

## Chapter 2

# USEFUL TOOLS AND CONCEPTS

*Macroeconomics in Context (Goodwin, et al.)*

### Chapter Overview

This chapter introduces standard concepts of economic modeling, efficiency, scarcity, opportunity cost, the Production Possibilities Frontier, and includes a review of graphing techniques. It describes two different macroeconomic models: the neoclassical model and the contextual model. It also provides an overview of the three spheres of economic activity: the core sphere, the public purpose sphere, and the business sphere. In this chapter you will see these concepts set into a broader context of concern for well-being.

### Chapter Objectives

After reading and reviewing this chapter, you should be able to:

1. Distinguish and differentiate among the different methods of investigation: empirical investigation, theoretical investigation, and historical investigation.
2. Understand the concept of economic tradeoffs (or opportunity costs) in the face of abundance or scarcity.
3. Interpret and apply the Production Possibilities Frontier.
4. Describe the basic neoclassical model and the contextual model and discuss the applicability of the models in depicting the real-world economy.
5. Describe the three spheres of economy activity.

### Key Terms

empirical investigation

time-series data

cross-sectional data

negative (or inverse) relationship

positive (or direct) relationship

theoretical investigation

model

ceteris paribus

historical investigation

abundance

scarcity

production possibilities frontier

opportunity cost

efficiency

basic neoclassical model

utility

core sphere

business sphere

public-purpose sphere

public good

regulation

direct public provision

informal sphere

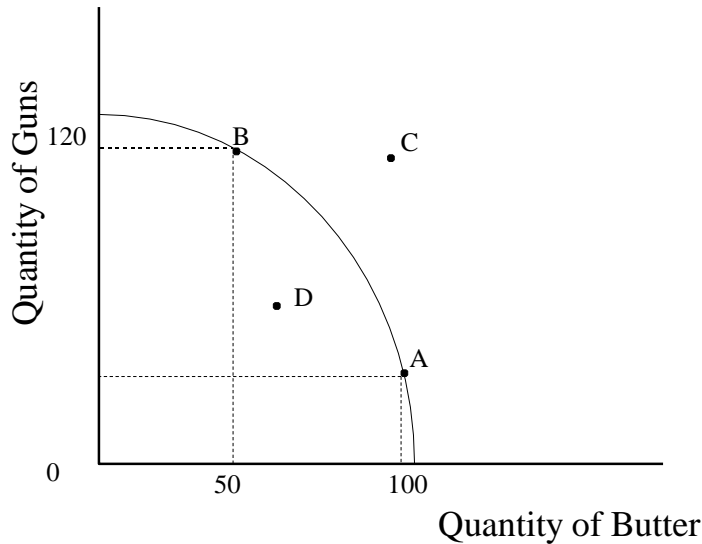
## Active Review

### *Fill in the Blank*

1. The observation and recording of specific phenomena of concern is called \_\_\_\_\_ investigation, whereas the analysis based in abstract thought is called \_\_\_\_\_ investigation.
2. When researchers study past events, they are conducting a(n) \_\_\_\_\_ investigation.
3. The Latin phrase that means “all else constant” or “other things equal” is \_\_\_\_\_.
4. A diagram that shows the tradeoffs between production of two goods is called a(n) \_\_\_\_\_.
5. You’re deciding whether to take an Economics course, or to take an Anthropology course. The \_\_\_\_\_ cost of taking the Economics course is the course you’re having to forego, the Anthropology course.
6. A process that achieves the maximum value of output from the given set of inputs can be described as \_\_\_\_\_.
7. The contextual model places economic activities within the \_\_\_\_\_ and \_\_\_\_\_ context.
8. Cooking family dinner at home is an activity of the \_\_\_\_\_ sphere.
9. Retailers such as Walmart, Target and Amazon are categorized under the \_\_\_\_\_ sphere.
10. The two main economic functions of the public-purpose sphere are \_\_\_\_\_ and \_\_\_\_\_.

