

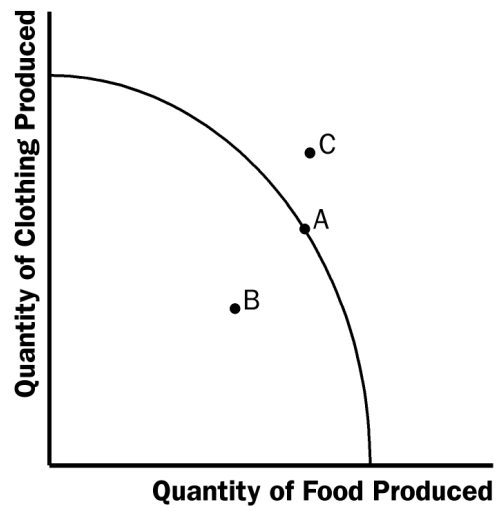
## **SOLUTIONS TO TEXT PROBLEMS:**

### **Quick Quizzes**

The answers to the Quick Quizzes can also be found near the end of the textbook.

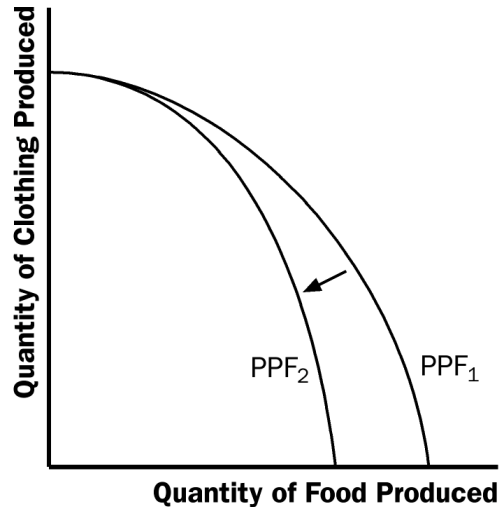
1. Economics is like a science because economists devise theories, collect data, and analyze the data in an attempt to verify or refute their theories. In other words, economics is based on the scientific method.

Figure 1 shows the production possibilities frontier for a society that produces food and clothing. Point A is an efficient point (on the frontier), point B is an inefficient point (inside the frontier), and point C is an infeasible point (outside the frontier).



**Figure 1**

The effects of a drought are shown in Figure 2. The drought reduces the amount of food that can be produced, shifting the production possibilities frontier inward.



**Figure 2**

Microeconomics is the study of how households and firms make decisions and how they interact in markets. Macroeconomics is the study of economy-wide phenomena, including inflation, unemployment, and economic growth.

2. An example of a positive statement is “higher taxes discourage work effort.” It is a positive statement because it is a claim that describes the world as it is. An example of a normative statement is “the government should reduce tax rates.” It is a normative statement because it is a claim that prescribes how the world should be. Many other examples are possible.

Parts of the government that regularly rely on advice from economists are the Department of the Treasury in designing tax policy, the Department of Labor in analyzing data on the employment situation, the Department of Justice in enforcing the nation’s antitrust laws, the Congressional Budget Office in evaluating policy proposals, and the Federal Reserve in analyzing economic developments. Many other answers are possible.

3. Economic advisers to the president might disagree about a question of policy because of differences in scientific judgments or differences in values.

### **Questions for Review**

1. Economics is like a science because economists use the scientific method. They devise theories, collect data, and then analyze these data in an attempt to verify or refute their theories about how the world works. Economists use theory and observation like other scientists, but they are limited in their ability to run controlled experiments. Instead, they must rely on natural experiments.

2. Economists make assumptions to simplify problems without substantially affecting the answer. Assumptions can make the world easier to understand.
3. An economic model cannot describe reality exactly because it would be too complicated to understand. A model is a simplification that allows the economist to see what is truly important.
4. Figure 3 shows a production possibilities frontier between milk and cookies ( $PPF_1$ ). If a disease kills half of the economy's cow population, less milk production is possible, so the  $PPF$  shifts inward ( $PPF_2$ ). Note that if the economy produces all cookies, it does not need any cows and production is unaffected. But if the economy produces any milk at all, then there will be less production possible after the disease hits.

