

## **Module 2 - Models and the Production Possibilities Frontier**

### **Multiple Choice**

1. A simplified representation that is used to study a real situation is called a(n):
- a. model.
  - b. production possibility frontier.
  - c. assumption.
  - d. trade-off.

*ANSWER:* a

2. The models that economists construct:
- a. usually make simplifying assumptions.
  - b. often rely on physical constructs, such as those used by architects.
  - c. rarely use mathematical equations or graphs.
  - d. attempt to precisely replicate the real world.

*ANSWER:* a

3. When building a model, economists:
- a. simplify reality to highlight what really matters.
  - b. attempt to duplicate reality in all of its complexity.
  - c. ignore the facts and instead try to determine what the facts should be.
  - d. are careful to avoid the scientific method.

*ANSWER:* a

4. The models used in economics:
- a. are always limited to variables that are directly related.
  - b. are essentially not reliable because they are not testable in the real world.
  - c. are of necessity unrealistic and not related to the real world.
  - d. emphasize basic relationships by abstracting from complexities in the everyday world.

*ANSWER:* d

5. Economic models are:
- a. set up and used to precisely mirror reality.
  - b. useless if they are simple.
  - c. made generally of wood, plastic, and/or metal.
  - d. potentially useful in forming economic policy.

*ANSWER:* d

6. The importance of an economic model is that it allows us to:
- a. build a complex and accurate model of how the economy should work.
  - b. build an accurate mathematical model of every aspect of the economy.
  - c. focus on the effects of only one change at a time.

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d. avoid opportunity costs.

ANSWER: c

7. In constructing a model, economists:

- a. might use a computer simulation.
- b. avoid making any assumptions.
- c. assume that all relevant factors are constantly changing.
- d. are prohibited from using mathematics.

ANSWER: a

8. A simplified version of reality that is used to clarify economic situations is called a(n):

- a. economic fact.
- b. current event.
- c. model.
- d. scarce resource.

ANSWER: c

9. An economic model:

- a. is useful for explaining past economic conditions but not for predicting future outcomes.
- b. often leads to faulty conclusions because of the *ceteris paribus* assumption.
- c. allows nothing to change in the economic situation that is being described.
- d. is a simplified version of reality used to understand real-world economic conditions.

ANSWER: d

10. The production possibility frontier illustrates that:

- a. the economy will automatically end up at full employment.
- b. an economy's productive capacity increases one-for-one with its population.
- c. if all resources of an economy are being used efficiently, more of one good can be produced only if less of another good is produced.
- d. economic production possibilities have no limit.

ANSWER: c

**Table: Production Possibilities Schedule I**

Alternatives	A	B	C	D	E	F
Consumer goods per period	0	1	2	3	4	5
Capital goods per period	30	28	24	18	10	0

11. (Ref 2-1 Table: Production Possibilities Schedule I) Use Table: Production Possibilities Schedule I. If the economy produces two units of consumer goods per period, it also can produce, at most, \_\_\_\_\_ units of capital goods per period.

- a. 30
- b. 28

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- c. 24
- d. 18

ANSWER: c

12. (Ref 2-1 Table: Production Possibilities Schedule I) Use Table: Production Possibilities Schedule I. If the economy produces 10 units of capital goods per period, it also can produce, at most, \_\_\_\_\_ units of consumer goods per period.

- a. 5
- b. 4
- c. 3
- d. 2

ANSWER: b

13. (Ref 2-1 Table: Production Possibilities Schedule I) Use Table: Production Possibilities Schedule I. The opportunity cost of producing the fourth unit of consumer goods is \_\_\_\_\_ units of capital goods.

- a. 2
- b. 4
- c. 6
- d. 8

ANSWER: d

14. (Ref 2-1 Table: Production Possibilities Schedule I) Use Table: Production Possibilities Schedule I. If the economy produces 4 units of consumer goods per period, it also can produce, at MOST, \_\_\_\_\_ units of capital goods per period.

- a. 30
- b. 28
- c. 10
- d. 18

ANSWER: c

15. (Ref 2-1 Table: Production Possibilities Schedule I) Use Table: Production Possibilities Schedule I. If the economy produces 24 units of capital goods per period, it also can produce, at MOST, \_\_\_\_\_ units of consumer goods per period.

- a. 5
- b. 4
- c. 3
- d. 2

ANSWER: d

16. (Ref 2-1 Table: Production Possibilities Schedule I) Use Table: Production Possibilities Schedule I. The opportunity cost of producing the third unit of consumer goods is \_\_\_\_\_ units of capital goods.

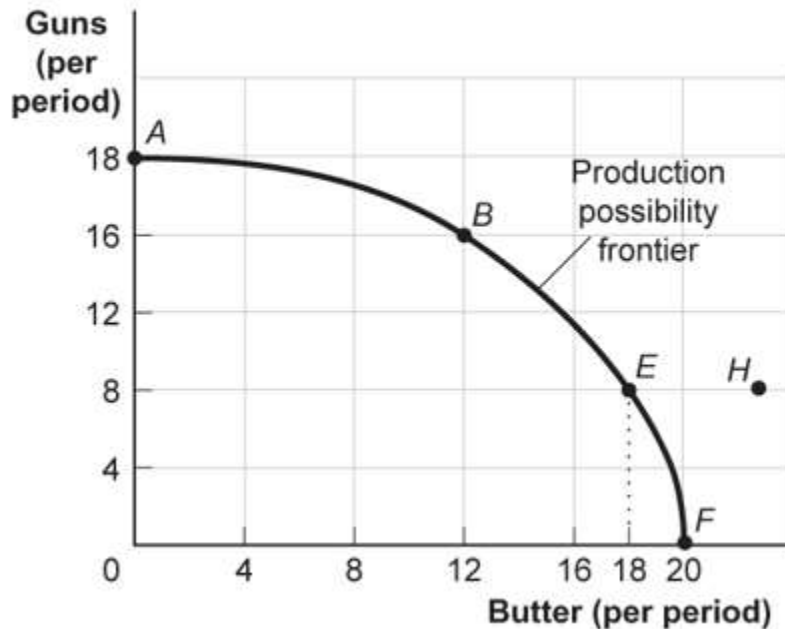
- a. 2

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- b. 4
- c. 6
- d. 8

ANSWER: c

**Figure: Guns and Butter**



17. (Ref 2-2 Figure: Guns and Butter) Use Figure: Guns and Butter. On this figure, points A, B, E, and F:
- a. indicate combinations of guns and butter that society can produce using all of its factors efficiently.
  - b. indicate increasing opportunity costs for guns but decreasing opportunity costs for butter.
  - c. indicate that society wants butter more than it wants guns.
  - d. indicate constant opportunity costs for guns and increasing costs for butter.

ANSWER: a

18. (Ref 2-2 Figure: Guns and Butter) Use Figure: Guns and Butter. This production possibility frontier is:
- a. bowed out because of increasing opportunity costs.
  - b. bowed in because of increasing opportunity costs.
  - c. bowed in because of constant costs of guns and butter.
  - d. linear because of constant costs.

ANSWER: a

19. (Ref 2-2 Figure: Guns and Butter) Use Figure: Guns and Butter. If the economy is operating at point B, producing 16 guns and 12 pounds of butter per period, a decision to move to point E and produce 18 pounds of butter:
- a. indicates that you can have more butter and guns simultaneously.
  - b. makes it clear that this economy has decreasing opportunity costs.

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- c. necessitates a loss of 8 guns per period.
- d. necessitates a loss of 4 guns per period.

ANSWER: c

20. (Ref 2-2 Figure: Guns and Butter) Use Figure: Guns and Butter. The combination of guns and butter at point H:

- a. can be attained but would cost too much.
- b. cannot be attained, given the level of technology and the factors of production available.
- c. has no meaning since it does not relate to the preferences of consumers.
- d. is attainable but would increase unemployment.

ANSWER: b

21. (Ref 2-2 Figure: Guns and Butter) Use Figure: Guns and Butter. Suppose the economy produced 8 guns and 12 pounds of butter per period. Given that, which statement is true?

- a. This is a possible choice, but it is inefficient.
- b. This combination invalidates the notion of increasing opportunity cost.
- c. The economy is still efficient but does not buy as much as it could.
- d. Something must be done to reduce the amount of employment.

