Basic Economic Concepts

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v2.0

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CHAPTER 1
ECONOMICS AND THE ECONOMIC PROBLEM

Overview

This chapter introduces students to the study of economics by explaining that the economic problem stems from the concept of scarcity. Students are introduced to these concepts through an exercise in which they decide on some things they would buy with an unlimited amount of money. Since resources are limited, they are told that economies must decide what gets produced, how these goods and services are produced, and who is to get them. The chapter continues with a description of how three types of economies have developed starkly different methods of making these decisions: traditional, in which decisions are made according to custom; command, in which economic decisions are made by a centralized authority; and market, in which decisions are made by the interactions of buyers and producers. Students are informed that the use of the factors of production—land, labor, and capital—even in market economies still contains elements of traditional decision-making (say, division of labor by gender) and command (taxation by government fiat). A variety of student exercises helps students learn these concepts and apply their knowledge in situations involving critical thinking.

Objectives

Students will:

- be able to explain the economic problem and why it exists
- identify the three types of economies that have vastly different approaches to solving the economic problem
- explain the importance of each of the factors of production.

Recommended Time

One to two class periods

Strategies

To establish good work habits among students on this lesson and many others, check whether students have done their homework. Start class by asking students to work with one or two of the people sitting next to them and share their lists of items they would purchase if they had an unlimited amount of money. (You may want to check homework while they are doing this exercise.) After five to seven minutes, have students share some of their lists, and write some of these items on the board. Keep in mind that human needs and even reasonable desires are effectively limitless and therefore beyond the availability of resources to fulfill. Then have students review the descriptions of three types of economies that attempt to solve the economic problem in vastly different ways, and point out that, while we live under a market economy, some economic decisions are still made as they are in traditional and command economies. Review the factors of production with your students and make sure that they understand the full meaning of each of the three terms: land (including natural resources), labor (including skilled and unskilled workers), and capital (including tools and factories). End class by reviewing how students characterized each of the listed economic decisions as traditional, command, or market.

Tips

If your class needs two periods to complete this assignment, assign students to report on the three types of economies discussed in this chapter, and spend some time reviewing the questions that asks students to identify the type of decision in each of the examples listed.

Assignment

Assign the reading and activities in Chapter 2. Students may use their own paper if they need more space.

CHAPTER 1

ECONOMICS AND THE ECONOMIC PROBLEM

Introduction

Before you can have economics, you have to have an economic problem. To learn what the economic problem is, imagine that you have just won the state lottery and then used all of your winnings to bet successfully on a thousand-to-one shot in a horse race. You've ended up with more money than you've ever dreamed of having, more than the combined wealth of Michael Jordan, Tiger Woods, and Bill Gates. You can afford to buy anything you want.

As your teacher directs, sit down by yourself or with a classmate, and make a list of what you would like to buy with the billions of dollars you have in your many bank accounts.

The purpose of the above exercise is to help you understand one reason for the economic problem. The reason is that **wants are practically unlimited.** Maybe you were satisfied with a Corvette, but if you had one, you might also want a Porsche or a Ferrari. If you had a nice house in your hometown, you might also want one in the Caribbean, in Europe, or in the South Seas. While you would have been satisfied at one point with merely getting enough to eat, you might now want to eat somewhere fancier than McDonald's or Burger King.

Another part of the problem is that although wants are unlimited, **the world's resources are limited, or scarce.** If we were to imagine the cost of providing adequate housing and shelter for the nearly seven billion people living on this earth (let alone a car and a four-bedroom house for each family), we'd soon use up most of the world's existing resources. For example, today there is barely enough fuel to supply the needs of those who can afford it. With 6% of the world's population, the U.S. uses about 25% of its energy. Suppose that the 1.3 billion people in China used as much energy per person as the 300 million people in the United States.

To review: **We have an economic problem because needs and wants are unlimited, but resources are scarce.**

The Economic Problem

Since the economic problem involves deciding how to use scarce resources in order to meet unlimited wants and needs, all human societies must decide:

1. **what is to be produced?**
2. **how is it to be produced and distributed?**
3. **for whom is it to be produced?**

These are the questions around which economies have been constructed, from the simplest societies to the most complex.

Three Types of Economic Systems

Historians have identified three different types of economic systems that have developed to answer the economic problem. Each of these three still exists in some form today, but few if any economies are a pure form of any of the three. The three types of economies are:

1. **traditional**
2. **command**
3. **market**

Traditional Economy

Long before what we call the advent of modern civilization, men and women lived together in a simple social order. In North America, over 400 different native tribes roamed the continent, each with its own political and economic system. The economies of most of these tribes ranged from gathering food to hunting, fishing, and farming, or some combination of the three. In some isolated parts of South America, Australia, Africa, and Asia, some tribes still live much as they did thousands of years ago.

Economic decisions in such an economy are governed by a series of rituals or ways of doing things handed down from one generation to the next, usually from father to son, or from mother to daughter. The decision of who does what, known as the "division of labor," was usually but not always determined by gender: men hunted and fished, while women stayed home, tended the fire, raised children, and cultivated crops. Leaders might be excused from certain economic activities and given a larger share of the hunt or the harvest in exchange for practical advice or spiritual guidance. To this day, the bushmen in the desert of South Africa divide an animal killed in the hunt thus: the two hind legs go to the successful hunter; other adult members of the hunting party get the feet, back, and stomach; and the younger boys have to be satisfied with the intestines. However, in the feast that follows the hunt, the hunter is expected to divide his larger share with those not as fortunate, so eventually all get enough to eat.

Aspects of a traditional economy also affect the way more complex societies function. Under the centuries-old caste system still in force in parts of India, each man does the same work as his father—whether his father was a carpenter, soldier, merchant, government official, or garbage collector. Women are not allowed to marry out of their parent's caste. In the pre–Civil War

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American South, African Americans were slaves. Once their bondage was ended, they were relegated to low-paying jobs not wanted by whites, separate and inferior schools, ghettoized neighborhoods, and the backs of public buses. In most of the world, tradition has long dictated that women could fill only well-defined social roles associated with child-bearing and -rearing, cooking, and other household tasks. Until recently, women in the U.S. did not fight in combat, attend military schools, become ministers, carpenters, or major-league umpires. In some countries, women must wear veils to cover their heads and bodies and are not allowed to drive cars or to work outside of the home.

Command Economy

Another way of solving the economic problem also has also existed for thousands of years. This method had its origins in the ancient city-states of Central and South America, the Near East, Africa, and Asia. For a number of complex reasons, people in these areas were able to raise crop surpluses that then often fell into the hands of small groups of warriors, nobles, kings, and priests who constituted the government and gave the commands. The command economies of antiquity resulted in the labor of hundreds of thousands in Egypt to build the pyramids, and in China to construct the Great Wall. Later in Europe, laborers built magnificent cathedrals in very modest towns. Though we admire the achievements of these inspired builders, we might shudder to think of the years of forced labor and suffering inflicted by a small ruling class simply to build a tomb for a pharaoh or a place for the masses to worship.

Command economies have also been forced on modern man. One need only think of the Soviet Union and Communist China. Under Stalin, the Soviet Union built a war machine that eventually defeated Nazi Germany's and afterwards engaged the U.S. in a struggle for military superiority. However, neither the Soviet Union nor Communist China was able to match the ability of the West in providing the average person with consumer goods. As a result, pure communism failed in both these countries, and they are now building a stable economic order increasingly based on a market economy.

Market Economy

The third way of making economic decisions has been instituted in the U.S., for example, as a market economy. Market economies are at times (favorably) called a "free enterprise" system and at others (unfavorably) labeled "capitalist." In its ideal form, all economic decisions in a market economy are made through interactions between consumers and producers. Under a completely free-market economy, what is produced, how much is produced, and for whom it is produced are determined solely by those who make these items and those who consume them. The producers and the buying public decide whatever people want to buy, whether the items are Barbie dolls, bibles, bananas, or basketballs. The market decides how many people become lawyers and how many decide to deal in cocaine. The market determines how much farmers produce and how much doctors are paid.

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The U.S., of course, does not have a completely free-market economy. Government makes many decisions that affect the market. For example, it taxes alcohol and tobacco to discourage consumption; it gives students loans to encourage education; it pays for roads to allow people to use their cars; and it regulates prices, pays subsidies, imposes tariffs, and decrees minimum wages and maximum working hours. In these ways the U.S. still operates as a command economy. But even the commands given by the government often operate through the market, encouraging one kind of activity (such as education) and discouraging another (such as smoking cigarettes).

The story of how the modern market system developed in the Western world is the story of the history of economics. We will not bore you with the details, but let it be understood that the first markets developed in medieval times, when peasants took the little produce not owed to their lords or needed to feed themselves, and sold it in an early form of farmers' markets. Towns gradually grew around these marketplaces, and people began to specialize in making certain products (shoes, clothes, baskets, pottery, jewelry, etc.). Similar activities took place in ancient times, but in western Europe these early markets grew and developed. With the invention and application of machinery and steam power, markets expanded, barriers to trade collapsed, banks developed, and trade became more and more important. Before the end of the 18th century, Europeans traveled the world over in search of raw materials and markets, and the free-enterprise system expanded. Today the power and the efficiency of the market has displaced the older societies based on command economies, and capitalism in one form or another has become the dominant form of economic organization. The powerful market forces that now control most of the world affect the economies in even the most remote villages in Africa, the Middle East, Asia, and South America.

The Factors of Production

Economists since the 18th century have talked about the factors of production. In the simplest terms, the factors needed for production are **land, labor,** and **capital.** Land includes the natural resources such as the oil, coal, and silver under the ground, as well as the soil on which production takes place and the timber that grows on the land. Labor refers to the work done by skilled and unskilled men and women who do the producing, as well as the skills of the industrialist or entrepreneur who creates the industry that harnesses this labor. Capital refers to the money invested in production, including the factories, machines, and tools used by workers to convert natural resources into finished marketable items. In a free-market economy, land can be sold or rented, workers hired and fired, and capital invested wherever the returns are expected to be most lucrative. The laws of supply and demand determine the price of everything. Following chapters will further explain these laws.

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Student Activities

Economics and the Economic Problem

1. Make a list of ten things you would buy if you had an unlimited amount of money.

2. Why do we have an economic problem?

3. Clearly and precisely state the economic problem.

4. Explain how economic decisions are made in each of the three different types of economies described in the reading.

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5. What are the factors of production? How are they each handled in a free-market economy?

6. Indicate which of the following are examples of societies in which economic activities are based on traditions, on commands by a central authority, or on market conditions:

   a. Tipping a waiter 15% of the bill

   b. Deciding to become an economist because your father is

   c. Deciding to become an engineer because the pay is good

   d. Not selling your watch because it belonged to your grandmother

   e. Keeping stocks that have been in the family for a long time

   f. Rationing of goods in the United States during World War II

   g. Going to the same college your family members attended

   h. Selling stocks because you think the market is going to go down

   i. An advertisement on TV in a communist country

   j. A woman's decision to stay home and raise her children, even though she could make more money in the workplace than her husband

   k. Discrimination against women in hiring computer salespersons

   l. Hunters' division of meat in a prescribed way among villagers

   m. Congress's voting to increase taxes on incomes by 10%

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CHAPTER 2
THE LAW OF SUPPLY AND DEMAND

Overview

This chapter makes the point that, in a market economy such as ours, price and amount of a particular good or service bought and sold are determined by the intersection of the demand for the item by buyers, and the willingness to produce and sell that item by suppliers. This, students are told, is the law of supply and demand.

Readers are informed that the demand curve slopes down from the left, because at lower prices buyers are willing to acquire greater amounts of a particular item. They then learn that the supply curve slopes up from the left (or down from the right) because higher prices lead to greater production. The final price and the quantity bought and sold are determined by the intersection of the two curves—representing the point at which the willingness to buy and to sell converge. All these points are illustrated by straight-line supply and demand curves, and students are asked to complete a number of multiple-choice questions to make sure they understand these basic concepts. In addition, they are provided with a demand and supply curve that they are asked to plot on a blank chart provided in the Student Activities.

Objectives

Students will:

- learn that prices and amounts of goods and services bought and sold in a market economy are determined by the laws of supply and demand
- understand the reasons that supply and demand curves slope the way they do
- be able to plot the points representing demand and supply at a particular point in time and draw lines indicating supply and demand curves.

Recommended time

One class period

Strategies

After checking to determine that students completed their homework assignment, ask volunteers to go to the front of the classroom and draw a supply and a demand curve. Ask students why they drew the demand curve as sloping down from the left and the supply curve as sloping up from the left. After making sure that all students understand this important concept, ask other students to go to the board and fill in a list of prices and amounts to complement the curves on the board. Then make the point that these curves represent demand and supply at a particular point in time. Ask then how they would show an increase or a decrease in demand and in supply. Let students know that they will learn how to do this in the next chapter, but provide them with a preliminary answer. If your class is sufficiently advanced, you may want to proceed by teaching the main points covered in the next chapter. Otherwise, review students' answers to the multiple-choice questions at the end of the chapter to make sure that they understand the main concepts.

Assignment

Assign the reading and activities in Chapter 3. Students may use their own paper if they need more space.

CHAPTER 2

THE LAW OF SUPPLY AND DEMAND

Introduction

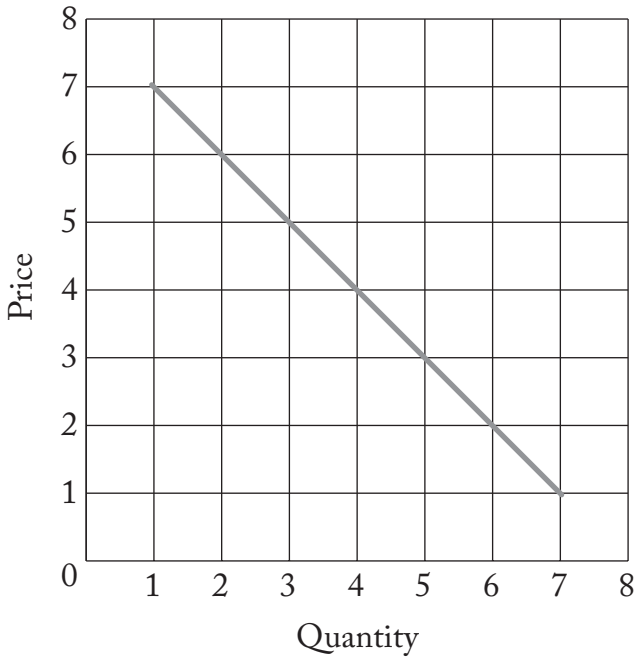
In a market economy, the law of supply and demand is the primary mechanism for determining the prices of goods and services and the amount to be bought and sold. This lesson explains how this basic economic law works.

Demand

We can start with the concept of demand. Simply stated, **demand is the estimated amount of a given commodity people will buy at different prices**. Economists make a series of guesses based upon the information they have, and plot a number of dots on a graph like the one below (Diagram 1). Then they connect these dots with a line.

The demand curve slopes down from the left (or up from the right) because when an item becomes more expensive, fewer people will likely buy it. Conversely, when an item becomes less expensive, more people are more likely to buy it. For example, when gasoline becomes cheaper, more people will drive more and buy cars that use a great deal of gas.

