You learned to ride a bicycle by trying it out. You tried getting on, starting, turning, stopping. Each of these was a problem. By solving problems one by one (and crash by crash), you developed the skill. Microeconomics is learned the same way. You can't rely on memorizing a bunch of definitions and dates; you have to get inside the skill and make it your own--like shooting a basket or knitting a sweater. The acquisition of any skill requires determination and practice.

Demonstrate your skill in economic analysis by answering the following questions on a separate sheet of paper. You can check your answers against the solutions at the ANS2 link on the web site.

1. An eminent judge argues that the rights of those accused of crimes should not be thought of as absolute. Rather, he points out that the more procedural rights are expanded for criminals, the lower the probability of conviction and the higher the crime rate. Can you cast this discussion in terms of the PPF? (Remember, you need to show two goods on the axes of the PPF.) You can put “Rights of the Accused” on one axis and “Security” or “Freedom from Fear of Crime” (or something like this) on the other axis. The implication is that more of one necessarily implies less of the other. Most discussion of rights seems to ignore the issue of trade-offs involved, implicitly suggesting that the extension of rights to some individuals (e.g., those charged with crimes) is costless. The PPF reminds us that nothing is free.

2. Consider the farmer and the rancher from the example in Chapter 3. Explain why the farmer's opportunity cost of producing 1 ounce of meat is 4 ounces of potatoes. Explain why the rancher's opportunity cost of producing 1 ounce of meat is 2 ounces of potatoes. When the farmer uses his limited time to produce an ounce of meat, he gives up the opportunity to produce four ounces of potatoes. Similarly, when the rancher uses her limited time to produce an ounce of meat, she gives up the opportunity to produce 2 ounces of potatoes.

3. Maria can read 20 pages of economics in an hour. She can also read 50 pages of sociology in an hour. She spends 5 hours per day studying.
   a. Draw Maria's production possibilities frontier for reading economics and sociology.
   b. What is Maria's opportunity cost of reading 100 pages of sociology? It takes Maria 2 hrs to read 100 pages of Soc. In that time she could read 40 pages of Econ. So the opportunity cost of 100 pages of Soc is 40 pages of Econ.
   What is the cost per page of reading sociology?

4. In one hour, Pat can cook six dinners and Chris can cook 2 dinners. In one hour, Pat can clean six areas of the kitchen and Chris can clean three areas.
   a. Who has the absolute advantage in cooking? In cleaning?
Pat has the absolute advantage in both cooking and cleaning.

b. Find the opportunity cost of cooking 1 dinner for each individual.
Cooking 1 dinner costs Pat 1 areas of cleaning.
Cooking 1 dinner costs Chris $3/2$ areas of cleaning.

c. Find the opportunity cost of cleaning 1 area for each individual.
Cleaning 1 area costs Pat 1 dinner.
Cleaning 1 area costs Chris $2/3$ dinner.

d. Who has the comparative advantage in cooking?
In cleaning?

Dan has a lower opportunity cost to cook, so Pat has the comparative advantage in cooking.
Ann has a lower opportunity cost to clean, so Chris has the comparative advantage in cleaning.

e. If each individual specializes and trades with the other, what would be a potential exchange rate?
(Hint: both individuals must be better off with trade than without trade.)
Pat would cook and trade 1 dinner for more than 1 area cleaned but less than $3/2$ areas cleaned.
Chris would clean and traded 1 area cleaned for more than $2/3$ dinner but less than 1 dinner.

One mutually beneficial exchange rate would be 1 dinner for $5/4$ areas cleaned, which is equivalent to 1 area cleaned for $4/5$ dinner.

5. Suppose that in Brazil the average worker can produce 20 bolts of cotton cloth or 60 tires in a year. In Peru the average worker can produce 50 bolts of cotton or 100 tires in a year.

a. Which country has the absolute advantage in cotton production and which has the comparative advantage in cotton production? Explain, perhaps with a table.

Peru has the absolute advantage in cotton; Peru also has the comparative advantage in cotton.

<table>
<thead>
<tr>
<th></th>
<th>Brazil</th>
<th>Peru</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 cot</td>
<td>3 tires</td>
<td>2 tires</td>
</tr>
<tr>
<td>1 tire</td>
<td>$1/3$ cot</td>
<td>$1/2$ cot</td>
</tr>
</tbody>
</table>

b. What kind of specialization and trade would occur?
Brazil would specialize in tires and Peru would specialize in cotton.

c. Give an example of a mutually beneficial exchange rate.
1 bolt of cotton could trade for 2 ½ tires. Equivalently, 1 tire could trade for $2/5$ bolt of cotton.