ANSWER: a

22. If an economy has to sacrifice only one unit of good X for each unit of good Y produced throughout the relevant range, then its production possibility frontier has a(n):

- a. zero slope.
- b. constant negative slope.
- c. increasing negative slope.
- d. decreasing negative slope.

ANSWER: b

23. A production possibility frontier that is a line sloping straight down from left to right suggests that:

- a. more of both goods could be produced moving along the frontier.
- b. the two products must have the same price.
- c. the opportunity costs of the products are constant.
- d. there are no opportunity costs.

ANSWER: c

**Table: Production Possibilities Schedule II**

Production alternatives	V	W	X	Y	Z
Capital goods per period	0	1	2	3	4
Consumer goods per period	20	18	14	8	0

24. (Ref 2-3 Table: Production Possibilities Schedule II) Use Table: Production Possibilities Schedule II. If the economy is producing at alternative X, the opportunity cost of producing at Y instead of X is \_\_\_\_\_ units of

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consumer goods per period.

- a. 0
- b. 6
- c. 8
- d. 14

ANSWER: b

25. (Ref 2-3 Table: Production Possibilities Schedule II) Use Table: Production Possibilities Schedule II. If an economy is producing at alternative *W*, the opportunity cost of producing at *X* is \_\_\_\_\_ unit(s) of consumer goods per period.

- a. 0
- b. 1
- c. 4
- d. 18

ANSWER: c

26. (Ref 2-3 Table: Production Possibilities Schedule II) Use Table: Production Possibilities Schedule II. The production of 14 units of consumer goods and 1 unit of capital goods per period would result in:

- a. full employment.
- b. no unused resources.
- c. some unused or inefficiently used resources.
- d. an increase in economic growth.

ANSWER: c

27. In movement along a production possibility frontier, the opportunity cost to society of getting more of one good:

- a. is always constant.
- b. is measured in dollar terms.
- c. is measured by the amount of the other good that must be given up.
- d. usually decreases.

ANSWER: c

28. If an economy has to sacrifice increasing amounts of good *X* for each additional unit of good *Y* produced, then its production possibility frontier is:

- a. bowed out.
- b. bowed in.
- c. a straight line.
- d. a vertical line.

ANSWER: a

29. The fact that a society's production possibility frontier is bowed out, or concave to the origin of a graph, demonstrates the law of \_\_\_\_\_ opportunity cost.

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- a. increasing
- b. decreasing
- c. constant
- d. concave

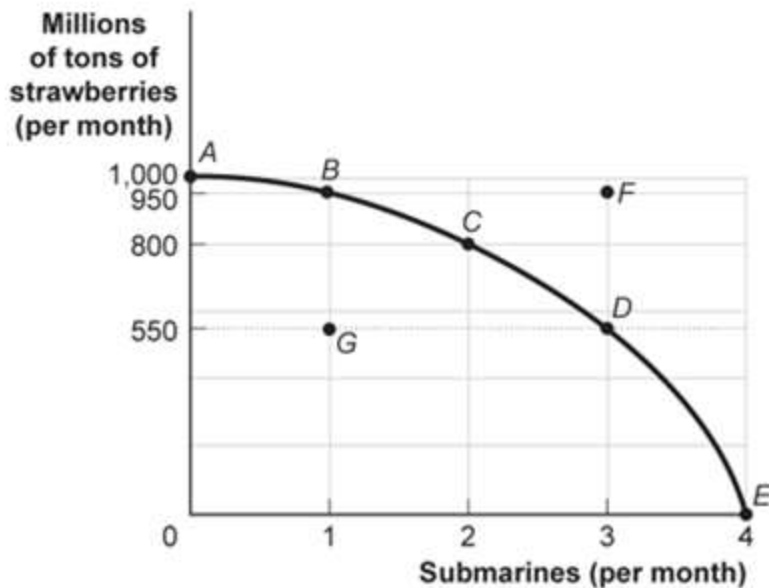
ANSWER: a

30. The economy's factors of production are not equally suitable for producing different types of goods. This principle generates:

- a. economic growth.
- b. technical efficiency.
- c. underuse of resources.
- d. the law of increasing opportunity cost.

ANSWER: d

**Figure: Strawberries and Submarines**



31. (Ref 2-4 Figure: Strawberries and Submarines) Use Figure: Strawberries and Submarines. Suppose the economy is operating at point G. This implies that:

- a. the economy can move to a point such as C only if it improves its technology.
- b. the economy has unemployment and/or inefficiently allocates resources.
- c. the economy lacks the resources to achieve a combination such as C.
- d. people in this economy don't really like strawberries or submarines.

ANSWER: b

32. (Ref 2-4 Figure: Strawberries and Submarines) Use Figure: Strawberries and Submarines. As the economy

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moves from point A toward point D, it will find that the opportunity cost of each additional submarine:

- a. falls.
- b. rises.
- c. remains unchanged.
- d. doubles.

ANSWER: b

33. (Ref 2-4 Figure: Strawberries and Submarines) Use Figure: Strawberries and Submarines. Suppose the economy now operates at point C. Moving to point E would require that the economy:

- a. achieve full employment and an efficient allocation of resources.
- b. eliminate its production of strawberries.
- c. reduce its production of submarines.
- d. improve its technology or increase its quantities of factors of production.

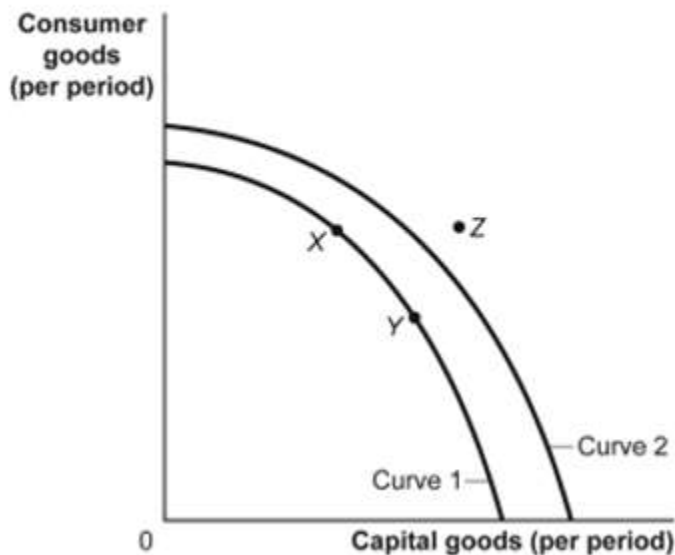
ANSWER: b

34. If an economy is producing a level of output that is on its production possibility frontier, the economy has:

- a. idle resources.
- b. idle resources but is using resources efficiently.
- c. no idle resources but is using resources inefficiently.
- d. no idle resources and is using resources efficiently.

ANSWER: d

**Figure: Consumer and Capital Goods**



35. (Ref 2-4 Figure: Consumer and Capital Goods) Use Figure: Consumer and Capital Goods. The movement from curve 1 to curve 2 indicates:

- a. economic growth.



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- b. a change from unemployment to full employment.
- c. a decrease in the level of technology.
- d. instability.

ANSWER: a

36. (Ref 2-4 Figure: Consumer and Capital Goods) Use Figure: Consumer and Capital Goods. Assume the economy's current production possibilities frontier is given by curve 1. Point Z:

- a. is unattainable, all other things unchanged.
- b. is attainable if the economy is able to reach full employment.
- c. is attainable if the quantity and/or quality of factors decreases.
- d. will be attained as soon as the economy becomes efficient and moves to curve 2.

ANSWER: a

37. Technological improvements will:

- a. leave the production possibility frontier unchanged.
- b. shift the production possibility frontier inward.
- c. shift the production possibility frontier outward.
- d. necessarily lead to increased unemployment.

ANSWER: c

38. A two-dimensional production possibility frontier illustrates the \_\_\_\_\_ facing an economy that \_\_\_\_\_ only two goods.