*True or False*

Questions 11 to 13 refer to the production possibilities frontier shown below.



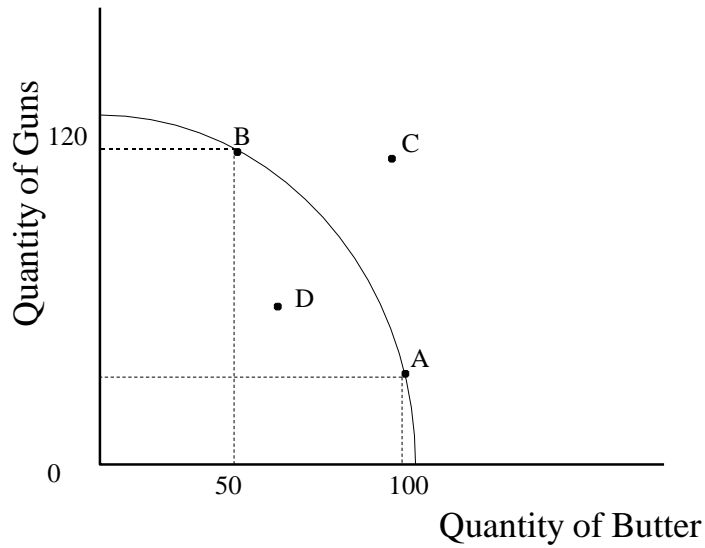
11. In the graph shown above, at point B, society is producing the maximum possible amount of butter.
12. To move from point A to point B, society would have to cut down on its gun production and increase butter production.
13. Starting from point B, society would have to shift substantial resources to increase gun production.
14. Business interests are aligned with maximizing both financial profits and social well-being.
15. The neoclassical model assumes that households make consumption decisions with the goal of maximizing utility and that businesses make production decisions with the goal of maximizing profits.

*Short Answer*

16. Assume you see that two macroeconomic variables are correlated with each other. But you want to know if there's an underlying or causal relationship between the two variables. Would you use an empirical or theoretical investigation? Explain why.

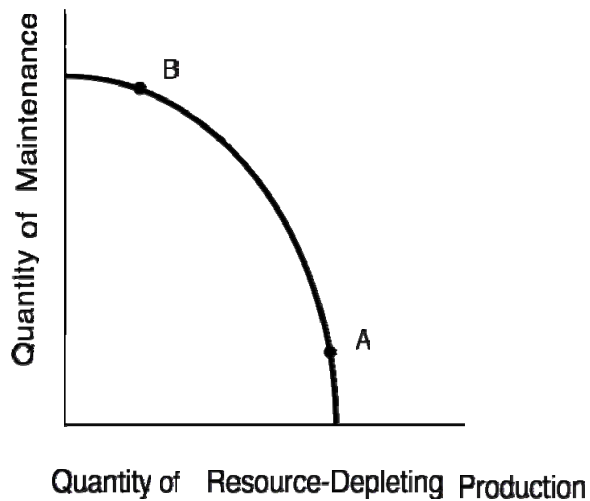
17. Why does a production possibilities frontier with increasing opportunity costs have a bowed-out shape?

18. Consider the following PPF:



Identify points that are a) inefficient and b) unattainable. How might a country be able to produce a combination of goods and services that was otherwise unattainable?

19. Consider the following Production/Maintenance frontier.



What would the future PPF look like if a high level of resource maintenance (e.g. point B) were chosen now? If a high level of resource depleting production (e.g. point A) were chosen now?

20. Name the two actors in the basic neoclassical (or traditional microeconomic) model of economics, and identify the assumptions the model makes of these two actors.
21. What does the basic neoclassical, or traditional, model of economics assume about markets?
22. Discuss the two key features of the contextual model.
23. What is the distinguishing characteristic of institutions in the public purpose sphere?
24. What are some of the strengths of the business sphere?
25. Describe some of the key activities conducted in the core sphere.

