

Consumer Choice and Behavioral Economics

Chapter Summary

As you learned in Chapter 1, economists assume that people are rational and try to make themselves as well off as possible. Economists therefore assume that when consumers spend their income they are trying to maximize their utility. **Utility** means enjoyment or satisfaction. The **marginal utility** a person receives from consuming an additional unit of a good or service will diminish as more is consumed in a given period of time. If you like Pepsi, your satisfaction will increase less from drinking a second glass than it did from drinking the first glass, and less from drinking a third glass than it did from drinking the second glass. Consumers maximize their utility when the marginal utility per dollar for each good consumed is equal.

In Chapter 3, you learned about demand curves. Demand curves slope downward because of the **income** and **substitution effects** from a change in price. A fall in price makes a good cheaper relative to substitutes—the substitution effect—but also allows a consumer to purchase more with a given amount of money—the income effect. For normal goods, the income and substitution effects both lead consumers to buy more of a good after its price falls. For inferior goods, the income effect associated with a decrease in price causes a decrease in quantity demanded, whereas the substitution effect causes quantity demanded to increase.

Social factors affect consumer choices. Firms such as Coca-Cola and Nike have long used celebrity endorsements to induce consumers to buy their products because some consumers want to buy products associated with celebrities. There are **network externalities** in the consumption of a product if the usefulness of the product increases with the number of people who use it. Your cell phone is useful because many other people also own one. Though consumer choice theory assumes consumers are rational, many people like to be treated fairly and try to treat others fairly even if this makes them worse off financially. Examples of this behavior are voluntary tipping in restaurants and donating to charities. A new area of economics, **behavioral economics**, studies consumer decisions such as these that appear not to be rational.

One of the goals of economics is to suggest ways for people to make better decisions. Consumers can improve their decision making by avoiding common pitfalls. Among the most common of these pitfalls are (1) ignoring the nonmonetary **opportunity costs** of choices (2) failure to ignore **sunk costs** and (3) being overly optimistic about future behavior.

Learning Objectives

When you finish this chapter, you should be able to:

1. **Define utility and explain how consumers choose goods and services to maximize their utility.** Utility is the satisfaction people receive from consuming goods and services. A consumer's goal is to spend available income so as to maximize utility. Utility maximization occurs when the additional (marginal) utility received per dollar spent on each good or service is equal.
2. **Use the concept of utility to explain the law of demand.** When the price of a good decreases, a consumer's purchasing power increases, causing an income effect due to the price change. The income effect increases the quantity demanded of a normal good but decreases the quantity demanded of an inferior good. The substitution effect of a decrease in price increases the marginal utility per dollar of the good. This will increase the quantity demanded of this good and decrease the quantity demanded of substitutes for this good.
3. **Explain how social influences can affect consumption choices.** Some people receive utility from consuming goods they believe are popular. Some consumers buy products associated with celebrities because using these products makes them feel closer to the celebrity endorsers or more fashionable. Technology can help explain why consumers buy products other consumers are buying since the usefulness of some products increases with the number of other consumers who use them.
4. **Describe the behavioral economics approach to understanding decision making.** Recognizing nonmonetary opportunity costs and ignoring sunk costs, which have been paid and cannot be recovered, will increase consumers' utility and make better use of their scarce resources. Being unrealistic about future behavior inhibits consumers' ability to achieve their long run goals.

Appendix: Use indifference curves and budget lines to understand consumer behavior. Your instructor may cover the appendix to this chapter. While the chapter assumes that we can measure a consumer's satisfaction, or utility, the appendix uses the more realistic assumption that consumers can *rank* different combinations of goods and services.

Chapter Review

Chapter Opener: Can Jay-Z Get You to Drink Cherry Coke? (pages 284-285)

Firms often hire celebrities to endorse their products with the expectation that the endorsements will increase their sales. For example, for nearly 100 years Coca-Cola has used movie stars and other celebrities in their advertising. One theme in this chapter, and several following chapters, is that firms try to distinguish their products from the products of rival firms (as Coke, for example, tries to distinguish itself from Pepsi) in the minds of consumers.



Helpful Study Hint

An *Inside Look* at the end of this chapter describes some additional examples of using celebrities to pitch firms' products. You may believe that advertising only increases the costs of marketing products, which are then passed on to consumers in higher prices. But advertising also

provides the consumer with information. Ads that firms place in newspapers and magazines, in particular, provide consumers with valuable information including dates and locations of special sales. Information is a valuable, though intangible, product for consumers. Often, consumers incur costs to obtain useful information. In practice, it is very difficult to distinguish between advertising spending that provides information and advertising that is intended to keep firms that cannot afford a large advertising budget from entering an industry.

Economics in YOUR Life! asks if you make consistent decisions. If you purchased a \$75 concert ticket, would you sell it to someone for \$90? Keep this question in mind as you read the chapter. The authors will answer this question at the end of the chapter.

9.1 LEARNING OBJECTIVE

9.1 Utility and Consumer Decision Making (pages 286-295)

Learning Objective 1 Define utility and explain how consumers choose goods and services to maximize their utility.

Utility is the enjoyment or satisfaction people receive from consuming goods and services. Economists assume consumers spend their limited budgets on the bundle of goods and services that provides them with the most utility, although utility cannot be measured exactly. If we assume that utility can be measured, then a certain number of “utils” (units of utility or satisfaction) are associated with each unit of a product.

Marginal utility (MU) is the change in total utility a person receives from consuming one additional unit of a good or service. The **law of diminishing marginal utility** states that consumers experience less additional satisfaction as they consume more of a good or service during a given period of time.

Because consumers have limited income, they try to receive the most utility they can as they spend their income. A **budget constraint** refers to the limited amount of income available to consumers to spend on goods and services. The model of consumer behavior can be used to determine the optimal amounts of goods a consumer will purchase given (a) knowledge of the marginal utilities (*MU*) of the goods, (b) the prices of the goods, and (c) the consumer’s budget constraint. This model applies a key economic principle you learned about in Chapter 1: optimal decisions are made at the margin.

The following information is taken from Table 9-2 on page 290 of the text. It is assumed that the price of pizza is \$2 per slice, the price of a cup of Coke is \$1, and the consumer has \$10 to spend on pizza and Coke.

Slices of pizza	MU per dollar (pizza)	Cups of Coke	MU per dollar (Coke)
1	10	1	20
2	8	2	15
3	5	3	10
4	3	4	5
5	1	5	3

The consumer maximizes utility by first buying the good for which the *MU* per dollar is higher. Because the first cup of Coke has a higher *MU* per dollar (20) than the *MU* per dollar from the first slice of pizza (10), the consumer will first spend \$1 on a cup of Coke. Because of the law of diminishing marginal

utility, the *MU* of Coke and pizza declines as more of each is consumed. The consumer will compare the *MU* per dollar of the next unit of each good in deciding how to spend his income. The consumer will maximize his utility when:

1. *MU*/Price is equal for each good consumed and
2. total spending on all goods equals the income available.

The consumer's optimal consumption is 3 slices of pizza (at \$2 each, spending \$6 on pizza) and 4 Cokes (at \$1 each, spending \$4 on Coke). Total spending is equal to the consumer's budget, \$10. Marginal utility per dollar is 5 for both pizza and Coke at this equilibrium.

The rule of equal marginal utility per dollar can be used to analyze a consumer's response to a price change. Using the previous example, if the price of pizza were to fall to \$1.50, there would be a substitution and income effect on the quantity of pizza demanded.

Slices of pizza	<i>MU</i> per dollar (pizza)	Cups of Coke	<i>MU</i> per dollar (Coke)
1	13.3	1	20
2	10.7	2	15
3	6.7	3	10
4	4	4	5
5	1.3	5	3

The decrease in the price of pizza has raised the *MU* per dollar of pizza. Previously, the consumer's \$10 budget was used to buy 3 slices of pizza and 4 cups of Coke. At the lower price of pizza, the same combination of goods costs only \$8.50. This increase in purchasing power is the income effect of the price change. And the consumer will now purchase 4 slices of pizza, but will still buy 4 Cokes as this is the consumption bundle where the entire budget is spent and the marginal utility per dollar of the last unit consumed is the same for both goods.