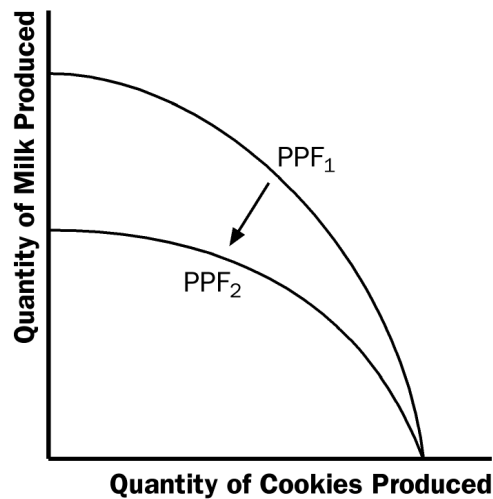


Figure 3

5. The idea of efficiency is that an outcome is efficient if the economy is getting all it can from the scarce resources it has available. In terms of the production possibilities frontier, an efficient point is a point on the frontier, such as point A in Figure 4. When the economy is using its resources efficiently, it cannot increase the production of one good without reducing the production of the other. A point inside the frontier, such as point B, is inefficient since more of one good could be produced without reducing the production of another good.

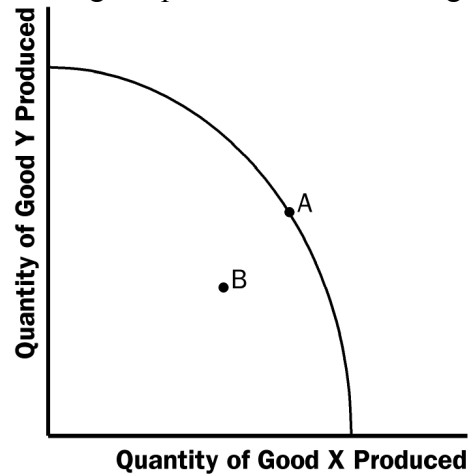
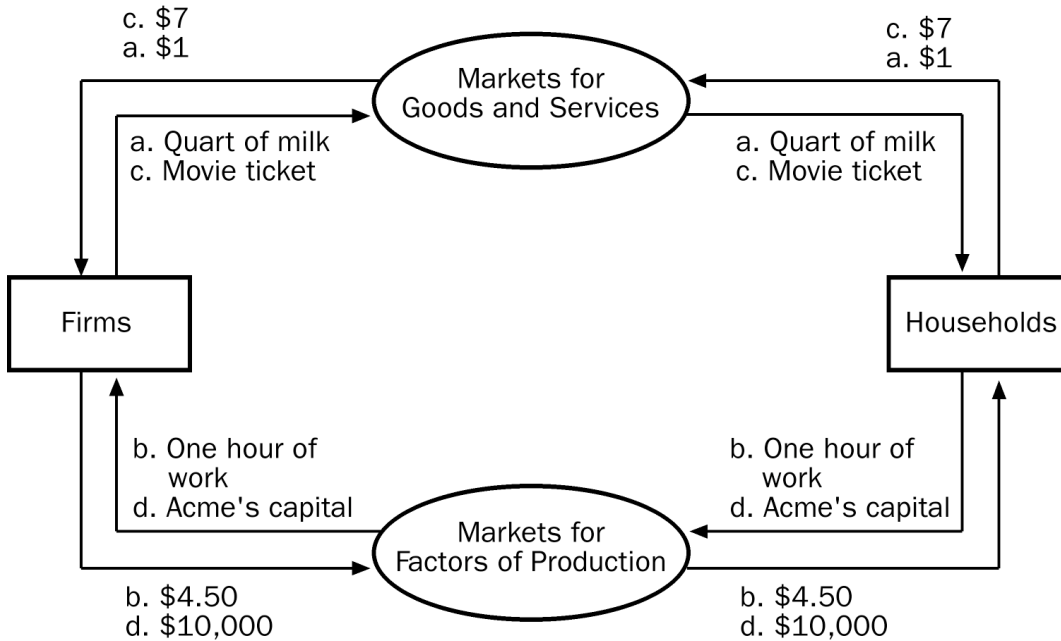


Figure 4

6. The two subfields in economics are microeconomics and macroeconomics. Microeconomics is the study of how households and firms make decisions and how they interact in specific markets. Macroeconomics is the study of economy-wide phenomena, including inflation, unemployment, and economic growth.
7. Positive statements are descriptive and make a claim about how the world is, while normative statements are prescriptive and make a claim about how the world ought to be. Here is an example. Positive: A rapid growth rate of money is the cause of inflation. Normative: The government should keep the growth rate of money low.
8. The Council of Economic Advisers is a group of economists who consult with the president of the United States about economic matters. The Council consists of three members and a staff of several dozen economists. It writes the annual *Economic Report of the President*.
9. Economists sometimes offer conflicting advice to policymakers for two reasons: (1) economists may disagree about the validity of alternative positive theories about how the world works; and (2) economists may have different values and, therefore, different normative views about what public policy should try to accomplish.