## Problems

1. Given the following data:

Year	Unemployment Rate (percent)	Inflation Rate (percent per year)
1984	7.5	3.8
1985	7.2	3.0
1986	7.0	2.2
1987	6.2	2.7

Source: Economic Report of the President

a. Plot the unemployment data on a time series graph:

b. Plot the inflation data on a time series graph:

c. Now plot the unemployment and inflation data using a scatter diagram. Over any period of years is there a positive relationship between the two variables? Over any period is there a negative relationship?

2. Suppose that a society could produce the following maximum combinations of schools and airplanes in a given year:

Alternative	Quantity of schools	Quantity of airplanes
A	100	0
B	80	30
C	60	50
D	40	60
E	20	65
F	0	68

a. Draw a production possibilities frontier (PPF) with schools on the horizontal axis and airplanes on the vertical axis. Assume that the dots define a complete curve.

b. Is it possible and/or efficient for this society to produce 50 airplanes and 80 schools?

c. If society is currently producing at alternative C, then the opportunity cost of increasing the output of schools from 60 to 80 is \_\_\_\_\_ airplanes.

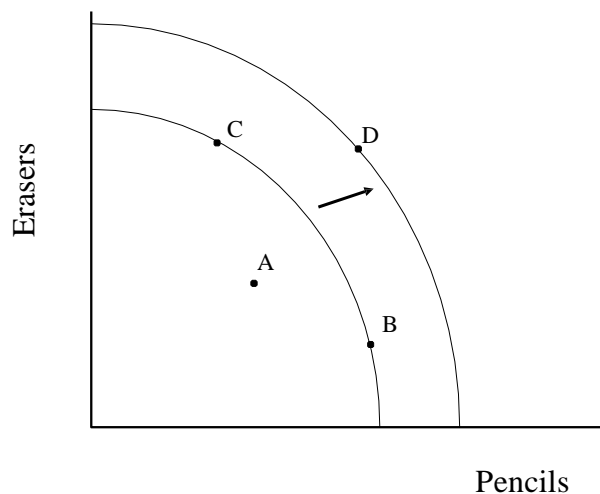
d. If society is currently producing at alternative E, then the opportunity cost of increasing the output of schools from 20 to 40 is \_\_\_\_\_ airplanes.

e. Is the opportunity cost of producing schools higher or lower moving from alternative C to B, than moving from E to D? Explain why.

## Self Test

1. Suppose an investigator has 50 years of data on rates of industrial production and annual accumulations of CO<sub>2</sub>, and discovers a positive relationship between the two variables. This is an example of what type of investigation?
  - a. Theoretical investigation
  - b. Empirical investigation
  - c. Historical investigation
  - d. Both A and B.
  - e. A, B, and C.
2. What does the Production Possibilities Frontier represent?
  - a. A catalog of all possible production options, represented as percentages.
  - b. The tradeoffs between production and consumption options.
  - c. The tradeoffs between possible production levels for two goods.
  - d. The amount that a society could produce if it devoted all its resources to producing one good.
  - e. The possible gains from international trade in two or more goods.
3. Which of the following factors could expand a society's production possibilities frontier?
  - a. Increased butter production.
  - b. Shifting from one product to another.
  - c. Producing air pollution.
  - d. Depleting resources now instead of later.
  - e. Technological innovations.

Questions 4 and 5 refer to the following scenario:

