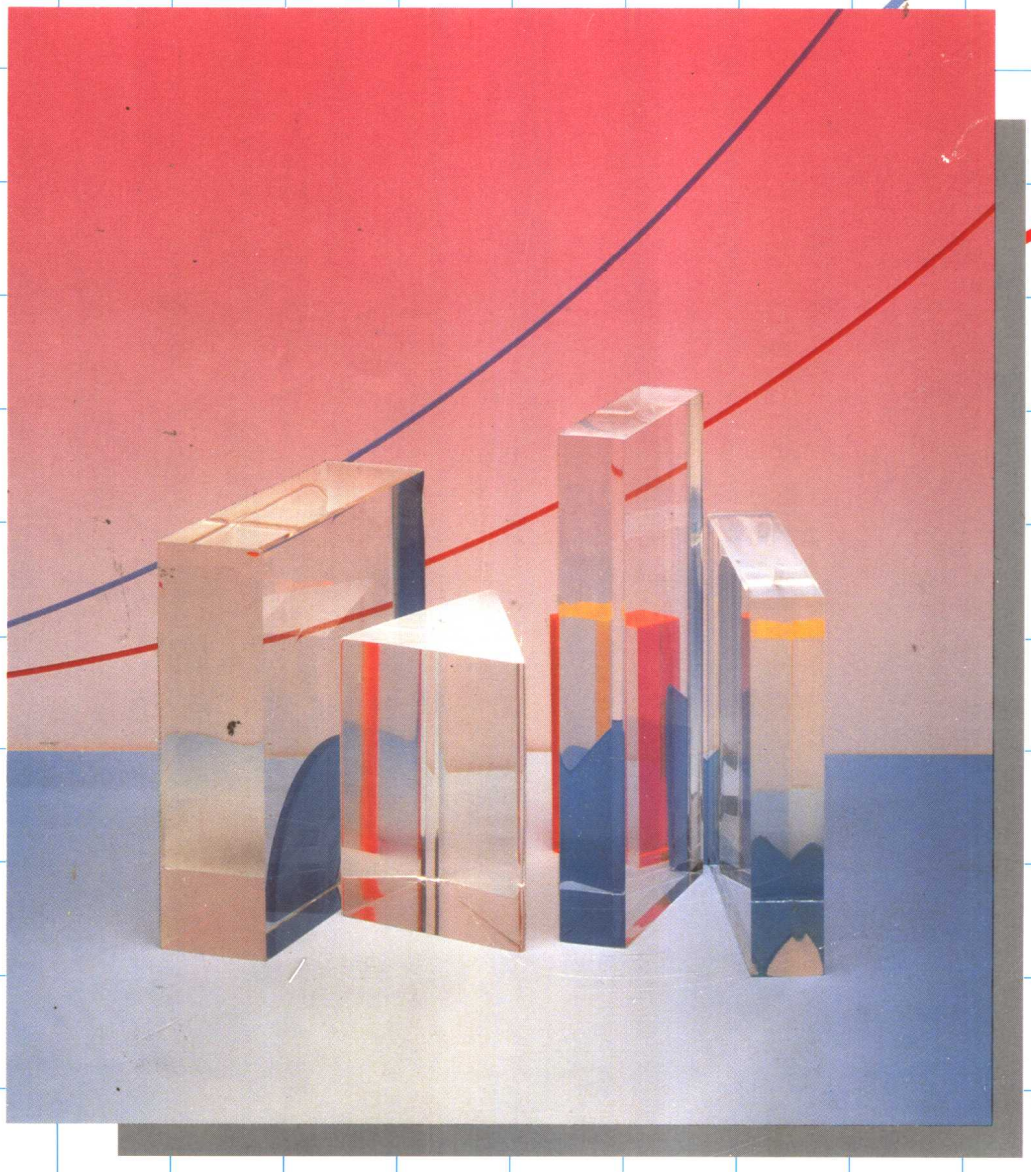
Student Workbook to Accompany

Kohler's MICROECONOMICS



Prepared by Heinz Kohler

Student Workbook

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Microeconomics

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PREFACE

This *Student Workbook* is designed to accompany the first edition of Heinz Kohler's *Microeconomics*. It is not a substitute for the text or for class discussion. Nor is it a summary of the text. Rather, it is a self-contained, self-help device, entirely devoted to making successful study easier for the student.

