



Section 1

Scarcity and the Factors of Production

Preview

Objectives

After studying this section you will be able to:

1. **Explain** why scarcity and choice are basic problems of economics.
2. **Identify** land, labor, and capital as the three factors of production, and identify the two types of capital.
3. **Explain** the role of entrepreneurs.
4. **Explain** why economists say all resources are scarce.

Section Focus

People, businesses, and governments must choose among limited or scarce resources. Economics describes how people seek to satisfy their needs and wants by choosing among many alternatives.

Key Terms

need
want
economics
goods
services
scarcity
shortage
factors of production

land
labor
capital
physical capital
human capital
entrepreneur

As you begin your study of economics, consider three scenes: In the first scene, members of a household work together to do the laundry, purchase groceries, make meals, earn money, decide how to spend their money, and decide who gets to hold the TV remote.

In the second scene, the leaders of a large corporation sit at a table for their monthly meeting. They discuss whether to add a new product to their product line and advertising options on television and the Internet.

In the third scene, senators in the United States Congress gather to debate the important issues of the day: How can we ensure that people are well fed and have access to health care? What limits should the government place on businesses and international trade? Who gets to control the Internet? Economists look at the decisions made in each of these scenes and study those decisions in greater detail.

Scarcity and Choice

The study of economics begins with the idea that people cannot have everything they **need** and **want**. A need is something like air, food, or shelter that is necessary for survival. A want is an item that we desire

but that is not essential to survival. Because people cannot have everything they need or want, they must consider their options and decide which choice will fill their needs best.

To look at the world economically, we can focus on the decisions that people make. You, for example, have to decide what to do with your time—go to a movie or study for a test. Businesses have to decide how many people to employ and how much to produce. A city government may have to decide whether to spend its budget to build a school or a park.

Economics is the study of how people seek to satisfy their needs and wants by making choices. Because people act individually, in groups (such as businesses), and through governments, economists study each of these groups. But why must people make such choices? The reason is scarcity.

Scarcity

Living in a relatively wealthy country, many Americans may find it hard to understand the idea of scarcity. Store shelves brim with goods. **Goods** are physical objects such as shoes and shirts. We have access to countless services. **Services** are actions or activities that one person performs for another. Haircuts, dental checkups, and tutoring are

need something like air, food, or shelter that is necessary for survival

want an item that we desire but that is not essential to survival

economics the study of how people seek to satisfy their needs and wants by making choices

goods physical objects such as clothes or shoes

services actions or activities that one person performs for another

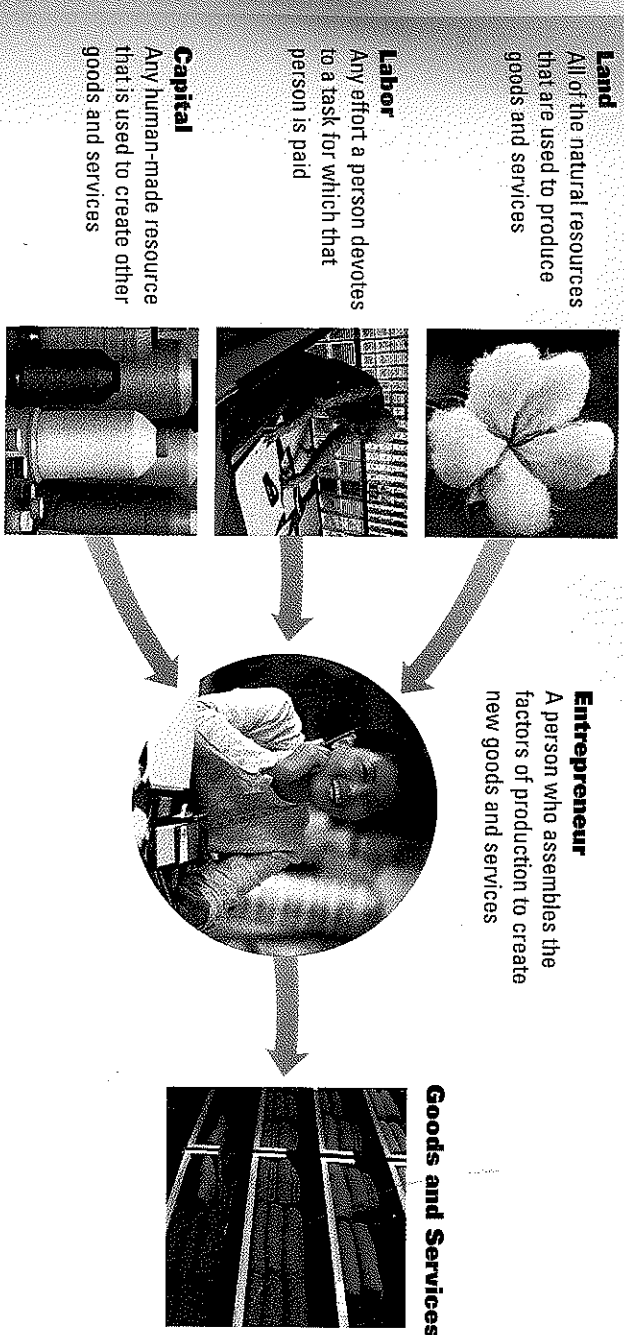
all the resources that are used to produce goods and services the **factors of production**. The factors of production are land, labor, and capital. We use the term **land** to refer to all the natural resources used to produce goods and services. Natural resources are materials and products that are in or on the land, such as coal, water, and forests.

The factor of production is **labor**. Labor is the effort that a person devotes to a task. If a person is paid, labor is the factor of production. A medical aid provided by a doctor is the tightening of a clamp by an orthodontist. It is an artist's creation of a sculpture or the repair of a television.

The factor of production is **capital**. Capital is human-made resource that is used to produce other goods and services. The factors of production are land, labor, and capital. The factors of production are land, labor, and capital. The factors of production are land, labor, and capital.

The factor of production is **capital**. Capital is human-made resource that is used to produce other goods and services. The factors of production are land, labor, and capital. The factors of production are land, labor, and capital. The factors of production are land, labor, and capital.

Figure 1.1 The Factors of Production



Land, labor, and capital, also known as the factors of production, are the "inputs," or resources, used to create all goods and services. **Entrepreneurs** What role do entrepreneurs play in producing goods and services?

people washes dishes by hand every day after every meal—breakfast, lunch, and dinner—for a total of 21 meals per week. It takes 30 minutes per meal for 2 family members working together to scrape, stack, wash, rinse, dry, and put away the dishes. That's 21 hours per week that could have been spent on other more productive activities.

knowledge to the use of other labor-saving devices, such as washing machines, dryers, and microwaves. **3. More productivity** Because family members now have extra time and extra knowledge, they can use their resources and labor to do additional chores or other activities that are beneficial to the family.