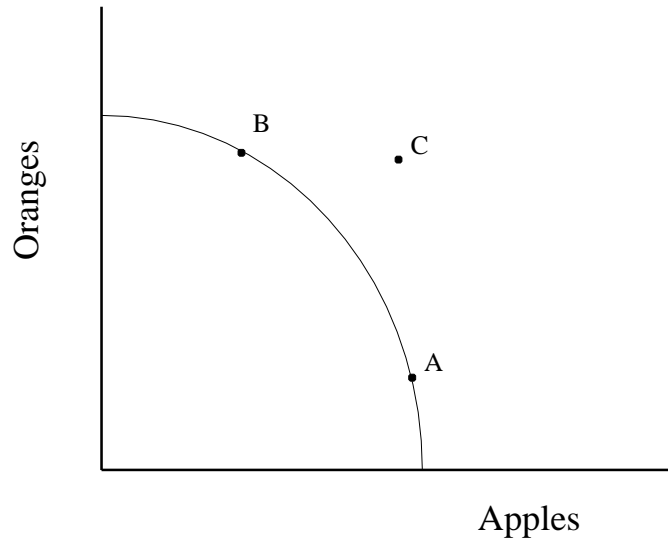




An economy produces two goods: pencils and erasers. Use the graph shown above depicting two possible production possibilities frontiers (PPFs) for this economy to answer questions 4 and 5.

4. Which of the following events could cause the PPF to shift out?
  - a. Workers become less productive due to poor working conditions.
  - b. A hurricane destroys vital resources for pencil production.
  - c. A new machine is invented that makes it easier to produce both pencils and erasers.
  - d. All production costs rise proportionally.
  - e. The cost of eraser inputs goes up.
  
5. Which of the following statements is true?
  - a. Moving from point C to point B requires shifting resources away from eraser production and into pencil production.
  - b. Point B represents a less efficient resource mix than point C.
  - c. Depletion of nonrenewable resources could lead the economy to shift from point C to point D.
  - d. Utility is maximized at point A.
  - e. At point A, society is producing all the pencils it can.
  
6. The nation of Anyplace produces two goods, chairs and tables. Anyplace can produce the chairs and tables using either sustainable methods or resource-depleting methods. If Anyplace chooses resource-depleting methods, which of the following statements is true?
  - a. Eventually the PPF of Anyplace will shift outward (away from the origin).
  - b. Eventually the PPF of Anyplace will shift inward (toward the origin).
  - c. Eventually the PPF of Anyplace will pivot, causing a change in the slope of the curve.
  - d. Eventually Anyplace will have to choose between producing only chairs or producing only tables.
  - e. None of the above

Question #7 refers to the graph shown below:



7. Which of the following statements is true?
- Point A is inefficient.
  - Point B is inefficient.
  - Point A is preferred to point B.
  - Point B is preferred to point A.
  - Point C cannot be attained with current technology.
8. Suppose there is a production possibilities frontier (PPF) for wine and cheese. Which of the following situations would shift the PPF inward (toward the origin)?
- A severe weather event that destroys much of the economy's productive capacity.
  - Discovery of a new, cheaper source of milk for making cheese.
  - Increased popularity of wine, as compared with cheese.
  - A technological breakthrough.
  - Improved education of the work force.
9. Which of the following is *not* an example of resource management activities that can lead to the PPF shifting outward in the future?
- Investment in plant, equipment, and physical infrastructure
  - Investment in education and knowledge
  - Investment in international diplomacy and conflict resolution
  - Conservation of non-renewable resources such as fossil fuels
  - Mandatory overtime and cutbacks in vacations that leave workers exhausted and in bad mental or physical health

10. In general, as production of a good increases, the opportunity cost of production increases. How is this notion reflected in the graph of production possibilities frontier (PPF)?

- a. The PPF bows inwards (that is, looks like a slide or a valley)
- b. The PPF bows outwards (that is, looks like a hillside).
- c. The PPF shifts in response to technological change.
- d. The PPF shows production of one good at a time.
- e. The PPF becomes flatter as resource availability increases.

11. Which one of the following is *not* an assumption of the basic neoclassical model?

- a. The actors in the economy are assumed to be households and firms
- b. Firms are assumed to maximize profits
- c. Households are assumed to maximize utility
- d. Markets are assumed to be perfectly competitive, with prices determined by supply and demand
- e. Communities are assumed to look after resource management and environmental protection

12. Which of the following statements below best fits the basic neoclassical model's perspective?

- a. Adam thinks that self-interested maximizing behavior and free markets lead to the best of all possible worlds.
- b. Karl thinks that workers are squeezed by greedy, profit-hungry bosses.
- c. Joseph experiences the booms and busts of the economy as if it were a rollercoaster ride.
- d. John thinks the economy is like an elevator that can get stuck in the basement, and can only be fixed by an elevator repairman.
- e. Julie values the work of volunteers and non-profit organizations in their communities that keeps the economy strong and vibrant.

