Answers to Text Questions and Problems Chapter 2

Answers to Review Questions

1. An individual has a comparative advantage in the production of a particular good if she can produce it at a lower opportunity cost than other individuals. An individual has an absolute advantage in the production of a good if she can produce more of that good than another individual, using comparable amounts of time, raw materials, and effort.

2. A reduction in the number of hours worked each day will shift all points on the production possibilities curve inward, toward the origin.

3. Technological innovations that boost labour productivity will shift all points on the production possibilities curve outward, away from the origin.

4. Failure to specialize means failure to exploit the wealth-creating possibilities of the principle of comparative advantage. Wealthy people buy most of their goods and services from others not because they can afford to do so, but because the high opportunity cost of their time makes performing their own services too expensive.
5. Canada’s forests and hydroelectric power gave it a comparative advantage in pulp and paper, and in the early 1900s, the provincial governments placed embargoes on the export of pulpwood to the United States in order to encourage the U.S. to import pulp and paper from Canada.

6. Canada has one of the world’s highest per-capita endowments of farm land.

7. The emergence of English as the *de facto* world language gives English-speaking regions a comparative advantage over non-English-speaking regions in the production of movies, books, and popular music.
Answers to Problems

1.

2. Point a is unattainable. Point b is efficient and attainable. Point c is inefficient and attainable.

3a. True: since Kyle and Toby face the same opportunity cost of producing a litre of cider, they cannot gain from specialization and trade.
b. False: suppose the doctor takes half an hour to vacuum her office thoroughly, and 15 minutes to consult with a patient. She must forgo 2 consultations with patients to vacuum her office. A commercial cleaner generally forgoes less valuable opportunities to vacuum a waiting room, so a cleaner will generally have a lower opportunity cost of vacuuming. The doctor should therefore hire a cleaner to vacuum her office.
c. False: this principle implies that as the quantity of the good on the horizontal axis increases, the resources transferred to its production will be less and less suitable to its production, and more and more suitable in the production of the other good. Thus, the opportunity cost of producing the good on the horizontal axis increases as its production increases. In the process, the production possibilities curve becomes steeper.

4. (e) Bill’s opportunity cost of replacing a set of brakes is lower than Nancy’s, because he must forgo replacing only one-third of a clutch, whereas Nancy must forgo replacing half a clutch. Bill thus has a comparative advantage at replacing brakes. Similarly, Nancy has a comparative advantage at replacing clutches, as well as an absolute advantage at replacing clutches, because she can do it faster than Bill. But if all the customers want only clutch replacements rather than brake replacements, Bill should help Nancy to replace clutches. (Thus option (a) is incorrect.)

5. (c) Stella has an absolute advantage at both tasks, for the reason given.
6a. The daily PPCs for Filipe and Kamal:

b. Kamal has an absolute advantage in both brewing beer and in making pizza; he can produce more beer per hour and more pizza per hour than Filipe.

c. Kamal has a comparative advantage in making pizza. His opportunity cost of producing one pizza is 3 beers, while Filipe’s opportunity cost of producing one pizza is 5 beers. But Filipe has a comparative advantage in brewing beer. His opportunity cost of producing one beer is 1/5 of a pizza, while Kamal’s opportunity cost of producing one beer is 1/3 of a pizza.

d. Filipe will drink 2 beers and eat 1.6 pizzas. Kamal will eat 2 pizzas and drink 9 beers.

e. The joint PPC for Filipe and Kamal:

If each specializes completely in the good for which he has a comparative advantage, Filipe will produce 10 beers and Kamal will produce 5 pizzas. There is no trade that will make them better off than part d, since only 10 beers are being produced, not the 11 that are consumed in part d. However, there are trades that will allow both individuals to consume outside their PPCs. For example, suppose they trade 2 pizzas for 8 beers, so that Filipe will consume 2 pizzas and 2 beers, and Kamal will consume 3 pizzas and 8 beers. Each will thus consume more pizza and beer than their PPCs would allow. Other trades are also possible.

7a. The daily PPCs for Filipe and Kamal:
b. Filipe has an absolute advantage in making pizza, since he can produce more pizza per hour than Kamal. Filipe also has an absolute advantage in brewing beer, since he can produce more beer per hour than Kamal.

c. Kamal has a comparative advantage in making pizza. His opportunity cost of producing one pizza is 1/2 of a beer, while Filipe’s opportunity cost of producing one pizza is 4/3 of a beer. But Filipe has a comparative advantage in brewing beer. His opportunity cost of producing one beer is 3/4 of a pizza, while Kamal’s opportunity cost of producing one beer is 2 pizzas.

d. Filipe will drink 6 beers and eat 1.5 pizzas. Kamal will eat 2 pizzas and drink 1 beer.

e. The joint PPC for Filipe and Kamal:

If each specializes in the good for which he has a comparative advantage, Filipe will produce 8 beers and Kamal will produce 4 pizzas. If they trade 2 pizzas for 1.5 beers, Filipe will consume 6.5 beers and 2 pizzas, and Kamal will consume 2 pizzas and 1.5 beers. Notice that each can do better by specializing even though Filipe has an absolute advantage in producing both beer and pizza.