- a. prices; sells
- b. trade-offs; produces
- c. trade-offs; sells
- d. shortages; produces

ANSWER: b

39. Suppose Oklahoma decides to produce only two goods, oil and football helmets. If Oklahoma is producing on its production possibility frontier, as oil production increases, the production of football helmets will:

- a. increase.
- b. not change.
- c. decrease at a necessarily decreasing rate.
- d. decrease at some rate.

ANSWER: d

40. One of the controversies surrounding the United States' energy markets is the trade-off between energy production and clean air. Assuming clean air has value, the United States will be on its production possibility frontier if and only if:

- a. resources used to produce clean air and energy are not being fully used.
- b. pollution is eliminated.
- c. the price of energy is relatively low.

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d. resources used to produce clean air and energy are being fully used.

ANSWER: d

41. If an economy is producing at a point on its production possibilities frontier, it is:

- a. efficient in production and allocation.
- b. efficient in production but not necessarily in allocation.
- c. efficient in allocation but not necessarily in production.
- d. not necessarily efficient in production or allocation.

ANSWER: b

42. Consider a production possibility frontier for Italy. If in 2016 Italy's resources are not being fully utilized, Italy will be somewhere \_\_\_\_\_ of its production possibility frontier.

- a. inside
- b. outside
- c. near the bottom
- d. near the top

ANSWER: a

43. All points inside the production possibility frontier represent:

- a. efficient production points.
- b. inefficient production points.
- c. infeasible production points.
- d. regions of economic growth.

ANSWER: b

44. All points on the production possibility frontier are:

- a. efficient.
- b. inefficient.
- c. infeasible.
- d. regions of economic growth.

ANSWER: a

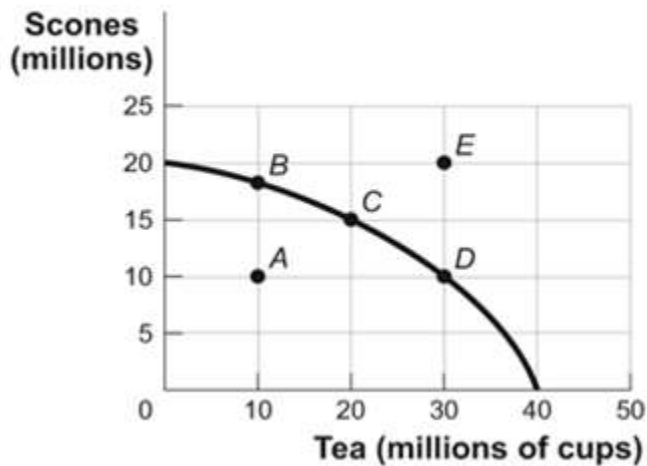
45. All points outside the production possibility frontier are:

- a. efficient.
- b. inefficient.
- c. infeasible.
- d. regions of economic growth.

ANSWER: c

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**Figure: Production Possibility Frontier Curve for Tealand**



46. (Ref 2-5 Figure: Production Possibility Frontier for Tealand) Use Figure: Production Possibility Frontier for Tealand. If Tealand is producing 10 million scones and 10 million cups of tea (point A), we know that the economy:

- a. is using its resources efficiently.
- b. is using its resources inefficiently.
- c. is fully employing its resources.
- d. has found new resources.

ANSWER: b

47. (Ref 2-5 Figure: Production Possibility Frontier for Tealand) Use Figure: Production Possibility Frontier for Tealand. Tealand is producing at point C on its production possibility frontier. What is the opportunity cost of increasing the production of tea from 20 million cups to 30 million cups?

- a. 10 million cups of tea
- b. 5 million scones
- c. 10 million scones
- d. The answer is impossible to determine from the information given.

ANSWER: b

48. (Ref 2-5 Figure: Production Possibility Frontier for Tealand) Use Figure: Production Possibility Frontier for Tealand. Tealand can produce at point E only if:

- a. the government eliminates unemployment.
- b. the government raises taxes.
- c. the country experiences economic growth.
- d. it increases the cost of production by decreasing the use of technology.

ANSWER: c

49. The production possibility frontier is bowed out because:

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- a. resources are not equally suited for the production of both goods.
- b. resources are scarce.
- c. economic growth leads to inefficiency.
- d. resources are inefficiently used.

ANSWER: a

50. The opportunity cost of production:
- a. is the price of a good.
  - b. is what you give up to produce the good.
  - c. decreases as production increases.
  - d. is what you gain by producing the good.

ANSWER: b

51. Suppose Poland is producing on its production possibilities frontier, and it decides to increase the production of steel and decrease the production of vodka. The bowed-out production possibility frontier suggests that there will be a(n) \_\_\_\_\_ opportunity cost of producing more steel.

- a. increasing
- b. decreasing
- c. nonexistent
- d. unchanged

ANSWER: a

52. Economists usually assume that production is subject to increasing opportunity costs because:
- a. higher production usually results in more inflation.
  - b. not all resources are equally suited to producing every good.
  - c. individuals desire constantly increasing opportunities to make themselves better off.
  - d. if production is efficient, it is not possible to increase the production of all goods simultaneously.

ANSWER: b

53. The production possibility frontier will shift outward because of:
- a. a decrease in the labor force.
  - b. an increase in infrastructure spending.
  - c. better technology that improves worker productivity.
  - d. a decrease in the unemployment rate.

ANSWER: c

54. In terms of the production possibility frontier, the inefficient use of available resources is shown by:
- a. an increase in the labor force growth rate.
  - b. a movement from one point to another along the production possibility frontier.
  - c. an inward shift of the production possibility frontier due to the lack of opportunity.
  - d. production at a point inside the production possibility frontier.

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ANSWER: d

55. The production possibility frontier will not shift outward due to an:
- a. increase in the unemployment rate.
  - b. increase in the labor force.
  - c. improvement in technology.
  - d. increase in worker productivity.

ANSWER: a

56. The effect of an increase in productive inputs such as labor and capital can be shown by a(n):
- a. point inside of the production possibility frontier.
  - b. outward shift of the production possibility frontier.
  - c. movement from one point to another along the production possibility frontier.
  - d. inward shift of the production possibility frontier.

ANSWER: b

57. The effect of a natural disaster can be shown by a(n) \_\_\_\_\_ the production possibility frontier.
- a. point inside of
  - b. outward shift of
  - c. movement from one point to another along
  - d. inward shift of

ANSWER: d

58. An inward shift in the U.S. economy's production possibility frontier could represent:
- a. U.S. workers moving to Canada.
  - b. workers moving from New Jersey to Massachusetts.
  - c. U.S. economic growth.
  - d. a movement from labor-intensive to capital-intensive industries in some states.

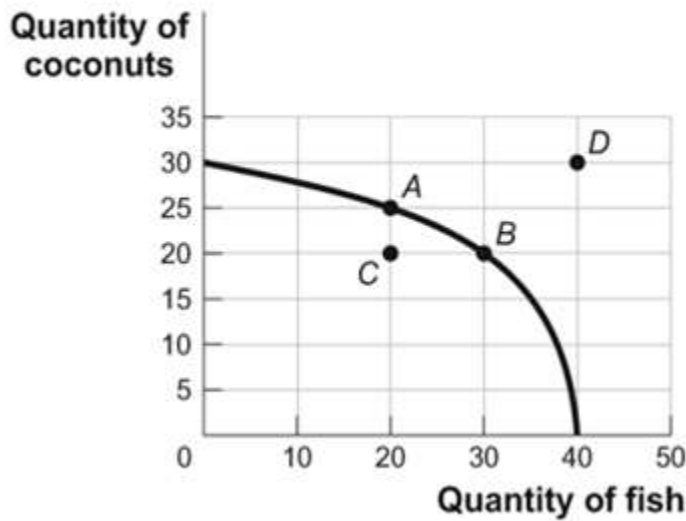
ANSWER: a

59. If the production possibility frontier is a straight line:
- a. opportunity costs are constant.
  - b. firms face increasing costs.
  - c. firms face decreasing costs.
  - d. there is no trade-off between the two goods represented.

ANSWER: a

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**Figure: Omar's Production Possibilities**



60. (Ref 2-6 Figure: Omar's Production Possibilities) Use Figure: Omar's Production Possibilities. Which point or points represent(s) a combination of coconuts and fish that is efficient in production?