13. Which of the following statements below best fits the contextual model's perspective?

- a. Markets are always perfectly competitive.
- b. Non-market production such as cooking, cleaning and caring for children should be included in our economic model
- c. The government should focus on helping businesses maximize profits.
- d. The core sphere is primarily responsible for all resource management activities.
- e. All of the above.

14. Which of the following statements is FALSE?
- a. The neoclassical model identifies firms and households as the two main economic actors.
  - b. The neoclassical model assumes that firms always maximize profits.
  - c. The contextual model focuses only on market activity.
  - d. The contextual model considers the environmental costs of economic activity.
  - e. There is some overlap between the neoclassical and the contextual model.
15. Which of the following is an example of a core sphere activity?
- a. James plays a game of catch with his nephew.
  - b. Martha works at a bank.
  - c. A local fire department responds to local emergencies.
  - d. A national government purchases weapons.
  - e. A publicly funded state college provides education.
16. The activities of the U.S. Environmental Protection Agency would be characterized as part of
- a. The core sphere
  - b. The free rider sphere
  - c. The public purpose sphere
  - d. The business sphere
  - e. The informal sphere
17. Which of the following is an activity in the business sphere?
- a. The government increases funding for public schools.
  - b. Tina sells home-made jam at the local market.
  - c. John helps a neighbor with yard work.
  - d. Martha volunteers to organize a community clean up event.
  - e. The local police department leads a training session on ensuring public safety.
18. Regulating the activities of financial institutions occurs in the
- a. public purpose sphere
  - b. the informal sphere
  - c. the banking sphere
  - d. the core sphere
  - e. the business sphere

19. In the United States, the monetary value of the annual production of goods and services was largest in:
- a. the core sphere
  - b. the informal sphere
  - c. the public purpose sphere
  - d. the business sphere
  - e. the free rider sphere
20. Which of the following is not a characteristic of the informal sphere?
- a. It is often dependent on family and community connections
  - b. It operates under government regulation and oversight
  - c. It is comprised of small scale market enterprises
  - d. It may include illegal activities and services provided “off the books”
  - e. The relative size of informal sphere tends to be larger in less developed countries