Human Capital

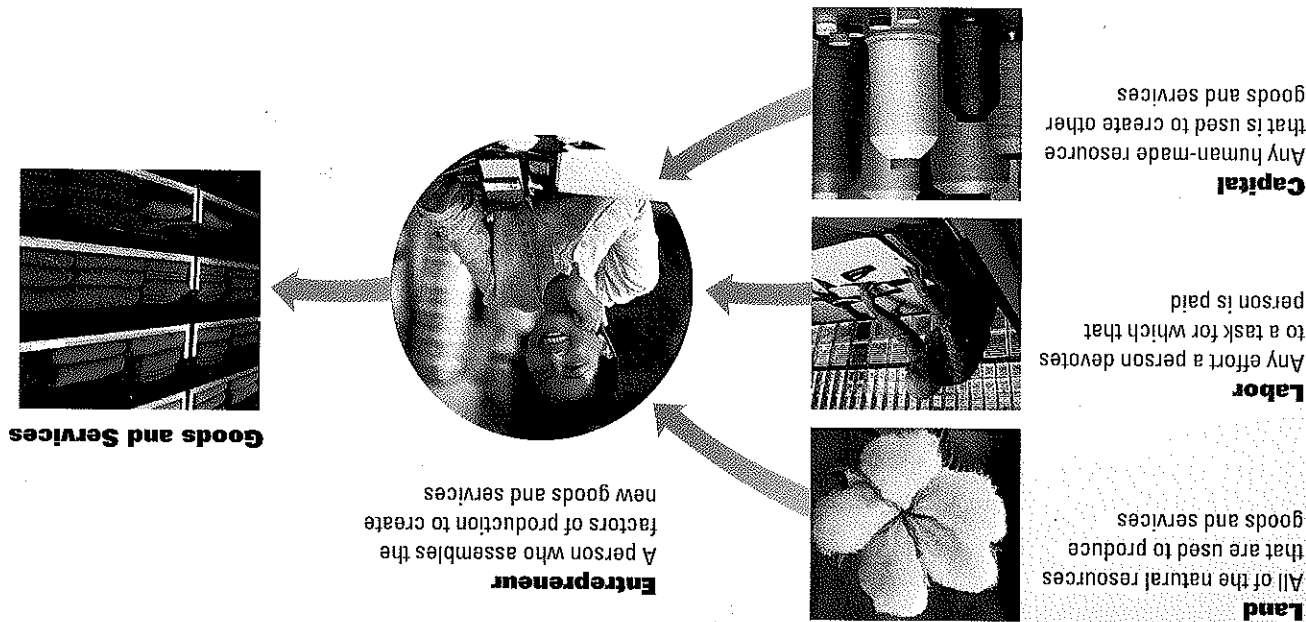
In addition to producing physical capital, people can invest in themselves. **Human capital** is the knowledge and skills a worker gains through education and experience.

human capital the skills and knowledge gained by a worker through education and experience

THE WALL STREET JOURNAL.
CLASSROOM EDITION

In the News As this excerpt from a Wall Street Journal Classroom Edition article shows, the success of the

Figure 1.1 The Factors of Production



Land, labor, and capital, also known as the factors of production, are the "inputs," or resources, used to create all goods and services.

Entrepreneurs What role do entrepreneurs play in producing goods and services?



people washes dishes by hand every day after every meal—breakfast, lunch, and dinner—for a total of 21 meals per week. It takes 30 minutes per meal for 2 family members working together to scrape, stack, wash, rinse, dry, and put away the dishes. That's 21 hours per week that could have been spent on other more productive activities.

Now, suppose that your family decides to buy a dishwasher that costs \$400. Using the dishwasher, it will take 15 minutes for a single family member to clean up after each meal. At this rate, it will take the entire family only 5½ hours per week to handle this chore. The benefits that your family reaps from the free time will cover the cost of the new dishwasher, which provides the typical benefits of physical capital:

1. Extra time Your family no longer has to spend 21 hours per week doing the dishes. Instead, the family gains 15½ hours each week to use for other activities.

2. More knowledge By learning how to wash the dishes by machine, family members learn more about using household appliances in general. They can apply that

In addition to producing physical capital, people can invest in themselves. **Human capital** is the knowledge and skills a worker gains through education and experience.

An economy requires both physical and human capital to produce goods and services. Doctors use stethoscopes and their medical school training to provide their services. Assembly-line workers use equipment and skills acquired through training and practice to produce goods.

Human Capital

knowledge to the use of other labor-saving devices, such as washing machines, dryers, and microwaves.

3. More productivity Because family members now have extra time and extra knowledge, they can use their resources and labor to do additional chores or other activities that are beneficial to the family.

human capital the skills and knowledge gained by a worker through education and experience

THE WALL STREET JOURNAL. CLASSROOM EDITION

In the News: As this excerpt from a Wall Street Journal Classroom Edition article shows, the experience that a successful worker needs can start with a basic summer job.

"Cornell entrepreneurship professor Deborah Streeter notes that being a waitress, for example, 'really teaches you to deal with people. . . . An entrepreneur needs to know what the marketplace wants. A really good waitress knows what her marketplace wants.'"

ECONOMIC

Profile

Economist

Entrepreneur



Gary Becker (b. 1930)

Nobel Prize-winning economist Gary Becker looks at daily life and sees economics at work in all we do. Becker even sees marriage as an economic decision that many people make based on opportunity costs. To understand how Becker arrived at this intriguing conclusion, you have to look at how he came to see the world.

Economics and Social Issues

Like many high school seniors, Becker knew what he was good at—mathematics—but wanted some practical way to apply it. Leaving his small Pennsylvania hometown, Becker went to Princeton University and decided to pursue economics. But he lost interest in the subject because it didn't "deal with important social problems."

Becker briefly considered a degree in sociology, but found the subject "too difficult." Later, as a graduate student at the University of Chicago, he realized that economics could indeed help answer social questions. His first book, based on his studies at Chicago, was an economic analysis of racial discrimination.

"It started me down the path of applying economics to social issues," states Becker, "a path that I have continued to follow." In 1992, that path led to the Nobel Prize in economics, which Becker received for using economic analysis to study a wide range of human behavior. "Economy is the art of making the most of life," he says.

Economics and Personal Decisions

Becker maintains that economics guides even life's most personal decisions. If...

"marriage market." Most people do not marry the first prospect they meet, he notes. The opportunity cost of such a marriage would be high because better prospects are likely to exist. Instead, people try to search for better prospects.

Considering Costs and Benefits

An extended search for a mate, however, consumes time, effort, and other resources. It involves expenditures on personal appearance, in social situations, for education, and for other things that help attract a mate. A person decides to marry, Becker says, when the cost of searching exceeds the possible benefits of finding a better mate.

People measure the benefits of a potential spouse by criteria such as job, appearance, education, and family, Becker says, and they try to judge other traits by these factors. For example, the probability that a person is honest and good-natured may be judged by looking at the person's family. Intelligence is gauged by the person's education. Becker maintains that this process causes people to marry on the basis of imperfect information. Not until later do they truly learn about their partner's per-

and one-half gallons of water half-foot plot where the potato was harvested, the potato was harvested, and then transported to cattle, it was fried in corn oil and eaten in a restaurant. economic resources, or factors that were used to create the are scarce. First, the quantity of water available for growing is limited. Second, the labor available to process and potatoes is limited by the size, and energy of a population. Land and labor are limited, of physical capital available to such fries, such as farm equipment.

have been talking about French could easily have been talking of blue jeans or a new space matter what good or service we at, we would discover that the and, labor, and capital used to are scarce, and that each many alternative uses.

each factor of production is representing? (a) an office building (c) a tree used to make paper (f) a student

today, you decide to start an business. Your first step is to get the al. Next you need to obtain the tion. Specifically, what do you need and capital?



Profile

Nobel Prize-winning economist Gary Becker looks at daily life and sees economics at work in all we do. Becker even sees marriage as an economic decision that many people make based on opportunity costs. To understand how Becker arrived at this intriguing conclusion, you have to look at how he came to see the world.