- a. A only
- b. A and B
- c. B and C
- d. D only

ANSWER: b

61. (Ref 2-6 Figure: Omar's Production Possibilities) Use Figure: Omar's Production Possibilities. Which point or points represent(s) an inefficient combination of coconuts and fish?

- a. A only
- b. A and B
- c. C only
- d. B and D

ANSWER: c

62. (Ref 2-6 Figure: Omar's Production Possibilities) Use Figure: Omar's Production Possibilities. Which point or points represent(s) an infeasible combination of coconuts and fish?

- a. A only
- b. A and B
- c. B and C
- d. D only

ANSWER: d

63. (Ref 2-6 Figure: Omar's Production Possibilities) Use Figure: Omar's Production Possibilities. Which point or points represent(s) a feasible combination of coconuts and fish?

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- a. A only
- b. A and B
- c. A, B, and C
- d. D only

ANSWER: c

64. (Ref 2-6 Figure: Omar's Production Possibilities) Use Figure: Omar's Production Possibilities. The opportunity cost for Omar to move from point A on the curve to point B is:

- a. 10 coconuts.
- b. 10 fish.
- c. 5 coconuts.
- d. 5 fish.

ANSWER: c

65. (Ref 2-6 Figure: Omar's Production Possibilities) Use Figure: Omar's Production Possibilities. The opportunity cost for Omar to move from point B on the curve to point A is:

- a. 10 coconuts.
- b. 10 fish.
- c. 5 coconuts.
- d. 5 fish.

ANSWER: b

66. (Ref 2-6 Figure: Omar's Production Possibilities) Use Figure: Omar's Production Possibilities. The opportunity cost for Omar to move from point C on the curve to point A is:

- a. 10 coconuts.
- b. 30 fish.
- c. 5 coconuts.
- d. There is no opportunity cost.

ANSWER: d

67. The \_\_\_\_\_ illustrates the trade-offs facing an economy that produces only two goods.

- a. production possibility frontier
- b. circular-flow diagram
- c. all else equal assumption
- d. income distribution

ANSWER: a

**Module 2 - Models and the Production Possibilities Frontier****Table: Trade-off of Study Time and Leisure Time**

<b>Quantity of Hours of Study Time</b>	<b>Quantity of Hours of Leisure Time</b>
16	0
12	4
8	8
4	12
0	16

68. (Ref 2-7 Table: Trade-off of Study Time and Leisure Time) Use Table: Trade-off of Study Time and Leisure Time. Suppose a student sleeps 8 hours per day and divides the remaining time between study time and leisure time. The table shows the combinations of study and leisure time that can be produced in the 16 waking hours of each day. If a student decides to consume one additional hour of leisure time, how many hours of study time must she give up?

- a. 4
- b. 0.25
- c. 1
- d. 16

ANSWER: c

69. (Ref 2-7 Table: Trade-off of Study Time and Leisure Time) Use Table: Trade-off of Study Time and Leisure Time. Suppose a student sleeps 8 hours per day and divides the remaining time between study and leisure time. The table shows the combinations of study and leisure time that can be produced in the 16 waking hours of each day. Suppose this student is studying 4 hours and spending 10 hours doing leisure activities. This point is:

- a. outside the production possibility frontier.
- b. inside the production possibility frontier.
- c. on the production possibility frontier.
- d. both efficient and feasible.

ANSWER: b

70. (Ref 2-7 Table: Trade-off of Study Time and Leisure Time) Use Table: Trade-off of Study Time and Leisure Time. Suppose a student sleeps 8 hours per day and divides the remaining time between study time and leisure time. The table shows the combinations of study and leisure time that can be produced in the 16 waking hours of each day. Suppose the student completes a speed-reading course that allows him to do the same amount of studying in half as many hours. His opportunity cost:

- a. of leisure has increased.
- b. of studying has increased.
- c. of leisure has decreased.
- d. has not changed.

ANSWER: a

71. If a production possibility frontier is a straight line, it tells us that the opportunity cost of producing one



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more unit of good X is:

- a. an increasing amount of good Y.
- b. a decreasing amount of good Y.
- c. equal to the inverse of the amount of good Y.
- d. a constant amount of good Y.

ANSWER: d

72. Suppose Indiana produces only steel and corn, with fixed amounts of land, labor, and capital resources. Which scenario best sets the stage for economic growth?

- a. The unemployment rate in Indiana rises from 5% to 6%.
- b. The Midwest has a devastating drought.
- c. The percentage of Indiana residents with a college degree rises from 25% to 30%.
- d. The United States imports more and more low-cost steel from Asian countries.

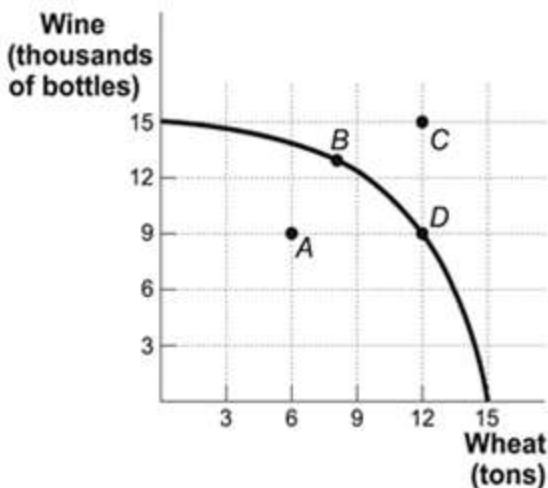
ANSWER: c

73. The production possibility frontier illustrates:

- a. the maximum quantity of one good that can be produced given the quantity of the other good produced.
- b. that, when markets don't achieve efficiency, government intervention can improve society's welfare.
- c. the inverse relation between price and quantity of a particular good.
- d. that people usually exploit opportunities to make themselves better off.

ANSWER: a

Figure: Wine and Wheat



74. (Ref 2-8 Figure: Wine and Wheat) Use Figure: Wine and Wheat. If this economy is producing 12 tons of wheat and 9,000 bottles of wine, we know the economy:

- a. is using its resources efficiently.
- b. is using its resources inefficiently.

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- c. is producing at an unattainable point.
- d. has unemployment.

ANSWER: a

75. (Ref 2-8 Figure: Wine and Wheat) Use Figure: Wine and Wheat. If this economy is producing at point A, we know the economy is:

- a. using its resources efficiently.
- b. using its resources inefficiently.
- c. producing at an unattainable point.
- d. trading with another country.

ANSWER: b

76. (Ref 2-8 Figure: Wine and Wheat) Use Figure: Wine and Wheat. If this economy is producing at point A and wants to produce at point B, it must:

- a. trade with another country.
- b. increase its resources.
- c. decrease production.
- d. use its existing resources efficiently.

ANSWER: d

77. (Ref 2-8 Figure: Wine and Wheat) Use Figure: Wine and Wheat. The opportunity cost of moving from producing only wheat to producing only wine is \_\_\_\_\_ tons of wheat.

- a. 3
- b. 6
- c. 9
- d. 15

ANSWER: d

78. (Ref 2-8 Figure: Wine and Wheat) Use Figure: Wine and Wheat. The opportunity cost of moving from producing only wheat to producing at point D is \_\_\_\_\_ tons of wheat.

- a. 3
- b. 6
- c. 9
- d. 15

ANSWER: a

79. (Ref 2-8 Figure: Wine and Wheat) Use Figure: Wine and Wheat. If this economy is producing on the production possibility frontier, what would allow it to produce at point C?

- a. an improvement in technology
- b. a decrease in resources
- c. a decrease in production
- d. policies expanding social programs for seniors

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ANSWER: a

80. The U.S. production possibility frontier would \_\_\_\_\_ if all computers using Microsoft operating systems contracted a virus that corrupted all information on those computers.

- a. shift in
- b. shift out
- c. not change
- d. The answer cannot be determined from the information provided.

ANSWER: a

81. The U.S. production possibility frontier will \_\_\_\_\_ if there is a large influx of working-age immigrants.

- a. shift in
- b. shift out
- c. not change
- d. The answer cannot be determined from the information provided.