The *Student Workbook* is completely integrated with the text and should be used with the text chapters as they are studied. Answers to *all* questions and problems in any chapter of this *Workbook* can be found at the end of that chapter. Thus, students can examine and grade themselves during and after study of the text and before taking an actual class test.

For each text and workbook chapter, the following order of study is particularly recommended:

1. Read the text chapter, taking notes as you like.

2. Look at the chapter Summary in the text and ask yourself whether you could easily elaborate upon each of the Summary points. If necessary, review your notes or reread the relevant section of the chapter.

3. Look at the list of Key Concepts at the end of the text chapter and ask yourself whether you could easily define them. If necessary, look at the Glossary in the back of the text or find the relevant term printed in boldface in the body of the chapter.

4. Answer the multiple-choice questions in this *Workbook*. There are thirty-five such questions per chapter. Then check your answers against those given later in the *Workbook* chapter.

5. Answer the true-false questions in this *Workbook* (there are twelve per chapter) and then check the answers.

6. If you did not do well, it is time for a second and more thorough reading of the text. Find out *why* you made the mistakes you did when answering the two types of objective questions.

7. Now give yourself a more difficult test by turning to the Problems in this *Workbook*. Once more, detailed solutions are available in each chapter.

8. Finally, turn to the end-of-chapter *text* questions and problems. You can check to see if you are on the right track by comparing your odd-numbered answers with those in the Answer section at the back of the text.

9. Those students who wish to go beyond the text will find a number of fascinating starting points in the Selected Readings given in each *Workbook* chapter. Furthermore, this *Workbook* contains an additional text Chapter (22), *The Economics of Health Care*.

Naturally, the above procedure is only a suggestion. After trying this approach, you may finally select another one that better suits your tastes and needs. I wish you the best of success.

Last but not least, I wish to thank Margaret Ferro who typed this *Workbook* and Dennis Thomas who drew the graphs and made up the pages. Both did a beautiful job.

Heinz Kohler
Amherst College

THE MICEC PERSONAL COMPUTER PROGRAMS

A set of programs for IBM personal computers and compatible machines has been specifically designed to accompany this text. The computer must have graphics capability. The 10 programs cover the following aspects of the text:

1. Demand and Supply
2. The Production Function
3. Costs
4. Profit Maximization: Perfect Competition
5. Profit Maximization: Imperfect Competition
6. Labor Markets
7. Capital Budgeting
8. Regulation
9. Externalities
10. Public Goods

There are numerous graphical and tabular exercises and a number of mathematical programs involving, for example, compounding, discounting, and net present value calculations. Additional information is provided on the computer itself.

Initial Start-Up Procedure

Given the DOS prompt, such as A>, place the diskette into the computer and type:

A:MICEC

Then press the *Enter* key. Naturally, if you have placed the diskette into another drive (such as **B**), replace the **A** above by a different appropriate letter (such as **B**).

Hard Disk Installation Instructions

Instructions on how to install the program on a computer hard disk are provided on the diskette itself. Simply follow the start-up procedure noted above, and you will find the instructions.

CONTENTS

*Optional text chapter

PART I. BASIC CONCEPTS

1. Scarcity, Choice and Optimizing
   1A. The Use of Graphs in Economics

2. Economic Systems and Economic Theory

3. Demand and Supply: The Fundamentals

4. International Trade and the Wealth of Nations

CHAPTER 1

Scarcity, Choice, and Optimizing

MULTIPLE-CHOICE QUESTIONS

Circle the letter of the *one* answer that you think is correct or closest to correct.

1. The basic economic problem that concerns economists is
   a. what to produce.
   b. how to produce.
   c. for whom to produce.
   d. scarcity.

2. *Commodities* are defined as
   a. physical objects, like bread, shoes, or cars.
   b. tangible items that are traded in markets.
   c. items--tangible or intangible--that people desire.
   d. intangible items that are traded in markets.

3. *Services* are defined as
   a. the temporary use of physical objects, such as that of a house for a month.
   b. the temporary use of people, such as that of a doctor for an hour.
   c. both (a) and (b).
   d. neither (a) nor (b).