"marriage market." Most people do not marry the first prospect they meet, he notes. The opportunity cost of such a marriage would be high because better prospects are likely to exist. Instead, people try to search for better prospects.

Considering Costs and Benefits

An extended search for a mate, however, consumes time, effort, and other resources. It involves expenditures on personal appearance, in social situations, for education, and for other things that help attract a mate. A person decides to marry, Becker says, when the cost of searching exceeds the possible benefits of finding a better mate. People measure the benefits of a potential spouse by criteria such as job, appearance, education, and family, Becker says, and they try to judge other traits by these factors. For example, the probability that a person is honest and good-natured may be judged by looking at the person's family. Intelligence is gauged by the person's education. Becker maintains that this process causes people to marry on the basis of imperfect information. Not until later do they truly learn about their partner's personality longer to assess.

CHECK FOR UNDERSTANDING

1. Source Reading Interpret the following passage from an article by Becker that appeared in *BusinessWeek*: "Human capital is as much a part of the wealth of nations as are factories, housing, machinery, and other physical capital."
2. Critical Thinking How does what you've read in this introductory chapter on economics support or conflict with Becker's idea that "economy is the art of making the most of life"?
3. Decision Making Do you agree or disagree with Becker's idea that economics guides even life's most personal decisions? Support your position with two or three examples of your own.



Key Terms
 trade-off
 guns or butter
 opportunity cost
 thinking at the margin

Defining Opportunity Cost

Whenever individuals, businesses, or governments decide on a course of action, they face many trade-offs. One alternative, though, is usually more desirable than all the others. The most desirable alternative given up as the result of a decision is called the **opportunity cost**.

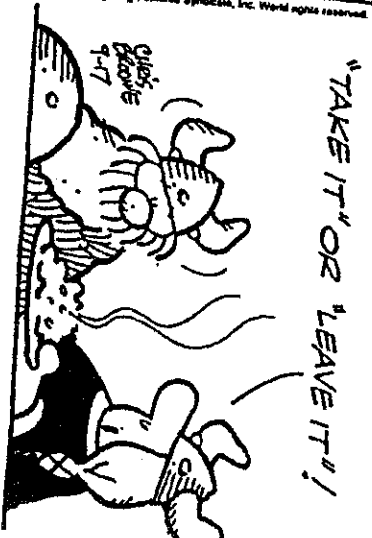
If a family buys a computer, family members cannot use the same money to pay for their second choice, going on a trip. The trip, then, is the opportunity cost of buying the computer. The farmer who chose to grow broccoli instead of cauliflower experienced the opportunity cost of planting cauliflower. If a government decides to produce more "guns," then having less "butter" is the opportunity cost.

Similarly, every ordinary decision that we make every day involves an opportunity cost. For each of the following choices, which alternative would you choose?

- Sleep late or wake up early for a ski trip?
- Sleep late or wake up early to eat your breakfast?
- Sleep late or wake up early to study for a test?



© 1981 by King Features Syndicate, Inc. World rights reserved.



► Because decisions are not always as clear-cut as the one in this cartoon, economists encourage us to consider the trade-offs and opportunity cost of a decision before we make it.

Opportunity cost the most desirable alternative given up as the result of a decision

and Trade-Offs
 on we make involves trade-off. For example, if you choose to spend your money on a baseball game, you give up watching work, you give up watching going to a baseball game. play soccer might prevent working on the yearbook or t-time job.

and Trade-Offs
 that businesspeople make to use land, labor, and capital to create trade-offs. Farmers broccoli cannot use the same time to grow cauliflower. farmer who decides to use all her to build chairs eliminates the of building tables or desks at me.

Trade-Offs

so make decisions that involve Economists simplify their of the trade-offs countries

to accept the opportunity cost of a choice you are about to make. In this particular grid, Karen is trying to decide whether to sleep late or get up early to study for a test. Karen likes to sleep. Getting up early is tough. However, getting up early to study would probably improve her test score. Karen knows that she is choosing between her two top alternatives: sleeping late and waking up early to study. Because of scarcity, she cannot do both. The time can only be occupied in one way.

To help her decide, Karen lists the benefits of each alternative on the grid. Waking up early to study will probably result in a better grade. Also, she will experience the personal satisfaction and comes with doing well on a test. However, she knows she would enjoy sleeping later and that the extra sleep would give her more energy during the day.

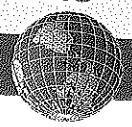


Global Connections

Global Trade-Offs

The same decision made in two different countries can have vastly different opportunity costs. Malaysia...

Global Connections



Global Trade-Offs The same decision made in two different countries can have vastly different opportunity costs. Malaysia bought two warships in 1992, paying a price equal to the cost of providing safe drinking water for the 5 million Malaysians lacking it. In other words, the opportunity cost of the warships was safe drinking water for 5 million people. The opportunity cost of building warships in wealthier countries is not nearly so high. However, there are still costs to consider. In the United States, the number of people employed by the military decreased dramatically following the end of the cold war. In response, the Pentagon developed a new program, "Troops to Teachers," to help former soldiers get jobs teaching in schools. The switch from army duty to teaching reminds us that the opportunity cost of a soldier may be a teacher and vice versa. **Why does the opportunity cost of a decision vary from one situation to another?**

to accept the opportunity cost of a choice you are about to make. In this particular grid, Karen is trying to decide whether to sleep late or get up early to study for a test. Karen likes to sleep. Getting up early is tough. However, getting up early to study would probably improve her test score. Karen knows that she is choosing between her two top alternatives: sleeping late and waking up early to study. Because of scarcity, she cannot do both. The time can only be occupied in one way.

To help her decide, Karen lists the benefits of each alternative on the grid. Waking up early to study will probably result in a better grade. Also, she will receive teacher and parental approval and experience the personal satisfaction that comes with doing well on a test. However, she knows she would enjoy sleeping later and that the extra sleep would give her more energy during the day.

Defining Opportunity Cost

Whenever individuals, businesses, or governments decide on a course of action, they face many trade-offs. One alternative, though, is usually more desirable than all the others. The most desirable alternative given up as the result of a decision is called **the opportunity cost**.

If a family buys a computer, family members cannot use the same money to pay for their second choice, going on a trip. The trip, then, is the opportunity cost of buying the computer. The farmer who chose to grow broccoli instead of cauliflower experienced the opportunity cost of planting cauliflower. If a government decides to produce more "guns," then having less "butter" is the opportunity cost.

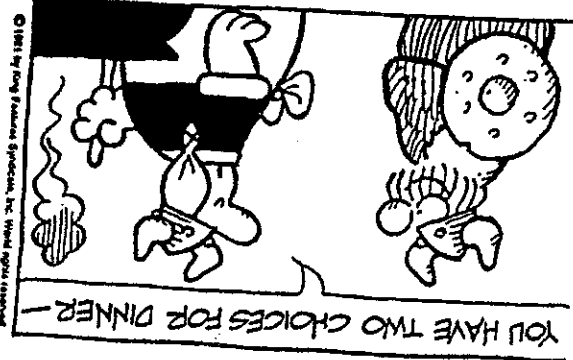
Similarly, every ordinary decision that we make every day involves an opportunity cost. For each of the following choices, which alternative would you choose?