8. By producing 8 beers per day and 4 pizzas per day, they could sell 4 pizzas and buy an additional 4 beers, for a total of 12 beers per day and no pizza (point A in the diagram below). Alternatively, they
could sell 8 beers per day and buy an additional 8 pizzas, for a total of 12 pizzas per day and no beers (point B in the diagram below).

![Production Possibilities Curve](image)

9a. No, the principle of increasing opportunity cost does not apply. The production possibilities curve is a straight line in both cases, implying that as the production of either commodity increases, its opportunity cost in terms of the other commodity remains constant.

b. Since the opportunity cost of a barrel of oil is 2 tons of oranges in Inlandia and 50 tons of oranges in Outlandia, Inlandia should produce oil. Since the opportunity cost of a ton of oranges is 0.5 of a barrel of oil in Inlandia, and 1/50 of a barrel of oil in Outlandia, Outlandia should produce oranges.

c. In the absence of trade, Inlandia pays an opportunity cost of 0.5 of a barrel of oil for each ton of its own domestically produced oranges. Therefore, Inlandia will not offer a price above 0.5 of a barrel of oil for each ton of imported oranges. Similarly, Outlandia will not be willing to accept a price below 1/50 of a barrel of oil for each ton of its exported oranges, since that is the price that oranges would trade for at home. So the international price for a ton of oranges will lie somewhere between 1/50 of a barrel of oil and half a barrel of oil.

10a. Daily PPCs for Jay, Kay, and Dee:

![Food and Water Commodity Graphs](image)
b. Their combined PPC:

![Food vs Water Production Possibilities Curve](image)

c. If the trio wants to consume a total of 12 units of water and 15 units of food, Jay and Dee should specialize in food production and Kay should specialize in water production.
d. If the trio wants to consume 6 units of water and as much food as possible, they will be able to consume 18 units of food. Jay and Dee should specialize in food production, and Kay should devote 6 hours a day to producing food and 6 hours to water.
e. Yes, they will be better off. Each individual can have 5 units of food and 4 units of water. Without cooperation, Jay would have only 3.5 units of water if he produced 5 units of food; Kay would have only 2 units of water if she produced 5 units of food; and Dee would have no water at all if she maximized her food output at 3 units.

**Sample Homework Assignment**

1. You can allocate your time for the next four years between studying and working at a car wash. Each semester you spend studying you can earn 15 credit hours and each semester you work at the car wash you wash 800 cars. If you have 8 semesters to allocate, label each of the following on a graph.
   a. Your production possibilities curve.
   b. A point that is unattainable.
   c. A point that is efficient.
   d. Plot and label a point on your graph that represents a decision to take a semester off from both studying and working.

2. Gilligan and Robinson are stranded on a desert island. To feed themselves each day they can either catch fish or pick fruit as specified in the table below. Use the information to determine who has each of the following.
   a. Comparative advantage in fruit picking.
   b. Comparative advantage in fishing.
   c. Absolute advantage in fruit picking.
   d. Absolute advantage in fishing.
Fruit Fish

<table>
<thead>
<tr>
<th></th>
<th>Fruit</th>
<th>Fish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gilligan</td>
<td>60</td>
<td>20</td>
</tr>
<tr>
<td>Robinson</td>
<td>100</td>
<td>150</td>
</tr>
</tbody>
</table>

3. Inlandia and Outlandia can both produce cars or wheat. The opportunity cost of a car in Inlandia is 50 bushels of wheat. The opportunity cost of a car in Outlandia is 300 bushels of wheat. The most wheat Inlandia can possibly produce is 100,000 bushels and the most wheat Outlandia can possibly produce is 3 million.
   a. Graph the production possibilities curve for each country.
   b. Does the Principle of Increasing Opportunity Cost apply in either of these two cases? How do you know?
   c. If the two countries sign a trade agreement to specialize according to their comparative advantage, what should each country produce?
   d. If these are the only two countries in the world that are open to trade, what are the maximum and minimum prices that can prevail on the world market for a bushel of wheat (in terms of cars)?

**Multiple Choice Quiz**

1. If one person can perform a task in fewer hours than another, you know the person has ________________ in performing the task.
   a. an absolute advantage
   b. a comparative advantage
   c. both a comparative advantage and an absolute advantage
   d. neither an absolute nor a comparative advantage
   e. either an absolute or a comparative advantage

2. If a person’s opportunity cost of performing a task is lower than another person’s, you know the person has ________________ in performing the task.
   a. an absolute advantage
   b. a comparative advantage
   c. both a comparative advantage and an absolute advantage
   d. neither an absolute nor a comparative advantage
   e. either an absolute or a comparative advantage

3. Which of the following can be a source of comparative advantage for an individual?
   a. Inborn talent.
   b. Education.
   c. Training.
   d. Experience.
   e. All of the above.