4. *Goods* are defined as
   a. commodities and services that people desire.
   b. physical objects only, like food, clothes, or cars.
   c. the temporary use of physical objects, like rental cars.
   d. the temporary use of physical objects or people, such as that which occurs during an airplane trip.

5. The term *process of production*
   a. refers to all types of activities by which people, directly or indirectly, make goods available where and when they are wanted.
   b. includes the physical manufacture of commodities as well as the provision of services.
   c. includes the transportation and storage of finished commodities until they reach their final users.
   d. is correctly described by all of the above.

6. *Human resources* include
   a. people able and willing to participate in the process of production.
   b. land that has been drained, fertilized, irrigated, or otherwise cultivated by people.
   c. structures, equipment, and other productive ingredients made by people.
   d. all of the above.

7. The following, without question, are classified as *natural resources*:
   a. 100 acres of fenced-in pasture land with 10,000 head of cattle.
   b. a waterfall, dam, and electric power plant.
   c. the wind, the tides, an iron ore deposit.
   d. newborn babies.

8. The following might well be classified as (real) *capital resources*:
   a. factory buildings, schools, airport control towers.
   b. bridges, computers, turret lathes.
   c. bottles of ketchup, pasture land, sheep.
   d. all of the above.

9. A firm with $1,000 of cash, $2,000 of U.S. government bonds, $4,000 of stock certificates (of other corporations), $13,000 of raw material inventories, $50,000 of machinery, and $500,000 of buildings is holding
   a. $570,000 of capital resources.
   b. $563,000 of capital resources.
   c. $4,000 of human capital.
   d. $1,000 of financial capital.

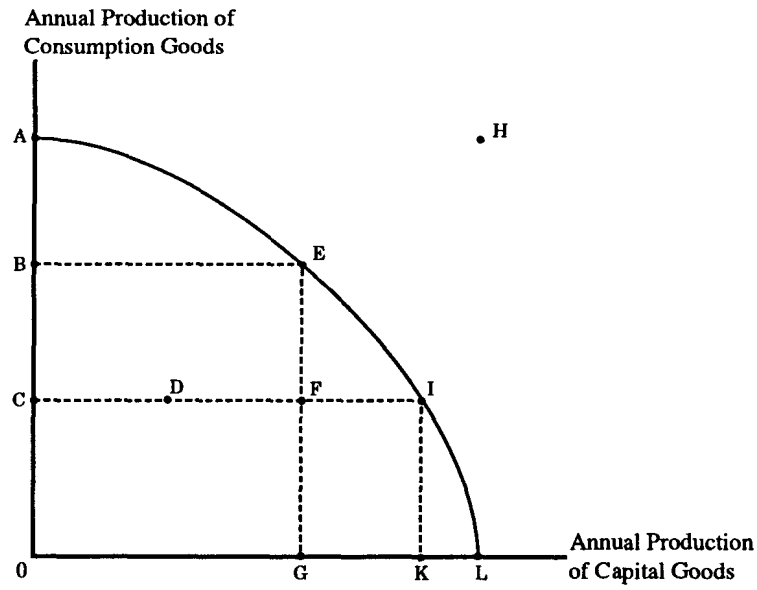
10. The term *stock* refers to
   a. any quantity that is related to a given moment of time.
   b. any quantity that is related to a given period of time.
   c. the structures, equipment, and producer inventories that have been newly produced during a year.
   d. the set of all goods newly produced in a year.

11. The basic economic problem of *scarcity* arises because
   a. every society produces finite flows of goods in a given period.
   b. people's desire for goods exceeds every society's ability to produce goods.
   c. a sufficiently large quantity of newly produced goods tends to be improperly distributed among people.
   d. too many goods are *free* goods, which causes people to take whatever quantity they want.

12. *Opportunity cost*
   a. is a disadvantage associated with an act of choice.
   b. is a forgone benefit associated with an act of choice.
   c. is the most highly valued alternative that is forgone in an act of choice.
   d. is correctly described by all of the above.

13. If there were no scarcity, the combination of goods that would fulfill people's desire for goods would lie
   a. to the left and below the production possibilities frontier.
   b. precisely on the production possibilities frontier.
   c. at a point described by either (a) or (b).
   d. to the right and above the production possibilities frontier.