- Sleep late or wake up early for a ski trip?
- Sleep late or wake up early to eat your breakfast?
- Sleep late or wake up early to study for a test?

Most likely, you did not choose "sleep late" for all three decisions. Your decision depended on the specific opportunity cost—whatever you were willing to sacrifice.

Using a Decision-Making Grid

At times, a decision's opportunity cost may be unclear or complicated. Using a decision-making grid like the one in Figure 1.2 can help you determine whether you are willing



Because decisions are not always as clear-cut as the one in this cartoon, economists encourage us to consider the trade-offs and opportunity cost of a decision before we make it.

Wake up early to study
Get better grade on test
Get teacher and parental approval
Get personal satisfaction
Wake up early to study for test
Get extra sleep time
Enjoy more sleep
Have more energy during the day

in and lose when we have to

chooses to sleep later?

as one minute or one dollar.
economist's point of view, when
how much more or less to do,
ing at the margin.

and what it means to think at
you might picture a piece of
line drawn down the left side.
separates the space used for
extra space on the paper. You
age of that extra space or you
blank. Similarly, thinking at
means you are thinking about
ditional unit.

cision at the Margin

ng whether or not to study,
he "all or nothing" approach
Figure 1.2. She was either
e up early to study or sleep

To make a decision at the margin, Karen should look at the opportunity cost of each extra hour of studying and compare it to the benefit. In Figure 1.3, we can see that one hour of studying means an opportunity cost of an hour of sleep and a benefit of probably passing the test with a C. Two hours of studying "cost" two hours of sleep and perhaps getting a B. Three hours of studying mean sacrificing three hours of sleep and probably getting only a slightly higher grade of B+.

What should Karen decide? At three hours, the cost is no longer worth the benefit to Karen because her grade will improve only slightly. Thus, Karen decides to awaken two hours earlier.

Cost and Benefit at the Margin

Comparing opportunity costs and benefits at the margin enabled Karen to decide how many hours to study. Likewise, such a comparison could help someone decide how much money to spend on a car, how many hours to work, and how much time to spend watching television. Employers think at the margin when they decide how many extra workers to hire. Legislators

Figure 1.3 Decision Making at the Margin

Options	Benefit	Opportunity cost
1st hour of extra study time	Grade of C on test	One hour of sleep
2nd hour of extra study time	Grade of B on test	2 hours of sleep
3rd hour of extra study time	Grade of B+ on test	3 hours of sleep



This person has to decide how many extra hours to study. By comparing the opportunity cost to the benefit of each extra hour, she can decide how much is the right amount. Opportunity Cost At what point is this person paying an added cost with little extra benefit?

think at the margin when deciding if a government program should include more or less of a particular benefit.

Deciding by thinking at the margin is just like making any other decision. Decision makers just have to compare the opportunity costs and the benefits—what they will sacrifice and what they will gain. Once the opportunity cost outweighs the benefits, then no more units should be added.

Section 2 Assessment

Key Terms and Main Ideas

1. Present three examples that illustrate how all decisions involve **trade-offs**.
2. Why must the **opportunity cost** of a decision always be something desirable?
3. How do economists use the phrase "**guns or butter**"?
4. What does it mean to "**think at the margin**"?
6. **Decision Making** Determine an opportunity cost for each of the following. (a) eating pizza (b) going to see a movie on a Tuesday (c) going to see a movie on a Saturday (d) watching television
7. **Try This** Create a decision-making grid like the one in Figure 1.2 to defend a decision you will make today.
8. **Critical Thinking** Decide whether to work 2, 4, or 6 hours



Take It to the NET

Brainstorm a list of the trade-offs of (a) continuing your education beyond high school and (b) not continuing your education beyond high school. Use the links provided in the Social Studies area at the following Web site for help in completing this activity.
www.phschool.com

Applying Economic Concepts

1. Present three examples that illustrate how all decisions involve trade-offs.
2. Why must the opportunity cost of a decision always be something desirable?
3. How do economists use the phrase "guns or butter"?
4. What does it mean to "think at the margin"?
5. Problem Solving Suppose that you can save \$50 by buying your car in a different city. If the trip requires only \$10 in gasoline, is the trip worthwhile? Why or why not?

Key Terms and Main Ideas

6. Decision Making Determine an opportunity cost for each of the following. (a) eating pizza (b) going to see a movie on a Tuesday (c) going to see a movie on a Saturday (d) watching television
7. Try This Create a decision-making grid like the one in Figure 1.2 to defend a decision you will make today.
8. Critical Thinking Decide whether to work 2, 4, or 6 hours at an after-school job by comparing the opportunity cost and benefit of each alternative.
9. Decision Making Which factors would an employer consider if he or she were trying to decide whether to hire an additional worker?

Section 2 Assessment

Cost and Benefit at the Margin

To make a decision at the margin, Karen should look at the opportunity cost of each extra hour of studying and compare it to the benefit. In Figure 1.3, we can see that one hour of studying means an opportunity cost of an hour of sleep and a benefit of probably passing the test with a C. Two hours of studying "cost" two hours of sleep and perhaps getting a B. Three hours of studying mean sacrificing three hours of sleep and probably getting only a slightly higher grade of B+.

What should Karen decide? At three hours, the cost is no longer worth the benefit to Karen because her grade will improve only slightly. Thus, Karen decides to awaken two hours earlier.

Comparing opportunity costs and benefits at the margin enabled Karen to decide how many hours to study. Likewise, such a comparison could help someone decide how much money to spend on a car, how many hours to work, and how much time to spend watching television. Employers think at the margin when they decide how many extra workers to hire. Legislators added.

Deciding by thinking at the margin is just like making any other decision. Decision makers just have to compare the opportunity costs and the benefits—what they will sacrifice and what they will gain. Once the opportunity cost outweighs the benefits, then no more units should be added.

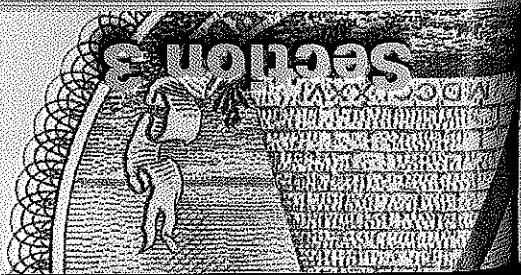


Figure 1.3 Decision Making at the Margin

Options	Benefit	Opportunity cost
1st hour of extra study time	Grade of C on test	One hour of sleep
2nd hour of extra study time	Grade of B on test	2 hours of sleep
3rd hour of extra study time	Grade of B+ on test	3 hours of sleep

This person has to decide how many extra hours to study. By comparing the opportunity cost to the benefit of each extra hour, she can decide how much is the right amount. Opportunity Cost At what point is this person paying an added cost with little extra benefit?

Production Possibilities Curves



Preview

Objectives

After studying this section you will be able to:

1. Interpret a production possibilities curve.
2. Demonstrate how production possibilities curves show efficiency, growth, and cost.
3. Understand that a country's production possibilities depend on its available resources and technology.

Section Focus

Decisions about which goods and services to produce affect each of us every day. Production possibilities graphs can help us examine the opportunity cost of these decisions.