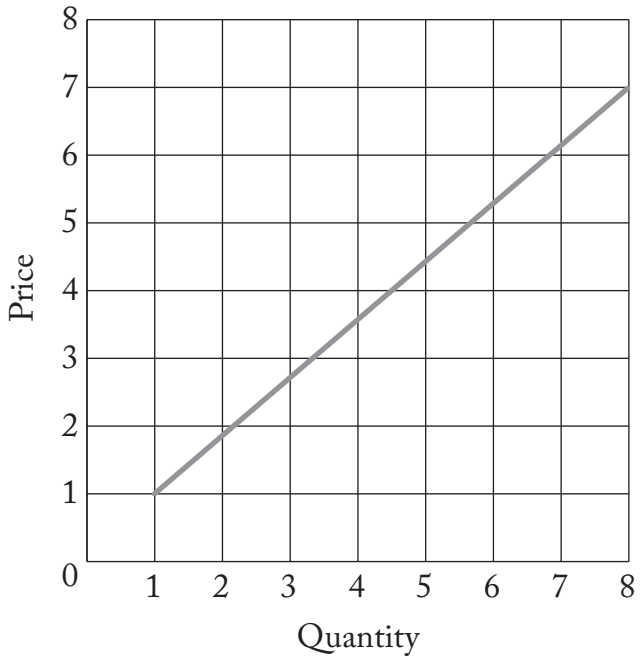
Diagram 1. The Demand Curve



Supply

The supply curve shows **what suppliers and retailers for a commodity will produce and sell at various prices at a given period of time.** The supply curve slopes in the opposite direction of the demand curve (Diagram 1): up from the left (or down from the right). This is because the higher the price of an item, the more of that item producers are willing to make and sell. For instance, when the price of gasoline at the pump rises, refineries will turn more oil into gasoline.

Diagram 2. The Supply Curve

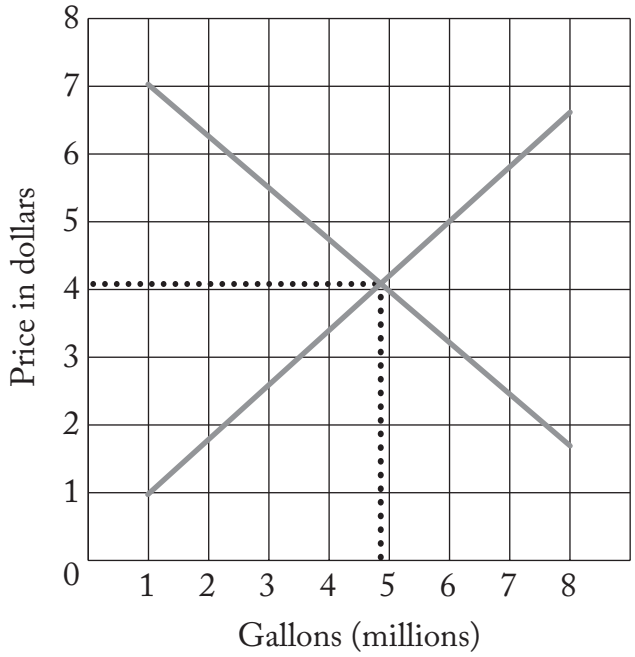


Determining Price

The price of an item and the amount bought and sold are determined by the intersection of the supply and demand curves (Diagram 3).

In Diagram 3, the supply and demand curves intersect where the price of gas is about $4 a gallon and the amount of gasoline bought and sold about 5 million gallons a day. This is the price at which the quantity demanded by consumers matches the quantity producers are willing to supply, resulting in what economists call an "equilibrium."

Diagram 3. Supply Meets Demand



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Student Activities

The Law of Supply and Demand

A. Multiple-Choice

1. Which of the following best describes a demand curve?
   a. A line or a curve on a graph showing how much of a given commodity people are willing to produce for sale at different prices at a given time
   b. A line or a curve on a graph showing how much of a given commodity people are willing to buy at different prices at a given time
   c. A line or a curve on a graph showing how much of a given commodity people are willing to buy

2. Which of the following best describes a supply curve?
   a. A line or a curve on a graph showing how much of a given commodity people are willing to produce for sale at different prices at a given time
   b. A line or a curve on a graph showing how much of a given commodity people are willing to buy at different prices at a given time
   c. A line or a curve on a graph showing how much of a given commodity people are willing to produce for sale

3. Which way does a demand curve slope?
   a. Up from the left to the right
   b. Down from the left to the right
   c. It is always a horizontal line.

4. Which way does a supply curve slope?
   a. Up from the left to the right
   b. Down from the left to the right
   c. It is always a vertical line.

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5. Why does a supply curve slope the way it does?
   a. The more money a producer can get for an item, the more it will likely produce.
   b. The more money it costs a producer to make an item, the more it will likely produce.
   c. Everyone likes to make money.

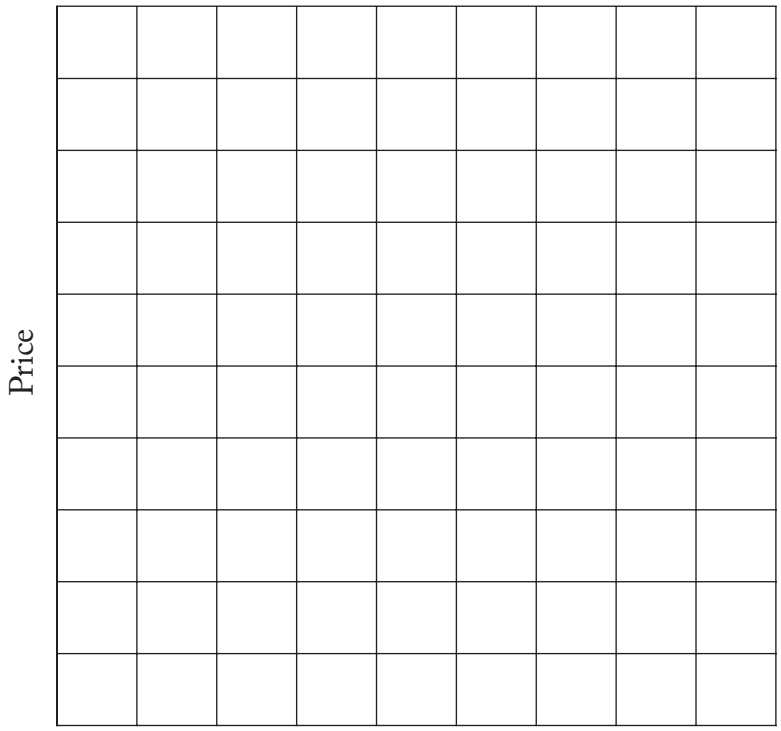
6. Why does a demand curve slope the way it does?
   a. The more money something costs, the fewer people will likely buy it.
   b. Most people like to buy expensive goods to show that they can afford them.
   c. The more money something costs, the less the producer will likely produce.

B. Charting

Using the numbers supplied in the following demand and supply schedules, complete the "Supply Meets Demand" graph below by drawing and labeling demand and supply curves, and drawing dotted lines to show the intersections of price and quantity.

Demand Schedule		Supply Schedule	
Price in dollars	Demand in millions of gallons	Price in dollars	Supply in millions of gallons
8	1	7	8
6	3	5	6
4	5	3	4
2	7	1	2

Supply Meets Demand



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CHAPTER 3
SHIFTS IN SUPPLY AND DEMAND CURVES

Overview

This chapter covers the concept that supply and demand curves only indicate the willingness of buyers and producers to buy and to produce *at a particular period of time*. In this chapter, students learn that as conditions change (such as knowledge of sticking gas pedals on certain Japanese cars) may cause buyers and sellers to change their priorities, and that these changes are registered as a shift of the demand or supply curves. Shifts are explained as down and toward the right in cases which influence increases in supply, and upward and to the left when indicating decreases in supply. Increases in demand, readers learn, are shown by moving the demand curve upward and to the right, while decreases are indicated by shifts downward and to the left. Students are given examples of events that might cause a shift of either curve and are instructed to chart these changes on a graph.

Objectives

Students will:

- understand that changes in demand and supply are shown by shifts in the curves
- learn which way each curve shifts to show an increase or decrease
- be aware that shifts in demand curves do not cause shifts in supply curves (or vice versa).

Recommended Time

One class period

Strategies

Start class by drawing a hypothetical demand and supply curves (let's say) for Toyota Corollas, complete with estimates of how many will be bought and sold at different price levels. Then tell them that reports were circulated that the gas pedals on these cars would stick an average of once in a million times the car accelerated. Ask how this would be shown on the demand and the supply curves. Accept several different answers, and indicate changes corresponding to each of the two curves similar to the answers you heard. After a few minutes of discussion, ask for a show of hands and then have students explain the reasoning for the answers they gave. After checking to make sure that all students these reasons provide paper for students and supervise them as they answer all of the Student Activities questions. Help students who have trouble answering the multiple-choice questions complete the assigned graphs. Make sure that students understand that factors that affect supply do not necessarily affect demand, and vice versa.

Assignment

Assign the reading and activities in Chapter 4. Students may use their own paper if they need more space.

CHAPTER 3

SHIFTS IN SUPPLY AND DEMAND CURVES

Introduction

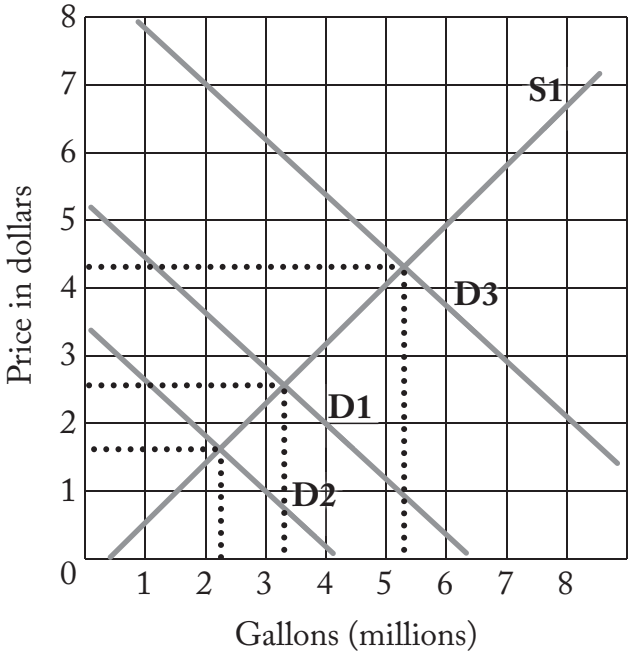
You may remember that demand curves show how much buyers will buy at different prices *at a particular moment in time,* while supply curves show how much producers or sellers will sell at different prices *at a particular moment in time*. This chapter explains how changes in supply and demand over time are shown by shifts in the curves and not by movement along a curve that remains in one place. You will examine some factors that cause demand and supply curves to shift, and will understand the effects of these changes on prices and the quantity bought and sold.

Changes in Demand

Any number of things can happen to cause a demand curve to shift either up or down. For instance, the development of a new engine that uses less fuel could decrease the demand for gas. In the graph below (Diagram 1), shifting the demand curve down from Demand 1 (D1) to Demand 2 (D2) shows a *decrease* in demand.

On the other hand, demand for gasoline usually increases during the summer when people use their cars to go on vacation. This *increase* is shown on the same chart by shifting the demand curve up from D1 to Demand 3 (D3). As you can see, each movement of the curve causes it to intersect the supply curve at a different place. This indicates changes in price and the quantity bought and sold.

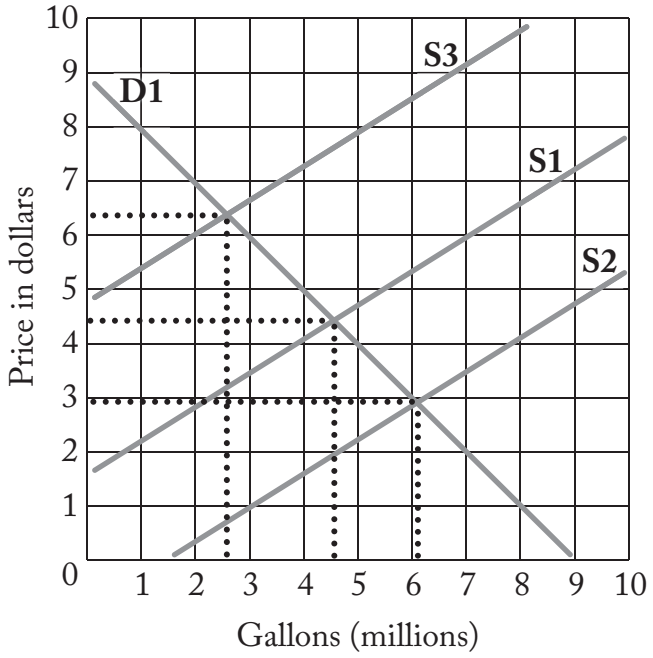
Diagram 1



Changes in Supply

The supply of gas and oil could be affected by another war in the Middle East, the discovery of new sources of oil, a fire in a major oil well, or any number of other factors. Moving either up or down along the supply curve does not indicate changes in supply. Instead, these changes are shown by shifts in the supply curve. If supply increases, the supply curve shifts down. This is indicated in Diagram 2, in which the supply curve moves from Supply 1 (S1)to Supply 2 (S2). When supply decreases, the supply curve shifts up. Therefore, in Diagram 2, the supply curve shifts from S1 to Supply 3 (S3).

Diagram 2



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Student Activities

Shifts in Supply and Demand Curves

If needed, write your answers to the following on a separate sheet of paper or in your notebook.

A. Multiple-Choice

1. Changes in demand are shown by:
   a. moving up or down the demand curve
   b. shifting the demand curve up to show an increase in demand
   c. shifting the demand curve down to show a decrease in demand
   d. both b and c

2. Changes in supply are shown by:
   a. moving up or down the supply curve
   b. shifting the supply curve down to show an increase in supply
   c. shifting the demand curve up to show a decrease in supply
   d. both b and c

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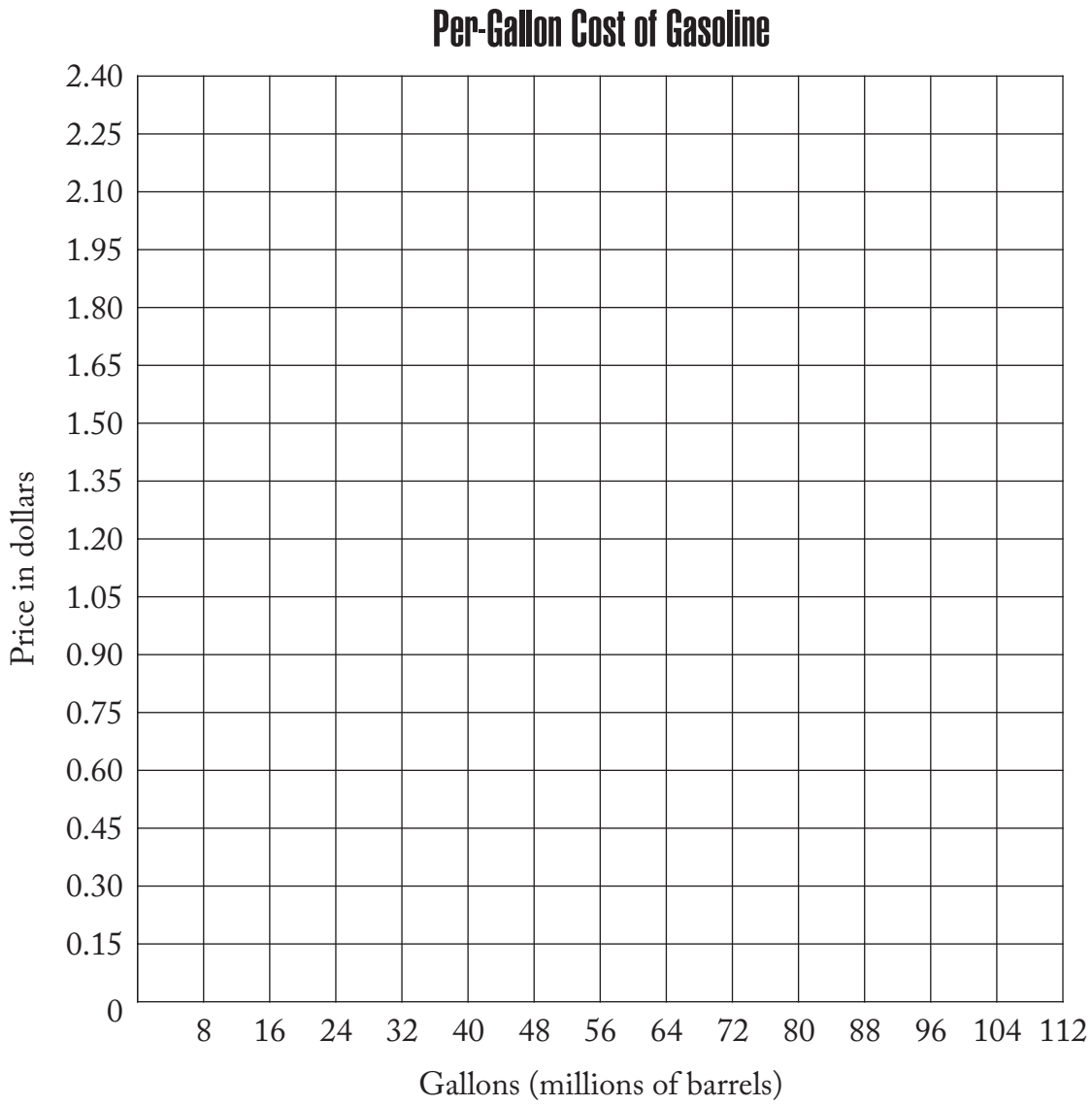
B. Graphing Supply and Demand

1. Using the statistics given and the graph on this page, chart the supply and demand for gasoline. Label the supply and demand curves.