The **income effect** is the change in the quantity demanded of a good that results from a change in price caused by the altered consumer purchasing power, holding all other factors constant. If pizza is a normal good, the income effect of a decrease in price will lead to an increase in the quantity demanded of pizza. If pizza is an inferior good, the income effect of a decrease in price will lead to a decrease in the quantity demanded. The **substitution effect** is the change in quantity demanded of a good that results from a change in price that makes the good more or less expensive relative to other goods, holding constant the effect of the price change on consumer purchasing power.

Helpful Study Hint

The assumption that we can measure utility exactly is unrealistic. We can't strap a consumer into a chair and measure how many "utils" she receives from eating a slice of pizza. But it is realistic to assume a consumer can determine whether he or she prefers a certain amount of one product to an amount of another, or that he or she is indifferent between consuming two different products. Economists do not believe in "cardinal utility" – utility measured in utils. Economists do believe in "ordinal utility" – that consumers can rank products, or combinations of products, based on their preferences. Cardinal and ordinal measurements can be found on newspapers' sports pages. A list of baseball teams' win-loss records from first to last is an ordinal ranking. For example,

reproduced below are the standings for baseball’s National League West division for the 2007 season. The Arizona Diamondbacks team finished first, the Colorado Rockies team finished second, and so on. Baseball standings also include the number of games teams are behind the first place club. This is a cardinal ranking since it provides information regarding how far from first place each team is. For example, in 2007 the Rockies finished 1/2 game behind the Diamondbacks, the San Diego Padres finished 1 1/2 games behind the Diamondbacks (and 1 game behind the Rockies), and so on.

National League West	W	L	Games Behind
Arizona	90	72	--
Colorado	90	73	1/2
San Diego	89	74	1 1/2
Los Angeles	82	80	8
San Francisco	71	91	19

 **Helpful Study Hint**

You may have difficulty understanding why consumers will equate the *MU* per dollar for all goods and services they consume. Imagine a consumer in a store with a shopping cart with all of the items she wishes to purchase. Because this consumer has not yet bought the items, it is possible to have a “utility inspector” with a magical ability to know the *MU* of each item in the cart and who will suggest ways to make the consumer better off. Assume that the *MU* per dollar for two items is unequal and the price of each item is the same (for example, \$1). Also assume there is more than one can of peas (*MU* per dollar = 20) and more than one can of corn (*MU* per dollar = 10) in the cart. The inspector can make the consumer better off by taking away one can of corn and replacing it with one more can of peas. The total dollar value of the goods in the cart has not changed, but there is a net gain of 10 utils (20 minus 10). As similar exchanges are made, the *MU* of corn will become more than 10 – this represents the last can placed in the cart – and the *MU* of peas will decrease from 20 because there are now additional cans of peas in the cart.

Extra Solved Problem 9-2

Chapter 9 in the textbook includes two Solved Problems. Here is an extra Solved Problem to help you build your skills solving economic problems.

Supports Learning Objective 2: Use the concept of utility to explain the law of demand.

Deriving Lee's Demand Curve for Ice Cream

The following table represents Lee's marginal utility per dollar for ice cream cones and cans of lime fizz as derived in Step 4 of Solved Problem 9-1 in the textbook. The optimal level of consumption, given Lee's \$7 budget constraint and the price of \$2 per cone and \$1 per can of lime fizz, is 1 ice cream cone and 5 cans of lime fizz.

Quantity	Ice Cream Cones \$2 each		Cans of Lime Fizz \$1 each	
	<i>MU</i>	<i>MU/P</i>	<i>MU</i>	<i>MU/P</i>
1	30	15	40	40
2	25	12.5	35	35
3	20	10	26	26
4	15	7.5	18	18
5	10	5	15	15
6	5	2.5	7	7

- Assume that the price per can of lime fizz remains \$1.00. What is the optimal level of consumption if the price per ice cream cone falls to \$1.50? What is the optimal level of consumption if the price per cone falls to \$1.00? (Hint: Select the *MU* per *P* ratios to be as close as possible.)
- Use the optimal consumption bundles for each of the three prices of ice cream cone to derive Lee's demand curve for ice cream cones.

SOLVING THE PROBLEM

Step 1: Review the chapter material.

This problem is about optimal consumption bundles and how to derive a demand curve, so you may want to review the section "Where Demand Curves Come From," which begins on page 295 of the textbook.

Step 2: Calculate the marginal utility per dollar of spending for each of the two prices proposed in part (a).

Since only the price of ice cream cones is changing we can focus on the marginal utility of ice cream cones. See the table below for the results of the calculations:

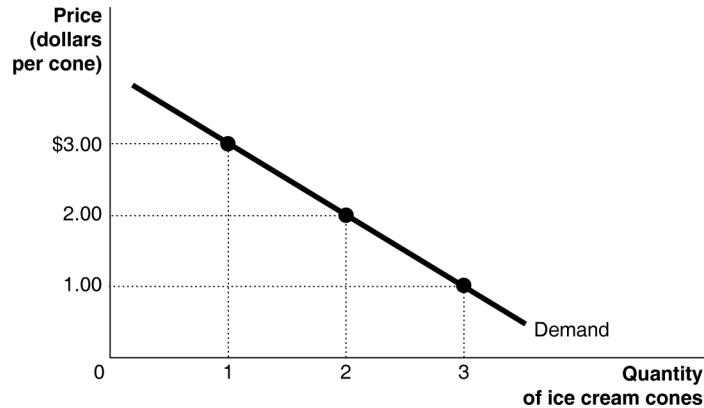
Quantity	Ice Cream Cones \$1.50 each		Ice Cream Cones \$1.00 each	
	<i>MU</i>	<i>MU/P</i>	<i>MU</i>	<i>MU/P</i>
1	30	20	30	30
2	25	17	25	25
3	20	13	20	20
4	15	10	15	15
5	10	7	10	10
6	5	3	5	5

Step 3: Determine the optimal consumption bundle for Lee given his \$7 budget for each of the new possible price of ice cream cones.

At a price of \$1.50 per ice cream cone, Lee will consume 2 ice cream cones and 4 cans of lime fizz as this is the point where the marginal utilities per dollar are closest and still within the \$7.00 budget. Similarly, when the price is \$1.00 per cone, Lee will consume 3 ice cream cones and 4 cans of lime fizz.

Step 4: Use the optimal bundles to generate Lee's demand curve for ice cream cones.

At a price of \$2.00, Lee will consume 1 ice cream cone. At \$1.50 per cone, Lee will consume 2 cones and at \$1 per cone, he will consume 3 cones.



9.2 LEARNING OBJECTIVE

9.2 Where Demand Curves Come From (pages 295-297)

Learning Objective 2 Use the concept of utility to explain the law of demand.

The substitution and income effects of price changes explain why demand curves for normal goods are downward sloping. As price decreases, the good becomes attractive relative to available substitutes, so the quantity demanded of the good will rise. This same price decrease causes an increase in the consumer's purchasing power, which causes an increase in the quantity demanded of normal goods. Although the substitution and income effects of price changes for inferior goods have opposite effects on quantity demanded, the income effect is typically quite small. So, as the price decreases, the quantity demanded will increase for nearly all goods. Economists have statistically estimated millions of demand curves using real-world data. In nearly every case, the demand curve slopes downward. The law of demand is based on real-world evidence, not economic theory alone.

9.3 LEARNING OBJECTIVE

9.3 Social Influences on Decision Making (pages 298-303)

Learning Objective 3 Explain how social influences can affect consumption choices.