When answering Questions 14-17, refer to the accompanying graph of a nation's production possibilities frontier.



14. Point E depicts a situation in which this nation
- **a.** is using all available resources fully and efficiently.
- **b.** is not using its technical knowledge to the maximum extent (because the production of consumption goods lies below maximum A, while the production of capital goods lies below maximum L).
- **c.** is producing either B units of consumption goods or G units of capital goods.
- **d.** is accurately described by all of the above.

15. A less-than-full or inefficient use of resources is depicted by position
- **a.** A.
- **b.** D.
- **c.** L.
- **d.** A as well as L.

16. The production of BE capital goods at position E implies an opportunity cost of
- **a.** 0B consumption goods.
- **b.** AB consumption goods.
- **c.** 0G capital goods.
- **d.** GL capital goods.

17. If the nation moves from position I to position E, it will reap a marginal benefit of
- **a.** IE.
- **b.** GK.
- **c.** CB.
- **d.** IF.

18. According to the *optimization principle*, it is advisable to
- **a.** expand an activity as long as marginal benefit, MB, exceeds marginal cost, MC.
- **b.** contract an activity as long as MC exceeds MB.
- **c.** leave an activity level unchanged when MB=MC.
- **d.** do all of the above.

19. At higher levels of an activity,
- **a.** the marginal benefit tends to be smaller.
- **b.** the marginal cost tends to be larger.
- **c.** both (a) and (b) are true.
- **d.** neither (a) nor (b) is true.

When answering Questions 20-21 refer to the accompanying table, which shows how a consumer's welfare (measured in hypothetical units of *utility*) varies with the weekly consumption of hamburgers, provided the consumption of all other goods remains unchanged.

Alternative	Number of Hamburgers Consumed	Total Utility
A	1	300
B	2	550
C	3	750
D	4	900
E	5	1,000

20. The marginal benefit associated with the consumption of 4 rather than 3 hamburgers equals
- **a.** 1 hamburger.
- **b.** 150 units of utility.
- **c.** 225 units of utility.
- **d.** 900 units of utility.

21. The marginal benefits associated with increasing weekly consumption beyond 1 hamburger equal
- **a.** 550, 750, 900, and 1,000 units of utility.
- **b.** 250, 200, 150, and 100 units of utility.
- **c.** 125, 66.67, 37.50, and 20 units of utility.
- **d.** none of the above.

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22. In the context of scarcity, if some food consumption has to be sacrificed for increased clothing consumption,
- **a.** the declining marginal benefits of increased food consumption translate into rising marginal costs of increased clothing consumption.
- **b.** the declining marginal benefits of increased clothing consumption translate into rising marginal costs of decreased clothing consumption.
- **c.** the declining marginal benefits of increased food consumption translate into rising marginal costs of decreased food consumption.
- **d.** all of the above are true.

23. According to the *optimization principle*, human welfare is maximized
- **a.** when an activity's total benefit just equals its total cost.
- **b.** when an activity's marginal benefit exceeds its marginal cost by the greatest amount.
- **c.** when an activity's total benefit is maximized (or its total cost is minimized).
- **d.** under none of the conditions noted here.

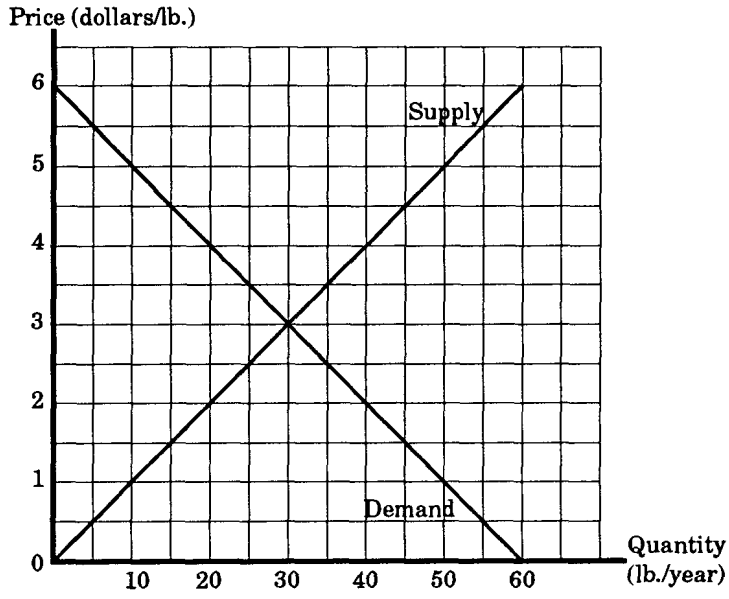
24. In the context of scarcity, the *marginal cost* of an activity can be viewed as
- **a.** the activity's marginal benefit (because the two are always equalized).
- **b.** the forgone marginal benefit of an alternative activity.
- **c.** the difference between the activity's total benefit and total cost.
- **d.** all of the above.