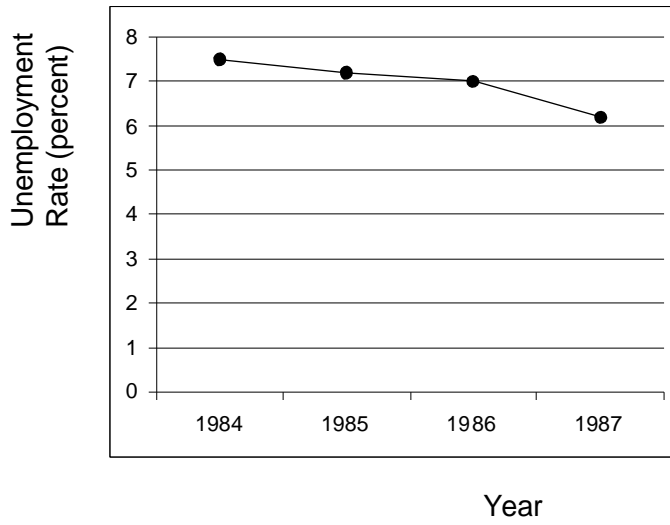
## Answers to Active Review Questions

1. empirical, theoretical
2. historical
3. ceteris paribus
4. production possibility frontier
5. opportunity (cost)
6. efficient
7. environmental, social
8. core
9. business
10. regulation and direct provision
11. False. Society could produce more butter by producing fewer guns.
12. False. To move from A to B, society would have to decrease butter production and increase gun production.
13. True. At point B, society is already employing many of its resources to produce guns. Increasing gun production further will present high opportunity costs.
14. False. Some of the decisions made by businesses with the goal of maximizing profits may come at the cost of social well-being. For example, cost-cutting measures such as reducing pay or benefits to workers by hiring temporary workers, or dodging environmental regulations to reduce production costs could have adverse impacts on social well-being.
15. True. These are the key assumptions of the neoclassical model.
16. You would use a theoretical investigation. Empirical investigation is useful in describing macroeconomic phenomenon, but may be inadequate in explaining them. It may be clear that two variables are correlated, but unclear if there's a causal relation between the two. Theoretical investigation can more closely examine complex relationships between phenomena.
17. The curve is bowed-out because some resources are better suited for the production of one good (e.g. butter) rather than the other (e.g. guns). And as we try to produce more and more of the other good (e.g. guns), it takes increasing amounts of resources to do so and thus we incur increasing opportunity costs.
18. Point D is inefficient and point C is unattainable. One could get to an unattainable point such as point C through technological progress, or the acquisition of additional resources.
19. If Point B were chosen, the PPF would shift outwards, leading to a larger set of production possibilities in the future. If Point A were chosen, the PPF would shift inwards, leading to a smaller set of production possibilities in the future.
20. Firms and households. Firms are assumed to maximize profits, and households are assumed to maximize their utility (or satisfaction).
21. It assumes that markets are perfectly competitive and smoothly functioning, and that prices are determined purely by forces of supply and demand.
22. The contextual model places economic activity in the environmental and social contexts. This model specifies economic activity as occurring within three spheres: core, public purpose, and business.
23. The distinguishing characteristic of institutions in the public purpose sphere is that they exist to serve the common good for a group larger than an individual or family, and do not have the goal of making a profit.

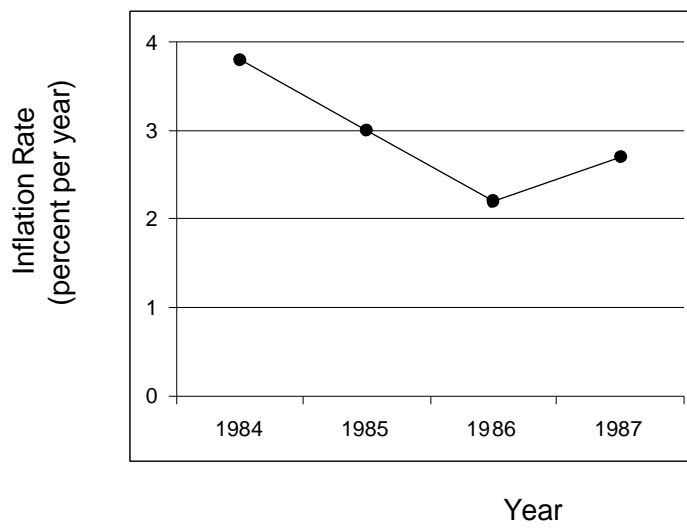
24. Because business sphere is focused on profit maximization, they are likely to encourage innovation and have higher efficiency.
25. Some of the key activities in the core sphere include producing of goods and services (such as cooking, lawn mowing, and providing care to dependent members), organizing savings and investment, allocating consumption spending, making labor supply decisions, and organizing of the use of leisure time.

## Answers to Problems

1.a.