If price per gallon is X, then consumers will buy		and producers will sell:	
$0.40	55 million gallons	.40	25 million gallons
$0.80	45 million gallons	.80	40 million gallons
$1.20	35 million gallons	1.20	55 million gallons
$1.60	25 million gallons	1.60	70 million gallons
$2.00	15 million gallons	2.00	85 million gallons
$2.40	5 million gallons	2.40	100 million gallons



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2. On the same chart you have just completed:
   a. Draw a new supply curve indicating an increase in supply, and label it S2.
   b. Draw a new supply curve indicating a decrease in supply, and label it S3.
   c. Draw a new demand curve showing an increase in demand, and label it D2
   d. Draw a new demand curve indicating a decrease in demand, and label it D3

3. Determine the effect that each of the following actions would have on oil demand, supply, price, and quantity bought and sold. Fill out the blank chart below with your answers.

A. An engine getting roughly twice the miles per gallon as most older engines is invented and marketed.	B. A strike stops all public transportation in a large city.
C. Fires shut down three major oil refineries.	D. New oil reserves are discovered in Alaska.
E. China doubles its use of cars from previous year.	F. U.S. government authorizes $20 billion to help people buy fuel-efficient cars.

Effects of Changes in Demand and Supply on Oil Prices and Quantities Bought and Sold

(Write "increases," "decreases," or "stays the same," where appropriate; the first has been done for you.)

	Demand	Supply	Quantity bought and sold	Price per gallon
A	*Decreases*	*Stays the same*	*Decreases*	*Decreases*
B				
C				
D				
E				
F				

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CHAPTER 4
ELASTIC AND INELASTIC DEMAND

Overview

This chapter introduces the concept of elasticity of demand. It teaches that an elastic demand curve can be identified as being closer to being horizontal (parallel to the graph's baseline) than vertical (perpendicular to the baseline), while an inelastic curve is closer to being vertical than horizontal. Students are informed that under conditions of elasticity, a decrease in the price of an article will result in an increase in total revenue, and when demand for an article is inelastic, an increase in price will result in increase in revenue. These concepts are illustrated via a number of graphs, and the chapter includes a list of factors that affect elasticity and a graphing exercise that helps students determine whether they understand each of them.

Objectives

Students will:

- understand the terms elasticity and inelasticity as they apply to a demand curve
- be able to explain why it is important to know what effects elasticity has on total revenues
- list and explain factors affecting elasticity.

Recommended time

One class period

Strategies

Check whether students did their homework by asking them to define the terms elastic and inelastic, explain the factors that make demand one or the other, and describe the effect of elasticity on total revenue. Have students come to the board and draw an elastic and an inelastic demand curve; have others demonstrate why total revenues increase when demand is inelastic

and prices are raised. Have other students demonstrate that total revenue will not increase when prices are raised and demand is elastic. Ask why producers and storekeepers, as well as government officials deciding what to tax, would want to know whether demand is elastic or inelastic. Spend the remaining class time helping students complete the Student Activities exercise while in class.

Assignment

If you decide to assign students Chapter 5, offer extra credit to those who can demonstrate the math on the board that shows how they arrived at the correct answer to questions 6–8, but ask all students to answer Question B (Reasons for Elasticity). Students may use their own paper if they need more space.

CHAPTER 4

ELASTIC AND INELASTIC DEMAND

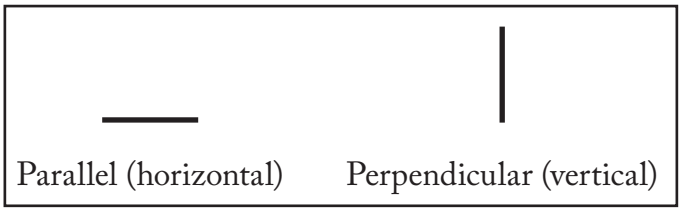
Introduction

After mastering the previous lessons, you are almost an expert on the law of supply and demand. However, one important concept remains: the difference between elastic and inelastic supply and demand.

As you may have guessed, the term "elastic" comes from the stretching action of, for example, a rubber band. If something is elastic, it can stretch or expand; if it isn't elastic, it can't. Keep this idea in mind as you study the differences between elastic and inelastic supply and demand curves.

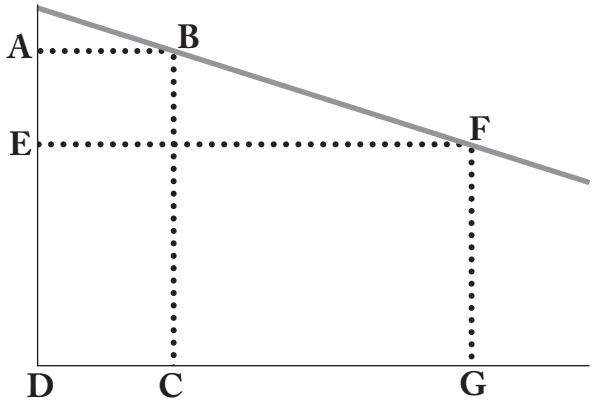
Elastic and Inelastic Demand Curves

An elastic demand curve tends to be closer to parallel to the bottom axis of the graph, or more horizontal. An inelastic demand curve is closer to perpendicular to the bottom axis, or more vertical.



When the demand curve tends toward being parallel, demand for the product is price-sensitive. A relatively small change in price will result in a relatively large change in sales. Let us take a look at both elastic and an inelastic demand curve. In Diagram 1, demand is elastic.

Diagram 1. Elastic Demand Schedule



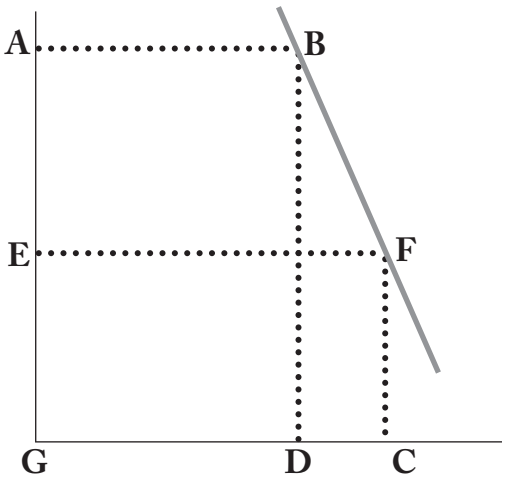
Lowering prices from A to E will increase revenue (from ABCD to EFGD). Conversely, an increase in prices from E to A will decrease revenues from EFGD to ABCD. As you can see, EFGD covers a larger area than ABCD. Since total revenue is calculated by multiplying the value on the graph's vertical axis by the value on

the graph's horizontal axis, you can see that lowering prices increases sales enough to make up for the declining revenue from each item sold.

Effect of Inelastic Demand on an Increase in Price

In Diagram 2, notice that the demand curve is closer to being perpendicular than parallel to the graph's baseline. Demand is therefore inelastic. When demand is inelastic (i.e., relatively insensitive to price changes), an increase in price from E to A will increase total revenues (from EFCG to ABDG). Similarly, a decrease in price from A to E will decrease total revenues.

Diagram 2: Inelastic Demand Schedule



Implications

We have already explained that a business owner under conditions of elastic demand may decide to not raise prices because it will decrease revenue. On the other hand, business owners operating under inelastic demand conditions are more likely to increase prices in order to increase total revenue.

There is another reason why it is good to know whether demand is elastic or inelastic. If you were designing tax policies for your government, you would not want to tax items with elastic demand. You'd simply reduce their sales and not make as much money. That's what happened when the U.S. Congress put a tax on luxury items such as large sailboats and expensive cars: tax revenues from such purchases decreased. If the government limited itself to taxing items with inelastic demand, it could raise much more money. This is one reason that taxes on cigarettes and alcohol tend to be high: people who are addicted tend to drink and smoke no matter what they have to pay to sustain the habit.

Why Do Some Items Have Elastic Demand While Others Don't?

Economists have identified four variables that help determine whether demand for something is elastic or inelastic:

- Demand for luxuries such as pleasure yachts, vacations in Europe, and houses in the country tend to be elastic. If the prices of these go up suddenly, sales will fall off rapidly, and total revenue will decrease. On the other hand, demand for necessities such as food and

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water tend to be more inelastic because people often buy these items no matter how high the price. However, items such as alcohol, cigarettes, and heroin fall into the same category as necessities because addicts at least behave in an economic sense as if they cannot live without them.

- Demand tends to be highly elastic if a ready substitute is available. Artificial sweeteners are a good substitute for the real thing and make sugar more expendable. Advertisers spend billions of dollars each year trying to convince consumers that no effective substitute for their aspirin, automobile, sneakers, or computer exists to keep the demand inelastic. When demand is inelastic, suppliers and producers can raise their prices and increase total revenues.
- Demand tends to be more inelastic when a product represents only a small portion of a consumer's total expenditures. Therefore, the price of paper clips is relatively inelastic, while the price for cars or houses are more elastic. This is one of the reasons that there is little advertising for paper clips, and why dramatic price reductions on automobiles take place at the end of the model year, with the arrival of new cars.
- Finally, demand is far more inelastic over the short term than the long term. A short-term increase in gasoline prices won't have a major effect on consumption, but higher fuel costs over the long term cause consumers to buy more fuel-efficient cars, use public transportation, take vacations closer to home, etc.

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Student Activities

Elastic and Inelastic Demand

A. Multiple-Choice

Choose the best answer to the following questions:

1. How does an elastic demand curve differ from an inelastic demand curve?
   a. An elastic curve tends to be more perpendicular than horizontal.
   b. An elastic demand curve tends to be more horizontal than perpendicular.
   c. Both a and b

2. If the demand for an item is elastic, what will probably happen if the manufacturer raises the price?
   a. Revenues will increase.
   b. Revenues will decrease.
   c. An increase in total sales will not make up for the increase in price.

3. Which of the following likely makes the demand for an item elastic?
   a. The item is inexpensive.
   b. The item is a necessity.
   c. Neither a nor b

4. Which of the following likely makes the demand for an item inelastic?
   a. There is a readily available substitute for the item.
   b. The item is very expensive.
   c. Neither a nor b

5. Which of the following is likely to help a merchant make a great deal more money if he raises its price?
   a. A glass of water in the city
   b. A glass of water in a desert
   c. A safety pin

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6. Today, Willie reduced the price of hot dogs at his stand in front of the ballpark from $2 to $1.50. His sales increased from 50 hot dogs during the previous day's game to 75 hot dogs today. All other factors being equal, the demand for hot dogs is:

   a. inelastic

   b. elastic

   c. neither

B. Charting

In each of the following, state whether demand is more likely to be elastic or inelastic, and cite one of the following criteria:

a. Is the item a necessity—yes or no?

b. Is a substitute available—yes or no?

c. Does the item cost a large percentage of income—yes or no?

d. Is the item scarcer over the short term or long term?

The first question is answered for you as an example. Keep in mind that you may use multiple criteria for your choices, if necessary.

Item	Elastic/inelastic/ undecided	Explanation
Toothpaste	*inelastic*	*Costs a small percentage of total income*
Yacht		
Kidney		
Postage stamp to mail a college application		
54" television		
Paper clip		
Drink for an alcoholic		
Can of Pepsi, when you would have preferred a Coke		
Heating oil during a cold winter		

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CHAPTER 5

ELASTIC AND INELASTIC SUPPLY AND DETERMINING ELASTICITY

Overview

This chapter covers the complicated concept that supply can be elastic or inelastic. It provides a formula that helps students to determine the degree of elasticity in supply and describes the impact on total revenues due to elasticity. Students also learn what factors make supply elastic or inelastic. Activity questions require students to determine the degree of elasticity of both supply and demand based on their determination and then dividing the percent change in quantity by the percent change in price.

Objectives

Students will:

- learn that supply curves as well as demand curves can be elastic or inelastic
- know that an elastic supply curve for an item results in a disproportionate increase in revenue when prices rise
- identify factors that determine increases and decreases in supply elasticity
- calculate elasticity by dividing percent change in sales by percent change in price.

Recommended Time

One class period

Strategies

Start class by asking students what they learned from the reading. Have a student come to the chalkboard and draw an elastic and an inelastic supply curve. Help them explain the effect of elasticity on total sales, and review the exercise requiring students to explain why the supply of items listed in the Student Activities are either elastic or inelastic. Have students who did the exercise explain how they arrived at their answers to multiple-choice questions 6–8. You should then make up a few examples of percent changes in sales and prices so that students may calculate the degree of elasticity. Explain that any figure over 1 is considered elastic, while a figure of less than 1 is inelastic. Work with the class in answering the extra-credit question and allow students time to complete other questions.

Assignment

Assign students the reading in Chapter 6 and ask them to answer Student Activities questions A and C. Students may use their own paper if they need more space.

CHAPTER 5

ELASTIC AND INELASTIC SUPPLY AND DETERMINING ELASTICITY

Introduction

You have learned how elasticity of demand affects total revenue when prices either increase or decrease. It stands to reason that elasticity of supply also affects total revenue. Since much of this chapter is based upon what you learned in previous chapters, you have the opportunity to review what you already know while gaining more knowledge.

This chapter also introduces some mathematical analysis, providing a formula for determining whether supply and demand are elastic or inelastic.

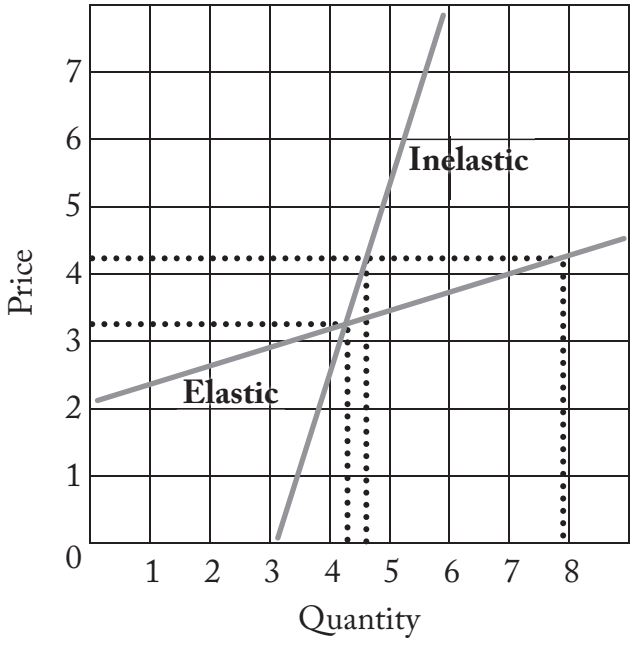
Elastic and Inelastic Supply Curves

When supply is inelastic, the supply curve tends toward being perpendicular to the bottom axis; when elastic, it tends toward being parallel. This diagram shows that when the supply curve is elastic, total revenues increase when prices increase, but the opposite is true when the supply curve is inelastic.