25. The *total benefit* associated with an expanding activity
- **a.** is rising as long as the marginal benefits are positive.
- **b.** is constant as long as the marginal benefits are constant.
- **c.** is falling as long as the marginal costs are positive.
- **d.** is correctly described by (a) and (c).

APPENDIX 1A

26. The horizontal axis in a system of coordinates is called
- **a.** the abscissa.
- **b.** the ordinate.
- **c.** the origin.
- **d.** none of the above.

When answering Questions 27-31, refer to the accompanying graph.



27. At a price of $6/lb., supply exceeds demand by
- **a.** 60 lb./year.
- **b.** 40 lb./year.
- **c.** 20 lb./year.
- **d.** an amount that cannot be determined from this graph.

28. The slope of the demand line in this graph equals
- **a.** –.1
- **b.** –6
- **c.** +6
- **d.** +60

29. The slope of the demand line indicates that
- **a.** every $1 decrease in price leads to a 10 lb. increase in quantity demanded.
- **b.** every $1 increase in price leads to a 10 lb. decrease in quantity demanded.
- **c.** both (a) and (b) are true.
- **d.** neither (a) nor (b) is true.

30. The *slope* of the supply line in this graph
- **a.** cannot be determined from the information given.
- **b.** is clearly negative because the line falls from the upper right corner of the graph toward the origin.
- **c.** is clearly equal to that of the demand line.
- **d.** is not correctly described by any of the above.

31. The slope of the supply line in this graph equals
- **a.** –6
- **b.** –1
- **c.** +.1
- **d.** +60

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32. The slope of a straight line is measured by
- **a.** run over rise.
- **b.** run over fall.
- **c.** either (a) or (b)--depending on whether the slope is positive or negative.
- **d.** none of the above.

33. The slope of a curve
- **a.** varies from point to point.
- **b.** can be measured at any given point as the slope of a tangent to the curve at that point.
- **c.** is correctly described by (a) and (b).
- **d.** is not correctly described by any of the above.

34. In order to draw a pie chart depicting the 22 percent, 31 percent, and 47 percent market shares of 3 firms in an industry, the following central angles are required:
- **a.** 65.7°, 105.3°, 189°
- **b.** 79.2°, 111.6°, 169.2°
- **c.** 84.5°, 126.3°, 149.2°
- **d.** None of the above.

35. Squeezing the vertical axis in a time-series line graph
- **a.** creates a meaningless graph.
- **b.** creates the impression of mild fluctuations of the depicted variable over time.
- **c.** creates the impression of severe fluctuations of the depicted variable over time.
- **d.** transforms the graph into a bar chart.

TRUE-FALSE QUESTIONS

In each space below, write a T if the statement is true and an F if the statement is false.

_____ **1.** Most people on earth harbor desires for a staggering variety and quantity of goods.

_____ 2. *Desire for goods* is the quantity of goods people would take in a given period of time if goods could be had for nothing.

_____ **3.** *Demand for goods* refers to the quantity of goods people would want if prices were zero.

_____ **4.** The *process of production* includes the growing of wheat, but excludes such activities as transporting, storing, or insuring wheat.

_____ **5.** Oil in the ground is a perfect example of a *natural resource.*

_____ **6.** Structures, durable equipment, and producers inventories of raw materials, semifinished, and finished goods are perfect examples of *financial capital* (because these items are tools that producers use to make money).

_____ **7.** Oil pumped from the ground and put in storage tanks, piles of coal in the factory yard, and tracts of land that people have cleared, fertilized, and irrigated--all these are perfect examples of *human capital.*

_____ **8.** *Free goods* are goods available in such quantities that everyone's desire for them can be fulfilled at the same time.