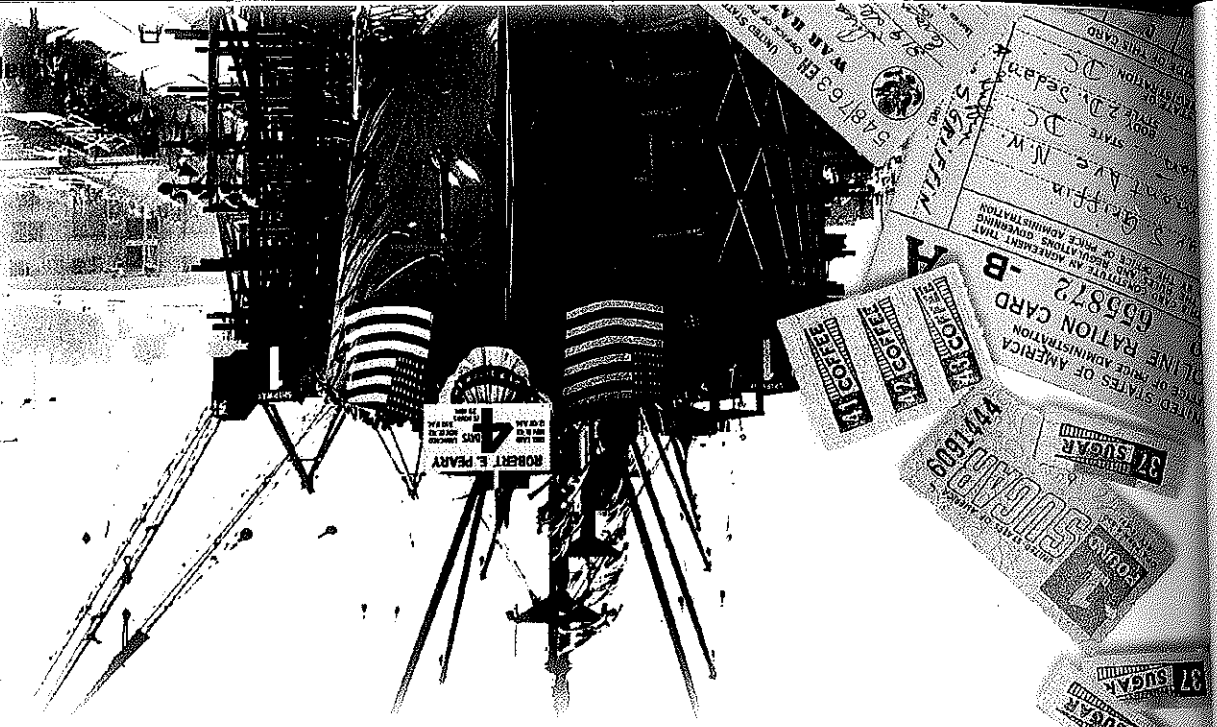
- ### Key Terms
- production possibilities curve
 - production possibilities frontier
 - efficiency
 - underutilization
 - cost
 - law of increasing costs

Production Possibilities

Economists often use graphs to analyze the choices and trade-offs that people make. Why? Because graphs help us see how one value relates to another value. A **production possibilities curve**, or graph, shows alternative ways to use an economy's resources. The axes of the graph can show categories of goods and services, such as farm goods and factory goods or capital goods and consumer goods. The axes can also display any pair of specific goods or services, such as hats on one axis and shoes on the other.

As the United States entered World War II in 1941, it faced an urgent task: create the weapons and equipment needed to win the war or face defeat. Government agencies took the lead in switching the output of America's factories, farms, and mines from the production of consumer products to the production of military products. Whether at war or not, individuals must choose what to produce. In 1999, farmers in the United States grew over 2 million tons of watermelons. Could they have produced more? If they had, what would have been the opportunity cost?

► During World War II, consumer goods were in short supply as the nation shifted resources to increase production of planes, ships, artillery, and ammunition. Ration coupons (far left) were used to ensure that civilians got a fair share of consumer goods.



ould produce 15 million pairs
used all of its resources to
shoes.

ental axis represents water-
h B indicates that Capeland
e 21 million tons of water-
s the only product it chose to
Capeland can produce a

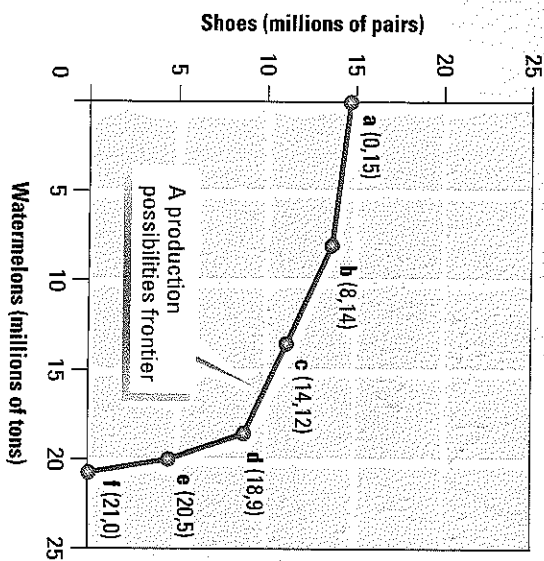
million pairs of shoes
OR

on tons of watermelons

ore likely, alternative appears
5. The citizens of Capeland
roduce both shoes and water-
his range of choices appears in
graph in that figure. It shows
ways that Capelanders could
ources to produce watermelons
ing the made-up data from the
plot points on the graph and
them to draw the line shown
. This line that we can draw,
production possibilities frontier,
inations of the production of
and watermelons. Any spot on

Figure 1.5 Production Possibilities Curve Step 2

Watermelons (millions of tons)	Shoes (millions of pairs)
0	15
8	14
14	12
18	9
20	5
21	0



The table above shows six different combinations of watermelon and shoes that Capeland could produce using all of its factor resources. Each combination of numbers in the table is drawn as a point on the graph. Connecting the points forms a line known as the production possibilities frontier.

Opportunity Cost What is the opportunity cost of choosing to produce the combination of goods shown at point c instead of that shown at point d?

that line represents a point at which Capeland is using all of its resources to produce a maximum combination of those two products.

Trade-Offs

Each point in Figure 1.5 reflects a trade-off. Near the top of the curve (points a and b), shoe factories produce more shoes, but farms grow fewer watermelons. Moving down the curve, farms grow more watermelons, but factories make fewer shoes. Why? Because land, labor, and capital are scarce. Using the factors of production to make one product means that fewer resources are left to make something else.

Efficiency

A production possibilities frontier represents an economy working at its most efficient level of production. **Efficiency**

means using resources in such a way as to maximize the production or output of goods and services. However, sometimes economies operate inefficiently. For example, what would happen if some farmers and factory workers were laid off? The farms and factories where they worked would produce fewer goods. This trade-off is represented by drawing a point inside the production possibilities frontier.

efficiency using resources in such a way as to maximize the production of goods and services

underutilization using fewer resources than an economy is capable of using

Graph B

No shoes, all possible watermelons



The table above shows six different combinations of watermelon and shoes that Capeland could produce using all of its factor resources. Each combination of numbers in the table is drawn as a point on the graph. Connecting the points forms a line known as the production possibilities frontier.

Opportunity Cost What is the opportunity cost of choosing to produce the combination of goods shown at point c instead of that shown at point d?

