in the price of gasoline, but the quantity demanded decreased only 8 percent. As more time passed, however, people purchased smaller cars and made greater use of public transportation. Because the price of oil used to generate electricity and to heat homes increased as well, people bought more energy-efficient appliances and insulated their homes better. As a result, the change in the amount of oil demanded was greater over time as consumers adjusted to the price hike.

The longer the adjustment period, the greater the consumers’ ability to substitute relatively higher-priced products with lower-priced substitutes. Thus, the longer the period of adjustment, the more responsive the change in quantity demanded is to a given change in price.

Figure 4.4 demonstrates how demand for gasoline becomes more elastic over time. Given an initial price of $1.00 a gallon, let $D_m$ be the demand curve one week after a price change; $D_m$ one week after that; and $D_m$ one week after that.

Think Critically Through Visuals

Direct students to focus their attention on the photographs on this page. Ask for a volunteer to answer the question posed in the caption.

Answer

An increase in the price of a grocery store item has little effect on one’s income, while an increase in the price of a car has a substantial effect on one’s income. Therefore, the demand for a car is more price elastic—you are more sensitive to a price increase for a car.

Group Activity

Organize students into small groups. Give each group the following list of products and ask them to rank the products from the most to the least elastic. Ask them to explain their rankings to the class. What might happen to these rankings over a long period of time, perhaps five years?

- a drug that controls AIDS infections
- gasoline for automobiles
- a particular brand of laundry soap
- tickets to your school’s senior prom
- table salt
- a brand of designer jeans

Determinants of Demand Elasticity

Hold up a stapler and ask students how many staples they use in a typical week at school. Ask if they think their demand for staples is elastic or inelastic.

Hold up a box of staples. Point out that boxes of 5,000 or more are common. The price of a single staple is likely to be as little as $.0001. Ask students if they would use fewer staples if the price doubled. Point out that the demand for staples is inelastic because their price is so small. A 100 percent increase is insignificant and will have little or no impact on the quantity demanded. The same can be said for any product that has a very low price and therefore constitutes a small part of a consumer’s total budget.

Point out that an increase of as little as 5 percent in the price of a new house would be $5,000 for a $100,000 home. This relatively small price increase might cause many people to put off buying a new house. The demand for expensive items is more likely to be elastic.

Lesson 4.2 • Elasticity of Demand
Determinants of Demand Elasticity

Ask students to imagine that they are about to start a major test such as the SAT or ACT and they realize that they do not have a No. 2 pencil. Only one person has an extra pencil, but he refuses to sell it for less than $5. Ask students if they would pay $5. What does this show about time and the elasticity of demand for products?

Think Critically Through Visuals

Direct students to focus their attention on Figure 4.4—Demand Becomes More Elastic Over Time. Point out the labels on the three demand curves.

The Elasticity of Demand Becomes More Elastic Over Time

Demand curve $D_m$ shows that one week after a price increase from $1.00 to $1.25, along this curve, quantity demanded per day falls from 100 to 95 million gallons. One month after the price increase, quantity demanded has fallen to 75 million gallons along $D_m$. One year after the price increase, quantity demanded has fallen to 50 million gallons along $D_m$. At any given price, $D_f$ is more elastic than $D_m$, which is more elastic than $D_w$.

Answers will vary. Possible answer: By selling directly via the Internet, catalogs, and the telephone, Dell maintains direct contact with customers and can regularly gauge their sensitivity to price.

Some Elasticity Estimates

Let’s look at some estimates of the elasticity of demand for particular goods and services. As noted earlier, the substitution of lower-priced goods for a good whose price has just increased often takes time. Thus, when estimating elasticity, economists often distinguish between a period during which consumers have little time to adjust—call it the short run—and a period during which consumers can more fully adjust to a price change—call it the long run. Figure 4.5 provides some short-run and long-run elasticity estimates for selected products.

The elasticity of demand is greater in the long run because consumers have more time to adjust. For example, if the price of electricity rose today, consumers in the short run might cut back a bit on their use of electrical appliances, and those in homes with electric heat might lower the thermostat in winter. Over time, however, consumers would switch to more energy-efficient appliances and might convert from electric heat to oil or natural gas. So the demand for electricity is more elastic in the long run than in the short run, as noted in Figure 4.5. In fact, in every instance where estimates for both the short run and the long run are available, the long run is more elastic than the short run.

Curriculum Connection—Literature

Author J. K. Rowling has written a series of books about the imaginary wizard Harry Potter that has sold many millions of copies in almost every nation of the world. Ask students to discuss the elasticity of demand for these books. What would happen to the number of these books sold if their price were 10 or 20 percent higher? Is demand for Harry Potter books elastic or inelastic? How do they know? Why might the publisher choose to sell the books for less as time goes by?
**CHECKPOINT**

What are the determinants of demand elasticity?

**An Application: Teenage Smoking**

As the U.S. Surgeon General warns on each pack of cigarettes, smoking cigarettes can be hazardous to your health. Researchers estimate that smoking causes more than 400,000 deaths a year in the United States—nearly 10 times the fatalities from all traffic accidents.

One way to reduce smoking is to raise the price of cigarettes. Economists estimate that the demand for cigarettes among teenagers would decrease by 13 percent. Among adult smokers, the estimated elasticity is only 0.4, or about one-third that of teenagers.