6. Lawyer Michael can type faster and more accurately than his legal secretary, Bonnie. Yet in their law office Bonnie types and Michael interviews clients. Is this arrangement efficient?
Yes it is efficient. It would be more costly (in terms of income given up from interviewing clients) for Michael to type his own documents. Production according to one’s comparative advantage is efficient.

7. While on a round-the-world trip you discover an economy engaged in foreign trade that can produce either beaded necklaces or agricultural products (food). This economy has the highest poverty rate in the world, with man of its citizens malnourished and starving. You are touched by their condition and offer your services as an economic consultant. "What shall we produce," they ask you. What is your answer? Explain yourself convincingly.
They should produce the good for which they have a comparative advantage and trade for other goods. By doing so, they will maximize their consumption opportunities.

8. The demand schedules of three individuals (Johann, Wolfgang, and Ludwig) for one-pound bags of popcorn are given below. Assume these are the only three buyers of popcorn.
   a. Diagram each of the individual demand curves.
   b. Calculate and diagram the market demand curve.

   QUANTITY OF 1 LB. BAGS OF POPCORN

<table>
<thead>
<tr>
<th>PRICE of 1 lb. bag of popcorn</th>
<th>Johann</th>
<th>Wolfgang</th>
<th>Ludwig</th>
<th>Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>$ .90</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
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<tr>
<td>.80</td>
<td>2</td>
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<tr>
<td>.40</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>15</td>
</tr>
</tbody>
</table>

9. Explain why there is an inverse relationship between quantity demanded and price. Hint: think about how a change in price affects the opportunity cost of consuming a given good. When the price of some good rises, the opportunity cost to continue consuming that good rises. Responding to that change in incentives, some consumers will buy less of the good and substitute some other relatively cheaper good.

10. Explain the difference between a change in demand and a change in quantity demanded.
A change in demand refers to a greater (or lesser) quantity that will be bought at every price, whereas a change in quantity demand refers to more (or less) that will be bought as a result of a decrease (increase) in the price of the good.

11. List the shift variables of demand.
   
   Tastes
   Income
   Price of Substitutes
   Price of Complements
   Expectations of Buyers
   Number of Buyers

   Remember: a change in a good’s own price causes a change in quantity demanded and is represented by a movement along the demand curve.

12. a. Show an increase in demand on a graph.

   ![Graph showing increase in demand](image)

   b. Show a decrease in demand on a graph.

   ![Graph showing decrease in demand](image)

13. Using a separate graph for each, show the effects of the following on the demand for autos:

   a. Increase in the price of gas **Complement—Decrease demand for autos (shift left)**
   b. Increase in incomes **Increase demand for autos (if normal)**
   c. Increase in auto insurance rates **Complement—Decrease demand for autos (shift left)**
   d. More and safer interstate highways are built **Complement—Increase demand for autos (shift right)**
   e. A decrease in air fares **Substitute—Decrease demand for autos**


   a. Demand is the actual quantity consumers are willing and able to purchase at the current market price.  
      **False. Demand is willingness to buy different quantities at various prices, etc.**
   b. An increase in the price of a postage stamp would decrease the demand for stamps.  
      **False. A increase in price would decrease quantity demanded.**
   c. An increase in income would increase the demand for higher education.  
      **True, assuming higher ed is a normal good (which is what the evidence shows).**
   d. The monthly market supply of gasoline is the average amount sold weekly at the market price.  
      **False. Supply is willingness to sell quantities at various prices, etc.**
   e. If buyers expect the future price of gasoline to rise, the demand curve now would shift to the right.
True.

f. An increase in the price of autos would increase the demand for auto tires.
   False. Increase in price of autos would decrease demand for tires.

g. An increase in income would increase the demand for intercity bus travel.
   False. Evidence indicates that intercity bus travel is an inferior good, so demand would fall.

h. A recession would increase the demand for air travel.
   False. Incomes (on average) fall during recessions, so demand for air travel would decrease.

i. An increase in the price of good X would cause a movement down along the supply curve of X.
   False. An increase in price would cause a movement up along a supply curve.

j. An increase in the price of mangos would decrease the demand for papayas.
   False. Assume mangos and papayas are substitutes. An increase in price of one would increase
demand for the other.

14. An increase in price leads to a decrease in demand. True/false/explain.
   False. An increase in the price of a good causes a decrease in quantity demanded for that good. In terms of a
demand curve, an increase in price causes a movement up along the same demand schedule, not a shift of the
schedule.