Consumer decisions appear to be influenced by the actions and perceptions of other consumers. Some people obtain utility from consuming goods that others consume. Firms use celebrity endorsements to sell products because consumers often wish to be identified with products used by celebrities. Celebrity

endorsements can be particularly effective when consumers believe celebrities are knowledgeable about the products they endorse. For example, consumers know that Tiger Woods is knowledgeable about golf clubs and therefore trust his endorsement.

Consumer decisions can be affected by **network externalities**. The utility of some products increase as more consumers use them. For example, you will not find a fax machine useful if no one else owns one. Consumers' willingness to buy new technologies, such as Blu-Ray DVD players, is enhanced when they know many others have bought them, because this will ensure these technologies will be available in the future and that complementary products—such as DVDs in the Blu-Ray format—will be widely available.

Recent studies of consumer behavior indicate consumers think about fairness when they make decisions, which means that consumers may decrease their well-being financially for the sake of fairness. For example, some restaurant diners may leave a good tip even though they do not expect to visit that restaurant again.

Firms realize that consumers value fairness. Tickets for Broadway plays, concerts, and sporting contests are often priced below their equilibrium levels. These decisions appear to be a response to consumers' concerns that the equilibrium prices would be unfairly high.

 **Helpful Study Hint**

Prior to the 1970s, owners of foreign-made automobiles often had difficulty locating parts for their cars and mechanics who could repair them. One would usually need hard-to-find metric wrenches to do even simple repair work. The rapid increase in oil and gasoline prices beginning in 1973 caused a surge in demand for the smaller, more fuel-efficient automobiles offered by Japanese and German automakers. By the late twentieth century, foreign manufacturers had gained significant market share in the United States. The availability of parts, mechanics, and tools was no longer an issue for buyers of domestic or foreign automobiles. This is an example of the importance of network externalities.

 **Helpful Study Hint**

Consumers' concern for fairness explains the social stigma attached to the practice of ticket scalping. In some cities, the practice is illegal despite the voluntary nature of the transactions. Scalpers buy tickets for events well before the events take place. They sell tickets at a premium if the demand for the event increases, but they suffer losses if the demand falls due to bad weather or when a sports game has no playoff implications for the teams involved. Most economists see the actions of scalpers as benign or beneficial for consumers. However, many other people disagree and perceive scalping as an unfair practice. For an example of the affect of fairness on decision making see *Making the Connection* "Professor Krueger Goes to the Super Bowl."

Extra Solved Problem 9-3

Chapter 9 in the textbook includes two Solved Problems. Here is an extra Solved Problem to help you build your skills solving economic problems.

Supports Learning Objective 3: Explain how social influences can affect consumption choices.

“Ladies and gentlemen: In this corner, the undisputed heavyweight champion of the marketing world: George Foreman!”

After stunning losses to Muhammad Ali and Jimmy Young, former heavyweight boxing champion George Foreman retired from the ring and spent over a decade in near obscurity. At age 40, he began an improbable comeback that resulted in his regaining the heavyweight title in 1994 at age 45. But even more improbable has been Foreman’s emergence as one of the most successful celebrity endorsers of any era. Salton Inc., the manufacturer of The George Foreman Grill, sold more than 55 million grills since the product was first launched in 1995. Foreman has endorsed other products as well, including Meineke Mufflers and the George Foreman Signature Collection, a clothing line sold by the Casual Male Big and Tall retail chain. By the end of 2004, Foreman had earned about \$240 million from celebrity endorsements, nearly three times what he earned from boxing. An important part of Foreman’s success is his amiable persona, a contrast with the sullen image he had in his early boxing years. Foreman recognizes the importance of his positive image.

He tries all potential new products – gathering approvals from his wife and children – before putting his name on anything. John Bellamy, CEO of Knockout Group Inc., says Foreman went so far as to put an ethics clause in Knockout’s contract prohibiting it from selling the company to anyone involved in alcohol, tobacco, pornography, or gambling...“The most important thing to him is image,” Bellamy says.

Source: “George Foreman: Marketing Champ of the World,” *BusinessWeek Online*. December 20, 2004.

- a. Why do consumers buy products endorsed by George Foreman?
- b. Celebrity endorsers are some dropped from product endorsements, as happened in recent years to Whoopi Goldberg and Mary-Kate Olsen. Contrast Foreman’s success with these marketing failures.

SOLVING THE PROBLEM

Step 1: Review the chapter material.

This problem is about how celebrity endorsements influence consumer choice, so you may want to review the section “Social Influences on Decision Making,” which begins on page 298 of the textbook.

Step 2: Answer question (a).

Part of Foreman’s appeal stems from his personality. Many consumers know and like Foreman and want to own products he endorses because they know other people who own these products. Consumers may also believe Foreman is knowledgeable about the products he endorses, such as George Foreman’s Grills and his line of “Big and Tall” men’s clothing.

Step 3: Answer question (b).

Goldberg and Olsen received adverse publicity for behavior that made companies unwilling to continue using them in their advertising campaigns. In contrast, Foreman carefully selects the products he endorses to maintain his credibility with consumers and the firms whose products he endorses.

9.4 LEARNING OBJECTIVE

9.4 Behavioral Economics: Do People Make Their Choices Rationally? (pages 303-308)

Learning Objective 4 Describe the behavioral economics approach to understand decision making.

Some economists have questioned whether consumers make decisions rationally. Consumers sometimes make poor choices. Among the most important reasons for poor choices are: failure to account for nonmonetary opportunity costs, failure to ignore sunk costs, and overly optimistic assessments of future behavior.

Helpful Study Hint

Sunk costs are often ignored not only by consumers but by government officials and even baseball executives. Before the 2002 baseball season, Allard Baird, the general manager of the Kansas City Royals, decided to release pitcher José Rosado. Writing about this decision Rany Jazayerdi wrote: “[I]t’s the first piece of evidence...that Baird understands...sunk costs. Rosado was paid \$3.5 million to make five starts in 2000...\$3.25 million again in 2001 to do absolutely nothing. He’s already guaranteed \$533,000 this year...it must be awfully tempting to keep him on the roster...in hope that, after so much time and so much money, their investment might finally pay some dividends...Baird cut Rosado because he compared Rosado to the other [pitching] options...and came to the...conclusion that the only thing Rosado had on [other pitchers] is service time and income.”

Source: Rany Jazayerdi, “Rany on the Royals: Cutting Bait,” posted on the website baseballprospectus.com, March 12, 2002.

Helpful Study Hint

Economics in YOUR Life! asked if you make consistent decisions. If you purchased a \$75 concert ticket, would you sell it to someone for \$90? The cost of going to see the concert is what you have to give up for the ticket. Initially, the cost was just \$75—the dollar price of the ticket. This amount was also the most you were willing to pay. However, once someone offers you \$90 for the ticket, the cost of seeing the concert rises to \$90. The reason the cost of the concert is now \$90 is that once you turn down an offer of \$90 for the ticket you have incurred a nonmonetary

opportunity cost of \$90 if you use the ticket yourself. The endowment effect explains why some people would not sell the ticket for \$90 even though they would not have bought it at the same price. People seem to value things that they have more than things that they do not have. Therefore, a concert ticket you already own may be worth more to you than a concert ticket you have yet to purchase. Behavioral economists study situations like this where people make choices that do not appear to be economically rational.

Key Terms

Behavioral economics. The study of situations in which people make choices that do not appear to be economically rational.

Budget constraint. The limited amount of income available to consumers to spend on goods and services.

Endowment effect. The tendency of people to be unwilling to sell a good they already own even if they are offered a price that is greater than the price they would be willing to pay to buy the good if they didn't already own it.

Income effect. The change in the quantity demanded of a good that results from the effect of a change in price on consumer purchasing power, holding all other factors constant.

Indifference curve. A curve that shows the combinations of consumption bundles that give the consumer the same utility.

Law of diminishing marginal utility. The principle that consumers experience diminishing additional satisfaction as they consume more of a good or service during a given period of time.

Marginal rate of substitution. The slope of an indifference curve, which represents the rate at which a consumer would be willing to trade off one good for another.