Why are teenagers more sensitive to price changes than adults? First, recall that one of the factors affecting the elasticity of demand is the importance of the item in the consumer's budget. The share of income that a teenager smoker spends on cigarettes usually exceeds the share for adult smokers. Second, peer pressure is more influential in a young person's decision to smoke than in an adult's decision to continue smoking. If anything, adults face peer pressure not to smoke. The effects of a higher price are more severe among young smokers because a higher price reduces smoking by peers. With fewer peers smoking, there is less pressure to smoke. And third, because smoking is addictive, young people who are not yet hooked are more sensitive to price increases than are adult smokers, who are already hooked.

**Selected Elasticities of Demand**

<table>
<thead>
<tr>
<th>Product</th>
<th>Short Run</th>
<th>Long Run</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity (residential)</td>
<td>0.1</td>
<td>1.9</td>
</tr>
<tr>
<td>Air travel</td>
<td>0.1</td>
<td>2.4</td>
</tr>
<tr>
<td>Medical care and hospitalization</td>
<td>0.3</td>
<td>0.9</td>
</tr>
<tr>
<td>Gasoline</td>
<td>0.4</td>
<td>1.5</td>
</tr>
<tr>
<td>Movies</td>
<td>0.9</td>
<td>3.7</td>
</tr>
<tr>
<td>Natural gas (residential)</td>
<td>1.4</td>
<td>2.1</td>
</tr>
</tbody>
</table>

**Focus**

**An Application: Teenage Smoking**

Introduce this topic by asking students to estimate the number of students in their school who are smokers. When the elasticity of demand for young smokers is 1.3, what impact would a 10 percent increase in the price of cigarettes have on the number of these smokers? For example, if the number of smokers were 300, a 10 percent increase in price would reduce this number to 261 (300 x 0.87 = 261).

Direct students to econxtra.swlearning.com. Remind them to click on the link for Lesson 4.2 to find the appropriate link for the NET Bookmark on this page. Remember that the specific information requested in this feature might not be available when students visit the web site. As an alternative, suggest that student groups use the web site to find at least three facts about tobacco that every teen should know.

**APPLY**

Assign Lesson 4.2 from the Contemporary Economics Workbook.

**ASSESS**

Assign all or part of Lesson 4.2 Assessment on page 114 as homework or an in-class activity.

**Xtra! Study Tools**

Direct students to the online study tools for Lesson 4.2 at econxtra.swlearning.com.

**RETEACH**

Many people collect baseball cards. It is relatively easy to find cards for current players. It is much more difficult to find rookie cards for famous players from the past. Ask students to discuss the elasticity of demand for a Roger Maris or Mickey Mantel rookie card. Why can owners of these cards ask for high prices without fear of being unable to sell them?
Key Concepts
1. Answers will vary. Students may point out that it would have to determine the percentage decline in sales that would result from this increase in price and then divide the percentage change in sales by the 10 percent change in price.
2. There is elastic demand for running shoes at the current price.
3. The store’s total revenue from running shoes would decline because the demand is elastic.
4. Answers will vary. Students may point out that there are many brands of cake mix consumers could buy. If the price of one goes up, people are likely to substitute other brands. A small percentage change in price should cause a much larger percentage change in the quantity demanded.

Graphing Exercise
5. The price elasticity of demand is 1.20 (0.20 ÷ 0.167 = 1.20). This is elastic demand. The total revenue would decrease.

Think Critically
6. Answers will vary. Students may point out that people who are lactose intolerant are not responsive to changes in the price of dairy products. On Easter many Christians buy eggs to color and hide for their children, regardless of the price.
7. Answers will vary. Students may point out that when there are many bakeries, it is easy for consumers to substitute one firm’s products for another when prices change. Opening a bakery in such a location would not allow a new firm to raise prices without losing many customers. To do so would cause the firm’s total revenue to fall.

Think Critically
6. Sociology The elasticity of demand for some products is affected by the personal values of possible customers. Consider people who practice the Hindu faith. They believe it is wrong to eat meat. In Hindu communities, the price elasticity of demand for meat products is 0.0, or completely inelastic—consumers won’t buy meat no matter what happens to its price. Describe several other situations where other factors are more important to the buying decision than price.
7. Entrepreneurship If there are 10 bakeries in a small city, why might the price elasticity of demand for the products they supply be high? Why might this not be a good location for you to open another bakery?

Visualizing the Answer
Graphing Exercises—
5. Students’ graphs should look similar to the one shown here. An excel spreadsheet containing this graph along with supporting data is available on the Instructor’s Resource CD.
movers & shakers

Julie Azuma   President, Different Roads to Learning

Finding appropriate toys for her autistic daughter was always a challenge for Julie Azuma. In 1995 she met that challenge by starting a business selling educational toys for learning disabled children via the Internet. Her first obstacle—she was not computer literate. With determination and courage, Azuma met the obstacle head-on, and within months her web site was established. Her company, Different Roads to Learning, received its first orders by December of that year.

Selling product via the Internet meant Azuma didn’t need a storefront. This was something she originally wanted but quickly learned she couldn’t afford. Selling via the Internet had its advantages, however. Azuma was able to reach potential customers throughout the world, and today 10 percent of her customers are from Canada, the United Kingdom, and Australia.