ANSWER: b

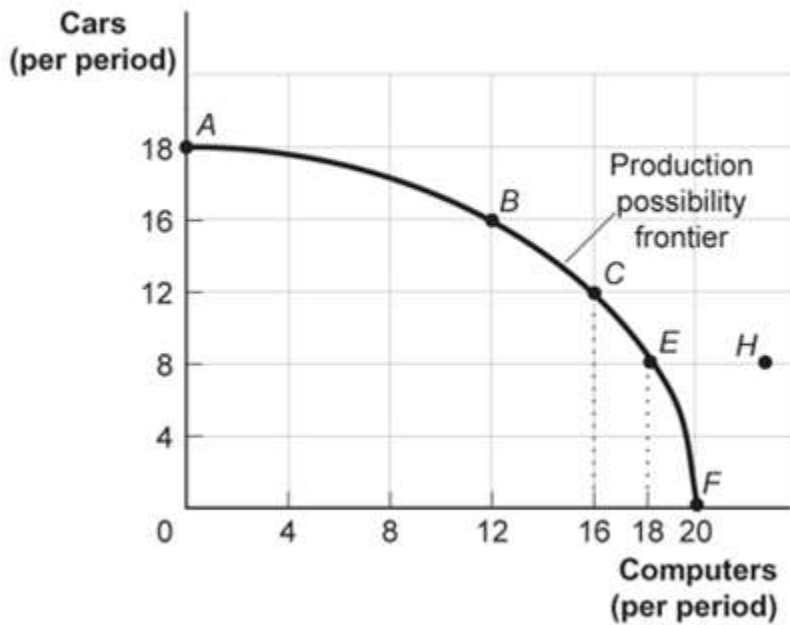
82. In Kessy's old kitchen, he could bake 10 cookies or mix 15 glasses of lemonade in one day. Now Kessy has a larger oven and refrigerator. How does this affect his production possibility frontier?

- a. It shifts his production possibility frontier out.
- b. It shifts his production possibility frontier in.
- c. He will be less efficient.
- d. He will not be able to produce as much as before.

ANSWER: a

**Module 2 - Models and the Production Possibilities Frontier**

**Figure: Production Possibility Frontier**



83. (Ref 2-9 Figure: Production Possibility Frontier) Use Figure: Production Possibility Frontier. Points A, B, E, and F:

- indicate combinations of cars and computers that society can produce using all of its resources efficiently.
- show that the opportunity cost of cars increases as more cars are produced but that of more computers decreases as more computers are produced.
- indicate that society wants computers more than cars.
- indicate constant opportunity costs for cars and increasing opportunity costs for computers.

ANSWER: a

84. (Ref 2-9 Figure: Production Possibility Frontier) Use Figure: Production Possibility Frontier. This production possibility frontier is:

- bowed out because of increasing opportunity costs.
- bowed in because of increasing opportunity costs.
- bowed out because of constant cost of cars and computers.
- linear because of constant costs.

ANSWER: a

85. (Ref 2-9 Figure: Production Possibility Frontier) Use Figure: Production Possibility Frontier. If the economy is operating at point B, producing 16 cars and 12 computers per period, a decision to move to point E and produce 18 computers:

- indicates that you can have more computers and more cars simultaneously.
- makes it clear that this economy has decreasing opportunity costs.

**Module 2 - Models and the Production Possibilities Frontier**

- c. entails a loss of 8 cars per period.
- d. entails a loss of 4 cars per period.

ANSWER: c

86. (Ref 2-9 Figure: Production Possibility Frontier) Use Figure: Production Possibility Frontier. The combination of cars and computers at point *H*:

- a. can be attained but would cost too much.
- b. cannot be attained given the level of technology and the resources available.
- c. has no meaning since it is not what consumers want.
- d. is attainable but would increase unemployment.

ANSWER: b

87. (Ref 2-9 Figure: Production Possibility Frontier) Use Figure: Production Possibility Frontier. If the economy is producing 8 cars and 12 computers per period:

- a. the economy has ongoing unemployment or inefficiency.
- b. the notion of increasing opportunity cost is invalidated.
- c. the economy is still efficient but has made a decision not to buy as much as it could.
- d. something must be done to reduce the amount of employment.

ANSWER: a

88. (Ref 2-9 Figure: Production Possibility Frontier) Use Figure: Production Possibility Frontier. A movement from point *C* producing 12 cars and 16 computers per period to point *B* means a \_\_\_\_\_ of \_\_\_\_\_ cars and a \_\_\_\_\_ of \_\_\_\_\_ computers per period.

- a. gain; 4; loss; 4
- b. gain; 2; loss; 4
- c. gain; 4; loss; 6
- d. loss; 2; gain; 4

ANSWER: a

89. (Ref 2-9 Figure: Production Possibility Frontier) Use Figure: Production Possibility Frontier. Which rate of production per period is not efficient?

- a. 18 cars and no computers
- b. 8 cars and 18 computers
- c. 16 cars and 12 computers
- d. no cars and 18 computers

ANSWER: d

90. If farmer Sam MacDonald can produce 200 pounds of cabbages and no potatoes or no cabbages and 100 pounds of potatoes and if he faces a linear production possibility frontier, the opportunity cost of producing an additional pound of potatoes is \_\_\_\_\_ pound(s) of cabbage.

- a. 0.5
- b. 2

**Module 2 - Models and the Production Possibilities Frontier**

- c. 100
- d. 200

ANSWER: b

91. If farmer Sam MacDonald can produce 200 pounds of cabbages and no potatoes or no cabbages and 100 pounds of potatoes and if he faces a linear production possibility frontier, the opportunity cost of producing an additional pound of cabbage is \_\_\_\_\_ pound(s) of potatoes.

- a. 0.5
- b. 2
- c. 100
- d. 200

ANSWER: a

92. The slope of a typical production possibility frontier is:

- a. 0.
- b. vertical.
- c. positive.
- d. negative.

ANSWER: d

**Table: Production Possibilities Schedule II**

<b>Production alternatives</b>	<b>V</b>	<b>W</b>	<b>X</b>	<b>Y</b>	<b>Z</b>
Capital goods per period	0	1	2	3	4
Consumer goods per period	20	18	14	8	0

93. (Ref 2-10 Table: Production Possibilities Schedule II) Use Table: Production Possibilities Schedule II. If the economy is producing at Y, the opportunity cost of producing at Z is \_\_\_\_\_ unit(s) of consumer goods per period.

- a. 1
- b. 6
- c. 8
- d. 14

ANSWER: c

94. (Ref 2-10 Table: Production Possibilities Schedule II) Use Table: Production Possibilities Schedule II. If an economy is producing at X, the opportunity cost to it of producing at Y is \_\_\_\_\_ unit(s) of consumer goods per period.

- a. 2
- b. 1
- c. 6
- d. 18

**Module 2 - Models and the Production Possibilities Frontier**

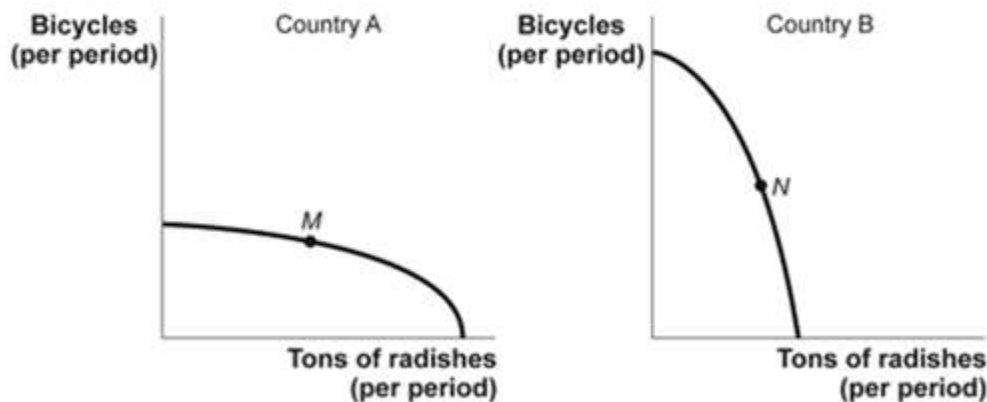
ANSWER: c

95. (Ref 2-10 Table: Production Possibilities Schedule II) Use Table: Production Possibilities Schedule II. The production of 8 units of consumer goods and 2 units of capital goods per period would result in:

- a. full employment.
- b. no unused resources.
- c. some unused or inefficiently used resources.
- d. increased economic growth.