Marginal utility (MU). The change in total utility a person receives from consuming one additional unit of a good or service.

Network externalities. The situation where the usefulness of a product increases with the number of consumers who use it.

Opportunity cost. The highest-valued alternative that must be given up to engage in an activity.

Substitution effect. The change in the quantity demanded of a good that results from a change in price, making the good more or less expensive relative to other goods, holding constant the effect of the price change on purchasing power.

Sunk cost. A cost that has already been paid and cannot be recovered.

Utility. The enjoyment or satisfaction people receive from consuming goods and services.

Appendix

Using Indifference Curves and Budget Lines to Understand Consumer Behavior (pages 317-331)

LEARNING OBJECTIVE: Use indifferent curves and budget lines to understand consumer behavior.

Consumer Preferences

Rather than assume utility is measured in utils, it is more realistic to assume that consumers rank different combinations of goods and services by how much utility they provide. If a consumer is presented with two alternative consumption bundles (A and B) one can assume she will be able to decide on one of the following:

1. the consumer prefers A to B , or
2. the consumer prefers B to A , or
3. the consumer is indifferent between A and B because she receives equal utility from A and B .

Economists assume the consumer's preferences are transitive. This means that if a consumer prefers A to B and B to C , then she must prefer A to C . Given the assumptions made, we can draw a map of a consumer's preferences using indifference curves. An **indifference curve** is a curve that shows the combinations of consumption bundles that give the consumer the same utility. Indifference curves assume that consumption bundles consist of various amounts of only two goods. Each possible combination of two goods – for example, cans of Coca-Cola and slices of pizza – has an indifference curve passing through it. A consumer is indifferent among all the consumption bundles that are on the same indifference curve.

In a graph of indifference curves, the further to the right a curve is the greater the utility it represents. Along an indifference curve the slope (which is called the **marginal rate of substitution (MRS)**) indicates the rate at which a consumer is willing to trade off one product for another, keeping total utility constant. The MRS decreases as we move down the indifference curve. This decrease in the MRS means the indifference curves are bowed in or convex.

Indifference curves do not cross. If two indifference curves (I_1 and I_2) crossed, they would share a common point (point X). Assume that Y is a point on I_2 so that the consumer would be indifferent between points X and Y . Assume that point Y lies on the portion of I_2 that is above I_1 . Z is another point on I_1 so that the consumer is indifferent between X and Z . Because of the transitivity assumption, the consumer should be indifferent between points Z and Y , but Y represents more of both Coke and pizza. The violation of the transitivity assumption proves that indifference curves cannot cross.



Helpful Study Hint

Be sure you understand Figure 9A-1 on page 318 and Figure 9A-2 on page 319 and the description of these graphs in the text. Notice that the indifference curves do not bend backward, or become positively sloped. This means that receiving more Coke and pizza always increases utility.

If indifference curves were positively sloped, this would mean that receiving more of one good (for example, pizza) would lower consumer utility and require more of the other good to maintain utility at the same level. (Positively sloped indifference curves are sometimes used to model economic “bads” such as pollution and risk.)

The Budget Constraint

A consumer’s budget constraint is the amount of income the consumer has to spend on goods and services. Knowing a consumer’s income and the prices of two goods he or she can buy allows us to draw a budget line in a graph with the amount of either good measured on the vertical and horizontal axes of the graph. The vertical intercept of the budget line is the maximum amount of a good (for example, cans of Coke) that can be bought with the consumer’s income (for example, \$10) and the price of the good (for example, \$1). The horizontal intercept of the budget line is the maximum of the other good (for example, slices of pizza) that can be bought with the consumer’s income.

The slope of the budget constraint is constant and is equal to the ratio of the price of pizza (the good measured on the horizontal axis) to the price of Coke (the good measured along the vertical axis) multiplied by negative 1.



Helpful Study Hint

Budget lines are similar to the production possibilities frontiers introduced in chapter 2. Figure 9A-3 on page 320 illustrates a budget line for Dave, a representative consumer. Points on the budget line represent maximum alternative combinations of two goods, points inside the budget line represent affordable but inefficient consumption bundles, and points above the budget line represent unaffordable consumption bundles.

Choosing the Optimal Consumption of Pizza and Coke

To maximize utility, a consumer needs to be on the highest indifference curve, given the consumer’s budget constraint. The combination of goods that will maximize utility subject to a consumer’s budget constraint is at the tangency of the budget line with an indifference curve. If the price of one of the goods changes, the budget line will change. For example, when the price of pizza decreases to \$1, more consumption bundles can be purchased than were previously possible. The change in the budget line from a price decrease results in a new combination of goods that will maximize utility.

By changing the price of one of the goods and determining amount of the good that will be purchased after the price change, one can derive the demand curve for the good. Indifference curves and budget constraints can be used to analyze the income and substitution effects from a price change. Assume that a consumer is maximizing utility at the tangency of a budget line and indifference curve I_1 . Assume a change in the price of pizza from \$2 to \$1. The budget line changes to reflect the price change and the lines’ new slope. The consumer maximizes utility at the tangency of the new budget line and indifference curve I_2 as in Figure 9A-6.

Drawing a line parallel to the new budget line (that is, with the new line’s slope) tangent to the I_1 illustrates the substitution effect of the price change. The change in consumption from the tangency of a line parallel to the new budget line and I_1 to the tangency of the new budget line and I_2 illustrates the

income effect of the change in price. Increases in income shift the budget line outward and enable consumers to reach higher indifference curves.

 **Helpful Study Hint**

It is much easier to understand how the optimal combination of goods is determined and how price changes change the optimal combination with graphs rather than with words alone. Be sure you understand the graphs in Figures 9A-4 through 9A-8, *Making the Connection, Dell Determines the Optimal Mix of Products*, and *Solved Problem 9A-1*.

The Slope of the Indifference Curve, the Slope of the Budget Line, and the Rule of Equal Marginal Utility per Dollar Spent

At the point of optimal consumption, the *MRS* is equal to the ratio of the price of the product on the horizontal axis to the price of the product on the vertical axis. The slope of the indifference curve is the rate at which a consumer is *willing* to trade off one good for the other. The slope of the budget line is the rate at which a consumer is *able* to trade off one good for the other. Only at the point of optimal consumption is the rate at which a consumer is willing to trade off one good for the other equal to the rate which she can trade off one good for the other.

Indifference curves and budget lines can be used to explain the rule of equal marginal utility per dollar. When a consumer moves downward along an indifference curve, more of one good (for example, pizza) and less of another good (for example, Coke) is consumed but utility is constant. Moving along an indifference curve results in a loss in utility equal to the change in the quantity of Coke multiplied by the marginal utility of Coke:

$$= -\Delta\text{Coke} \times \text{MU}_{\text{Coke}}$$

and a gain in utility equal to the change in the quantity of pizza multiplied by the marginal utility of pizza.

$$= +\Delta\text{pizza} \times \text{MU}_{\text{pizza}}$$

The loss in utility from consuming less Coke equals the gain in utility from consuming more pizza because the consumer remains on the same indifference curve. The change in utility can be written:

$$-\Delta\text{Coke} \times \text{MU}_{\text{Coke}} = +\Delta\text{pizza} \times \text{MU}_{\text{pizza}}$$

This can be rewritten:

$$\frac{-\Delta \text{Coke}}{+\Delta \text{pizza}} = -\frac{\text{MU}_{\text{pizza}}}{\text{MU}_{\text{Coke}}}$$

$$\text{MRS} = -\frac{\text{MU}_{\text{pizza}}}{\text{MU}_{\text{Coke}}}$$

Since the slope of the indifference curve (MRS) equals the slope of the budget line at the point of optimal consumption then:

$$\begin{aligned} -\frac{MU_{\text{pizza}}}{MU_{\text{Coke}}} &= -\frac{P_{\text{pizza}}}{P_{\text{Coke}}} \\ \frac{MU_{\text{pizza}}}{MU_{\text{Coke}}} &= \frac{P_{\text{pizza}}}{P_{\text{Coke}}} \end{aligned}$$

Rewriting this equation yields marginal utility per dollar:

$$\frac{MU_{\text{pizza}}}{P_{\text{pizza}}} = \frac{MU_{\text{Coke}}}{P_{\text{Coke}}}$$

Key Terms – Appendix

Indifference curve. A curve that shows the combinations of consumption bundles that give the consumer the same utility.

