


BYRNS • STONE


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SECOND EDITION

# ECONOMICS



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# **ECONOMICS**

SECOND EDITION

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Both of Metropolitan State College  
and The University of Colorado  
at Denver

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Finally, we are grateful to our wives, Tricia Byrns and Sheila Stone, and to our children Matthew and Rachel Stone and Jenni and Mitzi Byrns, for their support and patience during the times when our energies were absorbed by this revision.

# To the Instructor

Economists have many reasons to rejoice. In an era of declining college enrollments, the demand for economics courses continues to rise. Economic issues consume an ever-increasing share of national attention. Just as the demand for plumbers would soar if much of the world's plumbing failed, the economic difficulties of the recent past seem to have made our profession reasonably prosperous.

Yet, at the same time, there are reasons for concern. If our principles classes are representative, most Americans (including journalists) understand the economic news only dimly, if at all. The connections between the economic analyses conventionally presented in many economics courses and the real-world bombardment of economic issues launched by the media appear strained to many students. By comparison, our classroom analyses of current events sometimes seem abstract, irrelevant, or even boring.

We believe that the second edition of *ECONOMICS* will help you and your students avoid these pitfalls. Our major objective is to ensure that students learn those fundamental economic principles that provide unique insights into the way the world works and that are useful in problem solving. This goal cannot be realized if students find the material so difficult, theoretical, or dull that they will not read it (an all-too-common failing with many texts). Consequently, this book helps students internalize economic principles by using far more intuitively appealing examples and analogies than do most texts. These are drawn from everyday experiences, historical occurrences, and recent headlines.

## SPECIAL FEATURES OF THE BOOK

Although not encyclopedic in scope, our book is quite comprehensive and contains introductory discussions of the concepts that underpin most areas of economic study. The text is organized conventionally so that you will probably find it unnecessary to radically alter your principles syllabus.

Each part of this second edition opens with a broad introduction that gives students a sense of how sequential chapters are related, and each chapter begins with an overview of the topics to be covered. Numerous pedagogical aids run throughout this text:

1. Key terms are set in bold type when they are introduced, and major concepts expressed as equations are set off from the surrounding text.
2. Analytical graphs are rendered simply, to efficiently convey economic concepts, and yet attractively, to pique the students' interest. We have used a standardized set of notation to aid student comprehension. Descriptive and historical (background) data are illustrated in a contemporary manner that mirrors the graphics styles that students are seeing in all phases of the media—whether it is the business section of their local newspapers, publications such as *Time* and *Newsweek*, or the nightly network news broadcast.
3. Liberal doses of topical Boxes (e.g., “The Underground Economy”) and Biographical

Sketches give students a well-rounded introduction to the world of economics.

4. Each chapter concludes with a list of Key Terms, a comprehensive Chapter Review, and several Questions for Thought and Discussion.
5. Immediately following a number of chapters are related Legal Cases that emphasize the usefulness of economic analysis in real-life situations.
6. Optional Materials covering more rigorous concepts (e.g., the Mathematics of Multipliers, Indifference Curves, and Isoquants) are also appended to some chapters for instructors who wish to cover these topics.
7. An extensive Glossary at the end of the book provides a handy reference for student review.

## SUPPLEMENTARY MATERIALS

Our *ECONOMICS* package is intended to offer a much richer and broader set of tools for teaching economics than can be included in a text alone. Consequently, more supplements are available than for any other text:

1. *Great Ideas for Teaching Economics* now includes 250 analogies, anecdotes, exercises, and general teaching tips, contributed by instructors from across the country.
2. The *Instructors Manual for Teaching Economics* contains chapter outlines, suggestions for lectures, references to related *Great Ideas*, suggested answers to end-of-chapter questions, and analyses of the legal cases that conclude some chapters.
3. The *Test Bank for Teaching Economics* has been thoroughly revised and includes more than 50 multiple-choice questions for each

chapter in the text. Computerized versions of this test bank are available for either mainframe computers or microcomputers.