Since elasticity is so important, we should try to understand what actually determines elasticity. Important factors include:

a. **The length of time involved**. For instance, high oil prices tend to encourage more exploration and more drilling, thus increasing the supply of oil, but in the short run, supply is inelastic.

Diagram 1. Elastic vs. Inelastic Supply Curves



b. Relative scarcity of resources, such as natural resources, availability of labor, management expertise, transportation, and capital. When resources are not readily available, the supply curve tends to be inelastic.

c. Excessive production capacity in existing factories. If factory output is below potential, an increase in price will lead to rapid increases in production. Thus with no excess capacity, the supply curve will be inelastic

d. Ease of entry into an industry. Starting a factory to produce snow shovels is relatively simple; starting one to build airplanes is more complicated and takes much more time. Thus the supply curve for airplanes is inelastic.

Calculating Elasticity and Inelasticity of Supply

To determine whether supply of a product is elastic or inelastic, divide the percent change in an item's sales, by the percent change in price that caused the change in sales. Another way of stating this relationship is as follows:

$$E_s = \frac{\text{\% change in quantity}}{\text{\% change in price}}$$

Also, for the resulting value of elasticity: elastic > 1 > inelastic

For example:

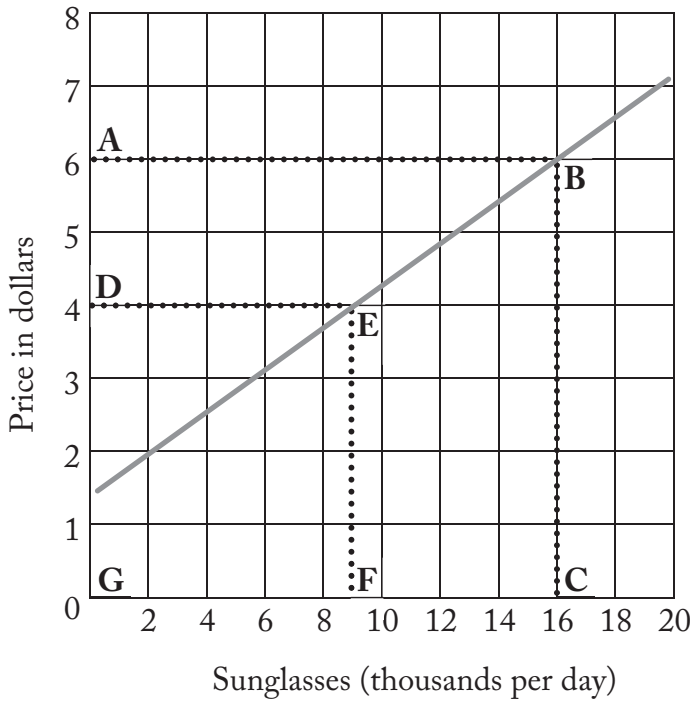
Step 1. Say that the price of sunglasses was increased from $4 to $6, or by 50% (6 – 4 = 2; 2 ÷ 4 = 0.50, or 50%).

Step 2. This caused an increase in supply from 9 to 16 units, or by 77% (16 – 9 = 7; 7 ÷ 9 = 0.77, or 77%).

Step 3. 77% ÷ 50% = 1.54. Anything over 1 is elastic, so we can say that the supply for sunglasses is elastic, and that an increase in price will cause a larger percent increase in revenues, if demand remains unchanged.

Diagram 2 provides a visual showing an increase in total revenues when supply is elastic and prices increase. Compare DEFG to ABCG.

Diagram 2. Effect of Price on Supply of Sunglasses



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Calculating Elasticity and Inelasticity of Demand

In order to determine the elasticity of demand of an item, use a formula similar to the one for determining the elasticity of supply. One need only divide the percent change of quantity produced by the percent change of price, or:

$$E_d = \frac{\text{\% change in quantity}}{\text{\% change in price}}$$

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Student Activities

Elastic and Inelastic Supply and Determining Elasticity

If needed, write your answers to the following question on a separate sheet of paper or in your notebook.

A. Multiple-Choice

1. How does an elastic supply curve differ from an inelastic supply curve?
   a. An elastic supply curve tends to be more vertical than horizontal.
   b. An elastic supply curve tends to be more horizontal than vertical.
   c. Both a and b

2. If the supply curve for an item is elastic, what is likely to happen if the prices for that item increase?
   a. Supply will increase by a greater percentage than price does.
   b. Supply will increase by the same percentage as price does.
   c. Supply will increase by a lower percentage than price does.

3. Which of the following will be likely to make supply elastic?
   a. The natural resources required to make the product are abundant.
   b. A suitable quantity of time passes since the increase in prices.
   c. Both a and b

4. Which of the following is likely to make supply for an item inelastic?
   a. Companies producing this item are running at full capacity.
   b. There is a shortage of skilled workers to make this item.
   c. Both a and b

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5. Under what conditions would a producer probably not increase production of an item, even if the price of that item has increased?

   a. Production costs have risen faster than prices.

   b. The production plant has excess capacity.

   c. Both a and b

For the following questions, assume that the price of a baseball has risen from $3.00 to $3.60. As a result, suppliers are willing and able to increase the number of baseballs they make from 100,000 a year to 110,000.

6. What is the percent increase in the price of baseballs?

   a. 10%

   b. 20%

   c. 18%

7. What is the percent increase in the production of baseballs?

   a. 5%

   b. 10%

   c. 8%

8. What is the elasticity of supply as a result of these changes?

   a. 20%

   b. 50%

   c. 47%

B. Reasons for Elasticity and Inelasticity of Supply

For each of the following, state whether supply is more likely to be elastic or inelastic, and use one of the following explanations:

   a. Short- or long-run time frame

   b. Unused production capacity

   c. Scarcity of resources

   d. Ease of entry to industry

The first question is answered to give you an example of what is expected.

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Item	Elastic/inelastic/ undecided	Reasoning in detail
Increase in price of gas	*Inelastic*	*In the short term* *More supply could be available in the long term*
Increase in price of luxury yachts		
Increase in price of cars during a depression		
Increase in price of milk		
Increase in price of paperclips		
Increase in price of pizzas		

C. Extra Credit

Using the formula for determining elasticity of demand, calculate the elasticity of moving from point B to C, and also from A to C.

Sneakers at a High-End Shoe Store in a Medium-Sized Town			
Time period	**Price**	**Amount sold**	**Elasticity**
A	$100	50	From A to B = 2.5
B	$80	75	From B to C = ____
C	$50	120	From A to C = ____

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CHAPTER 6

DIMINISHING RETURNS, OPPORTUNITY COSTS, AND PRODUCTION-POSSIBILITY CURVES

Overview

As the title implies, this chapter explains three different but interrelated concepts. It illustrates the law of diminishing returns by elaborating on a common problem facing high school students—making a rational decision when determining how much time to spend on homework. An example is given of a student's deciding how much time to spend studying for a French test, and makes the point that each additional hour spent will result in less of an increase in their test grade. The same idea is applied to the diminishing returns of an athlete training for a hundred-yard dash, and a farmer hiring additional workers.

"Opportunity cost" is the second major concept covered in this chapter. The example used to illustrate the term explains that in addition to tuition and room and board, the cost of college includes the money that the student could have earned by working instead, which the prospective student can't earn while studying and attending classes. Students are provided with the necessary information and are asked to determine how many years it would take the average individual to earn enough money to pay for their college education and compensate for the money they did not earn while attending college and graduate school.

The chapter also covers production-possibility curves and presents them as similar to opportunity costs and diminishing returns. The production-possibility curves are applied here in the often-used "guns vs. butter" dilemma. Students are supplied with a chart to help them understand the choices that can be made easier by expanding production.

Objectives

Students will:

- understand the idea of diminishing returns
- be able to explain the concept of opportunity cost
- draw a production-possibility chart.

Recommended Time

Two class periods

Strategies

Day 1: Check whether students did their homework by examining the answers to the Student Activities questions. Start class by asking students simpler questions such as:

- What law explains why the third hour of studying does not help as much as the second hour?
- What does one personally give up in dating one particular person?
- What might a country give up when spending money on defense preparations?
- What might it give up by not spending money on defense?
- What does the country give up by spending a great deal of money on low-income housing?

Check to see whether students could get the right answers to the questions in sections A and C. Help those students unable to complete the exercise, and ask students who finished the work to create their own chart using the production possibilities of producing two items such as tables or silverware, or food or clothing. Proceed to work on section B, or if students have mastered the information on diminishing returns and production-possibility curves, use your remaining time in class to work through answering section B; alternatively, assign students section B for homework.

Day 2: After checking whether students completed their homework, ask them whether going to college is worth the time, energy, and real and opportunity costs. Ask them for any questions concerning diminishing returns, opportunity cost, and production possibilities, and allow students to participate in providing answers. Pair students up to answer how they might use the terms learned in Chapter 6 to make decisions as a student, businessman, voter, or national leader.

Assignment

Assign the reading and activities in Chapter 7. Students may use their own paper if they need more space.

CHAPTER 6

DIMINISHING RETURNS, OPPORTUNITY COSTS, AND PRODUCTION-POSSIBILITY CURVES

Introduction

Previous chapters explained the law of supply and demand, changes in supply and demand curves, and elastic and inelastic demand and supply curves. This chapter covers the three distinct but interrelated concepts stated in the title.

The Law of Diminishing Returns

Pretend for a moment that you have a French test tomorrow as well as a job after school today. You know that if you don't study for the French exam you will probably get a 50; if you study for an hour, you will get a 70; if you study for two hours, an 80; three hours will get you an 85; and five hours a 90. Given that you won't get home from work until 6 pm, dinner won't be over until 7 pm, your favorite TV show is on tonight and lasts an hour, and you can't concentrate in the morning unless you go to bed by 12 pm, how much time will you spend studying for the French test? [Note: You could leave work two hours early and lose $15, plus a chance for a promotion.]

Of course, you could pick a time at random, or you could approach this problem of how much time you wish to study like an economist and set up the following table:

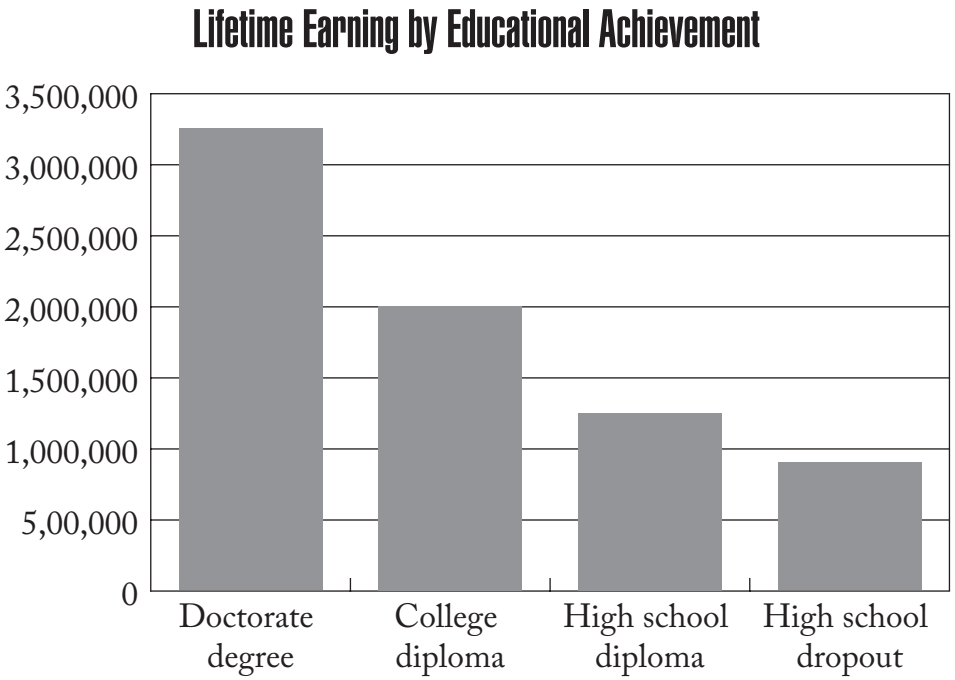
Hours studied weekly	Expected grade	Improved grade due to studying
0	50	n/a
1	70	20
2	80	10
3	85	5
5	90	2.5

In examining the table produced for this chapter, you will discover an old economic law: the law of diminishing returns. Each additional hour of study results in fewer additional points on your test. This law applies to almost all activities. An athlete might train two hours a day and run the 100-yard dash in 13 seconds. However, to reduce the time to 12 seconds might require four hours of training per day; to get to 11.5 seconds, she might have to train eight hours a day. Similarly, a farmer might be able to increase the yield of his field from 2000 to 3000 bushels by hiring one more worker. However, if he hires a second worker, the yield might only increase by another 500 bushels, and a third worker may only increase the number of bushels harvested by 200 bushels.

Opportunity Costs

The problem regarding the French test illustrates another economic concept: opportunity cost. For every hour you decide to spend studying for your French test you have to give up something else—perhaps watching your favorite TV show, talking to a friend on Facebook, reading a good book, playing video games, or listening to your favorite CD. What you give up in order to study for your French exam is the opportunity cost.

The term "opportunity cost" has a much wider application than studying for tests. Most relevant to you might be weighing the true cost of going to college: say, in addition to the $25,000 in tuition, you give up working at McDonald's for $8 an hour, 40 hours a week (about $16,000 a year for four years, or $64,000). These costs of course must be weighed against the economic benefits of going to college. See the chart below:



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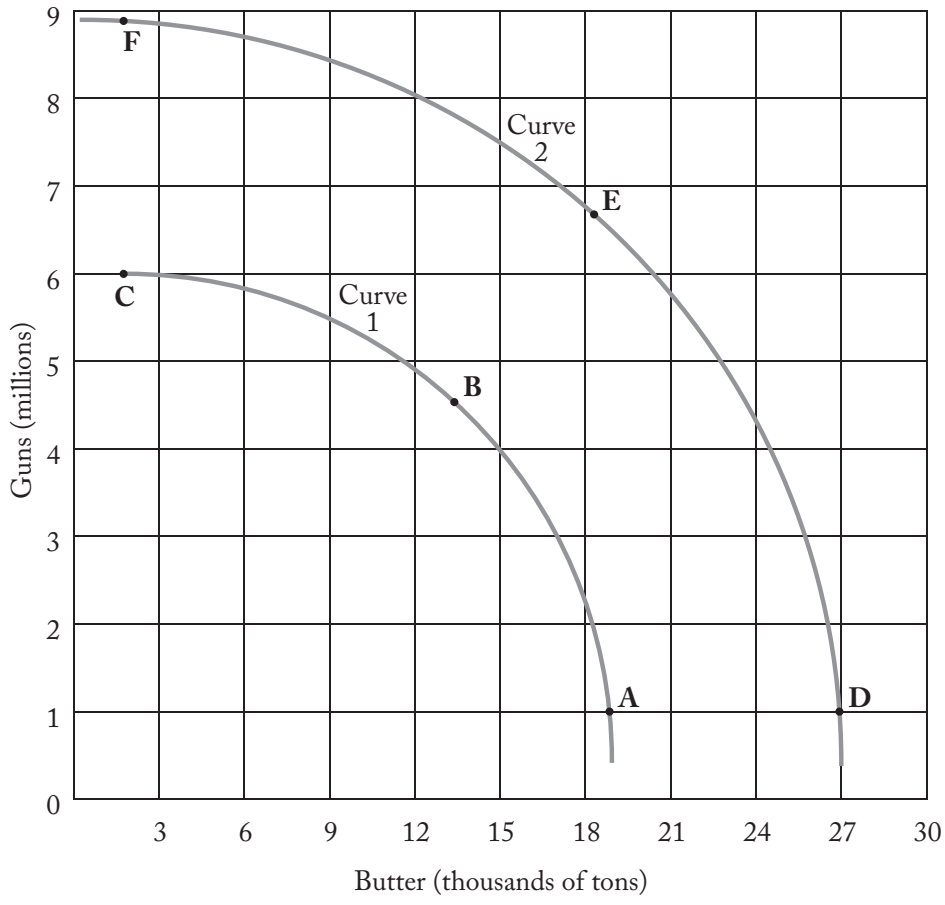
Managers also must reckon opportunity costs when making new investments. The cost of any investment must be balanced against the cost of doing something else with the money. For example, what a company gains by expanding its sales force must be balanced against what it loses by not spending the same money on, say, running more ads in local newspapers. Similarly, consumers must decide the loss in missed opportunities by spending money now for such things as movies, cars, or vacations, rather than saving the money and investing it in education, a home, or improved technology. By withholding consumption now, one is in a far better position to make more money in the future.