ANSWER: c

**Figure: Bicycles and Radishes I**



96. (Ref 2-11 Figure: Bicycles and Radishes I) Use Figure: Bicycles and Radishes I. The figure shows the production possibility frontiers for two countries that produce only radishes and bicycles. The axes of the two graphs are measured in equivalent units. Country A is operating at point *M*, and country B is operating at point *N*. The opportunity cost of producing an additional ton of radishes would be greater in:

- a. country A.
- b. country B.
- c. neither; the opportunity cost would be the same in both countries.
- d. There is not enough information to answer the question.

ANSWER: b

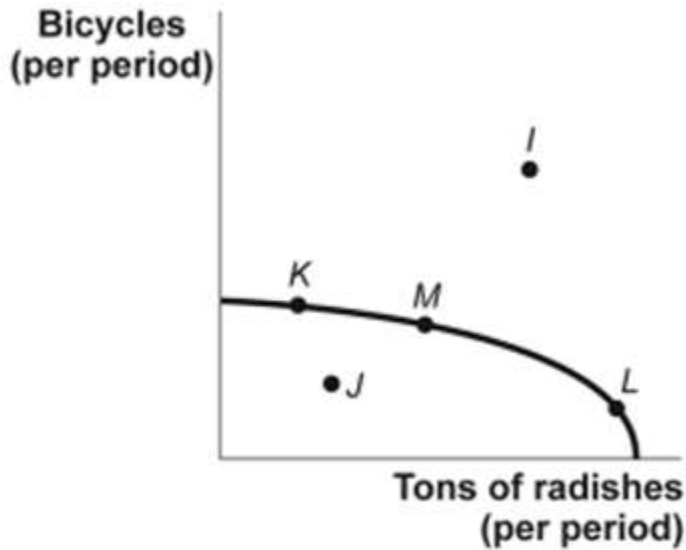
97. (Ref 2-11 Figure: Bicycles and Radishes I) Use Figure: Bicycles and Radishes I. The figure shows production possibility frontiers for two countries that produce only radishes and bicycles. The axes of the two graphs are measured in equivalent units. Country A is operating at point *M*, and country B is operating at point *N*. Suppose country A discovers a new technology that greatly increases its ability to produce bicycles but has no effect on its ability to produce radishes. This would:

- a. lower the opportunity cost of producing radishes in country A.
- b. increase the opportunity cost of producing radishes in country A.
- c. not affect the opportunity cost of producing radishes in country A.
- d. increase the opportunity cost of producing radishes in country B.

**Module 2 - Models and the Production Possibilities Frontier**

ANSWER: b

**Figure: Bicycles and Radishes II**



98. (Ref 2-12 Figure: Bicycles and Radishes II) Use Figure: Bicycles and Radishes II. The country depicted in this figure is operating at point *M*. It could achieve production at point *I* only if it:

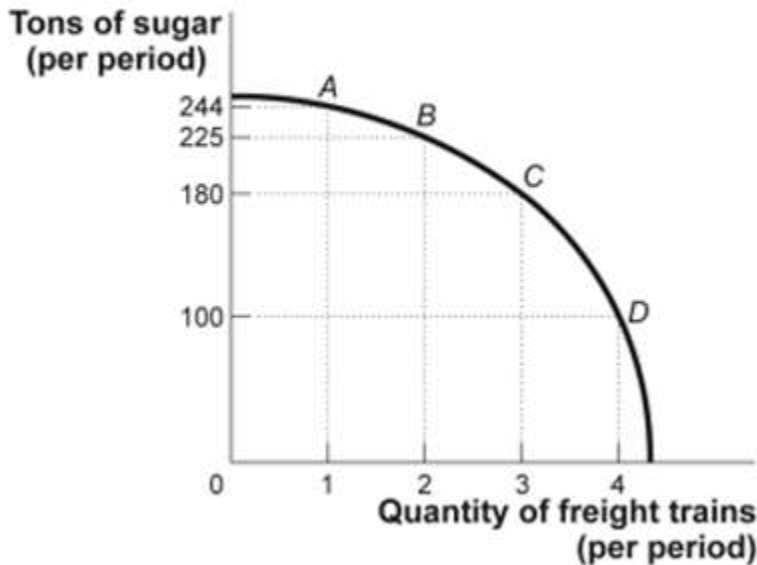
- a. used its resources more efficiently.
- b. devoted more resources to radish production.
- c. devoted more resources to bicycle production.
- d. increased the quantities of capital, natural resources, or labor available or improved its technology.

ANSWER: d



**Module 2 - Models and the Production Possibilities Frontier**

**Figure: Sugar and Freight Trains**



|||||

99. (Ref 2-13 Figure: Sugar and Freight Trains) Use Figure: Sugar and Freight Trains. Suppose the economy is operating at point B. The opportunity cost of producing the third freight train would be \_\_\_\_\_ tons of sugar.

- a. 6
- b. 19
- c. 45
- d. 80

ANSWER: c

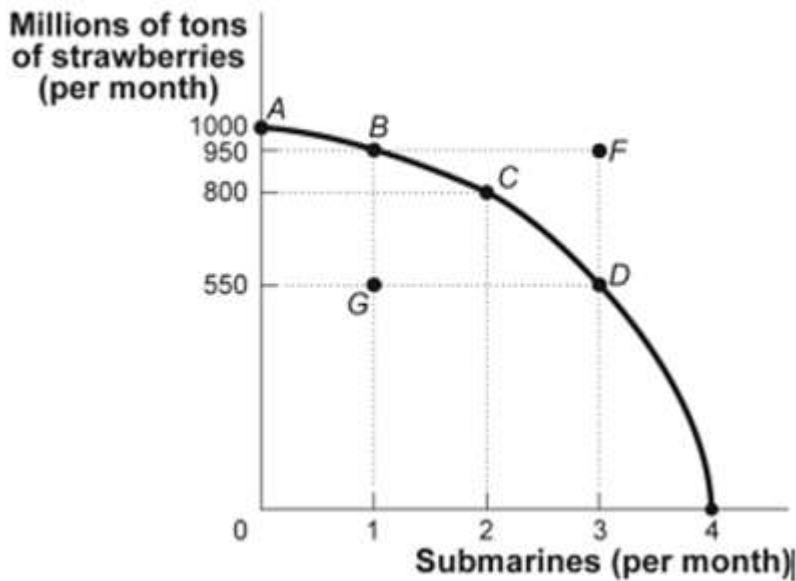
100. (Ref 2-13 Figure: Sugar and Freight Trains) Use Figure: Sugar and Freight Trains. Suppose the economy is operating at point C. The opportunity cost of producing the fourth freight train would be:

- a. 19 tons of sugar.
- b. 45 tons of sugar.
- c. 80 tons of sugar.
- d. 3 freight trains.

ANSWER: c

**Module 2 - Models and the Production Possibilities Frontier**

**Figure: Strawberries and Submarines II**



101. (Ref 2-14 Figure: Strawberries and Submarines II) Use Figure: Strawberries and Submarines II. Point *F* is:
- unattainable, all other things unchanged.
  - attainable if the quantity and/or quality of factors decreases.
  - attainable if the economy is able to reach full employment.
  - feasible but not efficient.

ANSWER: a

102. (Ref 2-14 Figure: Strawberries and Submarines II) Use Figure: Strawberries and Submarines II. Suppose the economy is operating at point *A*. The first submarine, which is achieved at point *B*, would have an opportunity cost of \_\_\_\_\_ million tons of strawberries.

- 50
- 150
- 400
- 950

ANSWER: a

103. (Ref 2-14 Figure: Strawberries and Submarines II) Use Figure: Strawberries and Submarines II. Assume that the economy is operating at point *A*. The opportunity cost of moving to point *C* is equal to \_\_\_\_\_ million tons of strawberries.