4. *EXAM*, a microcomputer-based examination generator, allows instructors to create reproducible examinations, answer sheets, and exam keys in minutes. Questions can be easily drawn from our *Test Bank* diskettes, or original questions created by the instructor can be added for a more "customized" result.
5. *Transparency Masters* are available for instructors who find these helpful in discussing economic graphs.
6. *MACROSIM*, a microcomputer-based simulation, allows students to manipulate policy instruments (e.g., government spending, tax rates, and the money supply) in attempts to stabilize economic activity and stimulate economic growth.
7. Our *Student Guide for Learning Economics* uses a variety of techniques to facilitate student mastery of economic concepts. Each chapter includes matching problems, true-false questions, fill-in reviews, multiple-choice and multiple multiple-choice questions; most have problems sets and specialized exercises as well.

Any principles text is always in progress. Your suggestions for the third edition of *ECONOMICS* or its supplements will be deeply appreciated and gratefully acknowledged. Please send your comments to us, % Scott, Foresman and Company, 1900 East Lake Avenue, Glenview, Illinois 60025.



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# To the Student

A 1980 survey of almost 1,600 people in leadership positions all over the country generated the following list of the ten biggest problems facing the United States today:

- \*1. inflation
- \*2. energy development
- \*3. energy conservation
- 4. national defense
- \*5. government growth and spending
- 6. avoiding war
- \*7. industrial productivity and innovation
- \*8. unemployment
- 9. containing Russia
- \*10. restructuring the tax system<sup>1</sup>

The seven problems we have marked with asterisks involve economics directly. The others—national defense, avoiding war, and containing Russia—indirectly involve economic trade-offs. The economic turmoil of the early 1980s has borne out the suggestion that these are all major national problems. But how does economics affect your life?

The basic economic problem confronting you, if you are typical, is that you would like to buy far more things than you can afford. Tuition and books probably absorb much of the income you would like to devote to clothes, cars, and entertainment. This means that you must make decisions about what you will or won't buy. In a similar way, all societies must choose between alternatives. The ways in which individuals and societies choose, and the effects of their choices, are the focal points of economics.

Economics can be as fascinating as any subject you have ever studied, and if you work diligently, it will seem very natural and logical. While some economic issues are complex, the methods of analysis you will learn in this book will enable you to answer many questions in a systematic fashion. When you complete this course, you may join one prominent economist, Robert Solow, in asking, "Why do I so often want to cry at what public figures, the press, and television commentators say about economic affairs." Unfortunately, it can be frustrating to understand economic reasoning. Many people do not.

## HOW TO STUDY ECONOMICS

In some courses, a quick reading of each assignment is adequate preparation to pull a passing grade. It is very unlikely that such an approach will work for an

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1. *U.S. News & World Report*, 14 April 1980, p. 39.

economics course. Here is one strategy that many students have found successful.

*First*, be sure that you understand simple algebra and how to read graphs. The algebra used in this book is elementary and should prove no problem if you have learned the material in a previous basic course. Economics relies on graphical techniques, perhaps more so than any other discipline. Don't let this frighten you. We have provided a brief review of graphical analysis at the end of this Preface. If you will take the time to learn how graphs work, you will save yourself the agony of feeling that you need to memorize each graph—a formidable task. Proceed to Chapter 1 only after you have reduced your anxiety somewhat about interpreting graphs. As you become more familiar with how graphs work, you may be surprised to find yourself mentally graphing many non-economic relationships, and even more amazed to find this process enjoyable.

*Second*, turn off the TV or radio and sit in a hard chair. Don't get too comfortable. Then, stop and think about the material as you read and try to avoid just coloring this book. Many students spend hours highlighting important points for later study, for which they somehow never find the time. Too frequently, this busy work is a substitute for thinking about the material. Try to skim a chapter; then go back and really focus on five or six pages. Don't touch a pen or pencil, except to make margin notes referring to related materials you already know about and want to cross reference. After you have finished a healthy dose of serious study, close the text and summarize the important points in what you have read with a half-page of notes. If you cannot briefly summarize what you have just read, put your pen down and re-read the material. You did not really digest the central ideas the first time. Don't be surprised if some concepts require several readings.