Guns vs. Butter: Production-Possibility Curves

In the real world, when one does something and gives up something else (opportunity costs), he/she must also realize that the law of diminishing returns applies. The traditional example used in many economic texts is the trade-off between guns and butter. In this example, "guns" represents a nation's spending on military preparation, while "butter" represents spending on domestic needs. The following chart shows a hypothetical production-possibility curve, indicating how many units of guns a nation must give up to get a single additional unit of butter, and how much butter one must do without in order to get a certain number of guns.

Diagram 1. Production Possibilities: Guns vs. Butter



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At one extreme in Curve 1, at point A, the country produces 19 thousand tons of butter but only one million guns. At Curve 1, point B, this country produces about 4.5 million guns and 13 thousand tons of butter. At Curve 1, point C, almost six million guns but only about two thousand tons of butter. The chart below summarizes the changes in production possibilities based on the data in Curve 1.

Trade-off Between Guns and Butter in Production-Possibilities Curve 1				
At point	**Millions of guns**	**Thousands of tons of butter**	**Change in guns**	**Change in butter**
A	1	19	n/a	n/a
B	4.5	13	+3.5	-6
C	6	2	+1.5	-11

According to Curve 1, the above chart shows that to get an additional 3.5 million guns, the people in this country would have to give up production of six thousand tons of butter. To increase the supply of guns by another 1.5 million, the country would have to give up about 11 thousand tons of butter. The only way to increase production of both guns and butter would be to increase production possibilities, as shown in Curve 2.

Production Possibilities Following Economic Growth

In the diagram, the second production-possibility curve (Curve 2) is stretched out past the first. This time production goals can be met at a much higher level. The possibilities now exist that, instead of producing up to 4.5 million guns and about 13 thousand tons of butter, the country can produce up to 6.5 million guns and about 19 thousand tons of butter (point E). This production-possibility curve is the result of economic growth which comes from investing scarce resources into increasing production, rather than daily consumption.

Economic Laws Don't Dictate Choices

The economic principles and laws—diminishing returns, opportunity costs, and production-possibility curves—do not give hard and fast answers telling individuals or countries what to do. However, they can help people make important decisions. If you knew precisely how much you'd have to give up in order to get an A on a French exam, you can make a rational and informed decision. If you can plot out what you gain and lose from a college education, you may make a more rational decision whether to attend school for four more years. Similarly, countries can make better (though not necessarily "correct") decisions regarding their use of technology. They would know how much they have to give up by building battleships versus building high-speed trains. The hope is that when you make important decisions as a student, consumer, worker, businessperson, voter, or national leader, you have as much of the relevant evidence at hand as possible and are aware of the fundamental economic laws discussed in this lesson.

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Student Activities

Diminishing Returns, Opportunity Costs, and Production-Possibility Curves

A. The Law of Diminishing Returns

1. On your own paper, make a chart showing the operation of the law of diminishing returns in the case of a farmer who could harvest 2000 bushels of wheat working by himself, 3000 bushels if he hired one person to help him, 3500 if he hired two, and 4000 if he hired four. Use the chart from page one of this lesson as a model.

Number of workers	Number of bushels harvested	Gain from hiring an additional worker
Farmer alone	*2000*	
Farmer + 1		
Farmer + 2		
Farmer + 3		
Farmer + 4		

2. Make your own chart, plotting time spent studying over a semester, and the effects you think it would have on your academic average. For example, if you studied an average of 40 minutes a night, you may get a 60% average. Use the same categories as before. Note (in writing) both the costs and benefits of doing the extra amount of studying to get the higher grade. Use the chart below as a model for your own chart:

Minutes of study each night	Average grade	Improvement in grade from studying
0	*40*	*n/a*
40	*60*	*20*
80		
100		
140		
160		
200		

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B. Opportunity Cost

Use the following information to determine how long it takes for additional years in school to pay off financially:

It takes most people about eight years to obtain a doctorate degree. People who earn such a degree will pay about $25,000 per year in tuition. Their opportunity cost in lost wages will average about $20,000 a year, and their lifetime income will average $80,000 a year for 40 years. However, if they stop their education after four years of college, their income will average $50,000 a year for 44 years. If they don't go to college they will earn an average of $20,000 per year for about 50 years.

Years before Additional Education Pays Off					
Years to obtain degree	**Costs per year (tuition + opportunity)**	**Total educational costs**	**Additional earnings per year**	**Years before additional education pays off**	**Total added net lifetime income**
Four years to finish college					
Four years to finish PhD					

C. Production Possibilities

1. Use Diagram 1 in this lesson's reading to determine how much production of both guns and butter is possible at points D through F in Curve 2. (Figures for Curve 1 are provided in the reading.)

Trade-off Between Guns and Butter in Production-Possibilities Curve 2				
At point	**Millions of guns**	**Thousands of tons of butter**	**Change in guns**	**Change in butter**
D			*n/a*	*n/a*
E				
F				

2. Make your own chart showing the operation of the production-possibility curve showing the trade-off of a country producing either boots or sneakers. Using the numbers on the next page to start your exercise, and using the chart toward the end of the reading as a guide only, make up your own numbers and draw the curves yourself.

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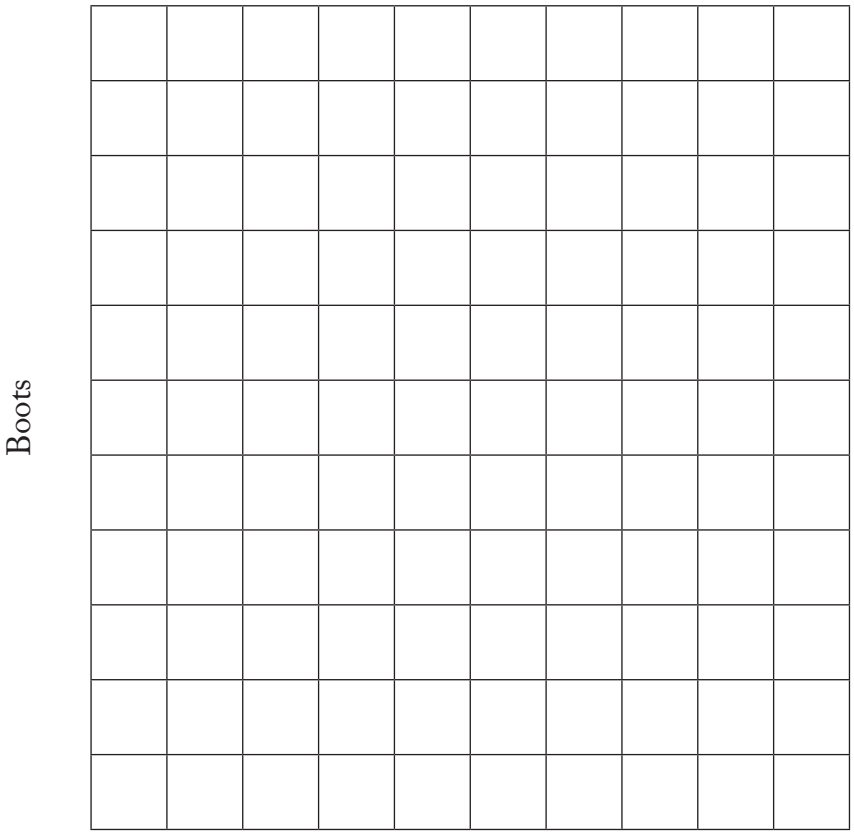
Point	Boots	Sneakers
A	1	8
B	4	6
C		
D		

Now draw a production-possibilities curve that shows the production curve shifted to the right, indicating a dramatic increase in production of shoes and sneakers.

Point	Boots	Sneakers
E		
F		
G		
H		

Production Possibilities: Boots vs. Sneakers



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CHAPTER 7
MARGINALITY

Overview

This chapter teaches a simple but very important economic concept: that most economic decisions are made based on the effects of adding either another unit of production or consuming an additional element. The chapter also explains how marginality is applied to determining tax rates on additional taxable income earned. The chapter is rife with hypothetical examples of added degrees of satisfaction, higher marginal costs and returns, and marginal income brackets. Students are asked to figure out answers to each example, and to devise more examples using situations similar to those in the text for other students to resolve.

Objectives

Students will:

- learn the meaning and the importance of the term "margin" as used by economists
- understand how margin may be used in deciding on personal consumption decisions
- apply the theory of marginal input, as opposed to marginal costs, in managerial decisions
- learn the meaning and importance of marginal federal income-tax brackets.

Recommended Time

One class period

Strategies

Start by asking students what they decided Aidan should spend his $23 on to maximize his satisfaction. Have students who obtained the right answer (two movies and a hamburger) explain how they reached their conclusion by showing their math on the board. Then ask how the concept of marginality applies to managerial decisions in adding workers or investing in machinery.

Once you're sure that all of them understand this particular application, ask students to show on the board how they arrived at the correct answers in the case of Melissa's pizzeria (adding an additional employee would have the marginal effect of her $12 more dollars an hour).

Assignment

Assign Chapter 8 and ask students to complete the activities. Students may use their own paper if they need more space.

CHAPTER 7
MARGINALITY

Introduction

Marginality is a term used by economists to note the effect of adding or subtracting one additional item. This concept applies to the calculations that go into buying an extra hamburger and is similar to the law of diminishing returns—few people get as much utility (which we will call "satisfaction") from eating the second hamburger, and the third milkshake may not give as much satisfaction as the first two. Marginality also applies to manufacturers when hiring additional workers. Their input may be more or less than the value added by workers already on the job, for the same reason that the third laborer working on a field does (or does not) add as much to the wheat harvest than each of the first two workers. Marginality also applies to rates of taxation—the marginal rate increases as income increases. In this chapter you will be introduced to applications of the concept of margin as used by people deciding how to spend their money, by managers deciding whether to hire additional workers, and by economists calculating income tax rates.

The term "marginal" has widespread use in economics. Economists talk of **marginal cost**—the change in total cost by adding one more unit of production; **marginal revenue**—the amount of additional money earned by increasing sales; **marginal propensity** (i.e., the likelihood) **to consume—**the amount that will probably be spent by people receiving an increase in take-home pay.

The Third Hamburger or Second Movie

Aidan loves hamburgers. He eats at least one for lunch almost every day. It satisfies his hunger. When asked, he says he gets five "satisfaction points" from the first hamburger he eats for lunch. However, he only gets three satisfaction points for the second hamburger, and one from the third hamburger. Similarly, he gets four satisfaction points from his first milkshake, two from his second milkshake, and zero satisfaction points from the third. Aidan also likes to go to the movies, and he expects to get ten satisfaction points from going to see a particular movie the first

time, but expects only eight the second time. A hamburger costs $5, the movie theatre charges $10, and a milkshake costs $3. Aidan has $23 to spend. In the Student Activities section of this chapter, you will be asked how Aiden should spend his money in order to maximize his satisfaction points.

Should Melissa Hire Another Worker?

Melissa runs a pizzeria. She pays her waitresses and cooks $10 an hour. On average, each of her four waitresses serves five pizzas in an hour, and Melissa earns $5 for every pizza served. She has figured out that, if she were to hire another worker, the worker would be able to serve four pizzas an hour but everyone else would only serve four pizzas instead of five. In the Student Activities section for this chapter, you are asked whether the marginal cost of adding another worker will increase Melissa's profits.

Income-Tax Rates

The marginal income-tax rate is the percent of your taxable income that must be paid on the highest income bracket you are in. The accompanying chart shows the marginal rates as 10, 15, 25, 28, 33, and 35 percent, depending on the income bracket. Everyone pays the same tax on their first $16,700, their first $68,000, and their first $137,000, etc. of taxable income (income minus deductions). In the Student Activities, you are asked for the highest marginal tax rate for each of the couples described below, and then for how much income tax they have to pay.

2010 Federal Income Tax Table
Married and Filing Jointly

If taxable income is:			
Over	But Not Over	The Tax Is	Of the Amount Over
$0	$16,750	$0 + 10%	$0
$16,750	$68,000	$1,675 + 15%	$16,750
$68,000	$137,300	$9,362 + 25%	$68,000
$137,300	$209,250	$26,687 + 28%	$137,300
$209,250	$373,650	$46,833 + 33%	$209,250
$373,650	n/a	$101,085 + 35%	$373,650

Hanna and Harry are married. Their income—after deductions for children, interest on mortgage, and charitable giving—is $108,000 before taxes. Naomi and Norman make $15,000 after deductions. Joe and Jessica are considerably better-off than Hanna and Harry and far better-off than Naomi and Norman. Their taxable income (income after deductions) is $573,000. What is their marginal tax rate? What do they have to pay in taxes?

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Student Activities

Marginality

A. Solving Aidan and Melissa's Problems

1. a. Revisit Aidan's story and figure out how he should spend his money in order to maximize his satisfaction. Show the calculations you used in order to arrive at your answer.

   b. Make up a similar problem involving another person who wants to obtain maximum satisfaction with a limited amount of money.

2. a. Review Melissa's dilemma and decide whether she would make more money by hiring an additional worker. Show the math you used to arrive at your answer.

   b. Make up a similar problem involving a another person who must decide whether the marginal cost of hiring an additional worker would be less than the marginal income this worker would produce for his/her employer.

B. Income Taxes

1. Fill out this table based on the information contained in the tax table from the reading:

Couple	Highest income bracket	Amount owed on taxable income
Hanna and Harry		
Naomi and Norman		
Jessica and Joe		

2. Make up a couple with a different income than any of the couples' described, and figure out the highest bracket of their taxable income and their federal income-tax bill.

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CHAPTER 8
COMPARATIVE ADVANTAGE

Overview

Unlike other chapters, this one begins by raising a practical question, rather than providing an introduction. The question asks students to decide why a lawyer making $300 per hour should let a typist making $25 per hour do his/her own typing even though the lawyer can type twice as many words per minute than the typist. The answer that students should reach is that the lawyer's opportunity cost of typing is the time lost working on a case billed at $300 per hour. This simple example is used to make the point that both sides gain in an economic exchange if each does the work they do more efficiently than the other, even if one side does both jobs more efficiently. This is illustrated by the hypothetical example in which American workers can suddenly produce coffee more efficiently than Brazilian workers, while Brazilian workers remain less efficient than American workers in making bicycles.

Note: This chapter attempts to explain the price that American and Brazilian workers would pay for coffee and bicycles, if both countries specialized in the product which they could make more efficiently than the other. Unless some students are able to understand this concept well enough (say, well enough to explain it to other students), you may wish to avoid spending classroom time on it.