- 800
- 200
- 2
- 50

ANSWER: b

**Module 2 - Models and the Production Possibilities Frontier**

104. (Ref 2-14 Figure: Strawberries and Submarines II) Use Figure: Strawberries and Submarines II. The downward slope of the production possibility frontier implies that resources:

- a. must be used efficiently.
- b. are scarce.
- c. should not be wasted.
- d. should be allocated so that approximately equal amounts of both goods are produced.

ANSWER: b

105. (Ref 2-14 Figure: Strawberries and Submarines II) Use Figure: Strawberries and Submarines II. Suppose the economy is operating at point *B*. Achieving production at point *F* would require that the economy:

- a. achieve full employment and an efficient allocation of resources.
- b. reduce its production of strawberries.
- c. reduce its production of submarines.
- d. improve its technology or increase its resources.

ANSWER: d

106. Efficient production occurs when the economy is \_\_\_\_\_ its production possibility frontier.

- a. operating inside
- b. operating on
- c. operating outside
- d. moving beyond

ANSWER: b

107. Assume an economy is operating on its production possibility frontier, which shows the production of military and civilian goods. If the output of military goods is increased, the output of civilian goods:

- a. will increase, too.
- b. will not change.
- c. must decrease.
- d. may increase or decrease.

ANSWER: c

108. The process observed when an economy's production possibility frontier shifts outward is:

- a. comparative advantage.
- b. economic growth.
- c. full employment.
- d. specialization.

ANSWER: b

109. Increases in resources or improvements in technology will tend to cause a society's production possibility frontier to:

- a. shift inward.
- b. shift outward.

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- c. remain unchanged.
- d. become vertical.

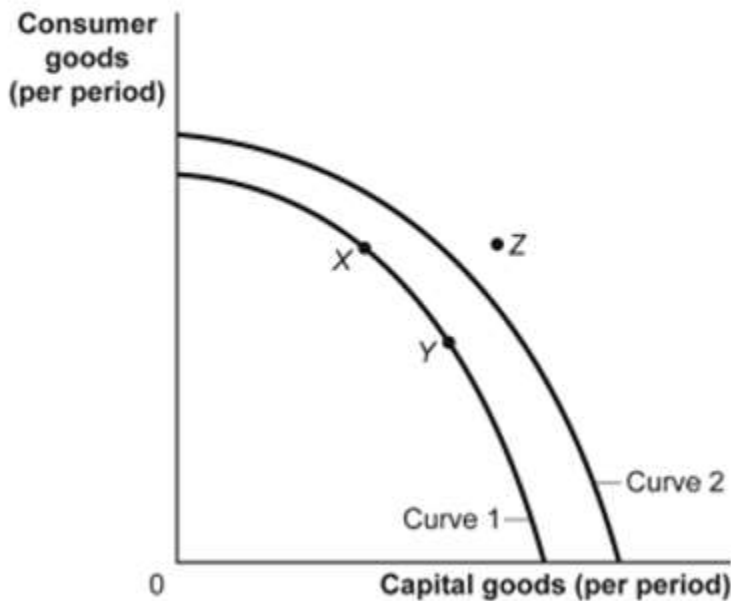
ANSWER: b

110. Technological improvements will:

- a. leave the production possibility frontier unchanged.
- b. shift the production possibility frontier inward.
- c. shift the production possibility frontier outward.
- d. necessarily lead to increased unemployment.

ANSWER: c

**Figure: Consumer and Capital Goods**



111. (Ref 2-15 Figure: Consumer and Capital Goods) Use Figure: Consumer and Capital Goods. If the economy is operating at point Y and its relevant production possibility frontier is curve 1:

- a. the economy is at full employment and is efficient.
- b. the economy is less than fully employed.
- c. the economy is not efficient.
- d. economic growth is not possible in the future.

ANSWER: a

112. (Ref 2-15 Figure: Consumer and Capital Goods) Use Figure: Consumer and Capital Goods. The movement from curve 1 to curve 2 indicates a(n):

- a. growing ability of the economy to produce capital and consumer goods.
- b. increase in the stock market.

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- c. decrease in the factors of production.
- d. shift of the production possibility frontier toward producing fewer goods.

ANSWER: a

113. (Ref 2-15 Figure: Consumer and Capital Goods) Use Figure: Consumer and Capital Goods. Technological improvements will likely:

- a. shift the production possibility frontier inward to curve 1.
- b. shift the production possibility frontier outward to curve 2.
- c. lead to increased unemployment.
- d. leave the production possibility frontier unchanged.

ANSWER: b

114. Abe starts exercising regularly, and after a few months he can do twice as much of everything. In a single day, Abe can now make 10 hamburgers or 8 milkshakes, rather than the 5 hamburgers and 4 milkshakes he made in the past. We now know that Abe's production possibility frontier has \_\_\_\_\_, but his opportunity costs of making milkshakes have \_\_\_\_\_.

- a. shifted right; not changed
- b. shifted right; decreased
- c. not changed; increased
- d. not changed; decreased

ANSWER: a

115. When a nation's economy grows:

- a. True
- b. False
- c. it has been able to reach full employment.
- d. it has moved to a more consumer-oriented position on its production possibility frontier.

ANSWER: a

116. It is impossible for economists to use computers to simulate how the economy works.

- a. True
- b. False

ANSWER: b

117. In building models, economists avoid making any assumptions that might leave out any aspect of reality.

- a. True
- b. False

ANSWER: b

118. In building models, economists often assume that opportunity costs don't matter.

- a. True
- b. False

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ANSWER: b

119. The assumption *ceteris paribus* in a model means "other things equal."

- a. True
- b. False

ANSWER: a

120. Because models make simplifying assumptions, they are of very little use in the real world.

- a. True
- b. False

ANSWER: b

121. An economic model is a simplified version of reality that is used to analyze real-world economic situations.

- a. True
- b. False

ANSWER: a

122. On any given production possibility frontier, we see the minimum quantity of one good that can be produced for any given production of the other.

- a. True
- b. False

ANSWER: b

123. Suppose residents of Montana operate on their production possibility frontier, and they want to increase production of both wheat and fly-fishing rods. According to the production possibility frontier, this cannot happen without new resources or technological improvement.

- a. True
- b. False

ANSWER: a

124. A typical bowed-out production possibility frontier between two goods, guns and butter, shows that the opportunity cost of butter in terms of guns increases as more butter is produced. This implies that the opportunity cost of guns in terms of butter decreases as more guns are produced.

- a. True
- b. False

ANSWER: b

125. Economists use models to explain real-life situations because:

- a. such models tend to be exactly what is occurring in each situation.
- b. assumptions found in such models tend to make analyzing the situation more difficult.
- c. simplifications and assumptions often yield results that can help to explain the more difficult real-life situations.

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d. real-life situations are not relevant to the building of models.

ANSWER: c

126. Economic models often:

- a. vary greatly in assumptions and simplifications.
- b. are correct.
- c. provide similar answers.
- d. fail to explain any of the real-life scenarios they are supposed to help solve.

ANSWER: a

127. "All other relevant factors remain unchanged" is another way of saying:

- a. all other things equal.
- b. allow several variables to change to understand how those variables affect one variable held constant.
- c. allow all variables to change and attempt to understand how the variables interact with each other.
- d. no variables change.

ANSWER: a

128. Alexander has a straight-line, or linear, production possibility frontier when he produces soybeans and corn. If he uses all of his resources to grow soybeans, he can produce 200 bushels of soybeans; if he uses all of his resources for corn production, he can produce 400 bushels of corn. Alexander cannot produce \_\_\_\_\_ bushels of soybeans and \_\_\_\_\_ bushels of corn.

- a. 200; 0
- b. 200; 600
- c. 0; 400
- d. 100; 200

ANSWER: b

129. Frances has a linear production possibility frontier when she produces tomatoes and green beans. If she uses all of her resources, she can produce 400 bushels of tomatoes or 800 bushels of green beans. Frances is not producing efficiently if she produces \_\_\_\_\_ bushels of tomatoes and \_\_\_\_\_ bushels of green beans.

- a. 400; 0
- b. 200; 400
- c. 200; 200
- d. 0; 800

ANSWER: c

130. Alison has a linear production possibility frontier in bracelets and necklaces. In one hour, she can produce 5 bracelets or 10 necklaces. What is the opportunity cost to make 1 necklace?