From the start, Different Roads to Learning’s web site included a complete line of products. “But as soon as the site went up, we received requests for a printed catalog, too,” Azuma responded by printing 3,000 catalogs for customers who requested them. It was a good decision. Although catalog requests typically came from parents, “we found that parents were bringing the catalog to their child’s school, asking their school districts to purchase many of the items.” That resulted in larger orders for more products. Today Azuma prints 50,000 to 100,000 catalogs a year.

Azuma prides herself on serving her customers the best she can. She’s quick to advise parents on what materials may be appropriate for their child, as well as what toys may not be a good fit. “We try to ship all of our orders on the day we receive them if at all possible,” she explains. “Parents of autistic children need to have their materials as soon as possible.”

In response to the increased demand for advice on helping an autistic child to learn, in 1999 Azuma started a publishing company, DRL Books, Inc. Her first book, a comprehensive handbook for parents of autistic children, sold more than she projected. She began to look for more books that met her high standards of assisting parents and teachers. By 2002, the company had published eight books with sales of $175,000. While the first books she published were extremely popular, not every book has met Azuma’s expectations. “I thought that all of our books would have the same appeal, but there are a lot of autism books available now.”

In 1996, Different Roads to Learning’s first year in business, gross sales were $8,000. By 2000, sales exceeded expenses and the company became profitable. Gross sales in 2002 exceeded $1,000,000, and in 2003 sales were expected to increase even more. In addition to increasing sales, Azuma also has learned how to make her business more profitable. Azuma’s efforts to help parents of autistic children have earned her New York State’s prestigious Martin Luther King Award for community service.

SOURCE READING

Although the first books published by DRL Books, Inc. exceeded sales goals, the books she published later were not as popular. Azuma said, “I thought that all of our books would have the same appeal, but there are a lot of autism books available now.” What influenced the elasticity of demand for the company’s later books?

ENTREPRENEURS IN ACTION

If Azuma’s first book sold for $22 and 875 copies were sold, what was her total revenue? What would likely happen to Azuma’s total revenue if she decreased the price of the book to $18? If demand is inelastic, would Azuma’s decision to lower the price be a good one? Why or why not?

Lesson 4.2  •  Elasticity of Demand

movers & shakers

Focus

Remind students that Julie Azuma’s business has been in existence since 1995. By now her success has been recognized by other people, some of whom have started their own businesses to compete with hers. This has created a wider selection of products from which consumers may choose. Ask students to discuss what this has probably done to the elasticity of demand for her products. What steps could Azuma take to maintain a relatively inelastic demand for the products she sells? Why is any business that is successful likely to face more elastic demand for its products as time passes? Success invites competition. Competition gives consumers a wider variety of products from which to choose. Therefore, the elasticity of demand for these products will increase over time.

Teach

Instruct students to read the Movers and Shakers about Julie Azuma. Point out that some students may find it helpful to read the article, read the questions at the bottom of the page, and then reread the article.

Assess

Use the questions in Source Reading and Entrepreneurs in Action at the bottom of the profile to assess the students’ understanding of this Movers and Shakers feature.

Answers to Source Reading

The availability of substitutes influenced the elasticity of demand for the company’s later books.

Answers to Entrepreneurs in Action

Azuma’s revenue was $19,250 (875 x $22 = $19,250). If Azuma decided to lower the price of the first book, her total revenue would probably have been less. This is because the demand for the first book was inelastic because there were no substitutes for the book at that time.
Changes in Demand

4.3

Will Business-Fare Cuts Bring Business Flyers Back?

Major airlines have experienced a huge drop in demand that will result in roughly $4 billion in losses in a year. This loss has airlines searching for ways to generate more revenue. One way being tested is to offer business travelers lower fares. This contradicts the airlines’ long-held belief that business travelers would pay whatever they had to for their necessary business trips. That belief may have been true when the economy was soaring and planes were full on the popular routes. However, it’s a much harder argument in light of tighter travel budgets and lots of empty seats offering travelers more choices. Business travelers have been staying at home or in the office, buying well in advance of their trip to get the discounts, or going to “no-frills” discount airlines. The airlines have been cutting back their sky-high business-travel fares in selected markets to see if lower fares will bring these flyers back. The early test results are encouraging some carriers to believe that they can in fact cut business fares and maintain or even increase their revenues. Delta Air Lines has cut business fares by about 21 percent in more than 400 small markets with no announcement. The company was rewarded with a double-digit increase in revenue. Continental Airlines also has been quietly conducting tests of lower business fares in a number of select markets with “mixed but not discouraging” results, according to Continental officials.

Think About It

Will the airlines’ tests cause a movement along the demand curve or a shift in the demand curve? Explain.

In the News

In the News

Objectives

Identify the determinants of demand, and explain how a change in each will affect the demand curve.

Distinguish between the money price of a good and the time price of a good.

Overview

So far the discussion of demand has been limited to the relationship between price and quantity demanded. That is, the focus has been on movement along a particular demand curve. A demand curve isolates the relation between the price of a good and the quantity demanded when other factors that could affect demand remain unchanged. What are these other determinants of demand, and how would changes in them affect demand?

Key Terms

tastes
movement along a given demand curve
shift of a demand curve

National Content Standards in Economics

A complete list of the NCEE Standards appears on page 000 of this Teacher’s Edition. The following standards are addressed in Lesson 4.3.