_____ **9.** The concept of *opportunity cost* is the most fundamental of all concepts of cost; it equals the lowest-valued alternative that is forgone in an act of choice.

_____ **10.** The change in activity's total benefit that is attributable to a unit change in the level of that activity is called the activity's *marginal benefit.*

_____ **11.** If the level of any activity declines, the activity's marginal benefits are likely to decline as well.

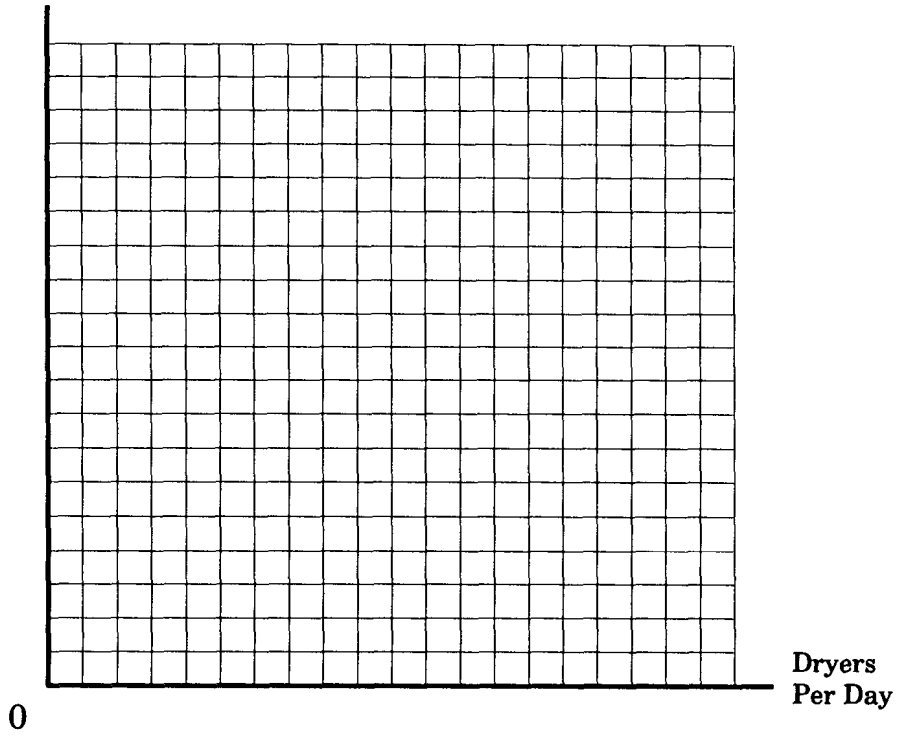
_____ **12.** In the context of scarcity, if more food is being produced at the cost of producing less clothing, the rising and (forgone) marginal benefits of clothing translate into the rising marginal costs of food.

PROBLEMS

1. Consider the following combinations of goods that a firm could produce in a day, given fixed quantities of human, natural, and capital resources and current technology.

Alternative	Washers	Dryers
A	150	0
B	130	100
C	95	200
D	55	300
E	0	380

a. In the following graph, draw the firm's production possibilities frontier as a smooth line through the given data sets.



b. In the graph, indicate the opportunity cost of producing 100 dryers.

c. Indicate the marginal benefit and marginal cost of replacing alternative C with alternative D.

d. Indicate the opportunity cost of operating at D and producing 55 washers per day.

2. Consider the following data collected by a farmer who is seeking to maximize the output of strawberries. Assume that a ton of fertilizer A costs the same as a ton of fertilizer B and that the farmer has a limited budget that allows the purchase of only 6 tons of A, B, or some combination of both.

Total Quantity of Fertilizer A Used (tons per year)	Total Quantity of Strawberries Produced (quarts per year)	Total Quantity of Fertilizer B Used (tons per year)	Total Quantity of Strawberries Produced (quarts per year)
1	500	1	800
2	900	2	1.,000
3	1,200	3	1,100
4	1,400	4	1,150
5	1,500	5	1,180
6	1,550	6	1,180

a. Employ *marginalist thinking* to figure the best allocation of the farmer's budget between A and B.

b. In the graph below, illustrate the best quantity of A employed by using the optimization principle.