*Third*, read through the Key Concepts and summary at the end of each chapter as you finish reading it and write good, but brief answers to the Questions for Thought and Discussion.

*Fourth*, obtain a copy of our *Student Guide for Learning Economics* and work through the material that parallels each chapter of the text. You will comprehend economic reasoning better, and it will be easier for you to apply economic analysis to the world around you, if you do so.

*Finally*, be alert to everyday applications of economics. The news media constantly report economic occurrences and cover economic policy, and you may find this side of the news comprehensible for the first time. When this happens, you will be among the few who truly understand economic news. Try to use the economics you learn in this class to interpret your day-to-day behavior and that of your friends and relatives. This will provide new insights into how people function and how the world works.

We know that we have just given you a tall order, but if you will conscientiously follow these suggestions, we can guarantee you an enjoyable and enlightening course. You also may find many of these techniques for studying helpful in other classes you are taking.

## CAREERS IN ECONOMICS

Many students, a little surprised by how interesting economics is on closer inspection, wonder whether this discipline is really practical. "Could I get a good job with a bachelor's degree in economics?" is a question often asked of economics professors. We are not promising anything, but here are some partial answers to this question.

If resources were so plentiful that everyone could have everything they wanted, there would be no need to economize and, hence, no need for economists. Economists concentrate on this problem of limited resources; therefore, they find employment in three principal areas: research, teaching, and consulting. Economic forecasting; investment and financial analysis; investigating proposed public policies towards business and labor; determining the extent of monopolization; and studying education,

pollution, tax and welfare reform, or governmental expenditures are only a few of the tasks engaged in by people with training in economics. Because effective political decision making, by both voters and their elected representatives, as well as sound business and personal decisions, increasingly demand economic literacy, many economists devote most of their time to teaching. Quite a few also find that there is a substantial and remunerative demand for their services because business and government policymakers are increasingly aware of the value of economic reasoning.

We hope that you find this text helpful as you study economics. Students who have used earlier versions of this book were responsible for many changes. We are grateful for all their valuable suggestions and insights. If you have comments or suggestions, we would like to hear about them. Write us in care of Scott Foresman, and Company, 1900 East Lake Avenue, Glenview, Illinois 60025.

*Ralph T. Byrns*

*Gerald W. Stone, Jr.*

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## OPTIONAL MATERIAL: GRAPHICAL TECHNIQUES IN ECONOMICS

Does the sight of an equation, figure, or graph strike fear into your heart? Do you still have nightmares about the geometry class you nearly flunked? You may be among the many intelligent and otherwise well-educated people who find their palms sweating when they are confronted with elementary mathematical analysis. The biggest problem you have to overcome is “math/graph-phobia.”

Try to cast aside your apprehensions and spend an hour or so (if necessary) studying this section. Working through the parallel exercises in our *Student Guide for Learning Economics* will also help tremendously. Your efforts will make it much easier to follow the economic analysis in this course and may yield the added benefit of helping you in other areas of study.

With the approach of the twenty-first century, mathematics and computer programming vie for the title of “second language.” Your reaction may be that well-written or properly spoken English is enough for your purposes. The major advantages of mathematical expression lie in its precision and efficiency in relating certain concepts. Graphs and mathematics can simplify many discussions. For example, try to describe in simple English how much you’d be paid if you worked 42½ hours in a week at an hourly rate of \$4.00 per hour, with time and a

half for anything in excess of 40 hours. Isn’t  $(40 \times \$4) + (2.5 \times \$4 \times 1.5) = (\$160) + (\$15.00) = \$175.00$  much easier?