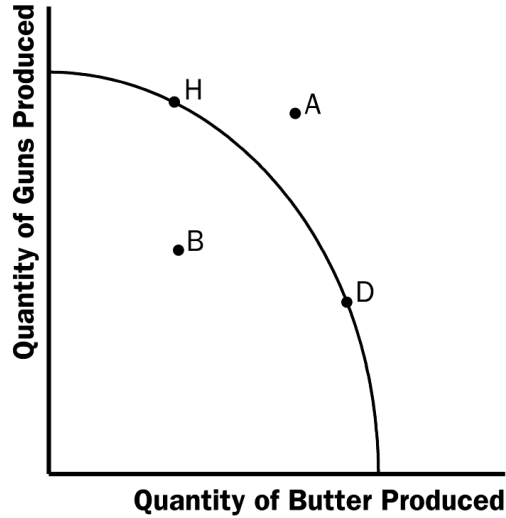
**Problems and Applications**

1. See Figure 5; the four transactions are shown.



**Figure 5**

2. a. Figure 6 shows a production possibilities frontier between guns and butter. It is bowed out because the opportunity cost of butter depends on how much butter and how many guns the economy is producing. When the economy is producing a lot of butter, workers and machines best suited to making guns are being used to make butter, so each unit of guns given up yields a small increase in the production of butter. Thus, the frontier is steep and the opportunity cost of producing butter is high. When the economy is producing a lot of guns, workers and machines best suited to making butter are being used to make guns, so each unit of guns given up yields a large increase in the production of butter. Thus, the frontier is very flat and the opportunity cost of producing butter is low.



**Figure 6**

- b. Point A is impossible for the economy to achieve; it is outside the production possibilities frontier. Point B is feasible but inefficient because it is inside the production possibilities frontier.
- c. The Hawks might choose a point like H, with many guns and not much butter. The Doves might choose a point like D, with a lot of butter and few guns.
- d. If both Hawks and Doves reduced their desired quantity of guns by the same amount, the Hawks would get a bigger peace dividend because the production possibilities frontier is much flatter at point H than at point D. As a result, the reduction of a given number of guns, starting at point H, leads to a much larger increase in the quantity of butter produced than when starting at point D.

3. See Figure 7. The shape and position of the frontier depend on how costly it is to maintain a clean environment—the productivity of the environmental industry. Gains in environmental productivity, such as the development of new way to produce electricity that emits fewer pollutants, lead to shifts of the production-possibilities frontier, like the shift from  $PPF_1$  to  $PPF_2$  shown in the figure.

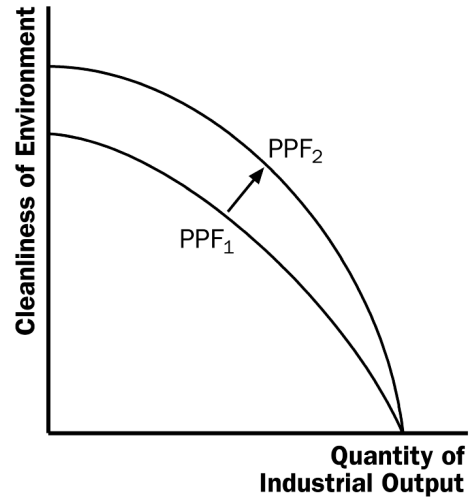


Figure 7

4. a. A: 40 lawns mowed; 0 washed cars  
 B: 0 lawns mowed, 40 washed cars  
 C: 20 lawns mowed; 20 washed cars  
 D: 25 lawns mowed; 25 washed cars