- a. 5 bracelets
- b. 10 necklaces
- c. 0.5 bracelet
- d. 2 necklaces

**Module 2 - Models and the Production Possibilities Frontier**

ANSWER: c

**131. Scenario: Linear Production Possibility Frontier**

**Scenario: Linear Production Possibility Frontier**

Largetown has a linear production possibility frontier, and it produces socks and shirts with 80 hours of labor. The table shows the number of hours of labor necessary to produce one pair of socks or one shirt.

Number of hours of labor to produce one shirt	Number of hours of labor to produce one pair of socks
4	2

What is the maximum number of pairs of socks Largetown can produce?

- a. 40
- b. 20
- c. 2
- d. 4

ANSWER: a

**132. Scenario: Linear Production Possibility Frontier**

**Scenario: Linear Production Possibility Frontier**

Largetown has a linear production possibility frontier, and it produces socks and shirts with 80 hours of labor. The table shows the number of hours of labor necessary to produce one pair of socks or one shirt.

Number of hours of labor to produce one shirt	Number of hours of labor to produce one pair of socks
4	2

If Largetown decides to devote half of its labor time to the production of socks and half of the time to the production of shirts, it can produce \_\_\_\_\_ shirts and \_\_\_\_\_ pairs of socks.

- a. 10; 20
- b. 20; 10
- c. 30; 30
- d. 0; 30

ANSWER: a

**133. Scenario: Linear Production Possibility Frontier**



**Module 2 - Models and the Production Possibilities Frontier**

**Scenario: Linear Production Possibility Frontier**

Largetown has a linear production possibility frontier, and it produces socks and shirts with 80 hours of labor. The table shows the number of hours of labor necessary to produce one pair of socks or one shirt.

Number of hours of labor to produce one shirt	Number of hours of labor to produce one pair of socks
4	2

- If Largetown's labor resource decreases by 40 hours, the opportunity cost of producing shirts:
- increases.
  - decreases.
  - does not change.
  - may or may not change depending upon the number of pairs of socks it wishes to produce.

ANSWER: c

**134. Scenario: Linear Production Possibility Frontier**

**Scenario: Linear Production Possibility Frontier**

Largetown has a linear production possibility frontier, and it produces socks and shirts with 80 hours of labor. The table shows the number of hours of labor necessary to produce one pair of socks or one shirt.

Number of hours of labor to produce one shirt	Number of hours of labor to produce one pair of socks
4	2

- Largetown CANNOT produce \_\_\_\_\_ shirts and \_\_\_\_\_ pairs of socks.
- 20; 0
  - 40; 40
  - 0; 40
  - 10; 20

ANSWER: b

135. Smallville has a linear production possibility frontier in the production of good X and good Y. It can produce 6 of X per hour or 8 of Y per hour. Suppose it has 240 hours of labor and divides labor hours equally between production of good X and good Y. What is the maximum number of good Y it can produce in the time it has allocated to Y production?

- 960
- 30
- 720
- 6

ANSWER: a

**Module 2 - Models and the Production Possibilities Frontier****136. Table: Production of Good Z and Good X in Urbanville****Table: Production of Good Z and Good X in Urbanville**

Combination	Good Z	Good X
A	0	75
B	5	70
C	10	60
D	15	45
E	20	25
F	25	0

Use Table: Production of Good Z and Good X in Urbanville. This table shows the production possibility frontier for Urbanville. Suppose Urbanville is producing 5 of Z and 50 of X; this combination is:

- feasible but inefficient.
- feasible and efficient.
- not feasible but efficient.
- neither feasible nor efficient.

ANSWER: a

**137. Table: Production of Good Z and Good X in Urbanville****Table: Production of Good Z and Good X in Urbanville**

Combination	Good Z	Good X
A	0	75
B	5	70
C	10	60
D	15	45
E	20	25
F	25	0

Use Table: Production of Good Z and Good X in Urbanville. This table shows the production possibility frontier for Urbanville. Suppose Urbanville is producing 15 of Z and 45 of X; this combination is:

- both allocatively and productively efficient.
- productively efficient.
- allocatively efficient.
- neither productively nor allocatively efficient.

ANSWER: b

**Essay**

138. Consider a point inside the production possibility frontier for a simple economy that produces only two goods, X and Y. Why is this point described as feasible but not efficient?

ANSWER: Any point that lies inside the frontier is feasible. This simply means that the economy has the resources and technology to produce this combination of goods. However, it is not efficient because

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more of one good could be produced without sacrificing any of the other good. In fact, more of both goods could be produced by moving to a point on the frontier above and to the right of the point inside the frontier.

139. Explain why economists believe that production possibility frontiers have a bowed-out curvature, rather than a straight line.

*ANSWER:* As an economy produces more and more of one good, the opportunity cost of that good, in terms of the other goods sacrificed to make it, begins to rise. One reason for this principle is that resources (land, labor, capital) are not equally well suited for producing all goods. Because some resources are better suited to producing good X (and ill-suited to producing good Y), they will be employed in the production of the first unit of good X. This causes a large increase in production of good X at a cost of very little lost production of good Y. However, as the production of good X increases, it is necessary to use resources that were very well-suited to producing good Y and not very productive in producing good X. The consequence is a very small increase in production of good X at a very large cost in the loss of production of good Y.

140. Leaders of a small town are tired of looking at a vacant and dilapidated warehouse that sits on a prime piece of real estate. The town finds an investor who purchases the warehouse and promises to renovate the old building and build condominiums in the old building. Is this economic growth?

*ANSWER:* A politician would probably tell you that it is economic growth, but an economist might disagree. The land and building are unproductive. You might imagine that this indicates the town is operating inside the production possibility frontier. When the land is purchased and made productive again, the town moves out toward the frontier, but the frontier itself does not move outward. Simply put, this is not economic growth, but it is a more efficient use of resources.

141. Explain how technological progress is a source of economic growth.

*ANSWER:* Suppose a nation's factors of production (land, labor, capital, and human capital) are fixed, but its collective technology improves. This means it can produce more goods and services with a fixed quantity of economic resources. If it can produce more with the same amount of resources, the production possibility frontier must increase, or shift outward.

**Table: Crab and Cake Production in Chesapeake**

<b>Crab Production</b>	<b>Cake Production</b>
500	0
400	250
300	450
200	600
100	700
0	750

142. (Ref 2-16 Table: Crab and Cake Production in Chesapeake) Use Table: Crab and Cake Production in Chesapeake. What is the opportunity cost of increasing the production of crabs from zero to 100? What is the opportunity cost of increasing the production of crabs from 400 to 500? Explain the difference in your answers.

*ANSWER:* When the region increased production from zero to 100 crabs, the cost was only 50 cakes. But when Chesapeake increased crab production from 400 to 500, the cost was a much larger 250 cakes. In

## **Module 2 - Models and the Production Possibilities Frontier**

other words, the opportunity cost of crab production rose as more crabs were produced. The reason is that resources (labor, land, capital, and human capital) are not perfectly substituted between crab production and cake production. A unit of capital, such as a boat, is very good at producing crabs but terrible at producing cakes. A square mile of ocean is very good at producing crabs but useless at producing cakes. At some point, as you seek to produce more and more crabs, you run out of such productive resources for making crabs. So you need to start using some resources that may be less productive at producing crabs. In other words, the opportunity cost of producing a given good rises as you produce more and more of that good (since you are running out of resources that are well-suited to making that good!).

143. (Ref 2-16 Table: Crab and Cake Production in Chesapeake) Use Table: Crab and Cake Production in Chesapeake. The table shows the maximum annual output combinations of crabs and cakes. Given the scarce resources and limited technology, as Chesapeake uses more resources for the production of cakes, fewer resources are available to produce crabs. Can this nation produce 200 crabs and 500 cakes? Is this efficient? Explain.

*ANSWER:* Yes, Chesapeake can produce 200 crabs and 500 cakes; after all, it can produce 200 crabs and 600 cakes. However, producing 200 crabs and 500 cakes is not efficient because, if it produces only 500 cakes, there must be idle resources in the economy, and the nation is operating inside the production possibility frontier. Without losing any crab production, the nation could produce 100 more cakes and move out to the production possibility frontier, if only it were able to more efficiently use its resources.