Standard 4: Role of Incentives

Standard 7: Markets—Price and Quantity Determination

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CHAPTER 4 Demand

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Focus 4.3

Ask students to identify a clothing style they once thought was attractive, but that is now out of style. How much would they have been willing to pay for these garments when they were popular? How much would they be willing to pay for them now? Ask students to discuss how this change in demand came about. Did people just get bored with the style or was it replaced with a new style that was clearly better? Why does the fashion industry come out with new styles every year? In 2003, the jeans industry was having a particularly difficult time because the sales of designer jeans had fallen by more than 50 percent since the late 1990s. The demand for designer jeans had become much more elastic.

Objectives

Remind students to read the lesson objectives to help focus their attention before reading the lesson.

Key Terms

Direct students to create a database using the key terms for this section. The database fields should include terms, definitions, and page numbers. Point out that the process of keying the data is an effective way to study the key terms.

In the News

Instruct students to read the passage and write down their answers. Point out that their answers might change after they finish studying Lesson 4.3.

Answers to Think About It

Answers will vary. Possible answer: Airlines’ tests will cause a shift in the demand curve because it will result in an increase in the number of consumers participating in the airline industry market.

Visual Presentation

Use the PowerPoint presentation on the Instructor’s Resource CD as an adjunct to your lecture. The presentation also be can used for review.
Changes That Can Shift the Demand Curve

A demand curve isolates the relation between price and quantity when other factors that could affect demand are assumed constant. These other factors, often referred to as determinants of demand, include:

1. Consumer income
2. The prices of related goods
3. The number and composition of consumers
4. Consumer expectations
5. Consumer tastes

How does a change in each affect demand?

Changes in Consumer Income

Figure 4.6 shows the market demand curve $D$ for pizza. Consumers’ money income is assumed to remain constant along a demand curve. Suppose money income increases. Some consumers will then be willing and able to buy more pizza at each price, so market demand increases. The demand curve shifts to the right from $D$ to $D'$. For example, at a price of $12, the amount of pizza demanded increases from 14 million to 20 million per week, as indicated by the movement from point $b$ on demand curve $D$ to point $f$ on demand curve $D'$. In short, an increase in demand—that is, a rightward shift of the demand curve—means that consumers are more willing and able to buy pizza at each price.

Normal Goods

Goods are classified into two broad categories, depending on how the demand for the good responds to changes in money income. The demand for a normal good increases as money income increases. Because pizza is a normal good, the demand curve for pizza shifts rightward when consumer income increases. Most goods are normal.

Inferior Goods

In contrast, the demand for an inferior good actually decreases as money income increases. Examples of inferior goods are board games and other at-home forms of entertainment.

Lesson 4.3

Changes in Demand

Changes That Can Shift the Demand Curve

Point out that in 2003 the federal government lowered tax rates for all people who paid income taxes. Effectively, most workers received more take-home pay. Ask students to discuss what this would have done to the demand for most normal and most inferior goods. You might ask them to describe how increased income would have affected demand for movie tickets and restaurant meals. Why might it have had less of an impact on sales of board games and other at-home forms of entertainment? (Answer: With greater take-home income, consumers may have increased their demand for more expensive forms of entertainment and felt less need to stay at home to save money.)

Outside Resources

Local Television News Reports

Events that can shift demand are constant features on local television news reports. Assign students to identify a story about an event that will cause consumers to purchase more or less of a product. Each student should explain, either to the class or in a written assignment, how the news feature will affect demand.

Celebrity Endorsements

Ask students to identify a celebrity who has endorsed a product. An example might be Tiger Woods and Buick automobiles. What does Buick hope will happen to the elasticity of demand for its cars because of the endorsement?
Changes That Can Shift the Demand Curve

Ask students to imagine that the price of energy they use to heat their homes has increased by 100 percent over the past year. Ask them to identify different ways such a price increase would affect their lives. What products would they buy more of (home insulation, sweaters, better windows), and which they would demand fewer of (water for long showers, new home additions, heated swimming pools). How do these changes demonstrate changes in demand that result from changes in the price of substitute and complementary products?

Use Figure 4.7—A Decrease in the Market Demand for Pizza to illustrate a shift in the demand curve. Direct students to the Graphing Workshop for Chapter 4 at econxtra.swlearning.com. Instruct students to click on See It: Demand and Shifts in Demand to view the graph and listen to an explanation. The first part of this workshop will be a review of the demand schedule and demand curve. The last part covers shifts in demand, the topic of Figure 4.7.

Answers will vary. Students might point out the need for day care centers, grocery stores, and gasoline stations in an area that is experiencing growth due to construction of affordable housing, an influx of young families, and a high birthrate. In an older community where the population is aging, there might be an increase in the demand for travel agencies, home repair services, and medical services.

The price of imported crude oil has fluctuated widely in recent years from as low as $10 to as high as nearly $40 per barrel. As a result, the price of gasoline has also fluctuated. Ask students to identify goods or services that are complementary products to gasoline and explain how the demand for these products would have increased or declined because of the changes in the price of gasoline. Examples would include automobile tires, hotel stays, admission to national parks, and crossings purchased at toll bridges.
Changes in the Size or Composition of the Population

As mentioned earlier, the market demand curve is the sum of the individual demand curves of all consumers in the market. If the population grows, the number of consumers in the market increases. For example, if the population grows, the demand curve for pizza will shift rightward. Even if the total population remains unchanged, demand could shift as a result of a change in the composition of the population. For example, a bulge in the teenage population could shift pizza demand rightward. A baby boom would shift rightward the demand for car seats and baby food.