4. Which of the following can be a source of comparative advantage for a nation?
   a. Natural resources.
   b. Entrepreneurship.
   c. Speaking the English language.
   d. Standards of production quality.
   e. All of the above.
For Questions 5 to 7, refer to the graph provided.

5. The economy efficiently produces *both* cloth and wine at which point?
   a. a
   b. b
   c. c
   d. d
   e. e

6. Which point could represent production in the economy if it were experiencing unemployment?
   a. a
   b. b
   c. c
   d. d
   e. e

7. Which point on the graph is not currently attainable for this economy?
   a. a
   b. b
   c. c
   d. d
   e. e

8. If a country experiences increasing opportunity costs, its production possibilities curve will
   a. be a straight line.
   b. bow outward.
   c. bow inward.
   d. shift out from the origin.
   e. shift in toward the origin.
9. According to the Principle of Increasing Opportunity Cost, in expanding production of a good, you should first employ those resources
   a. where you have comparative advantage.
   b. where you have absolute advantage.
   c. with the highest opportunity cost.
   d. with the lowest opportunity cost.
   e. that have the lowest price.

10. Which of the following is the basis for an argument against free trade?
   a. The Principle of Comparative Advantage.
   b. the change in the total value of goods and services resulting from trade.
   c. the distribution of the benefits from trade.
   e. All of the above.

**Problems/Short Answer**

1. A factory can either be used to produce t-shirts or shorts. The production possibilities for the factory are shown on the graph below. Refer to the graph and identify ALL points that are:
   a. efficient
   b. unattainable
   c. the result of working less than 8 hours.

2. Two countries, Eastland and Westland, can both produce rice or machines. The opportunity cost of a machine in Eastland is 50 bushels of rice. The opportunity cost of a machine in Westland is 200 bushels of rice. The most rice Eastland can possibly produce is 10,000 bushels and the most rice Westland can possibly produce is 2 million.
   a. Graph the production possibilities curve for each country.
   b. If the two countries sign a trade agreement to specialize according to their comparative advantage, what should each country produce?
   c. If these are the only two countries in the world that are open to trade, what are the maximum and minimum prices that can prevail on the world market for a machine (in terms of bushels of rice)?
Answer Key to Extra Questions in Instructor’s Manual

Sample Homework Assignment

1a.

\[
\begin{align*}
\text{Credit hours} & \quad \text{b. any point beyond the PPC} \\
120 & \quad \text{75} \\
\end{align*}
\]

\[
\begin{align*}
\text{4000 Car washes} & \quad \text{6400 Car washes} \\
\end{align*}
\]

d. Any point below the PPC that is for 7 semesters (e.g., 75 credit hours and 3200 car washes). One semester of studying is 15 credit hours, one semester of car washes is 800 car washes).

2a. Gilligan has the comparative advantage in fruit picking (his opportunity cost is 1/3 versus Robinson’s 1.5).
b. Robinson has the comparative advantage in fishing (his opportunity cost is 2/3 versus Gilligan’s 3).
c. Robinson has an absolute advantage in fruit picking (he can gather 100 versus Gilligan’s 60).
d. Robinson has an absolute advantage in fishing (he can catch 150 versus Gilligan’s 20).

3a.

\[
\begin{align*}
\text{Wheat} & \quad \text{Wheat} \\
100,000 & \quad 3,000,000 \\
\text{Inlandia} & \quad \text{Outlandia} \\
2000 & \quad 10,000 \\
\text{Cars} & \quad \text{Cars} \\
\end{align*}
\]

b. No, the opportunity cost of cars (and wheat) is constant.
c. Inlandia should produce cars (their opportunity cost is 50 versus Outlandia’s 300) and Outlandia should produce wheat (their opportunity cost is 0.003 versus Inlandia’s 0.02).
d. Inlandia has an opportunity cost of 0.02 for wheat and Outlandia has an opportunity cost of 0.003 for wheat. Therefore, the price must be above 0.003 cars (for Outlandia to provide wheat to the world market) but below 0.02 cars (for Inlandia to buy wheat on the world market).

**Multiple Choice**

1. a
2. b
3. e
4. e
5. c
6. b
7. e
8. b
9. d
10. c

**Problems/Short Answer**

1a. a, b, c
b. e, f
c. d

2a.

<table>
<thead>
<tr>
<th>Rice</th>
<th>Rice</th>
</tr>
</thead>
<tbody>
<tr>
<td>10,000</td>
<td>2,000,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Eastland</th>
<th>200 Machines</th>
</tr>
</thead>
</table>

| Westland | 10,000 Machines |

b. Eastland should produce machines (their opportunity cost is 50 versus 200); Westland should produce rice (their opportunity cost is 0.005 versus 0.02).
c. The price would have to be between 50 bushels of rice and 200 bushels of rice.