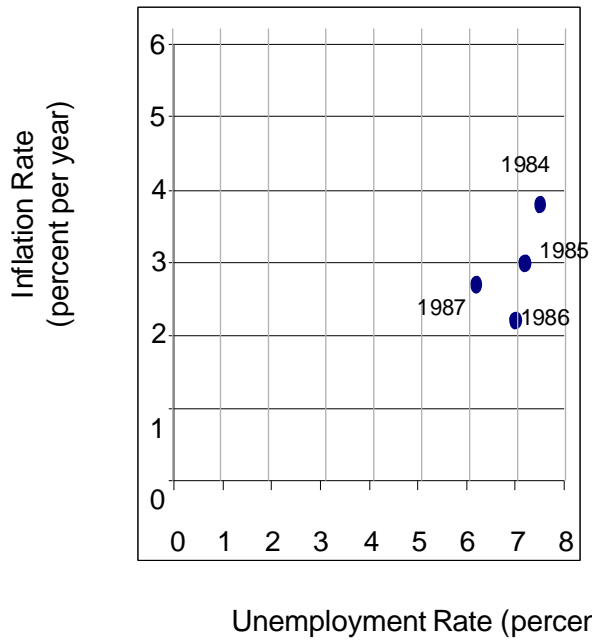


b.



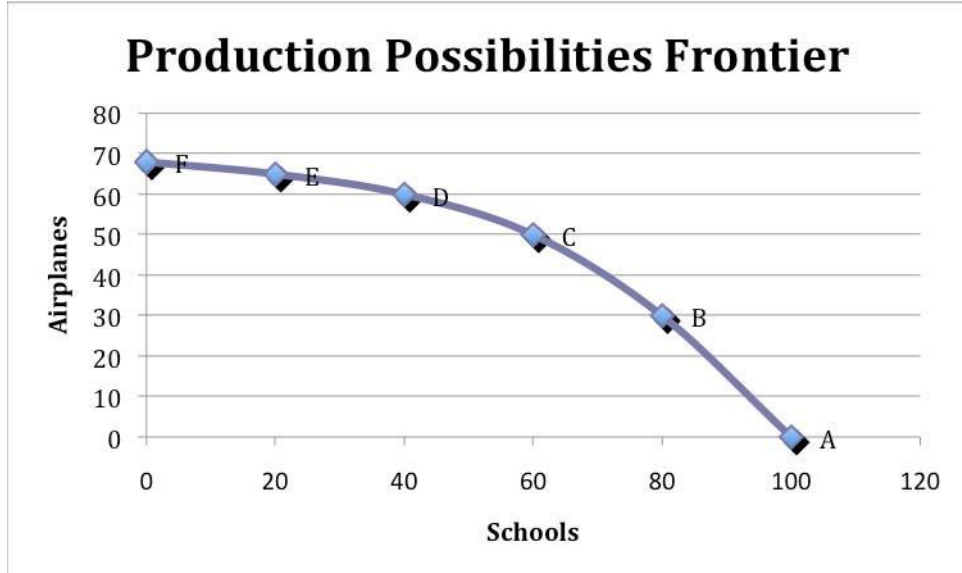


c.



There appears to be a positive (direct) relationship between unemployment and inflation from 1984 to 1986 (both are falling), but an negative (inverse) relationship between them from 1986 to 1987 (unemployment falls while inflation rises).

2. a.



b. No, 50 airplanes and 80 schools is unattainable, because it's beyond the PPF.

c. To go from 60 to 80 schools, 20 airplanes must be given up. Thus the opportunity cost of 20 schools is 20 airplanes.

d. To go from 20 schools to 40 schools, 5 airplanes must be given up. Thus, the opportunity cost of 20 schools is 5 airplanes, starting from alternative E.

e. The opportunity costs of moving from C to B is higher than it is moving from E to D. As we try to get more and more schools, we're using resources not as well suited into the production of schools, incurring increasing costs.

### Answers to Self Test Questions

- |       |       |
|-------|-------|
| 1. B  | 11. E |
| 2. C  | 12. A |
| 3. E  | 13. B |
| 4. C  | 14. C |
| 5. A  | 15. A |
| 6. B  | 16. C |
| 7. E  | 17. B |
| 8. A  | 18. A |
| 9. E  | 19. D |
| 10. B | 20. B |