The Student Activity questions ask students to use their own words and own sets of statistics to explain why the lawyer should not do his own typing and why a country should specialize in producing what it can produce most efficiently. An extra-credit question challenges students to write a dialogue on whether to impose a tariff on cheap foreign imports.

Objectives

Students will:

- understand the theory of comparative advantage
- apply the theory by explaining how it applies to two hypothetical cases in which they supply the examples and the specifics
- learn to construct an argument opposing a tariff on goods from a country with lower labor costs than the U.S.

Recommended Time

Two class periods

Strategies

Day 1: After checking whether students did the homework, ask whether they know where their sneakers or shoes were made, and whether they could formulate an argument that the U.S. allow the continued importation of these products, even if it cost the jobs of American workers. Ask how the example of the lawyer not doing their own typing might apply to this discussion. Note that both the U.S. and China are better served by producing the goods and services in which they enjoy a comparative advantage.

Once you are sure that most of your students understand the concept of comparative advantage, ask a few to present their answers to questions 1 and 2 in which they need to supply their own examples and statistics. Have students explain in class why they agree or disagree with each presenter's explanation. Then present the following problem:

Country	Beer (in gallons)	Wine (in gallons)
France	10 per worker per day	12 per worker per day
U.S.	15 per worker per day	8 per worker per day

Ask how much more wine and beer France and the U.S. would produce if both specialized by devoting their entire workforce of 20 men per country to producing what they do most efficiently, rather than split their workforces in half.

Assign all students the charts as well as this chapter's additional assignment. It asks students to write an argument between an economist who advocates the concept of comparative advantage and the American worker who could lose their job unless the U.S. institutes a tariff as a barrier to stop foreign imports.

Day 2: Start class by reviewing the concept of comparative advantage and discussing the U.S. yearly trade deficit. Ask: Does the U.S. benefit from this because it buys the goods and the rest of the world has its money, or does the U.S. suffer because the U.S. buys the goods and is in debt while foreigners have its money and jobs? Note that this is an open-ended question without an objectively correct answer. Allow this discussion to continue for 10 to 15 minutes.

Separate students into groups of no more than three, and allow them to share the dialogs they wrote with their group, before having volunteers debate their views and allow classmates to participate. Inform the class that the question comes down to a country's either having a favorable balance of trade and the money and jobs there, or accumulating debt and losing jobs but having the goods purchased with borrowed money.

Assignment

Have students prepare for a test by studying Chapter 9, "Unit Review."

CHAPTER 8
COMPARATIVE ADVANTAGE

Introduction

Suppose you were an accomplished lawyer who bills your clients at the rate of $300 an hour for legal work. You also happen to be an excellent typist and can type 120 words per minute—twice as many as your secretary, who earns $25 an hour. If you have a choice between spending an hour typing and doing legal work, which would you do?

If you were smart enough to get through law school, you'd probably choose to do legal work—no matter how fast you can type. The opportunity cost for you to type for an hour would be $300. You'd save yourself only $50, because it would take your secretary two hours to complete the same amount of typing you can do in an hour. Therefore, by doing your own typing, you would lose $250.

Suppose that you were a secretary who can type 60 words a minute and earns $25 an hour. You have to defend yourself in a court of law for an alleged traffic accident. It would take 100 hours away from work to prepare to do battle with an experienced attorney. Should you put in that time to save the $300 you would otherwise have to pay your lawyer, who could settle the case in five hours?

If you were smart enough to learn how to type, you could figure out that the opportunity cost of your doing your own legal work would be $2500. Even if you could win your case, you would still be far better off hiring a lawyer and spend your time at work earning $300.

The Theory of Comparative Advantage

The basic examples you just read illustrate an important economic law: the theory of comparative advantage. The main concept behind this theory is that **producers should do the things in which they have a comparative advantage in producing, and pay for the goods and services they cannot produce as efficiently.** This is why most people hire plumbers, electricians, tutors, and lawyers to do certain jobs for them—it pays to specialize. This also explains why certain regions of the country produce cars and others grow cotton. This is also the theory behind international trade—why we buy our coffee from Brazil and our bananas from Honduras, and (often) our automobiles from Japan, and our sneakers from China.

In this lesson, we look at two cases of comparative advantage: first in which one country is better at doing one thing than another, and second in which one country produces everything more efficiently than the other. In both cases, as we shall see, it is good for each country to specialize in what it does comparatively better than the other.

The U.S. and Brazil: Bicycles and Coffee

Let us assume that a worker on a Brazilian coffee plantation can produce 20 pounds of coffee an hour, while a Brazilian working in a bicycle factory can produce three bicycles an hour. Meanwhile, a worker in the U.S. can produce only one pound of coffee in an hour, but 10 bicycles in the same time. Let's also suppose that the worker in each country works 20 hours a week on the coffee plantation and 20 hours in the bicycle factory. The following chart shows what each country would produce if each devoted the same number of hours working on both products, and the total production of the two countries:

Country	Coffee	Bicycles
Brazil	20 × 20 = 400	20 × 3 = 60
U.S.	20 × 1 = 20	20 × 10 = 200
Total	420	260

The second chart shows the effect of each country specializing in producing what it does best.

Country	Coffee	Bicycles
Brazil	40 × 20 = 800	0 × 3 = 0
U.S.	0 × 1 = 0	40 × 10 = 400
Total	800	400

By specializing, the two countries have produced 380 more pounds of coffee and 140 more bikes than without specialization. Brazil can easily trade its surplus coffee to the U.S. and end up with more bicycles and more coffee than it had when it produced all of its own. Similarly, the U.S. can trade its bicycles for coffee and have more of both. Each country is better off as a result.

Should the U.S. Trade Even if It Can Produce Both Coffee and Bicycles More Efficiently Than Brazil?

Even if you drink coffee and ride a bike, the above may not be the question that you ask yourself when you wake up in the morning. Nevertheless, economists understand that countries that are better at producing everything (in this case, better at both growing coffee and manufacturing bicycles), should engage in foreign trade. Here's why: Suppose the U.S. suddenly developed a new way of growing coffee. Now one worker can produce 25 pounds of coffee per hour. The same worker can still make ten bicycles per hour. At the same time, no increase in productivity has

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occurred in Brazil. Should the U.S. still specialize in making bicycles, or should the U.S. divide its time between making bicycles and growing coffee? Let's examine the following charts to find the answer:

Without Specialization

Country	Coffee	Bicycles
Brazil	20 × 20 = 400	20 × 3 = 60
U.S.	20 × 25 = 500	20 × 10 = 200
Totals	900	260

With Specialization

Country	Coffee	Bicycles
Brazil	40 × 20 = 800	0 × 3 = 0
U.S.	0 × 25 = 0	40 × 10 = 400
Totals	800	400

In this case, both countries are better off with specialization. Although the two of them produce 100 fewer pounds of coffee by not specializing, this is at the cost of 140 bicycles. It's not hard to figure out that 140 bicycles are generally worth more than 100 pounds of coffee.

The rate of exchange between bicycles made in the U.S. and coffee grown in Brazil would depend in part on how the law of supply and demand work for each in their respective countries. But Brazilians, who could make three bikes and 20 pounds of coffee in an hour, would not pay more than 6.66 pounds of coffee for a bike (20 ÷ 3 = 6.66). Americans, who can make ten bikes for every 25 pounds of coffee, would never pay more than one bike for 2.5 pounds of coffee (25 ÷ 10 = 2.5). So the exchange rate between coffee and bikes would range from one bike for every 2.5 pounds of coffee, to one bike for every 6.66 pounds of coffee. The lower rate favors Brazil, which has a *comparative* advantage in growing coffee, and the higher rate favors the U.S., even though it has an *absolute* advantage in growing coffee and in manufacturing bicycles, but more of an advantage making bicycles.

Before we lose sight of the main point, let us remember that both the U.S. and Brazil can benefit from trade even though the U.S. is better than Brazil at producing both bikes and coffee.

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Student Activities

Comparative Advantage

A. Short Essay

1. Using the theory of comparative advantage, and assuming that the lawyer from the reading earns $250 an hour and types 150 words per minute, while the secretary earns $20 an hour and types 75 words per minute, explain why lawyers should not do their own typing, and why typists should not handle their own legal cases.

2. Apply the same theory to the case of Americans' making bicycles and Brazilians' growing coffee, but use different statistics, products, and countries.

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B. Chart

1. Using the data in the following chart, calculate how many tons of rice and how many computers would be produced by each country if the United States and Japan each concentrated on what it did most efficiently instead of spending half their workers on producing each product. Assume there are 20 workers in each country.

Country	Rice (in tons)	Computers
Japan	10 per worker per day	3 per worker per day
U.S.	50 per worker per day	1 per worker per day

Additional Assignment

Using what you have learned about the theory of comparative advantage, and assuming that wages in different countries reflect the average efficiency of labor and cost of production[1], decide whether the U.S. should raise taxes on imports in order to prevent inexpensive sneakers from being imported from China. You may also assume that workers who lose their jobs in the U.S. would find jobs working in export industries, and that consumers in both countries would be getting the cheaper products.

Write a dialogue in which an economist who believes in the theory of comparative advantage argues with an American worker employed in a computer factory about whether the U.S. should raise tariffs on computers imported from China.

1. Refers to the assumption that wages in countries reflect the value of goods that, on average, each worker produces in the country. Therefore, wages are higher in the U.S. than in China because the American worker on the whole produces more in each hour than the Chinese worker.

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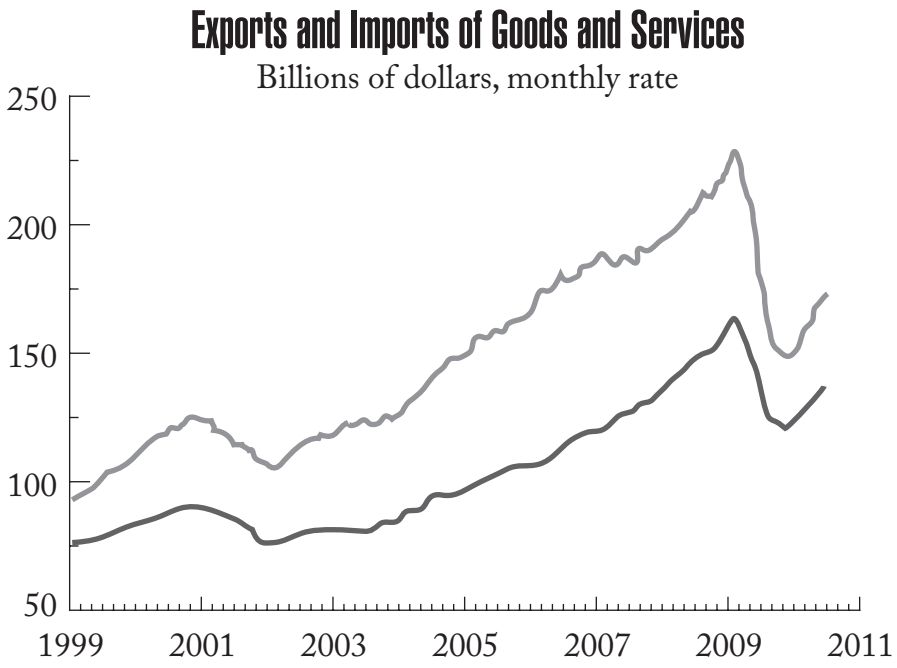
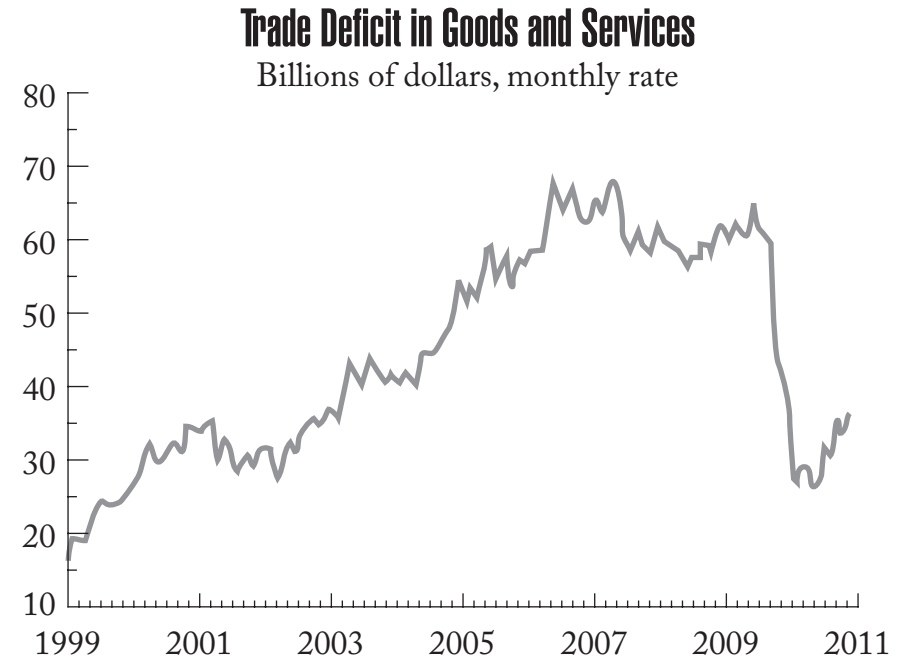
You may want to make reference to the charts produced by the U.S. Department of Commerce (below) in making your arguments.





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CHAPTER 9
UNIT REVIEW

Overview

This chapter is provided to prepare students for a test on this unit. It reviews material found in previous chapters, and its headings correspond to chapter titles.

Objectives

Students will review and remember important concepts taught throughout this unit.

Strategies

Give students a list of economic concepts taught in this unit and allow them to review these concepts in groups of no more than three or four.

CHAPTER 9

UNIT REVIEW

Introduction

The economic terms and concepts covered in this unit are basic to an understanding of what a long-dead economist once called "the dismal science." Use this chapter to review the key ideas introduced in Chapters 1–8.

Economics and the Economic Problem

The main reason for the economic problem is that human needs and desires are almost unlimited, while the resources to satisfy them are finite. The problem concerns what to produce, how to produce and distribute it, and for whom it is produced.

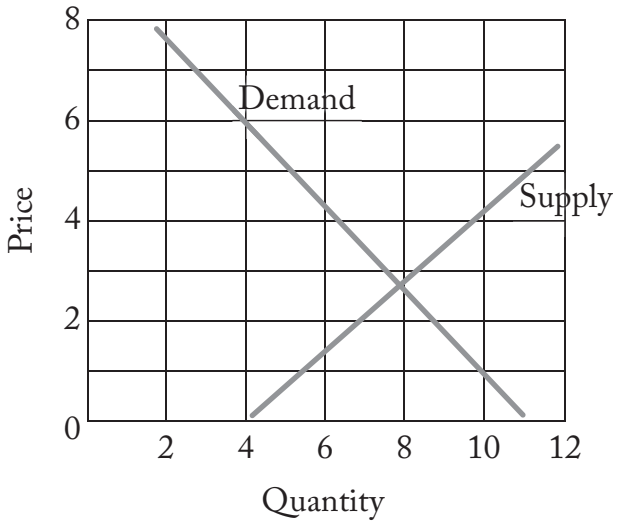
Through the ages, three types of economies have developed to resolve the economic problem: a traditional economy, in which patterns of behavior are handed down from previous generations and change slowly if at all; a command economy, in which centralized high-level bureaucrats (or other authorities) dictate what is produced; and a market economy, in which such decisions are made according to the willingness of buyers to buy and producers to produce, all at prices and amounts set by mutual self-interest. In a traditional economy, economic decisions are made on the basis of customs that evolved over time. The caste system of India is a good example of men and women inheriting their economic roles from their parents. Even now, tipping a waiter 15% of the bill, for example, is determined by custom. In a command economy, such as that of ancient Egypt, an authority such as the pharaoh makes crucial decisions on what gets produced, how it is produced and distributed, and for whom it is produced. Even in a democracy such as the U.S., decisions to tax and spend, build roads and schools, encourage agriculture and discourage smoking are made by the government, often (but not always) with the consent of the people. Finally, in a market economy, most economic decisions are made through the free exchange of goods and services, and prices are set by the interplay of supply and demand.