Marginal rate of substitution (MRS). The slope of an indifference curve, which represents the rate at which a consumer would be willing to trade off one good for another.

Self-Test

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

Multiple-Choice Questions

- When total utility is maximized, which of the following is true concerning marginal utility?
 - Marginal utility is equal to total utility.
 - Marginal utility equals zero.
 - Marginal utility is also maximized.
 - Marginal utility is minimized.
- If marginal utility is negative, what must be true about total utility?
 - Total utility increases with additional consumption.
 - Total utility decreases with additional consumption.
 - Total utility remains constant regardless of the number of units consumed.
 - Total utility equals zero.
- Which of the following statements concerning total utility and marginal utility is correct?
 - Marginal utility is usually larger than total utility.
 - Total utility is the sum of marginal utilities.
 - Marginal utility is the sum of total utility.
 - Marginal utility is maximized when total utility is zero.

4. According to the law of diminishing marginal utility, as the consumption of a particular good increases,
- total utility increases by more and more.
 - marginal utility increases.
 - total utility decreases.
 - marginal utility decreases.
5. Refer to the table below. Total utility derived from consuming three ice cream cones equals

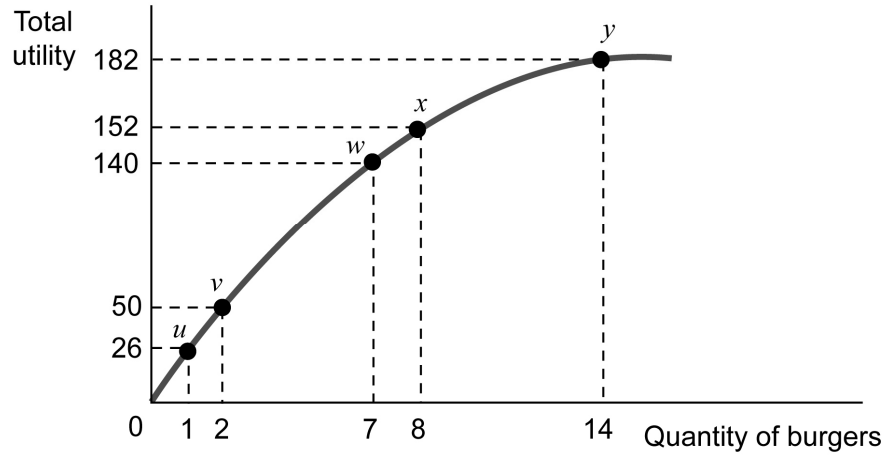
Ice Cream Cones	Total Utility	Marginal Utility
1	10	?
2	18	?
3	?	6
4	28	?
5	?	2

- 34.
 - 6.
 - 22.
 - 24.
6. Refer to the table below. The marginal utility of consuming the second ice cream cone equals

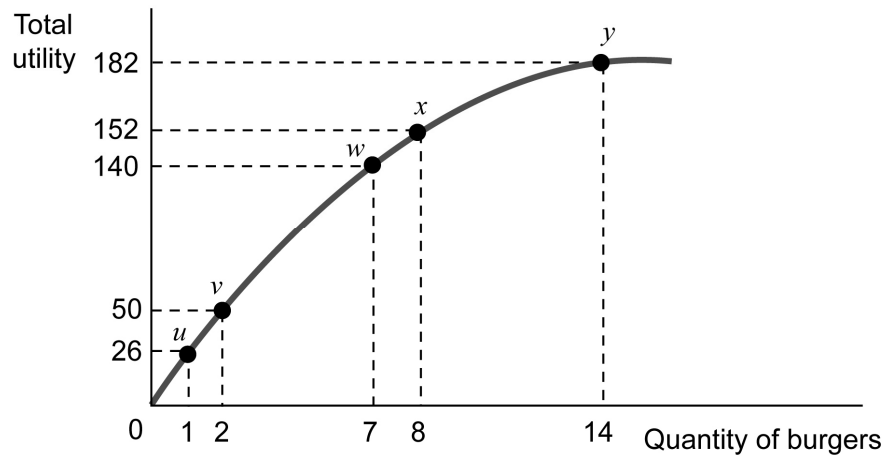
Ice Cream Cones	Total Utility	Marginal Utility
1	10	?
2	18	?
3	?	6
4	28	?
5	?	2

- 10.
- 9.
- 8.
- 18.

7. Refer to the graph below. Marginal utility is



- a. greater at points *u* and *v* than at points *w* and *x*.
 - b. greater at points *w* and *x* than at points *u* and *v*.
 - c. the same at points *u* and *v* than at points *w* and *x*.
 - d. greatest at point *y*.
8. Refer to the graph below. From the information in the graph, we can deduce that the marginal utility curve would be



- a. downward sloping.
- b. upward sloping.
- c. horizontal.
- d. vertical.

9. What is a budget constraint?
- The limited amount of income available to consumers to spend on goods and services.
 - The amount of income that yields equal marginal utility per dollar spent.
 - The amount of utility that a consumer receives from spending a limited amount of income on goods and services.
 - The amount of money necessary to purchase a given combination of goods.
10. According to economists, decisions to increase an activity, such as consumption, are based on the following:
- An evaluation of the incremental implications of that decision, that is, an evaluation of what happens at the margin.
 - An evaluation of the totality of the consequences of our actions, both past and present.
 - The maximization of opportunity cost.
 - The maximization of social welfare.
11. Refer to the formula below. In this case, the marginal utility per dollar spent on good X is less than the marginal utility per dollar spent on good Y . According to the rule of equal marginal utility per dollar spent, what can a consumer do to increase total utility from consumption of goods X and Y ?

$$\frac{\text{Marginal utility of good } X}{\text{Price of good } X} < \frac{\text{Marginal utility of good } Y}{\text{Price of good } Y}$$

- Increase the consumption of good X
 - Increase the consumption of good Y
 - Increase the consumption of both goods
 - Decrease the consumption of both goods
12. A consumer maximizes total utility from a limited amount of income when
- choosing more of one good and less of another increases utility.
 - choosing more of one good and less of another no longer increases utility.
 - marginal utility is maximized.
 - marginal utility per dollar spent on each good is highest.
13. Suppose you have a fixed budget for two goods, X and Y . The price of good X is $P_x = \$10$ and the price of good Y is $P_y = \$5$. The marginal utility of X is $MU_x = 60$ utils and the marginal utility of Y is $MU_y = 15$ utils. Should the consumption of X and/or Y be higher, lower, or remain the same?
- Consumption of good X should increase, and consumption of good Y should decrease.
 - Consumption of good X should decrease, and consumption of good Y should increase.
 - The current combination of goods maximizes total utility; consumption should remain the same.
 - The consumption of goods X and Y should both increase.

14. Refer to the table below. As stated in the first row, the income of the consumer (I) equals \$20. The price of good X (P_x) equals \$4.00 and the price of good Y (P_y) equals \$2.00. Total utility derived from consuming X and Y is listed. What combination of goods X and Y will maximize utility subject to her budget constraint?