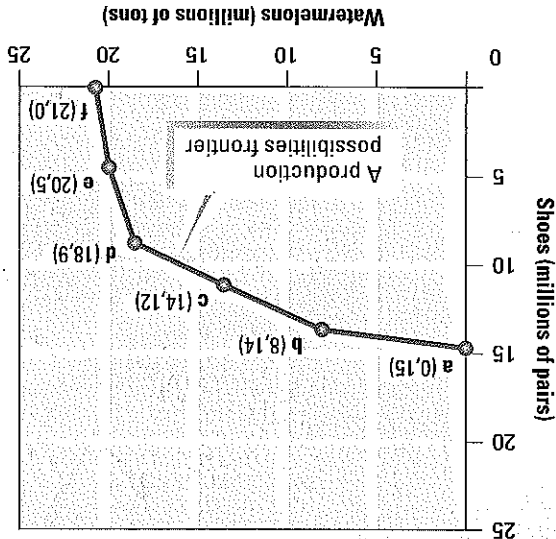


Figure 1.5 Production Possibilities Curve Step 2

that line represents a point at which Capeland is using all of its resources to produce a maximum combination of those two products.

Trade-Offs

Each point in Figure 1.5 reflects a trade-off. Near the top of the curve (points a and b), shoe factories produce more shoes, but farms grow fewer watermelons. Moving down the curve, farms grow more watermelons, but factories make fewer shoes. Why? Because land, labor, and capital are scarce. Using the factors of production to make one product means that fewer resources are left to make something else.

Efficiency, Growth, and Cost

Production possibilities graphs tell us important information. They can show how efficient an economy is, whether an economy has grown or shrunk, and the opportunity cost of a decision to produce more of one good or service.

Efficiency

A production possibilities frontier represents an economy working at its most efficient level of production. Efficiency means using resources in such a way as to maximize the production or output of goods and services. However, sometimes economies operate inefficiently. For example, what would happen if some farmers and factory workers were laid off? The farms and factories where they worked would produce fewer goods. This trade-off is represented by drawing a point inside the production possibilities frontier.

Any point inside the line indicates an underutilization of resources. Underutilization means using fewer resources than the economy is capable of using. Point g in Figure 1.6 shows that Capeland is harvesting 5 million tons of watermelons and manufacturing 8 million pairs of shoes—much less than the maximum possible production.

efficiency using resources in such a way as to maximize the production of goods and services

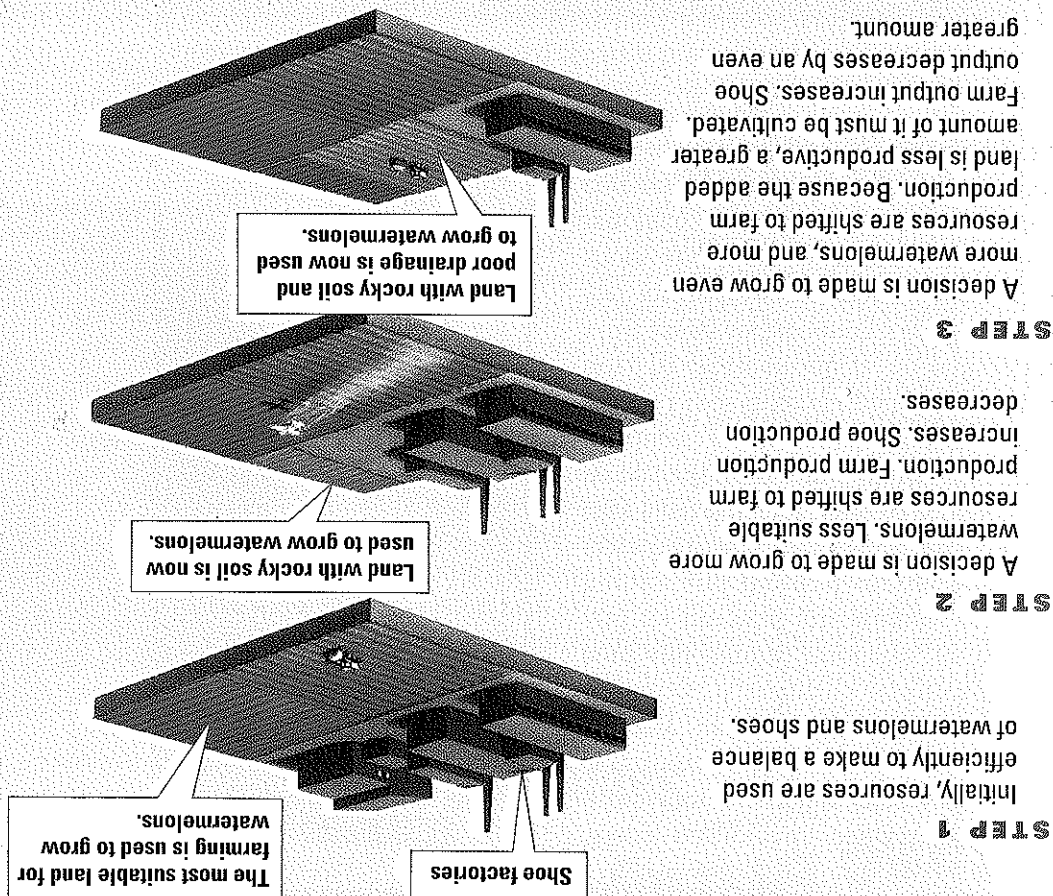
underutilization using fewer resources than an economy is capable of using

For example, if a country goes to war and loses part of its population, the supply of labor would decrease, and the production curve would shift to the left.

Looking at the table in Figure 1.5, we can see the cost of moving from producing 1 million pairs of shoes to producing 8 million tons of watermelons is 1 million pairs of shoes. In other words, we had to sacrifice 1 million pairs of shoes to produce 8 million tons of watermelons. In the same way, if we decide to produce 14 million tons of watermelons—an increase of only 6 million tons—it costs 2 million pairs of shoes. In the process, those 8 million tons of watermelons cost 1 million pairs of shoes. In the next step, an increase of only 6 million tons of watermelons cost an additional million pairs of shoes. This amounts to a total of 1 million pairs of shoes for 14 million tons of watermelons.

law that states that as we shift factors of production from making one good or service to another, the cost of producing the second item increases

Figure 1.7 The Law of Increasing Costs



The law of increasing costs states that as production shifts from one item to another, in this case from shoes to watermelons, more and more resources are necessary to increase production of the second item, in this case, watermelons. Opportunity Cost According to this diagram, what is the cost of increasing watermelon production?

Economists explain these increasingly expensive trade-offs with the **law of increasing costs**. This law states that as production switches from one item to another (for example, from shoes to watermelons), more and more resources are necessary to increase production of the second item (watermelons). Therefore, the opportunity cost increases.

Why does the cost increase? In this example it is because some resources are better suited for use in farming, while others are more appropriate for manufacturing. Moving resources from factory to farm production means that farmers must

use resources that are not as suitable for farming. For example, say that at first this economy used its most fertile land for growing watermelons. After the best land was used up, farmers had to use poorer land that could produce less per acre than the fertile land could. To increase output on the poorer land, farmers had to use more land and other resources.

The law of increasing costs explains why production possibilities frontiers, such as the one in Figure 1.5, usually curve. As we move along the curve, we trade off more and more to get less and less additional output.

