

## **Solutions for Chapter 2, Confronting Scarcity—Choices in Production**

### **Concept Problems**

- 1.** Human capital is the skill a worker has as a result of education, training, or experience that can be used in production. A college education provides additional training in the areas of verbal, writing, speaking, computing, and analytical skills. In addition, a college education provides opportunity for students to work in teams, an element of human capital very much in demand in the modern, global economy.
- 2.** A downward-sloping production possibilities curve shows that in order to obtain more of one good (or service), another must be forgone. That is the meaning of scarcity—the situation where we are forced to choose among alternatives.
- 3.** The law of increasing opportunity costs holds that as an economy moves along its production possibilities curve in the direction of producing more of a particular good, the opportunity cost of additional units of that good will increase. That is what is shown on a bowed-out production possibilities curve—its slope gets steeper and steeper. To get additional units of one good, more and more of the other good must be given up.
- 4.** When resources are allocated according to comparative advantage, specialized resources are allocated to the production of a specific good. If more of that good is produced, less specialized resources, with comparative advantage in other goods, will have to be used. This necessarily means that the cost of

producing additional units will increase, just as the law of increasing opportunity costs predicts.

**5.** The opportunity cost of producing good B is given by the absolute value of the slope of the production possibilities curve. The opportunity cost of producing good B is increased as indicated by the greater slope of curve ST at point E' than was the slope (in absolute value) on curve RT at point E.

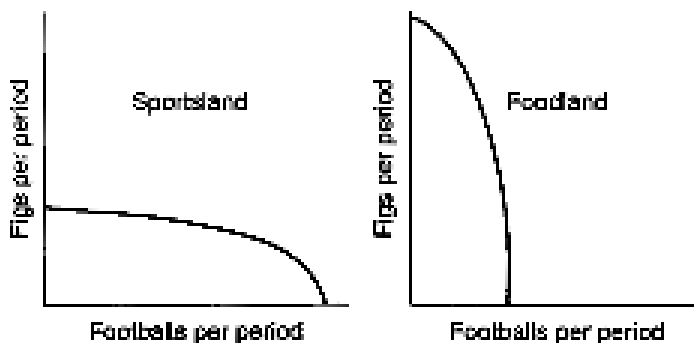
**6.** An inward shift would mean that the economy was capable of producing fewer goods and services than before. Such a shift would be caused by a reduction in the factors of production available to the economy. Labor could be reduced by widespread serious illness, war, or emigration. Capital could be reduced by a natural disaster or by war. Natural resources could be reduced simply by using them up. Some scientists worry that we might run out of oil, for example, reducing our ability to produce goods or service.

**7.** Two approaches could be taken to this problem. One would be to recognize that blue-eyed people are capable of working but are barred from doing so by an arbitrary law. That would imply no change in the curve itself, but a choice of a solution inside the curve. Alternatively, one could regard the law as part of the determination of society's resources and treat it as an inward shift in the production possibilities curve. The law is a form of economic discrimination and has the effect on production that economic discrimination always has: It limits society's choices in production.

**8.** The statement is a normative one that can't be either proved or disapproved. In general, policies to promote growth involve a sacrifice in present consumption.

Whether such policies are desirable depends on whether one regards the benefits of future increases in consumption as worth the cost of forgone current consumption.

**9.** The cost of producing additional footballs generally lower in Sportsland than in Foodland because Sportsland's production possibilities curve is generally flatter. If, however, Sportsland is operating close to the intersection of its production possibilities curve and the horizontal axis and Foodland is operating close to the intersection of its curve and the vertical axis, then the cost of one more football could be greater in Sportsland.



**10.** It would be bowed in.

**11.** Assuming that states imposed the restrictions, U.S. output would go down. It would reduce production by blocking the allocation of resources according to comparative advantage.

**12.** By allowing resources to be allocated on the basis of comparative advantage, the elimination of trade barriers within the European Union tended to increase total output as the EU moved closer to the combined production possibilities curve for the member nations.

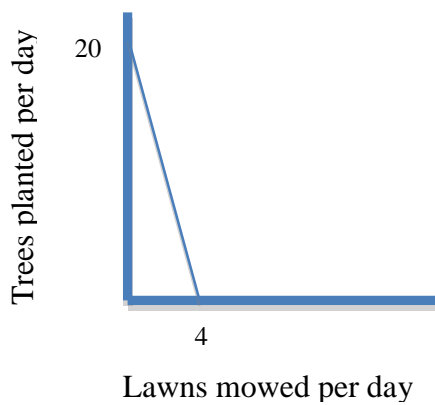
**13.** The production possibilities curve shifted outward.

## Numerical Problems

1.

- a. The production possibilities curve is a straight line from a point at twenty trees per day on the vertical axis to four lawns per day on the horizontal axis.
- b. Nathan must forgo  $\frac{1}{5}$  of a lawn mowed for each tree he plants.
- c. Mowing a lawn requires that Nathan give up planting 5 trees.

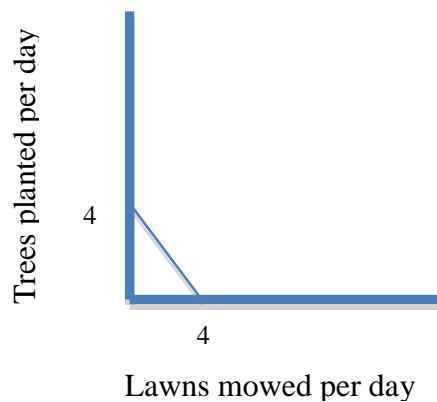
**Figure 2-1a**



2.

- a. The production possibilities curve is a straight line drawn from four trees planted per day on the vertical axis to four lawns mowed per day on the horizontal axis.
- b. The opportunity cost of planting a tree is mowing one lawn per day.
- c. The opportunity cost of mowing one lawn is planting one tree.