I = \$20.00		P _X = 4.00		P _Y = \$2.00			
X	Total Utility	MU _X	MU _X P _X	Y	Total Utility	MU _Y	MU _Y P _Y
0	0	-		0	0	-	
1	40			1	35		
2	65			2	55		
3	85			3	70		
4	100			4	80		
5	108			5	84		
6	114			6	85		

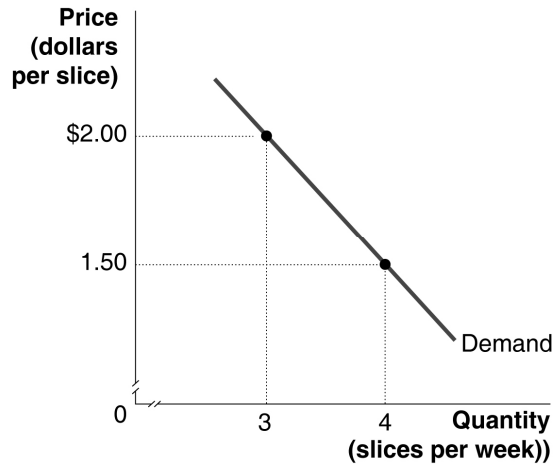
- 6 units of X and 6 units of Y
 - 5 units of X
 - 3 units of X and 4 units of Y
 - 4 units of X and 3 units of Y
15. Refer to the table below. As stated in the first row, the income of the consumer (I) equals \$20. The price of good X (P_x) equals \$3.00 and the price of good Y (P_y) equals \$2.00. Total utility derived from consuming X and Y is listed. What combination of goods X and Y will maximize utility subject to her budget constraint?

I = \$20.00		P _X = \$3.00		P _Y = \$2.00			
X	Total Utility	MU _X	MU _X P _X	Y	Total Utility	MU _Y	MU _Y P _Y
0	0	-		0	0	-	
1	40			1	35		
2	65			2	55		
3	85			3	70		
4	100			4	80		
5	108			5	84		
6	114			6	85		

- 6 units of X and 6 units of Y
 - 6 units of X and 1 unit of Y
 - 4 units of X and 3 units of Y
 - 4 units of X and 4 units of Y
16. Fill in the blanks. The change in the quantity demanded of a good that results from _____, holding all other factors constant, is known as the *substitution effect*.
- the effect of a change in price on consumer purchasing power
 - a change in price making the good more or less expensive relative to other goods
 - an increase in the usefulness of a product as the number of consumers who use it increases
 - the tendency of people to be unwilling to sell something they own

17. Fill in the blanks. The change in the quantity demanded of a good that results from _____, holding all other factors constant, is known as the *income effect*.
- the effect of a change in price on consumer purchasing power
 - a change in price, making the good more or less expensive relative to other goods
 - an increase in the usefulness of a product as the number of consumers who use it increases
 - the tendency of people to be unwilling to sell something they own
18. How do the income and substitution effects work when the price of a normal good decreases?
- Both the income effect and the substitution effect cause an increase in the quantity demanded of the good.
 - Both the income effect and the substitution effect cause a decrease in the quantity demanded of the good.
 - The income effect causes an increase in the quantity demanded and the substitution effect causes a decrease in the quantity demanded.
 - The income effect causes a decrease in the quantity demanded and the substitution effect causes an increase in the quantity demanded.
19. How do the income and substitution effects work when the price of an inferior good decreases?
- Both the income effect and the substitution effect cause an increase in the quantity demanded of the good.
 - Both the income effect and the substitution effect cause a decrease in the quantity demanded of the good.
 - The income effect causes an increase in the quantity demanded and the substitution effect causes a decrease in the quantity demanded.
 - The income effect causes a decrease in the quantity demanded and the substitution effect causes an increase in the quantity demanded.
20. What is the inclination of the demand curve for an inferior good if the income effect prevails over the substitution effect?
- Downward sloping
 - Upward sloping
 - Horizontal
 - Vertical

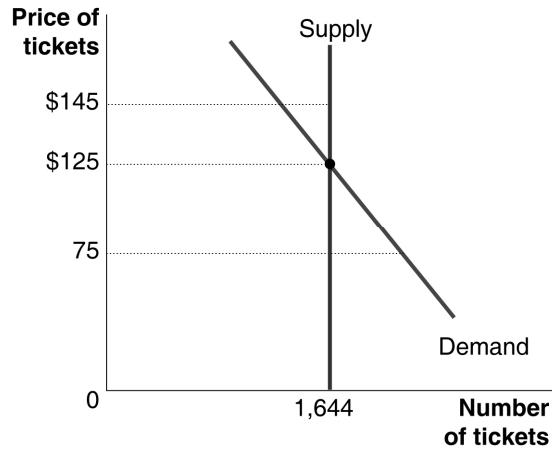
21. Refer to the graph below. The graph shows your weekly demand for pizza. How was this demand curve constructed?



- a. By computing your optimal consumption of pizza at the various prices shown, all else the same.
 - b. By computing your consumption of pizza when the price of pizza remains constant.
 - c. By computing your consumption of pizza when both the price of pizza and the number of slices you consume per week remain constant.
 - d. By computing your consumption of pizza at various prices, regardless of utility gained.
22. What are the characteristics of *Giffen* goods?
- a. Giffen goods have downward-sloping demand curves.
 - b. Giffen goods are normal, not inferior goods.
 - c. Giffen goods are inferior goods for which the income effect prevails over the substitution effect when price changes.
 - d. All of the above
23. Which of the following factors best explains why consumers would prefer to go to a restaurant that was popular than another restaurant that had similar décor and serves similar food but had fewer customers?
- a. Network externalities
 - b. Some people receive utility from goods they believe are popular.
 - c. Income and substitution effects
 - d. Celebrity endorsements
24. Whenever consumption takes place publicly, what does your decision to buy a product depend on?
- a. The decision depends strictly on the characteristics of the product.
 - b. The decision depends strictly on how many other people are buying the product.
 - c. The decision depends both on the characteristics of the product and on how many other people are buying the product.
 - d. The decision depends on factors other than the characteristics of the product or how many people are buying it.

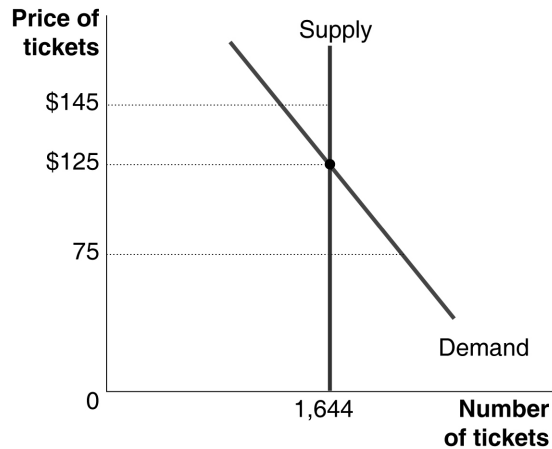
25. What happens when *network externalities* are present?
- The usefulness of telecommunications equipment rises.
 - The usefulness of networks diminishes with the number of consumers who enter them.
 - The usefulness of a product increases with the number of consumers who use it.
 - The usefulness of a product decreases as the number of products rises.
26. What happens when a product is *path dependent*?
- The technology used to produce the product has a specific growth path.
 - The product will have advantages over other products if it was the first one to be introduced in the market.
 - The cost of switching to a better technology gives the initial technology an advantage.
 - The path that a product follows depends on the firm that uses the best technology to produce it.
27. What are the potential results of *path dependence*?
- Market failure
 - A loss of efficiency if the government chooses to intervene in these markets
 - A reduction in switching costs
 - All of the above
28. In considering consumers' attitudes toward fairness, which of the following is supported by a great deal of evidence?
- People are interested mainly in making themselves as well off as possible.
 - People attempt to treat others fairly, even if doing so makes them worse off financially.
 - People attempt to treat others fairly, but only if doing so makes them better off financially.
 - People usually ignore fairness when making spending decisions.
29. Which of the following is consistent with the general view of fairness by consumers?
- In order to part with their money, consumers need to receive something material in return.
 - Making donations gives people more utility than if they had kept the money and spent it on themselves.
 - People leave tips but only if they anticipate returning to the same restaurant again.
 - All of the above
30. In the *ultimatum game*, if neither the allocator nor the recipient cared about fairness, what would be the optimal distribution of \$20.00?
- \$19.99 for the allocator and \$0.01 for the recipient
 - \$10.00 for the allocator and \$10.00 for the recipient
 - \$19.99 for the recipient and \$0.01 for the allocator
 - \$20.00 for the allocator and nothing for the recipient
31. In the *ultimatum game*, when the allocator and the recipient care about fairness, how is the distribution of \$20.00 affected?
- Allocators receive everything and recipients nothing.
 - Recipients usually reject offers of less than a 10 percent share.
 - Allocators usually offer recipients a very small share.
 - Allocators and recipients always end up sharing the \$20.00 equally.