Changes in Consumer Expectations

Another factor assumed to be constant along a given demand curve is consumer expectations about factors that influence demand, such as the future income and the future price of the good. A change in consumer expectations can shift the demand curve. For example, you may spend a little more after lining up a summer job, even before summer arrives.

Changes in price expectations also can shift demand. For example, if you expect pizza prices to jump next week, you may buy an extra one now for the freezer, thereby shifting the demand for pizza rightward. Or if consumers come to believe that home prices will climb,

Lesson 4.3 • Changes in Demand

Investigate Your Local Economy

Examine changes or trends in the composition of the population of your city or town. What products or categories of products might these changes affect?

Technology Is a Girl’s Best Friend

Banners flying the headline “Technology Is a Girl’s Best Friend” greeted attendees to the 2003 International Consumer Electronics Show (CES) in Las Vegas. The show included a product showcase devoted specifically to female-friendly products. Also featured at the annual show was a series of conferences and events concerned with understanding and promoting women’s increased role in the consumer electronics world. A few years earlier, about 70 percent to 80 percent of the show’s attendees were men. These days, however, the attendance ratio is down to about 60–40 in favor of men.

In 2003, women’s spending accounted for about $55 billion of the projected $100 billion U.S. consumer electronics market, according to a CES vice president. She also said that women initiate nearly 75 percent of such purchases on their own or with a spouse. Consumer electronics companies are realizing that female buyers are a demographic worthy of their attention. They also realize that young girls are more receptive to technology than older women, according to Ann Shoket of Cosmo Girl magazine. “This generation of girls is going to change everything,” Shoket said. “They don’t see technology as some sort of alien, strange thing they’re afraid of.”

Think Critically

Identify the determinant of demand this situation illustrates. Explain your answer.

Direct students to read the passage entitled “Technology Is a Girl’s Best Friend” on this page.

Answers to Think Critically

This situation illustrates the “composition of consumers” determinant of demand. Demand is changing because the percentage of women that represent the consumer body as a whole is increasing in the technology industry.

Answer

The five determinants of demand are: (1) Consumer income—a rise in income causes an outward shift of the demand curve. (2) The price of related goods—a rise in this causes an outward shift of the demand curve. (3) Number of consumer’s in the market—a rise in this causes an outward shift of the demand curve. (4) Consumer expectations—a rise in this causes an inward shift of the demand curve. (5) Consumer tastes—a change in this could shift the demand curve either inward or outward.

Extend the Content

Firms that produce products that have inelastic demand enjoy a degree of monopoly power in their markets. They know that if they increase their prices they will lose relatively few sales and their total revenue will grow, at least in the short run. In the long run, however, this can cause problems. In the 1960s demand for U.S. automobiles was quite inelastic. As prices were raised by manufacturers sales remained strong. In the 1970s, foreign competition caused great difficulties for U.S. automakers. Discuss what happened to the elasticity of demand for U.S. automobiles as a result of foreign competition.

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Extensions of Demand Analysis

Point out that some families make a point of eating together and sharing their daily experiences around the dinner table. These families do not care what the price of fast food might be because they almost never choose to buy any. Then ask students how such a family’s demand for fast food might change if the person who normally does the cooking became ill and could no longer prepare the family’s meals. In such a case, is it food alone that is being demanded? What does fast food offer consumers in addition to sustenance?

Direct students to the econxtra.swlearning.com website. Remind them to click on the link for Lesson 4.3 to find the appropriate link for the NET Bookmark on this page.

Answer

According to the article, the rise in the value of time has resulted in increased spending on timesaving services such as store-bought clothing, processed foods, and restaurant meals.

Extensions of Demand Analysis

Role of Time in Demand

The cost of consumption has two components: the money price of the good and the time price of the good. Goods are demanded because of the benefits they provide. Thus, you are willing to pay more for medicine that works faster. Similarly, it is not the microwave oven, personal computer, or airline trip that you value but the services they provide. Other things constant, the good that provides the same benefit in less time is preferred. That’s also why you are willing to pay more for ready-to-eat foods that you don’t need to prepare yourself.

Extensions of Demand Analysis

Propose the following scenario. A major computer manufacturer, G-Tech, is having a giant 35% off sale for its laptop computers while other producers of laptops have left their prices unchanged. Ask students to explain what will happen to the demand curves for both G-Tech computers and other manufacturers’ products. Remind them that when the price of a product changes there will be movement along its demand curve so there will be no shift in the demand curve for G-Tech computers. The other manufactures, however, produce substitutes for G-Tech computers. The demand curves for their products will shift to the left as more people buy G-Tech computers instead of other brands.
Your willingness to pay more for time-saving goods and services depends on the opportunity cost of your time. Differences in the value of time among consumers help explain differences in the consumption patterns observed in the economy. For example, a retired couple has more leisure time than a working couple. The retired couple may clip coupons and search the newspapers for bargains, sometimes going from store to store for particular grocery items on sale that week. The working couple usually will ignore the coupons and sales and will eat out more often and purchase more at convenience stores, where they are willing to pay extra for the convenience. The retired couple will be more inclined to drive across country on vacation, whereas the working couple will fly to a vacation destination.

