Solutions to Problems and Applications

1. Many answers are possible.

2. a. Steel is a fairly uniform commodity, though some firms produce steel of inferior quality.
   
b. Novels are each unique, so they are quite distinguishable.
   
c. Wheat produced by one farmer is completely indistinguishable from wheat produced by another.
   
d. Fast food is more distinguishable than steel or wheat, but certainly not as much as novels.

3. See Figure 5; the four transactions are shown.
4. a. Figure 6 shows a production possibilities frontier between guns and butter. It is bowed out because when most of the economy's resources are being used to produce butter, the frontier is steep and when most of the economy's resources are being used to produce guns, the frontier is very flat. 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 production possibilities frontier is flat. 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 production possibilities frontier is steep.

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's 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 steeper 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.
5. 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 a no-emission auto engine, lead to shifts of the production-possibilities frontier, like the shift from PPF₁ to PPF₂ shown in the figure.

![Figure 7](image)

6. a. A family's decision about how much income to save is microeconomics.
   b. The effect of government regulations on auto emissions is microeconomics.
   c. The impact of higher saving on economic growth is macroeconomics.
   d. A firm's decision about how many workers to hire is microeconomics.
   e. The relationship between the inflation rate and changes in the quantity of money is macroeconomics.

7. 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 doesn't 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.

8. 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. Note that in all cases, even though they are statements of fact, fewer than 100 percent of economists agree with them. You could say that positive statements are statements of fact about how the world is, but not everyone agrees about what the facts are.

9. As the president, you’d be interested in both the positive and normative views of economists, but you’d 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.

10. There are many possible answers.

11. As of this writing, the chairman of the Federal Reserve is Alan Greenspan, the chair of the Council of Economic Advisers is R. Glen Hubbard, and the secretary of the treasury is Paul H. O’Neill.

12. As time goes on, you might expect economists to disagree less about public policy because they will have opportunities to observe different policies that are put into place. As new policies are tried, their results will become known, and they can be evaluated better. It’s likely that the disagreement about them will be reduced after they’ve been tried in practice. For example, many economists thought that wage and price controls would be a good idea for keeping inflation under control, while others thought it was a bad idea. But when the controls were tried in the early 1970s, the results were disastrous. The controls interfered with the invisible hand of the marketplace and shortages developed in many markets. As a result, most economists are now convinced that wage and price controls are a bad idea for controlling inflation.

But it is unlikely that the differences between economists will ever be completely eliminated. Economists differ on too many aspects of how the world works. Plus, even as some policies get tried out and are either accepted or rejected, creative economists keep coming up with new ideas.