**Figure 2-2a**



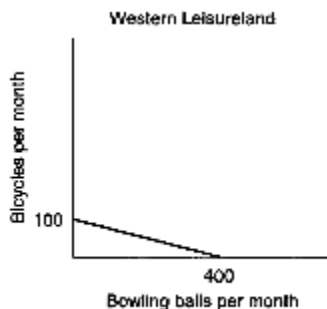
3. Nathan's opportunity cost of planting one tree per day is  $\frac{1}{5}$  of a lawn mowed, while David's cost per tree planted per day is one lawn mowed per day. Nathan has the comparative advantage in planting trees. David's opportunity cost for mowing one lawn is planting one tree; Nathan's opportunity cost for mowing one lawn is planting five trees. David has the comparative advantage for mowing lawns.

4.

- a. The slope of Germany's production possibilities curve is  $-(1/3)$ .
- b. The slope of Turkey's production possibilities curve is  $-2$ .
- c. The opportunity cost of a T-shirt in Germany is  $1/3$  of an optical instrument.
- d. The opportunity cost of a T-shirt in Turkey is 2 optical instruments.
- e. The opportunity cost of producing an optical instrument in Germany is three T-shirts per year.
- f. The opportunity cost of producing an optical instrument in Turkey is  $1/2$  a T-shirt per year.
- g. Germany has a comparative advantage in the production of T-shirts.
- h. Turkey has a comparative advantage in the production of optical instruments.

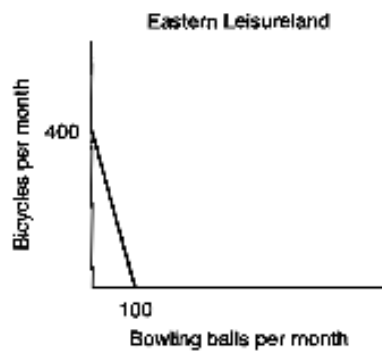
5.

a.



- b. To produce one additional bowling ball per month requires reducing production of bicycles by  $1/4$  of a bicycle per month so the opportunity cost of an additional bowling ball is  $1/4$  of a bicycle.

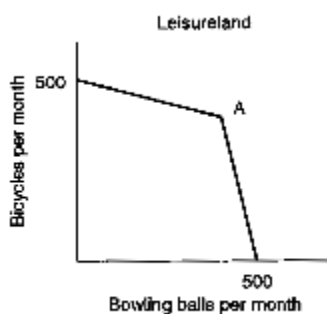
c.



d. The opportunity cost of producing one more bowling ball per month in Eastern Leisureland is the production of 4 bicycles per month.

e. Western Leisureland has a comparative advantage in bowling ball production because it costs less to produce them there. Eastern Leisureland has a comparative advantage in producing bicycles.

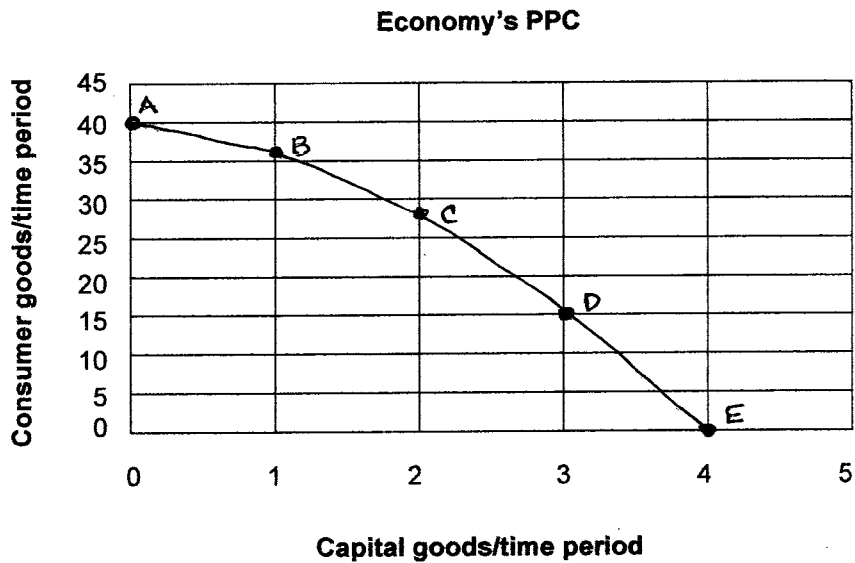
f.



g. 400 bowling balls per month can be produced.

h. Bowling balls will be produced in Western Leisureland, and bicycles will be produced in Eastern Leisureland.

6.



- a.
- b. The cost of producing one more unit of capital goods per period by moving from Point B to Point C is 8 units of consumer goods per period.
- c. Moving from Point C to Point D requires giving up the production of 12 units of consumer goods per period.
- d. It is possible to produce 30 units of consumer goods per period while producing 1 unit of capital goods per period, but since the economy could produce 36 units of consumer goods, producing only 30 implies either an inefficient allocation of resources or a failure to employ resources fully.
- e. Point C involves the production of more capital goods and should therefore lead to more economic growth.

**7.**

- a. Between 1909 and 1929, roughly 38% of growth was from increases in the quantity of labor and 27% from increases in the quantity of labor.



- b. During that same period, increases in human capital accounted for about 13 percent of growth, while increases in technology accounted for about 12 percent of growth.
- c. For the period from 1950 to 1979, increases in the quantities of labor and capital were relatively less important. An increased quality of labor accounted for 27 percent of growth and an increased quantity of capital accounted for 15 percent.
- d. Quality played an increasingly important role in the latter period. Increases in human capital accounted for 30 percent of growth, and improved technology accounted for 22 percent.

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