Chapter 1 also covers a concept known as the "factors of production." These comprise land (the resources above and under the ground), labor (both skilled and unskilled, including the industrialist or entrepreneur who devises how to harness the labor), and capital (money, tools, and factories) used to create the goods and services demanded and supplied in a market economy.

The Law of Supply and Demand

In a market economy, most economic decisions are made in accordance with the law of supply and demand. The law of supply is expressed by a series of estimates (the supply schedule) of how much producers are willing and able to produce at various prices. The supply curve shifts downward from the right to the left because those who produce the product will create more of an item when its price increases. The law of demand is expressed in a series of estimates (the demand schedule) of how much buyers will purchase at various offered prices. The demand curve slopes down from the left because buyers will purchase more of a given product if the price is low. The price of an object and the number bought and sold are shown by the intersection of the two curves, as follows:

Intersection of Supply and Demand Curves Determines Price



In the diagram to the left, quantity is shown as almost 8 and price as slightly below $3. Therefore, 8 items would have been bought for the price of about $3 each.

Shifts in the Demand and Supply Curves

Remember that supply and demand indicate what people want to buy and to produce at certain prices at a given period of time. Moving the entire curve shows changes in the supply and demand curves. To show an increase in supply, the entire curve moves to the right. This indicates that producers are willing and able to produce more of a given item at lower prices. To show a decrease in supply, the entire curve moves to the left. This shows that suppliers are no longer willing or able to produce as much as they had at earlier prices.

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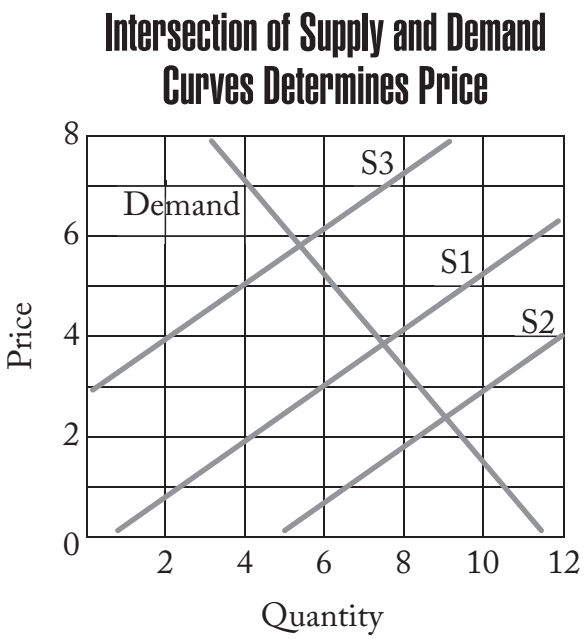
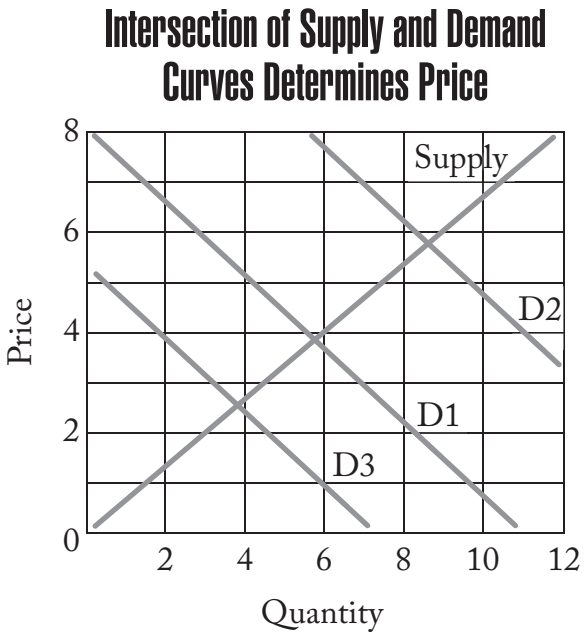


In the diagram to the left, Supply 2 shows an increase in supply from Supply 1, while Supply 3 indicates that supply has decreased relative to Supply 1. Each change alters where the supply and demand curves meet, affecting both price and quantity.

Shifts in the demand curve are indicated by moving it to the right to show an increase in demand and to the left to show a decrease, as illustrated in the following diagram.



In the diagram on the left, Demand 2 shows an increase in demand from Demand 1, and Demand 3 indicates that demand has gone down relative to Demand 1. Each change alters where the supply and demand curves meet and affects both price and quantity.

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Elasticity of Demand Curves

Demand curves can be either elastic or inelastic. An elastic demand curve tends to be closer to parallel to the baseline of the graph. If demand is elastic, a decrease in price is likely to lead to an increase in total revenues (determined by multiplying price times revenue.) If demand for the product tends to be elastic, suppliers are more likely to lower than to raise prices in order to make a profit.

An inelastic demand curve tends to be perpendicular to the baseline, rather than parallel. Under conditions of inelastic demand, an increase in price will tend to increase revenues.

Factors contributing to demand being elastic include the availability of substitutes for the product (such as artificial sweeteners for sugar). Demand tends to be elastic when, as with automobiles, the item in question costs a relatively large percent of a person's income, and also when the item is a luxury that a person can do without.

Demand is generally inelastic when the item in question tends to be a necessity (such as food, water, or an addictive drug), rather than something a person can easily live without. Demand is inelastic when it costs a relatively small part of a person's income, or when no good substitute is readily available.

It is important for producers to know whether demand for an item is elastic or inelastic. If elastic, the person could sell his or her merchandise at a reduced price and increase total revenues. If inelastic, a producer could sell his or her merchandise for more money and increase revenues. Taxes on inelastic items such as cigarettes and alcohol will have a relatively minor effect on sales and bring in more tax dollars than a tax on a product with elastic demand.

Elasticity on Supply Curves and Determining Elasticity

Supply curves can also be either elastic or inelastic, and elasticity of supply determines how responsive supply curves are to changes in price.

Supply is more elastic in the long run—when producers have a chance to adjust production curves—than in the short run. Supply curves are less elastic when there is a shortage of resources needed to produce the item, of workers and technicians, or of capital. Supply is more elastic when it is easier for new businesses to enter a market than when entry is difficult.

When supply is elastic, a decrease in prices will increase total revenue; when inelastic, an increase in prices will increase total revenue.

It is important to know when supply is elastic and when it is inelastic, and you can use the following formula to use to figure it out.

$$E_s = \frac{\textbf{\% change in supply}}{\textbf{\% change in price}}$$

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If the result is more than 1, supply is elastic. This means that a decrease in price will increase revenue.

The formula for determining whether demand is elastic is similar to the formula determining elasticity of supply:

$$E_d = \frac{\text{\% change in demand}}{\text{\% change in price}}$$

Again, if the result is more than 1, demand is elastic. This means that a decrease in price will increase revenue.

Diminishing Returns, Opportunity Costs, and Production-Possibility Curves

The example used in Chapter 8 that explains the law of diminishing returns demonstrates that the third hour of studying for a test may not result in as much of a grade increase as the first hour alone; similarly, the farmer who hires additional workers to help him cultivate the fields will find out that each additional laborer adds less to the final output than the previous worker. This is a hard-and-fast law of economics that applies to making many different decisions.

An economist would say that opportunity costs are what you give up because you pursued another course of action. You as well as managers apply this idea when deciding on the most effective way of spending a finite amount of money.

A production-possibilities curve represents an assumption concerning how much a country has to give up when deciding to produce one thing (typically described as domestic spending, such as building roads and bridges) at the expense of producing something else, such as new fighter jets with which to defend their country.

Marginality

The concept of marginality has many different applications in economics. They include marginal utility (satisfaction), marginal costs, marginal likelihood to consume, and marginal income-tax rates. In each case, the term "marginal" refers to a change in output of one kind caused by the change in some form of input.

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Comparative Advantage

The concept of comparative advantage is best illustrated by the case of a lawyer who does not do his own typing, even though he types faster than his secretary, because he can make more money practicing law. It applies to major decisions people make to hire mechanics, tutors, doctors, etc. to do things for them because it is more efficient to pay skilled individuals for things we ourselves cannot do as effectively. Applied to international trade, this concept leads to countries such as the U.S. producing airplanes that they can manufacture more efficiently than the inexpensive clothes, cheap toys, or coffee that other countries might produce. Comparative advantage lies at the heart of the argument against taxing imports in order to protect industries that do not produce things as efficiently as they are produced in foreign countries.

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Name: _____ Date: _____

Student Activities

Unit Review

1. Why is there an economic problem?

2. What is the economic problem?

3. Briefly describe each of the three types of economies and their different approaches to solving the economic problem.

4. Which way does the demand curve slope, and why? Which way does the supply curve slope, and why? How are price and amount determined in a market economy?

5. How are shifts of the supply and demand curves shown? Which way does each curve slope to show increases and decreases in either supply or demand?

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6. What are the differences between elastic and inelastic demand and supply curves? What are the effects on revenue if demand is elastic? What are the effects on revenue if supply is elastic? What causes demand and supply curves to be either elastic or inelastic?

7. Explain the law of diminishing returns, the meaning of opportunity costs, and what a production-possibility curve shows. Give examples of each.

8. What is the importance of people knowing marginal costs, marginal revenues, and marginal tax rates? Give an example for each of a decision that a person may make by taking into account marginal costs, revenue, and tax rate.

9. Explain the term "comparative advantage" as it might apply to a tropical country producing bananas and trading with an industrialized country for bicycles.

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ANSWER KEY

Chapter 1

Economics and the Economic Problem

Answer Key, Student Activities, pp. 7–8

1. Accept any concrete purchases students say they would make if they had an unlimited amount of money. Do not accept abstract things such as world peace or an end to poverty.

2. There is an economic problem because desires are almost limitless and resources are scarce.

3. The economic problem is (a) what should be produced, (b) how does it get produced and by whom, and (c) who gets what is produced?

4. Economic societies could be divided into (a) traditional economies, in which economic decisions are based on how things were done in previous times, (b) command economies, in which most decisions made by a central government, and (c) market economies, in which decisions are made on the basis of what profits the individuals making the decisions.

5. The factors of production are land, labor, and capital. *Land* refers not only to surface acreage but also to the minerals and natural features the land contains; *labor* refers to work that is done, from the mundane to highly skilled; and *capital* refers to money and/or already-paid-for machines and tools used to produce goods.

6. Indicate which of the following are examples of societies in which the economic activities are based on traditions, commands by a central authority, or on market considerations.

a. Tipping a waiter 15% of the bill: **Traditional**.

b. Deciding to become an economist because your father is: **Traditional**.

c. Deciding to become an engineer because the pay is good: **Market**.

d. Not selling your watch because it belonged to your grandmother: **Traditional**.

e. Keeping stocks that have been in the family for a long time: **Traditional**.

f. Rationing of goods in the United States during World War II: **Command**.

g. Going to the same college your family attended: **Traditional**.

h. Selling stocks because you think the market is going down: **Market**.

i. An advertisement on TV in a communist country: **Command** (assuming the decision was made by the government).

j. A woman's decision to stay home and raise her children even though she could make more money in the workplace than her husband: **Traditional**.

k. Discrimination against women in hiring computer salespersons: **Traditional**.

l. Hunters' division of meat in a prescribed way among villagers: **Traditional**.

m. Congress voting to increase taxes on incomes by 10%: **Command**.

Chapter 2

The Law of Supply and Demand

A. Multiple-Choice Answers, pp. 13–14

1. The best description of a demand curve is **(b)** a line or curve on a graph which shows how much of a given commodity people are willing to buy at different prices at a given time.

2. The best definition of a supply curve is **(a)** a line or curve on a graph which shows how much of a given commodity people are willing to produce for sale at different prices at a given time.

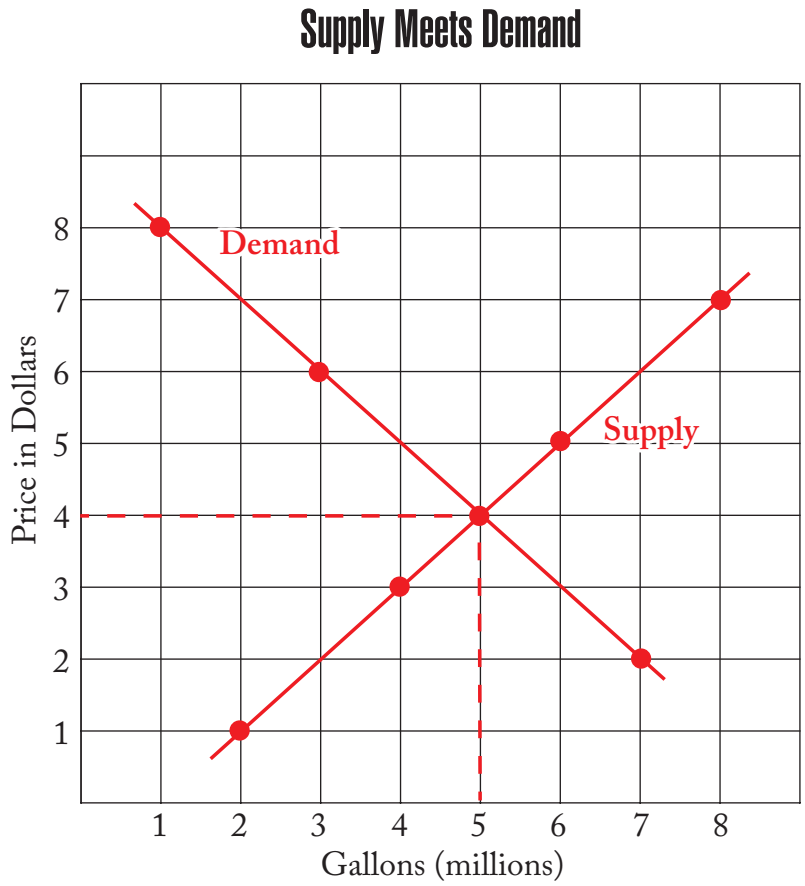
3. A demand curve slopes **(b)** down from the left to the right.

4. A supply curves slopes **(a)** up from the left to the right.

5. A supply curve slopes the way it does because **(a)** the more money a producer can get for an item, the more it is likely to produce.

6. A demand curve slopes the way it does because **(a)** the more money something costs, the fewer people will likely buy it.