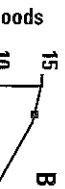
law of increasing costs
 law that states that as
 we shift factors of
 production from making
 one good or service to
 another, the cost of
 producing the second
 item increases

Forces and Technology

Economists collect data to create production possibility curves, they must first determine which goods and services a country can produce, given its current natural resources, its work force, physical and human capital. Both production and physical capital reflect a vital technology. At any time, countries have different ways to produce shoes or cars or any of the thousands of goods in the world. Each country has different technology, or knowledge, to create products. So economists also look at each country's level of technology—how: whether Capeland makes plants watermelons by hand or by machine, they have machines to help. A country's production possibilities depend on its technological level and the resources available.

On farm workers remain unemployed through the winter. A drought might describe a specific event that would shift the production possibility curve. A point moves down and to the left to the right.

Assume that graphs A and B below show production trade-off made by a society. A brief description of each graph is a specific example of what the society



Real-life Case Study

Safety at Any Cost?

Opportunity Cost

When you buy a car, you face trade-offs. Do you buy the new subcompact that may not have enough room for your gear or the larger used sedan that needs a paint job?

The features that make a car safer may also involve trade-offs. Economists urge consumers to consider the trade-offs and opportunity costs of each of their purchase decisions. Most of these opportunity costs fall into one of three categories: cost and convenience, size, and personal freedom.

Safety Devices Versus Cost and Convenience

Over 40,000 people are killed every year in crashes on our roads.

Safety features like antilock brakes and dual-side air bags may save lives, but they also make cars more expensive.

Some features like seatbelts are sometimes seen as an inconvenience, so consumers do not always use them.

Manufacturers would like to produce safe cars, but they must sell them at a price that buyers are willing to pay.

Safety features are defeated if travelers ignore or disable them.

Size Versus Pollution

Heavier cars are generally safer cars—they tend to hold up better when there is an accident and provide passengers with more protection. SUVs have become increasingly popular because they are heavy and taller, giving the driver a better view of the road. On the other hand, they are also more expensive to buy and more costly to run because they have lower fuel efficiency.

Burning extra fuel also means increasing auto emissions. The U.S. currently generates more greenhouse gas emissions than any other country in the world, and the amount is growing. Also, "gas guzzlers" increase our dependence on foreign oil.

Safety Laws Versus Personal Freedom Many states have struggled with laws requiring the use of seatbelts in cars, carseats for infants and young children, or helmets for motorcyclists. There is considerable evidence that these safety precautions reduce the severity of injury if there is an accident. However, laws requiring people to use seatbelts or helmets also restrict individual freedom, so there is a trade-off between a national interest in keeping people safe and a personal interest in being able to make your own choices.



▲ Safety devices save lives but also involve some opportunity costs.

The Costs of Auto Safety

Cost of vehicle: \$10,000

Safety feature	Cost
Antilock brakes	\$400.00
Side impact air bags	\$350.00
Traction control	\$1,200.00

Cost of vehicle: \$14,205

Safety feature	Cost
Antilock brakes	\$645.00

Real-life Case Study

Safety at Any Cost?

When you buy a car, you face trade-offs: Do you buy the new subcompact that may not have enough room for your gear or the larger used sedan that needs a paint job?

The features that make a car safer may also involve trade-offs. Economists urge consumers to consider the trade-offs and opportunity costs of each of their purchase decisions. Most of these opportunity costs fall into one of three categories: cost and convenience, size, and personal freedom.

Safety Devices Versus Cost and Convenience Over 40,000

people are killed every year in crashes on our roads. Safety features like antilock brakes and dual-side air bags may save lives, but they also make cars more expensive.

Some features like seatbelts are sometimes seen as an inconvenience, so consumers do not always use them.

Manufacturers would like to produce safe cars, but they must sell them at a price that buyers are willing to pay.

Safety features are defeated if travelers ignore or disable them.

Size Versus Pollution Heavier cars are generally safer cars—they tend to hold up better when there is an accident and provide passengers with more protection. SUVs have

become increasingly popular because they are heavy and taller, giving the driver a better view of the road. On the other hand, they are also more expensive to buy and more costly to run because they have lower fuel efficiency.

Burning extra fuel also means increasing auto emissions. The U.S. currently generates more greenhouse gas emissions than any other country in the world, and the amount is growing. Also, "gas guzzlers" increase our dependence on foreign oil.

Safety Laws Versus Personal Freedom Many states have struggled with laws requiring the use of seatbelts in cars, carseats for infants and young children, or helmets for motorcyclists. There is considerable evidence that these safety precautions reduce the severity of injury if there is an accident. However, laws requiring people to use seatbelts or helmets also restrict individual freedom, so there is a trade-off between a national interest in keeping people safe and a personal interest in being able to make your own life choices.

Applying Economic Ideas

1. Suppose you are buying a car. How would the trade-offs discussed above affect your decision?
2. The table at the right shows the specific costs of various optional auto safety devices. On what basis would you decide which, if any, of these safety options to buy?

The Costs of Auto Safety

Cost of vehicle: \$10,000

Safety feature Cost

Antilock brakes \$400.00

Side impact air bags \$350.00

Traction control \$1,200.00

Cost of vehicle: \$14,205

Safety feature Cost

Antilock brakes \$645.00

Side impact air bags \$295.00

Traction control n/a

Cost of vehicle: \$19,175

Safety feature Cost

Antilock brakes \$600.00

Side impact air bags \$390.00

Traction control \$600.00

▲ Safety devices save lives but also involve some opportunity costs.



Opportunity Cost

sentence by choosing the correct list of terms below. You will not

opportunity cost
scarcity
trade-offs
underutilization
economics

define — as “limited quantities unlimited wants.”

involve — because we have some alternatives when we have a certain course of action.

— refers to all natural resources that are used to produce goods and services.

use the phrase — to describe a country is forced to make choices between military and civilian production.

is the most important sacrifice from making a decision.

who starts a new business or original idea is known as a(n) entrepreneur.

resources occurs when an economy has fewer resources than it is capable of using.

Organizers

the sheet of paper, copy the tree diagram to help you organize information about factors of production. Complete each by writing descriptions and

Reviewing Main Ideas

- Using examples of land, labor, and capital, explain why economists believe that all goods and services are scarce.
- Explain how each of the following people would talk about scarcity and trade-offs. (a) the President of the United States (b) the leader of a developing nation (c) a U.S. citizen whose income is in the top one percent (d) a U.S. citizen whose income is in the bottom 5 percent
- What three important pieces of information can we learn by reading a production possibilities graph?
- Explain the law of increasing costs.

Critical Thinking

- Testing Conclusions** Review the typical benefits of physical capital described in Section 1. Give specific examples of how the first railroads in the United States created or did not create the benefits of physical capital.
- Predicting Consequences** Describe three services that the government provides to its citizens. Identify some of the opportunity costs of providing each of those services.
- Drawing Conclusions** Some economists consider entrepreneurship to be a fourth factor of production in addition to land, labor, and capital. Other economists consider entrepreneurship to be a special category of labor. Which group of economists do you agree with? Why?

Problem-Solving Activity

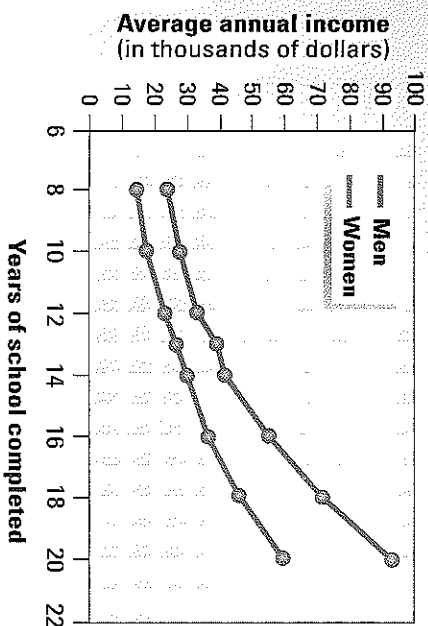
- Suppose that you lent \$100 to a friend, and he or she paid you back one year later. What was the cost of lending your friend this money?