32. Refer to the graph below. At what price level is there a shortage of tickets?



- a. At \$75
- b. At \$125
- c. At \$145
- d. At all three prices

33. Refer to the graph below. When producers take fairness into account, which of the following would most likely be true?



- a. The market will almost always settle in equilibrium at \$125.
- b. Producers could charge \$75 even though the result would be a shortage.
- c. Producers could charge \$145 in anticipation of stronger demand.
- d. Producers could raise prices gradually as demand strengthens.

34. Fill in the blanks. Which of the following has been found by researchers in surveys of consumers? Most people considered it _____ for firms to raise their prices following an increase in costs _____ to raise prices following an increase in demand.

- a. fair; and fair
- b. fair; but unfair
- c. unfair; but fair
- d. unfair; and unfair

35. Fill in the blanks. Researchers have found that sometimes firms will give up some profits in the _____ to keep their customers happy and increase their profits in the _____.
- short run; long run
 - long run; short run
 - sale of some goods; sale of other goods
 - early stages of product development; mature market
36. Based on the textbook's description of Alan Krueger's study, which of the following statements best describes the policy the National Football League (NFL) uses to set the prices of Super Bowl tickets?
- The NFL attempts to set ticket prices at their equilibrium levels.
 - The NFL sets prices at less than equilibrium levels in order to allow corporate sponsors and teams to resell tickets at higher prices.
 - The NFL sets prices at greater than equilibrium levels to discourage ticket scalping.
 - The NFL sets prices at less than equilibrium levels to avoid alienating football fans.
37. What is the study of situations in which people act in ways that are not economically rational called?
- Normative economics
 - Rational economics
 - Behavioral economics
 - The economics of fairness
38. Which of the following mistakes do consumers commonly commit when making decisions?
- They take into account monetary costs but ignore nonmonetary opportunity costs.
 - They fail to ignore sunk costs.
 - They are overly optimistic about their future behavior.
 - All of the above
39. According to the *endowment effect*, people are unwilling to sell a good they already own in which of the following cases?
- Even if they are offered a price greater than the price they would pay if they did not already own the good
 - If they are offered a price lower than the price they would have to pay to replace the good
 - If they can't replace the good
 - If the good was a gift
40. Which of the following reasons is attributed to being overweight according to economists who study this problem?
- People undervalue the utility to be received in the future.
 - People overvalue the utility from current choices.
 - People's preferences are not consistent over time.
 - All of the above

Short Answer Questions

1. Is it possible for a normal good to have an upward-sloping demand curve? Explain briefly.

2. A Congressional representative explained his support for a spending project in his district by arguing “The bridge that is being built has cost the taxpayers of the United States \$15 million. If we don’t spend an additional \$20 million to finish the bridge, the initial \$15 million will be wasted. We owe it to the taxpayers to finish this project.” Explain the decision-making mistake the representative made in this statement.

3. In Table 9-2 (page 290) from the textbook, you have a budget of \$10 to spend on pizza and coke and the pizza costs \$2 per slice while Coke is \$1.00 per cup. You would maximize your utility by consuming 3 slices of pizza and 4 Cokes. What quantities of Coke and pizza would you consume if your budget increased to \$13?

4. Some consumers argued that VHS video recorders used technology that was inferior to the technology used by Sony Betamax recorders. Nevertheless, VHS technology dominated the market for video recorders, and by the end of the twentieth century, Betamax recorders were so rare that their owners found it to be nearly impossible to purchase movies taped in Betamax format. Is this an example of market failure?

5. Approximately 20 percent of U. S. adults smoke cigarettes despite the documented health risks associated with smoking. Explain how the prevalence of smoking can be cited as an example of irrational decision-making.

True/False Questions

- T F 1. Coca-Cola has used celebrity endorsements to sell their products since the 1700s.
- T F 2. Marginal utility is the total utility a person receives from consuming one additional unit of a good or service.
- T F 3. One of the conditions for maximizing utility is that total spending on goods must be equal to the amount available to be spent.
- T F 4. For an inferior good, a price decrease increases a consumer’s purchasing power and causes the quantity demanded to increase.
- T F 5. Gary Becker and Kevin Murphy are among the economists who believe that social factors such as culture, customs, and religion do not explain the choices consumers make.
- T F 6. Economists use the phrase “network externalities” to describe the role technology plays in explaining why consumers buy products that other consumers are already buying.
- T F 7. Switching costs can explain why consumers buy products that have inferior technologies.
- T F 8. A Giffen good has an upward-sloping demand curve.
- T F 9. When the price of a normal good decreases, the substitution effect causes the quantity demanded to increase. When the price of an inferior good decreases, the substitution effect causes the quantity demanded to decrease.
- T F 10. Economists believe that it is possible to measure utility in units called “utils.”

- T F 11. When economists state “optimal decisions are made at the margin” they mean that most decisions people make involve doing a little more of one thing or a little more of an alternative.
- T F 12. Firms pay celebrities to endorse their products because they believe this will increase the demand for these products.
- T F 13. Firms will sometimes not raise their prices, even when there is a large increase in demand for their products, because they fear consumers will consider the price increases unfair.
- T F 14. Consumers often commit the mistake of ignoring sunk costs when they make decisions.
- T F 15. The endowment effect is used to describe the mistake a consumer makes when he accounts for the monetary costs of his decisions but ignores the nonmonetary opportunity costs.

Answers to the Self-Test

Multiple-Choice Questions

Question	Answer	Explanation
1	b	Maximum total utility is consistent with zero marginal utility. Remember, marginal utility is the slope of the total utility curve. At its maximum, the slope of the total utility curve is zero.
2	b	Figure 9-1 on page 288 in the textbook shows this clearly.
3	b	The table in Figure 9-1 on page 288 in the textbook confirms this fact.
4	d	According to the law of diminishing marginal utility, consumers experience diminishing additional satisfaction as they consume more of a good or service during a given period of time.
5	d	Total utility is the sum of marginal utilities. Therefore, total utility = $18 + 6 = 24$.
6	c	Marginal utility is the additional utility caused by the consumption of one additional ice cream cone, so $18 - 10 = 8$.
7	a	As total utility increases, marginal utility decreases.
8	a	For successive units of X consumed, the values of marginal utility would be: 40, 25, 20, 15, 8, and 6, so the marginal utility is negatively sloped.
9	a	This is the textbook’s definition of a budget constraint.
10	a	Optimal decisions are made at the margin.
11	b	Increasing the consumption of good Y causes the marginal utility of good Y to decrease, thus lowering the numerator of that fraction and bringing both fractions into equality.
12	b	When a consumer maximizes utility subject to the budget constraint, the marginal utility of the last dollar spent on each good is the same.
13	a	Apply the utility maximizing rule: $(60/10) > (15/5)$. Since the marginal utility per dollar spent on X is greater than the marginal utility per dollar spent on Y , the quantity of X consumed should increase. As the quantity consumed of good X increases, the MU_x decreases, lowering the numerator and bringing both fractions into equality. At the same time, the quantity consumed of Y should decrease. This will increase the marginal utility of Y , raising the numerator of the right side of the equation and also bringing both fractions into equality.
14	c	The marginal utility per dollar spent on the third unit of X ($20/\$4 = 5$) equals the marginal utility per dollar spent on the fourth unit of Y ($10/\$2 = 5$).
15	d	The marginal utility per dollar spent on the fourth unit of X ($15/\$3 = 5$) equals the marginal utility per dollar spent on the fourth unit of Y ($10/\$2$).