**Sharpen Your Life Skills**

### Draw Conclusions

Demand for many products can be affected by a single important event. In September 2002, for example, Hurricane Isadore plowed into the southern coast of Louisiana, leaving widespread destruction in its wake. Thousands of homes were destroyed along with many businesses, roads, and public buildings. Consider how this disaster must have changed people’s demand for goods and services in Louisiana. Divide the following businesses into two lists: one made up of firms that would have had increased demand for their products because of Isadore, the other of businesses that would have experienced reduced demand. Explain your placement of each business.

- building contractors
- swimming pool installers
- luxury hotels
- apartment buildings
- lumber yards
- amusement parks

### Apply Your Skill

Imagine that the United States mobilizes its military forces to fight a war in a foreign country. It calls up 250,000 reserve soldiers and increases its purchases of military equipment. Many factories operate 24 hours a day to keep up with government orders. Describe several ways in which this would shift demand for products in the U.S. economy.

**CHECKPOINT**

What is the difference between the money price of a good and its time price?

**Sharpen Your Life Skills**

### Draw Conclusions

- Increased demand to replace destroyed structures
- Increased demand as people need to find a place to live while homes are rebuilt
- Increased demand as people buy lumber and other building products to repair or replace their homes
- Reduced demand because people choose to spend limited income for other products needed to rebuild
- Reduced demand as fewer people choose to vacation in damaged area
- Reduced demand because people choose to spend limited income for other products needed to rebuild

**Revisit** the In the News feature on the first page of the lesson. Ask students to review their preliminary answers and discuss the questions now that they have completed this lesson.

**Review** the objectives for Lesson 4.3. Students should be able to:

- Identify the determinants of demand, and explain how a change in each will affect the demand curve.
- Distinguish between the money price of a good and the time price of a good.

**Sharpen Your Life Skills**

### Draw Conclusions

See the answers at the bottom of this page.

### Apply Your Skill

Answers will vary. Students may point out that many workers will have more income to spend which will shift many demand curves to the right. Certainly the demand curve for military equipment will shift to the right. It is possible, however, that taxes could be raised to help pay for the war which would shift consumer demand for products to the left. Further, some consumers might buy more products because they are worried that they might not be available in the future. This would shift demand to the right.

**Lesson 4.3 • Changes in Demand**
**Key Concepts**

1. Answers will vary. Students may point out that an increase will cause people to substitute bus transportation for driving a car. The demand curve for bus tickets would shift to the right because of this change in the price of a related good.

2. Answers will vary. Students may point out that this would cause people to demand more of the product. It would change their tastes and cause the demand curve for the shampoo to shift to the right.

3. Answers will vary. Students may point out that the would cause people to put off buying until next week. The change in their expectations of future prices would cause their demand curve for towels to shift to the left.

4. The demand curve for hot dogs will stay in the same location. This is an example of a change in the quantity demanded. There will be movement from one point on the demand curve to a different point indicated by the higher price.

5. Answers will vary. Students may point out that consumers demand more “Quick Oats” because they value the time they spend preparing their breakfast.

**Graphing Exercises**

6. a. The demand curve shifts right because of a change in tastes.
   b. The demand curve shifts left because of a change in tastes.
   c. The demand curve shifts left because workers have less income to spend.
   d. The demand curve shifts right because there are more potential customers near the store.

**Think Critically**

7. Answers will vary. Students may point out that the stock market crash caused many people to feel poor so they spent less of their income on new goods or services. This reduced sales, caused workers to be laid off, and contributed to the failure of many businesses.

8. Answers will vary. Students may point out that these warnings are intended to change smokers’ tastes for cigarettes by convincing them that smoking is bad for their health. If successful, the warnings shift the demand curve to the left.

**Visualizing the Answer—Graphing Exercises**

6. The answer includes a graph. Students graphs should look similar to the one shown here. An Excel spreadsheet containing this graph along with supporting data is available on the Instructor’s Resource CD.
The Industrial Revolution began with England’s textile industry in the late 1700s. Cotton had been around since the 1630s, when it was introduced to Europe from India. Although popular, cotton was considered a threat to the British wool, linen, and silk industries. In response, Parliament restricted cotton imports. The restrictions lasted until 1736, when Great Britain changed the laws allowing the manufacture and sale of cotton. This marked the beginning of cotton manufacturing in the West.

The two basic stages of manufacturing cotton textiles were spinning and weaving. Typically these tasks were done in the home in what was called a cottage industry. Entrepreneurs supplied raw materials, such as raw cotton or thread, to a household. Then members of the household would produce thread or cloth for the entrepreneur. Of the two tasks, spinning was simpler and the spinners produced more thread than the weavers could weave. John Kay’s 1733 invention, the flying shuttle, changed much of that. It allowed one weaver rather than two to operate a loom and produce more cloth. The demand for thread began to rise.

To satisfy this demand, James Hargreaves invented the spinning jenny in the 1760s. With his invention, a single worker could spin multiple threads, but it produced a relatively weak product. Richard Arkwright invented the water frame in 1769. This innovation produced a stronger, coarser thread. Finally, Samuel Crompton’s 1779 spinning mule produced a strong yet fine thread. Once again spinners were producing more than what weavers could use. Edmund Cartwright’s power loom, patented in 1785, enabled the British cotton textile industry to explode. In 1796, the country manufactured 21 million yards of cotton cloth. That number increased to 347 million by 1830. The demand for cotton cloth proved to be highly elastic. The technological advances, coupled with a source supply in the United States, caused the price of cotton cloth to drop. By the early part of the century, Britain was even able to sell cotton cloth in India. With this increased technology, the demand for raw cotton increased. Great Britain found in the United States a willing and able supplier.