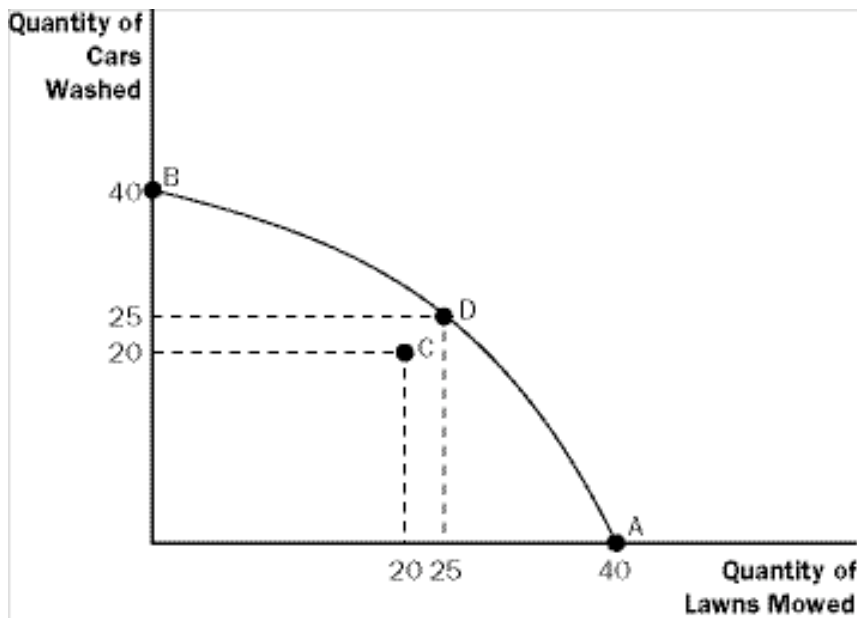


Figure 8

- b. The production possibilities frontier is shown in Figure 8. Points A, B, and D are on the frontier, while point C is inside the frontier.
  - c. Larry is equally productive at both tasks. Moe is more productive at washing cars, while Curly is more productive at mowing lawns.
  - d. Allocation C is inefficient. More washed cars and mowed lawns can be produced by simply reallocating the time of the three individuals.
- 5.
- a. A family's decision about how much income to save is related to microeconomics.
  - b. The effect of government regulations on auto emissions is related to microeconomics.
  - c. The impact of higher saving on economic growth is related to macroeconomics.
  - d. A firm's decision about how many workers to hire is related to microeconomics.
  - e. The relationship between the inflation rate and changes in the quantity of money is related to macroeconomics.
- 6.
- a. The statement that society faces a short-run tradeoff between inflation and unemployment is a positive statement. It deals with how the economy *is*, not how it should be. Since economists have examined data and found that there is a short-run negative relationship between inflation and unemployment, the statement is a fact, thus it is a positive statement.
  - b. The statement that a reduction in the rate of growth of money will reduce the rate of inflation is a positive statement. Economists have found that money growth and inflation are very closely related. The statement thus tells how the world is, and so it is a positive statement.
  - c. The statement that the Federal Reserve should reduce the rate of growth of money is a normative statement. It states an opinion about something that should be done, not how the world is.
  - d. The statement that society ought to require welfare recipients to look for jobs is a normative statement. It does not state a fact about how the world is. Instead, it is a statement of how the world should be and is thus a normative statement.
  - e. The statement that lower tax rates encourage more work and more saving

is a positive statement. Economists have studied the relationship between tax rates and work, as well as the relationship between tax rates and saving. They have found a negative relationship in both cases. So the statement reflects how the world is, and is thus a positive statement.

7. Two of the statements in Table 2 are clearly normative. They are: "5. If the federal budget is to be balanced, it should be done over the business cycle rather than yearly" and "9. The government should restructure the welfare system along the lines of a 'negative income tax.'" Both are suggestions of changes that should be made, rather than statements of fact, so they are clearly normative statements.

The other statements in the table are positive. All the statements concern how the world is, not how the world should be. They can each be evaluated using data.

8. As the president, you would be interested in both the positive and normative views of economists, but you would probably be *most* interested in their positive views. Economists are on your staff to provide their expertise about how the economy works. They know many facts about the economy and the interaction of different sectors. So you would be most likely to call on them about questions of fact—positive analysis. Since you are the president, you are the one who has to make the normative statements as to what should be done, with an eye to the political consequences. The normative statements made by economists represent their own views, not necessarily your views or the electorate's views.
9. There are many possible answers.
10. There are many possible answers.