- 16 b If we hold constant the effect of the price change on your purchasing power, and just focus on the effect of the price being lower relative to the price of the other good, we have isolated the substitution effect of the price change.
- 17 a An increase in purchasing power is essentially the same thing as an increase in income. The change in the quantity of pizza you will demand because of this increase in purchasing power—holding all other factors constant—is the income effect of the price change.
- 18 a The lower price increases purchasing power and lowers the opportunity cost of consuming the good.
- 19 d Refer to the effects of a price change in Table 9-4 on page 294 in the textbook.
- 20 b When the price of an inferior good falls, the income and substitution effects work in opposite directions: The income effect causes consumers to decrease the quantity of the good they demand, whereas the substitution effect causes consumers to increase the quantity of the good they demand. It is possible, then, that consumers might actually buy less of a good when the price falls. If this happened, then the demand curve would be upward-sloping.
- 21 a A consumer responds optimally to the fall in the price of a product by consuming more of that product. When the price of pizza falls from \$2 per slice to \$1.50, the optimal quantity of slices consumed rises from 3 to 4. We assume that tastes and preferences, income and the price of related goods remain constant. When we graph this result, we have the consumer's demand curve.
- 22 c For a demand curve to be upward sloping, the good would have to be an inferior good, and the income effect would have to be larger than the substitution effect. Goods that have both of these characteristics are called Giffen goods.
- 23 b Although economists have traditionally believed social influences on consumer choice are unimportant, some consumers appear to receive utility from consuming goods that are popular with other consumers.
- 24 c Whenever consumption takes place publicly, many consumers will base their purchasing decisions on what other consumers buy. Examples include eating in restaurants, attending sporting events, wearing clothes or jewelry, or driving cars. In all these cases, the decision to buy a product will depend partly on the characteristics of the product and partly on how many other people are buying the product.
- 25 c There are network externalities in the consumption of a product if the usefulness of the product increases with the number of consumers who use it. For example, if you owned the only telephone in the world, it would not be very useful.
- 26 c Once a product becomes established, consumers may find it too costly to switch to a new product that contains a better technology. The selection of products may be *path dependent*. That means that because of switching costs, the technology that was first available may have advantages over better technologies that were developed later.
- 27 a Some economists have argued that because of path dependence and switching costs, network externalities can result in market failures.
- 28 b There is a great deal of evidence that people like to be treated fairly and that they usually attempt to treat others fairly, even if doing so makes them worse off financially. Tipping servers in restaurants is an example.
- 29 b There are many other examples where people willingly part with money when they are not required to do so and when they receive nothing material in return. The most obvious example is making donations to charity.
- 30 a If neither the allocator nor the recipient cared about fairness, optimal play in the ultimatum game is straightforward: The allocator should propose a division of the money in which the allocator receives \$19.99 and the recipient receives \$0.01. The

- allocator has maximized his or her gain. The recipient should accept the division, because the alternative is to reject the division and receive nothing at all.
- 31 b When the ultimatum game experiment is carried out, both allocators and recipients act as if fairness is important. Allocators usually offer recipients at least a 40 percent share of the money, and recipients almost always reject offers of less than a 10 percent share.
- 32 a At this price level, the quantity demanded is greater than the quantity supplied.
- 33 b The theater could have raised prices for the musical. Instead, the theater kept the price of tickets at \$75, even though the result was a shortage of seats.
- 34 b Most people considered it fair for firms to raise their prices following an increase in costs but unfair to raise prices following an increase in demand.
- 35 a Knetsch and Thaler have concluded that firms may sometimes not raise their prices even when the demand for their product is greater than the supply out of fear that in the long run they will end up losing customers who believe the price increases were unfair.
- 36 d When asked whether it would “be fair for the NFL to raise the [price of tickets] to \$1,500 if that is still less than the amount most people are willing to pay for tickets,” 92 percent of the fans surveyed answered “no.” Even 83 percent of the fans who had paid more than \$1,500 for their tickets answered “no.” Krueger concluded that whatever the NFL might gain in the short run from raising ticket prices, it would more than lose in the long run from alienating football fans.
- 37 c Behavioral economics is the study of situations in which people act in ways that are not economically rational.
- 38 d Consumers commonly commit the following three mistakes when making decisions: They take into account monetary costs but ignore nonmonetary opportunity costs. They fail to ignore sunk costs. They are overly optimistic about their future behavior.
- 39 a The *endowment effect* is the tendency of people to be unwilling to sell something they already own even if they are offered a price that is greater than the price they would be willing to pay to buy the good if they didn’t already own it.
- 40 d Because you are unrealistic about your future behavior, you underestimate the costs of choices—like overeating or smoking—that you make today. A key way of avoiding this problem is to be realistic about your future behavior.

Short Answer Responses

- No. Assume that the price of a normal good (apples) increased. The substitution effect from this price change would cause the quantity of apples demanded to decrease. Because apples are a normal good, the income effect would cause the quantity demanded to decrease also. If apples were an inferior good, the income effect would cause quantity demanded to increase. Apples would have an upward-sloping demand curve only if (a) it was an inferior good and (b) the income effect of the price increase was greater than the substitution effect.
- The representative fails to recognize that the \$15 million spent on bridge construction is a sunk cost that should be ignored when deciding whether the project merits additional spending so that the bridge can be finished. The representative should ignore the money that has already been spent and explain why the additional expenditure of \$20 million is justified.

3. You should consume the quantity of pizza and Coke that makes the marginal utility per dollar equal and spends your entire budget. If the budget increases to \$13, you would want to consume 4 slices of pizza and 5 cups of Coke to maximize your utility.
4. Some economists argue that because of switching costs and path dependence, network externalities can result in market failure. In their view, the triumph of VHS technology can be seen as market failure. But other economists, such as Stephen Margolis and Stan Leibowitz, argue that network externalities do not lock consumers into using inferior technology and that the evidence that Betamax technology was truly superior is unconvincing. This is an area where there is no consensus opinion among mainstream economists.
5. This is an example of people being unrealistic about their future behavior. Those who are addicted to nicotine have difficulty quitting because of the withdrawal effects, including nervousness, irritability, and weight gain. As a result, the decision to quit smoking is put off into the future even though the withdrawal effects will not be avoided. No doubt most adults who smoke would like to quit in the long run but their short run decisions are inconsistent with their long run goals.

True/False Answers

1. F Coca-Cola has used celebrity endorsements since the 1910s. Wedgwood china was probably the first product that received celebrity endorsements and this began in the 1700s. Josiah Wedgwood offered china dishware to celebrities of the day at a reduced price hoping to receive publicity from these sales.
2. F Marginal utility is the *increase* in total utility a person receives from consuming one additional unit of a good or service.
3. T To maximize utility we must spend our total budget.
4. F This describes the income effect for a normal good, not an inferior good.
5. F These economists believe that the mentioned factors *do* influence decision making.
6. T The product becomes more useful as more consumers purchase and use the product.
7. F Switching costs can explain why consumers continue to use a previously purchased product that presently contains inferior technology.
8. T For Giffen goods, as the price increases so does the quantity demanded.
9. F If the price of either a normal good or an inferior good decreases, the substitution effect will cause quantity demanded to increase.
10. F At one time, some economists believed that this might be possible.
11. T Marginal decision making involves small, incremental changes.
12. T Consumers may buy product endorsed by celebrities in order to be cool or to feel closer to the celebrity.
13. T See the section entitled “Does Fairness Matter?” that begins on page 300.
14. F In fact, consumers should ignore sunk costs when they make decisions, but they often don’t.
15. F The endowment effect is the tendency of people to be unwilling to sell a good they already own even if they are offered a price that is greater than the price they would be willing to pay to buy the good if they didn’t already own it.