THINK CRITICALLY
Indicate how the demand curve for cotton would shift with each of the Industrial Revolution’s technological inventions. Use $D_1$ for the cottage industry demand, $D_2$ for John Kay’s flying shuttle, $D_3$ for Samuel Crompton’s spinning mule, and $D_4$ for Edmund Cartwright’s power loom.

Bibliography
**Summary**

**Consider**

Ask students to revisit the questions they were asked to consider at the beginning of the chapter. Remind students that they should be able to answer all of the questions after studying Chapter 4.

- Why are newspapers sold in vending machines that allow you to take more than one copy? See page 103—Diminishing Marginal Utility.
- How much do you eat when you can eat all you want? See page 103—Diminishing Marginal Utility.
- What economic principle is behind the saying, “Been there, done that”? See page 103—Diminishing Marginal Utility.
- Why do higher cigarette taxes cut smoking by teenagers more than by other age groups? See page 115—An Application: Teen Smoking.

**Exam View**

Use ExamView to assess students.

- Create a chapter test using questions from the existing test bank.
- Add your own questions to the existing test bank.
- Generate multiple forms of a chapter test.

**Study Skills**

Offer the following study skills suggestions for students as they review this chapter.

- Outline the chapter.
- Review Key Terms.
- Review Checkpoints.
- Work in pairs to quiz each other.
- Use Xtra! Quiz Prep for the chapter.

Direct students to the online quiz preparation for Chapter 4 at econxtra.swlearning.com.

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**Chapter Assessment**

**Summary**

**4.1 The Demand Curve**

a. Demand indicates how much of a product consumers are willing and able to buy at each possible price during a given period, other things remaining equal. The law of demand states that the higher the price, the smaller the quantity demanded, and vice versa.

b. The quantity demanded of a product grows as prices fall because of the substitution effect, income effect, and diminishing marginal utility. The law of diminishing marginal utility states that additional units of a product normally provide smaller additional amounts of utility to a consumer within a period of time.

c. Demand for a product can be expressed in a demand schedule or a graph called a demand curve. Most demand curves slope down from left to right, indicating an inverse relationship between changes in price and quantity. This means that as prices decline, the quantity demanded of the product will grow.

**4.2 Elasticity of Demand**

a. The price elasticity of demand measures the responsiveness of the quantity demanded to a change in price. Elasticity is calculated by dividing the percentage change in the quantity demanded by the percentage change in price.

b. The price elasticity of demand may be elastic, unit elastic, or inelastic. Elastic demand is indicated by a value greater than 1.0. When there is elastic demand, a percentage change in price will result in a larger percentage change in the quantity demanded. Unit elastic demand is indicated by a value of 1.0. When there is unit elastic demand, a percentage change in price will result in the same percentage change in the quantity demanded. Inelastic demand is indicated by a value less than 1.0. When there is inelastic demand, a percentage change in price will result in a smaller percentage change in the quantity sold.

c. The price elasticity of demand can be used to predict what will happen to a firm’s total revenue when it changes the price of its product. When there is elastic demand, an increase in price will result in reduced total revenue. When there is unit elastic demand, an increase in price will result in unchanged total revenue. When there is inelastic demand, an increase in price will result in increased total revenue.

d. Products that have many substitutes tend to have elastic demand. Those that are very important and have few substitutes, or that represent a small proportion of the consumer’s budget, tend to have inelastic demand. As a general rule, the more time that passes, the more elastic demand will be.

**4.3 Changes in Demand and the Time Price of Goods**

a. There are five general classifications of events that can cause the location of a demand curve to move. These are: (1) a change in consumer income, (2) a change in the price of related goods, (3) a change in the number and composition of consumers, (4) a change in consumer expectations, and (5) a change in consumer tastes.

b. Substitute products may be used interchangeably. An increase in the price of one will cause demand for the other to increase. Complementary products are normally used together. An increase in the price of one will cause the demand for the other to fall.

c. The demand for products can be influenced by time. Customers who must wait in line to buy a product may choose not to wait. They are being required to pay in time as well as money to purchase the product.

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**Overmatter pg. 104_Side Column**

**Answer**

Answers will vary. Possible answer:
The law of demand says that quantity demanded varies inversely with price, other things constant.
Review Economic Terms

Choose the term that best fits the definition. On a separate sheet of paper, write the letter of the answer.

1. The sum of the individual demand of all consumers in the market
2. A graph that shows the quantities of a particular good that will be demanded at various prices during a given time period, other things constant
3. The demand of a single consumer in the market
4. The amount of a product that is demanded at a particular price
5. An increase or decrease in demand that results from a change in a determinant of demand
6. A change in the quantity of a product demanded that results from a change in the product’s price
7. The change in total utility resulting from a one-unit increase in consumption of a particular product
8. The more of a good a person consumes per period, the smaller the increase in total utility from consuming one more unit, other things constant
9. The quantity of a good demanded per period relates inversely to its price, other things constant
10. Price multiplied by the quantity demanded at that price
11. A relation showing the quantities of a good that consumers are willing and able to buy at various prices per period, other things constant
12. Measures how responsive quantity demanded is to a price change
13. Consumer preferences; assumed to be constant along a given demand curve

Review Economic Concepts

14. True or False A change in the price of a product will not cause that product’s demand curve to shift.
15. The __?__ is demonstrated by the fact that people will buy more hot dogs and hamburgers when the price of pizza increases.
16. Elasticity expresses a relationship between the percentage change in __?__ and the resulting percentage change in __?__.
17. Which of the following is false about demand curves?
18. True or False Quantity demanded at a particular price is represented by an individual point on the demand curve.