B. Charting Answers, p. 14



Chapter 3

Shifts in Supply and Demand Curves

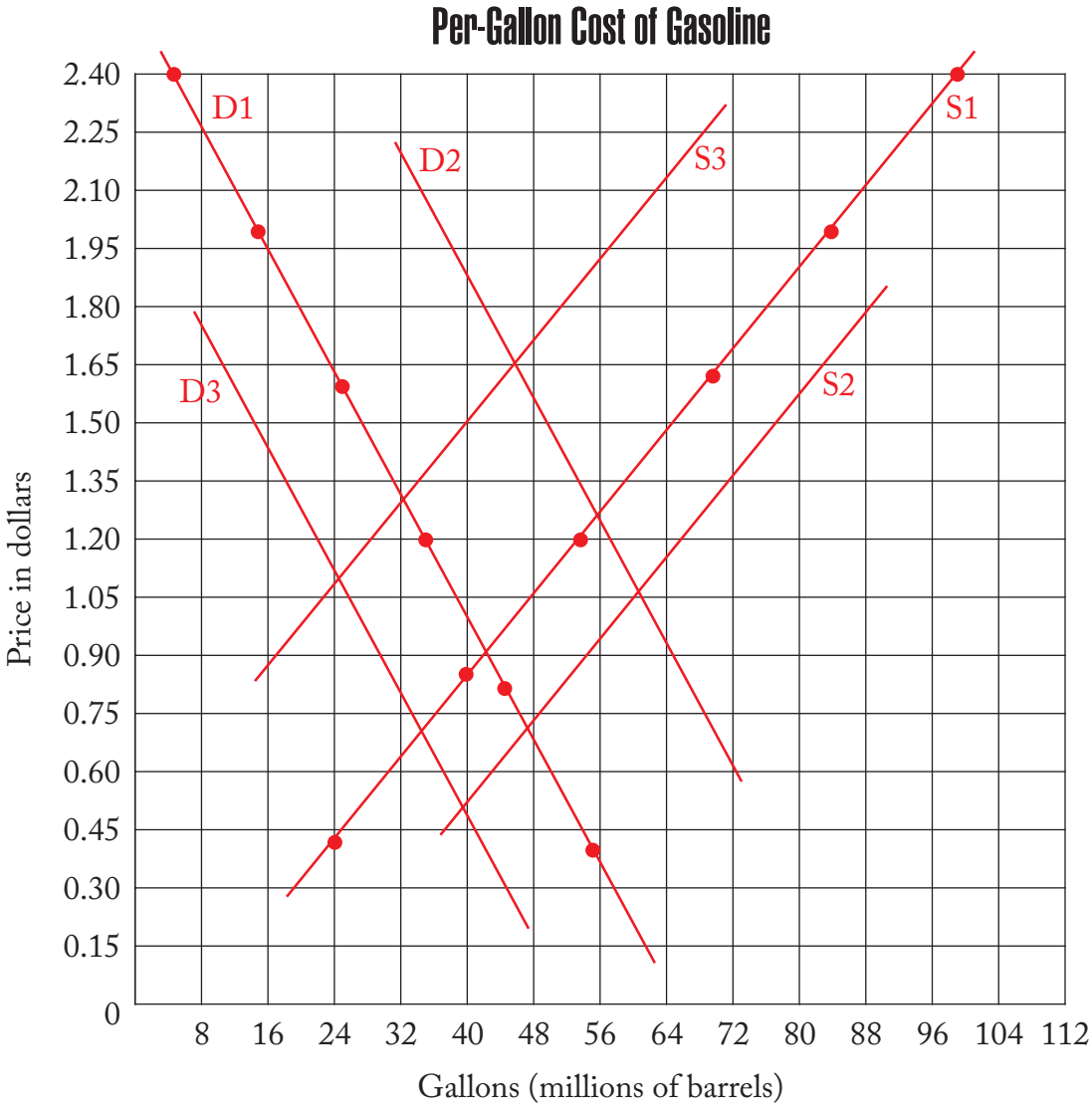
A. Multiple-Choice Answers, p. 19

1. Changes in demand are shown by **(d)** both shifting the demand curve up to show an increase in demand and shifting the demand curve down to show a decrease in demand.

2. Changes in supply are shown by **(b)** shifting the supply curve down to show an increase in supply.

B. Graphing Supply and Demand Answers, pp. 20–21

1. and 2.



3. Determine the effect that each of the following actions would have on oil demand, supply, price, and quantity bought and sold:

If price per gallon is X,			
then consumers will buy		and producers will sell:	
$0.40	55 million gallons	.40	25 million gallons
$0.80	45 million gallons	.80	40 million gallons
$1.20	35 million gallons	1.20	55 million gallons
$1.60	25 million gallons	1.60	70 million gallons
$2.00	15 million gallons	2.00	85 million gallons
$2.40	5 million gallons	2.40	100 million gallons

Effects of Changes in Demand and Supply on Oil Prices and Quantities Bought and Sold, p. 21

	Demand	Supply	Quantity bought and sold	Price per gallon
A	*Decreases*	*Stays the same*	*Decreases*	*Decreases*
B	*Increases*	*Stays the same*	*Increases*	*Increases*
C	*Stays the same*	*Decreases*	*Decreases*	*Stays the same*
D	*Stays the same*	*Increases*	*Increases*	*Decreases*
E	*Increases*	*Stays the same*	*Increases*	*Increases*
F	*Decreases*	*Stays the same*	*Decreases*	*Decreases*

Chapter 4
Elastic and Inelastic Demand

A. Multiple-Choice Answers, pp. 28–29

1. An elastic demand curve differs from an inelastic demand curve in that it tends to be **(b)** more horizontal than perpendicular.

2. If the demand for an item is elastic, **(b)** revenues will decrease if the manufacturer (or seller) raises the price.

3. The relative expense of an item is usually not a determinant of elasticity but a result of elasticity or inelasticity; and the more necessary an item is, the less elastic, so **(c)**.

4. Demand for an item tends to be elastic if there is a readily available substitute; and, again, expense is not a determinant of elasticity, hence **(c)**.

5. A merchant is likely to make a great deal more money if he **(b)** raises the price of a glass of water in the desert.

6. If Willie reduces his price for hotdogs and his sales go up, the demand for hotdogs is likely to be **(b)** elastic. Point out to students that the price went down from $2.00 to $1.50, or by 25%, while sales increased from 50 to 75, or by 50%.

B. Charting Answers, p. 29

In each of the following, state whether demand is more likely to be elastic or inelastic and cite one of the following criteria:

a. Is the item a necessity—yes or no?

b. Is a substitute available—yes or no?

c. Does the item cost a large percentage of income—yes or no?

d. Is the item scarcer over the short term or long term?

The first question is answered for students as an example. Keep in mind that they may use multiple criteria for their choices, if necessary.

Item	Elastic/inelastic/ undecided	Explanation
Toothpaste	*Inelastic*	*Costs a small percentage of total income*
Yacht	*Elastic or Undecided*	*Not a necessity (elastic)* *A small percentage of income for the very rich (inelastic)*
Kidney	*Inelastic*	*Necessity, can't live without it*
Postage stamp to mail a college application	*Inelastic*	*Low percentage of income (inelastic)* *No substitute available (inelastic)* *Arguably a necessity (inelastic)*
54" television	*Elastic or Undecided*	*Not a necessity (elastic)* *Percentage of wealth varies (undecided)*
Paper clip	*Elastic*	*Small percentage of income*
Drink for an alcoholic	*Inelastic*	*Alcoholics think drinks are necessary*

Can of Pepsi, when you would have preferred a Coke	*Elastic*	*Substitute available*
Heating oil during a cold winter	*Inelastic*	*Necessity* *Substitutes not readily available for most familiies*

Chapter 5

Elastic and Inelastic Supply and Determining Elasticity

A. Multiple-Choice Answers, pp. 36–37

1. An elastic supply curve differs from an inelastic supply curve in that **(b)** an elastic supply curve tends to be more horizontal than vertical.

2. If the supply curve for an item is elastic, **(a)** supply will increase by a higher percentage than price does.

3. Supply is more likely to be elastic when **(c)** both the natural resources required to make the product are abundant, and a suitable amount of time passes since the increase in prices.

4. Supply is more likely to be inelastic when **(c)** both companies producing this item are working at full capacity, and there is a shortage of skilled workers producing this item.

5. Companies producing this item are unlikely to increase production even if its price increased when **(a)** production costs have risen faster than prices.

6. The percent increase in the price of baseballs is **(b)** 20%.

7. The increase in the price of baseballs led to an increase of **(b)** 10% in the production of baseballs.

8. By what percent has the increase in the price of baseballs increased the production of baseballs? The increase in price was 20%, the increase in production 10%, so the effectiveness of the increase is **(b)** 50%.

B. Reasons for Elasticity and Inelasticity of Supply Answers, pp. 37–38

In each of the following, state whether supply is more likely to be elastic or inelastic, and use one of the following explanations: short- or long-run timeframe, unused production capacity, scarcity of inputs, or ease of entry. The first question is answered to give students an example of what is expected.

Item	Elastic/inelastic/ undecided	Reasoning in detail
Increase in price of gas	*Inelastic*	*In the short term* *More supply can be availabe in the long term*
Increase in price of luxury yachts	*Inelastic*	*Takes a long time to increase production* *Difficult to enter the industry*
Increase in price of cars during a depression	*Elastic*	*Unused production capacity*
Increase in price of milk	*Inelastic*	*Long time to increase production*
Increase in price of paperclips	*Elastic*	*Ease of entry into industry*
Increase in price of pizzas	*Elastic*	*Ease of entry into industry* *Plenty avaiable labor*

* Students might insist that it is **not** easy to start a pizza parlor.

C. Extra Credit Answers, p. 38

Warning to teachers: This is a difficult exercise. Using the formula for determining elasticity of demand: Calculate the elasticity of moving from point B to C and from A to C (A to B is given).

Sneakers at a High-End Shoe Store in a Medium-Sized Town			
Time period	**Price**	**Amount sold**	**Elasticity**
A	$100	50	From A to B = 2.5
B	$80	75	From B to C = 1.6
C	$50	120	From A to C = 2.8

Chapter 6

Diminishing Returns, Opportunity Costs, and Production-Possibility Curves

A. Law of Diminishing Returns Answers, p. 45

1. Students are asked to make a chart showing the operation of the law of diminishing returns in the case of a farmer who could harvest 2000 bushels of wheat working by himself, 3000 bushels if he hired one person to help him, 3500 if he hired two, and 4000 if he hired four. The first line is provided.

Number of workers	Number of bushels harvested	Gain from hiring an additional worker
Farmer alone	*2000*	
Farmer + 1	*3000*	*1000*
Farmer + 2	*3500*	*500*
Farmer + 3	*3800?**	*300?**
Farmer + 4	*4000*	*200?**

* Assumption because the numbers were not made available

B. Opportunity Cost Answers, p. 46

Students are asked to use the following information to determine how long it takes for additional years in school to pay off financially.

It takes most people about eight years to obtain a doctorate degree. People who earn such a degree will pay about $25,000 per year in tuition. Their opportunity cost in lost wages will average about $20,000 a year, and their lifetime income will average $80,000 a year for 40 years. However, if they stop their education after four years of college, their income will average $50,000 a year for 44 years. If they don't go to college, they will earn an average of $20,000 per year for about 50 years.

Note: In some editions of the book, this chart was mistakenly labeled to contrast high school and college rather than college and a graduate school PhD program.

Years before Additional Education Pays Off					
Years to obtain degree	**Costs per year (tuition + opportunity)**	**Total educational costs**	**Additional earnings per year**	**Years before additional education pays off**	**Total added net lifetime income**
Four years to finish college	*$45,000*	*$180,000*	*$30,000*	*6*	*$1,140,000**
Four years to finish PhD	*$45,000*	*$360,000*	*$36,000*	*6*	*$840,000 + $1,140,000 =$1,980,000***

* Assumes working 44 years (to age 66) after graduation at 22.
** Assumes working 40 years (to age 66) after graduation at 26.

Basis for calculations: Our college graduate begins earning at age 22, pays off educational costs at age 28, and pockets an additional $30,000/year for 38 years. Our PhD begins earning at age 26, pays off educational costs at age 38, and pockets an additional $30,000/year (above the $30,000/year gained by the college degree) for 28 years.

Students should be warned that all these estimates are approximate and cannot be guaranteed without figuring in ability, effort, and luck.

C. Production Possibilities Answers, p. 46

1. Students are to use Diagram 1 of this lesson to determine how much production of both guns and butter is possible at points D, E, and F in Curve 2. Figures for Curve 1 are already provided in the reading.

Trade-off Between Guns and Butter in Production-Possibilities Curve 2				
At point	Millions of guns	Thousands of tons of butter	Change in guns	Change in butter
D	*1*	*27*	*n/a*	*n/a*
E	*7*	*18*	*+6*	*–9*
F	*9*	*2*	*+2*	*–16*

2. Answers to other questions in the chapter cannot be specified because students make up their own numbers.

Chapter 7
Marginality

A. Solving Aidan and Melissa's Problems, p. 53

1. a. How can Aidan maximize his satisfaction with hamburgers, milkshakes, and movies? Teachers should help students make a chart, like the one below, based on the text to figure out what combination will yield the highest number of satisfaction points for Aidan's $23.

	Hamburgers		Milkshakes		Movies	
	$	Points	$	Points	$	Points
First time	*$5.00*	*5*	*$3.00*	*4*	*$10.00*	*10*
Second time	*$5.00*	*3*	*$3.00*	*2*	*$10.00*	*8*
Third time	*$5.00*	*1*	*$3.00*	*0*	*$10.00*	*0*

Best combinations: (1) two hamburgers ($10.00 for 8 points), one milkshake ($3.00 for 4 points), and one movie ($10.00 for 10 points) = $23.00 for 22 points; and (2) one milkshake ($3.00 for 4 points) and two movies ($20.00 for 18 points) = $23.00 for 22 points.

1. b. Students create a similar problem with their own numbers.

2. a. At present, Melissa's four waitresses each serve five pizzas per hour and make $10 per hour. Thus, 20 pizzas are served, costing $40 per hour in labor. Each pizza brings in $5.00 profit, hence $100 profit per hour.

   $100.00 pizza profit – $40.00 labor = $60.00 hourly profit.

   If Melissa hires another worker, each of her five employees would serve four pizzas an hour instead of five, so Melissa would still sell 20 pizzas per hour, but her hourly payroll would increase from $40.00 to $50.00. Instead of making $60.00 per hour in profit, Melissa would earn $50.00 per hour, so she'd be foolish to hire the additional help.

2. b. Students create a similar problem with their own numbers.

B. Income Taxes Answers, p. 53

1. Fill out this table based on the information contained in the tax table from the reading. Taxes should be computed to the nearest dollar.

   Short answer:

Couple	Highest income bracket	Amount owed on taxable income
Hanna and Harry	*25%*	*$19,362*
Naomi and Norman	*10%*	*$1,500*
Jessica and Joe	*35%*	*$170,858*

   How the answers were derived:

Couple	Highest Bracket	Taxable income $	Tax calculation	Tax
Hanna and Harry	*25%*	*$108,000*	*$9,362.50 + 25% of $40,000 ($108,000 – $68,000) = $10,000*	*$9,362.50 + $10,000 = $19,362*
Naomi and Norman	*10%*	*$15,000*	*$0 + 10% of $15,000 ($15,000 – 0) = $1,500*	*$0 + $1,500 = $1,500*
Jessica and Joe	*35%*	*573,000*	*$101,085.50 + 35% of $199,350 ($573,000 – $373,650) = $69,772.50*	*$101,085.50 + $69,772.50 =$170,858*

For further consideration: If Hanna and Harry's income before deductions was $128,000, what was their real tax rate? The answer is $19,362 divided by $128,000 or 15.13%. If Naomi and Norman's income before deductions was $20,000, their real tax rate is 7.5%. If Joe and Jessica's income before deductions was $750,000, what was their real tax rate? The answer is $170,858 divided by $750,000 or 22.78%. Assuming these are realistic numbers, ask students whether the current income tax rates are fair. Have them research actual tax figures for various income levels and further discuss the issue.

2. Students create a similar problem with their own numbers.

Chapter 8
Comparative Advantage

B. Chart Answers, p. 61

1. Show what would happen if the United States and Japan concentrated on producing the item (rice or computers) in which they have a comparative advantage, rather than dividing their time equally between computers and rice. Students use that data in the chart provided and assume that there are 20 workers in each country.

   According to the chart, Japan produces 100 tons of rice per day (10 workers x 10 tons rice each) and 30 computers (10 workers x 3 computers each). The United States presently produces 500 tons of rice per day and 10 computers. Total present daily production is 600 tons of rice and 40 computers.

   The chart below shows that, if both countries allocate their workforce according to comparative advantage, total daily production will rise to 1000 tons of rice and 60 computers.

Country	Rice (in tons)	Computers
Japan	0 × 10 = 0	20 × 10 = 200
U.S.	20 × 50 = 1,000	0 × 1 = 0
Total	1,000	60

Chapter 9
Unit Review

Answer Key

Review test answers are discussed in the Student Pages of this chapter immediately following the Unit Review test.