Skills for Life

Interpreting Line Graphs Review the steps shown on page 12; then answer the following questions about the line graph shown below.

- What relationship does the line graph describe?
- What is the average annual income of men with 16 years of education?
- How many years of schooling result in an average annual income of \$60,000 for women?
- What could you conclude from the line graph about the relationship between income and education?
- Use this graph to practice thinking at the margin. Suppose you have just completed grade 12. If you spend one more year in school, by how much will your lifetime income increase (assuming you work until age 65)?

Income and Education, 1998



Source: Bureau of the Census

Reviewing Main Ideas

9. Using examples of land, labor, and capital, explain why economists believe that all goods and services are scarce.
10. Explain how each of the following people would talk about scarcity and trade-offs. (a) the President of the United States (b) the leader of a developing nation (c) a U.S. citizen whose income is in the top one percent (d) a U.S. citizen whose income is in the bottom 5 percent
11. What three important pieces of information can we learn by reading a production possibilities graph?
12. Explain the law of increasing costs.

Critical Thinking

13. **Testing Conclusions** Review the typical benefits of physical capital described in Section 1. Give specific examples of how the first railroads in the United States created or did not create the benefits of physical capital.
14. **Predicting Consequences** Describe three services that the government provides to its citizens. Identify some of the opportunity costs of providing each of those services.
15. **Drawing Conclusions** Some economists consider entrepreneurship to be a fourth factor of production in addition to land, labor, and capital. Other economists consider entrepreneurship to be a special category of labor. Which group of economists do you agree with? Why?

Problem-Solving Activity

16. Suppose that you lent \$100 to a friend, and he or she paid you back one year later. What was the cost of lending your friend this money?

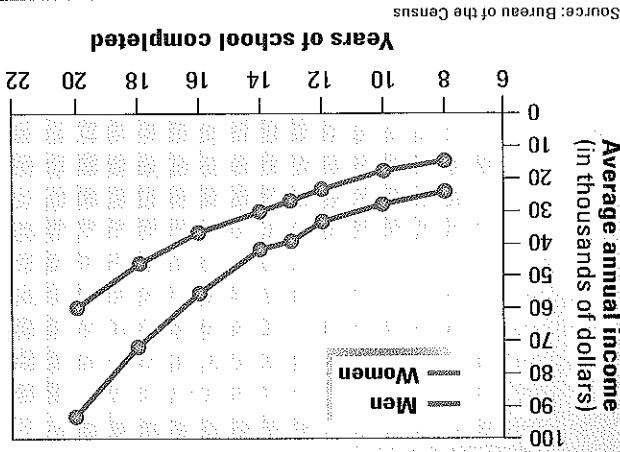
Economics Journal

Essay Writing Review your Economics Journal entry for Chapter 1. Write a brief essay describing the opportunity cost for each of the three decisions that you noted in your journal.

Skills for Life

- Interpreting Line Graphs** Review the steps shown on page 12; then answer the following questions about the line graph shown below.
17. What relationship does the line graph describe?
 18. What is the average annual income of men with 16 years of education?
 19. How many years of schooling result in an average annual income of \$60,000 for women?
 20. What could you conclude from the line graph about the relationship between income and education?
 21. Use this graph to practice thinking at the margin. Suppose you have just completed grade 12. If you spend one more year in school, by how much will your lifetime income increase (assuming you work until age 65)?

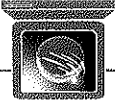
Income and Education, 1998



Source: Bureau of the Census

Take It to the NET

Chapter 1 Self-Test As a final review activity, take the Economics Chapter 1 Self-Test in the Social Studies area at the Web site listed below and receive immediate feedback on your answers. The test consists of 20 multiple-choice questions designed to test your understanding of the chapter content.



Schedule of Services

School Year	Services Start Date	Services Duration	Campus Assignment	District of RDSPD	Program Name	PPCD Location
2018-19	8/22/2018	10/4/2018	Westlake High School			0
Instructional Arrangement: 41			Speech Count: 0			

Instructional Schedule

Subject	Semester	Service Provider	Grade Assigned By	Min. Gen	Min. SpEd	Freq. / Duration	Service Type	RDSPD	Comments
Math Models with Applications	Both	Gen/Spec. Ed. Teacher	Combination	50	0	1 / day	Direct	No	with special education support and behavior support
English III	Both	Gen/Spec. Ed. Teacher	Combination	50	0	1 / day	Direct	No	with special education support and behavior support
US History w/EOC (03340100)	Both	Gen/Spec. Ed. Teacher	Combination	50	0	1 / day	Direct	No	with special education support and behavior support
Chemistry	Both	Gen/Spec. Ed. Teacher	Combination	50	0	1 / day	Direct	No	with special education support and behavior support
Study Skills	Both	Special Education Teacher	Special Education	0	50	1 / day (G)	Direct	No	with behavior support
Elective	Both	General Education	General Education	50	0	2 / day	Direct	No	

Accommodations

Subject	Accommodation	Comments
English, Math, Science, Social Studies, Electives/Specials	Access to behavior support	
English, Math, Science, Social Studies, Electives/Specials	Allow student to leave class a few minutes before bell rings	Student becomes overwhelmed with too many people in the hallway
English, Math, Science, Social Studies, Electives/Specials	Assist student in problem-solving situations	
English, Math, Science, Social Studies, Electives/Specials	Check for understanding	
	Chunk assignments	
English, Science, Social Studies, Electives/Specials	Copy of class notes	Provide at start of class
	Establish a consistent routine	
English, Math, Science, Social Studies, Electives/Specials	Extra time on assignments	1 additional day
English, Math, Science, Social Studies, Electives/Specials	Frequent and immediate feedback on assignments	To motivate and increase work completion
English, Math, Science, Social Studies, Electives/Specials	Maintain close proximity to student during instruction	
English	Oral/signed administration	on formal assessments upon request
English, Math, Science, Social Studies, Electives/Specials	Positive praise upon assignment completion	
English, Math, Science, Social Studies, Electives/Specials	Preferential seating	Seat student near teacher or staff to reduce visual and auditory distractions
English, Math, Science, Social Studies, Electives/Specials	Provide consistent, supportive, and structured academic setting	Expectations should be well-delineated and limits firm
English, Math, Science, Social Studies, Electives/Specials	Reminders to stay on task	
English, Math, Science, Social Studies, Electives/Specials	Short in-class breaks	For management of emotional state
English, Math, Science, Social Studies, Electives/Specials	Study sheets/previews/summaries (with answers)	Provide student with study sheets 2 days in advance
English	Verbal reinforcement of written text	Upon student request

Related Services

Service	Semester	Service Provider	Minutes	Freq. / Duration	Service Type	Removed From
Counseling	Both	Licensed Specialist in School Psychology	15	2 / 9 wks	Direct	Both

This is the campus which the student would attend if not in special education.

☒ Yes ☐ No

This is the campus that is as close as possible to EMILY's home which provides the services the IEP committee has deemed