Chapter Assessment
19. Which of the following is the correct formula for the price elasticity of demand?
   a. change in the price of the product
   change in the quantity demanded
   b. change in the quantity demanded
   change in the price of the product
   c. % change in the price of the product
   % change in the quantity demanded
   d. % change in the quantity demanded
   % change in the price of the product

20. True or False A firm’s total revenue will increase if it raises the price of a product that has a price elasticity of demand equal to 0.73.

21. If the total revenue from selling a product declines when the price of the product is increased, the demand for that product is __?__.

22. True or False A business is more likely to increase the price of its products if the demand for these products is elastic than if the demand is inelastic.

23. Which of the following does not influence the elasticity of demand?
   a. availability of substitute products
   b. availability of complementary products
   c. the share of the consumer’s budget spent on the good
   d. the timeframe of the purchase

24. True or False Market demand is the demand of an individual consumer.

25. Which of these products is most likely to have very elastic demand?
   a. a cable television service
   b. a particular brand of hand soap
   c. ground black pepper
   d. taxi service in a large city

26. True or False When consumers earn more income, their demand for all products will increase.

27. Which of the following is not a determinant of demand?
   a. consumer income
   b. prices of related goods
   c. consumer expectations and tastes
   d. all of the above would affect demand when other factors are assumed constant

28. True or False Demand for a normal good decreases as income increases.

29. The purpose of advertising is to
   a. shift a product’s demand curve to the right.
   b. shift a product’s demand curve to the left.
   c. make a product’s demand more elastic.
   d. point out a product’s substitutes to its consumers.

30. Your __?__ income is your income measured in terms of how many goods and services it can buy.

31. Which of the following pairs of products are examples of complementary goods?
   a. blank sheets of paper and copy machines
   b. dining room tables and floor lamps
   c. heating oil and natural gas
   d. warm gloves and trips to Florida
   e. peanut butter and jelly
   f. private and public transportation
   g. Coke and Pepsi
   h. alarm clocks and automobiles
   i. golf clubs and golf balls

32. A change in a __?__ will change demand for a product when there is no change in price.

33. True or False If a person’s income falls to zero, he or she will still demand some products.
35. Price Elasticity of Demand
If Rita changed the price of her tacos from $1.75 to $1.50 each, her sales would grow from 100 to 125 per day. Calculate the percentage change in price and quantity demanded and then the price elasticity of demand. Is this demand elastic, unit elastic, or inelastic?

36. Total Revenue
Calculate the total revenue Rita received from the tacos when she sold them at a price of $1.75 and now that she sells them at a price of $1.50. Can you be sure that her business is more profitable at the lower price? Explain why.

37. Market Demand
Working in small groups, determine your group’s market demand for gasoline. Make up a chart listing a variety of prices per gallon of gasoline, such as $1.00, $1.25, $1.50, $1.75, $2.00, $2.25. Each group member should determine how many gallons per week they would purchase at each possible price. Then do the following:

a. Plot each group member’s demand curve. Check to see whether each person’s responses are consistent with the law of demand.

b. Derive the “market” demand curve by adding up the quantities demanded by all students at each possible price.

c. What do you think will happen to that market demand curve after your class graduates and your incomes rise?

38. Read the Real Per Capita Disposable Income article in the EconDataOnline section at econxtra.swlearning.com. What happens to quantity of goods demanded when real per capita disposable income increases?

34. Graphing Shifts in Demand
The owner of Rita’s Tacos bought ads in a local newspaper. As a result, the demand for her tacos increased as demonstrated in the demand schedule below.

<table>
<thead>
<tr>
<th>Price Per Taco</th>
<th>Old Quantity Demanded</th>
<th>New Quantity Demanded</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2.00</td>
<td>25</td>
<td>75</td>
</tr>
<tr>
<td>$1.75</td>
<td>50</td>
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<td>125</td>
<td>175</td>
</tr>
<tr>
<td>$0.75</td>
<td>150</td>
<td>200</td>
</tr>
</tbody>
</table>

35. Price Elasticity of Demand
If Rita changed the price of her tacos from $1.75 to $1.50 each, her sales would grow from 100 to 125 per day. Calculate the percentage change in price and quantity demanded and then the price elasticity of demand. Is this demand elastic, unit elastic, or inelastic?

36. Total Revenue
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a. Plot each group member’s demand curve. Check to see whether each person’s responses are consistent with the law of demand.

b. Derive the “market” demand curve by adding up the quantities demanded by all students at each possible price.

c. What do you think will happen to that market demand curve after your class graduates and your incomes rise?

38. The quantity of goods demanded will increase when real per capita disposable income increases.

Chapter 4 Assessment
Apply Economic Concepts
34. Students’ graphs should look similar to the one shown here. An Excel spreadsheet containing this graph along with supporting data is available on the Instructor’s Resource CD.