Most economic relationships treated in this book can be described in any of four ways: with English, with graphs, with tables, or with equations. We try to use more than one of these techniques each time we treat an important concept. However, you need to be able to deal with all four if you want to understand economic reasoning fully. Graphs are visual aids that make analysis easier. In this section, we will show you how to read, interpret, and use simple graphs like the ones in this book. Concentrate on the graphical analysis as you proceed through the first few chapters. You will gain proficiency and confidence in your ability to understand graphical techniques with time. Anyone can learn to read and use graphs with a little effort.

### GRAPHS AND GRAPHICAL ANALYSIS

*Even to students . . . who possess the mathematical tools to handle a more formal approach, there is just no substitute for the [economic] intuition that one acquires with lots of curve bending.*

**JAMES P. QUIRK (1976)**



Graphs are little more than pictorial representations of information. They can be used descriptively, as in maps and charts, or analytically, to gain insights into theory. The simplest and most commonly used descriptive graphs are maps. Almost all city, street, and state road maps use systems of coordinates as aids in pinpointing locations. These coordinates are then indexed. If you are reading a California map and trying to locate Fresno, you look up Fresno on the map index. The coordinates provided, such as G-9, guide you to Fresno by directing you to a certain part of the map. Looking at the sides of the map, you can locate coordinate "G," which tells you how far north or south Fresno is. Glance at the top of the map, and you find "9," which gives you Fresno's east/west orientation. Thus, G-9 lets you know where to look for Fresno on the map. Aha!—

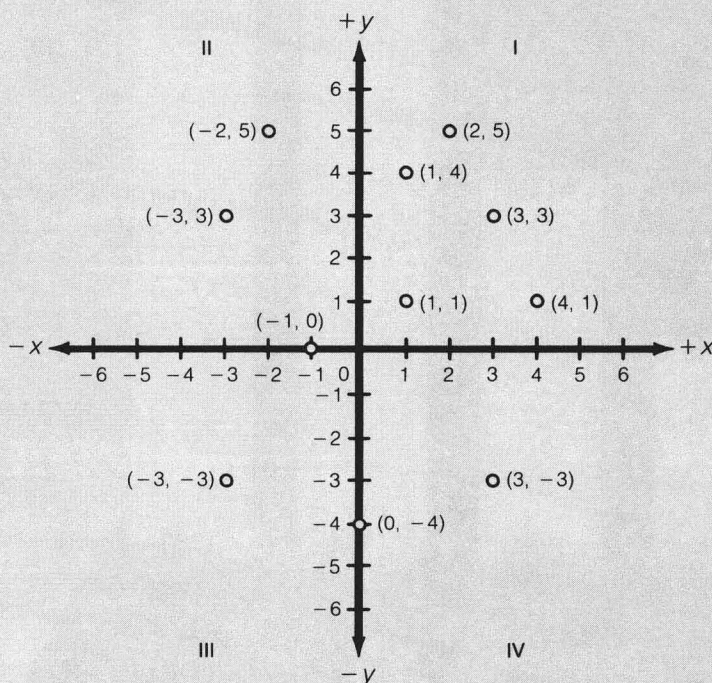
Fresno! The coordinate systems of maps are called *Cartesian coordinates*.

## Cartesian Coordinates

Most economic graphs also are based on Cartesian coordinate systems. A thorough grasp of this graphing system will enable you to understand and enjoy applications of such economic theory as supply-and-demand analysis.

The Cartesian coordinate system is constructed by drawing two lines perpendicular to each other. These lines, labeled  $x$  and  $y$ , are numbered and normally intersect at their respective zeros. The black lines (or *axes*) in Figure 1 are baselines for a standard set of Cartesian coordinates.

FIGURE 1 Cartesian Coordinates



The coordinate system is divided into four areas called *quadrants*; starting from the northeast, they are numbered in a counterclockwise fashion. A point is located numerically by an ordered pair, denoted  $(x, y)$ . Various ordered pairs are located on the graph. The  $x$  value represents a rightward movement from the vertical axis if the number is positive, and vice versa. The second coordinate ( $y$ ) value is the vertical distance from the horizontal axis (upward movement if  $y$  is positive and downward if  $y$  is negative).

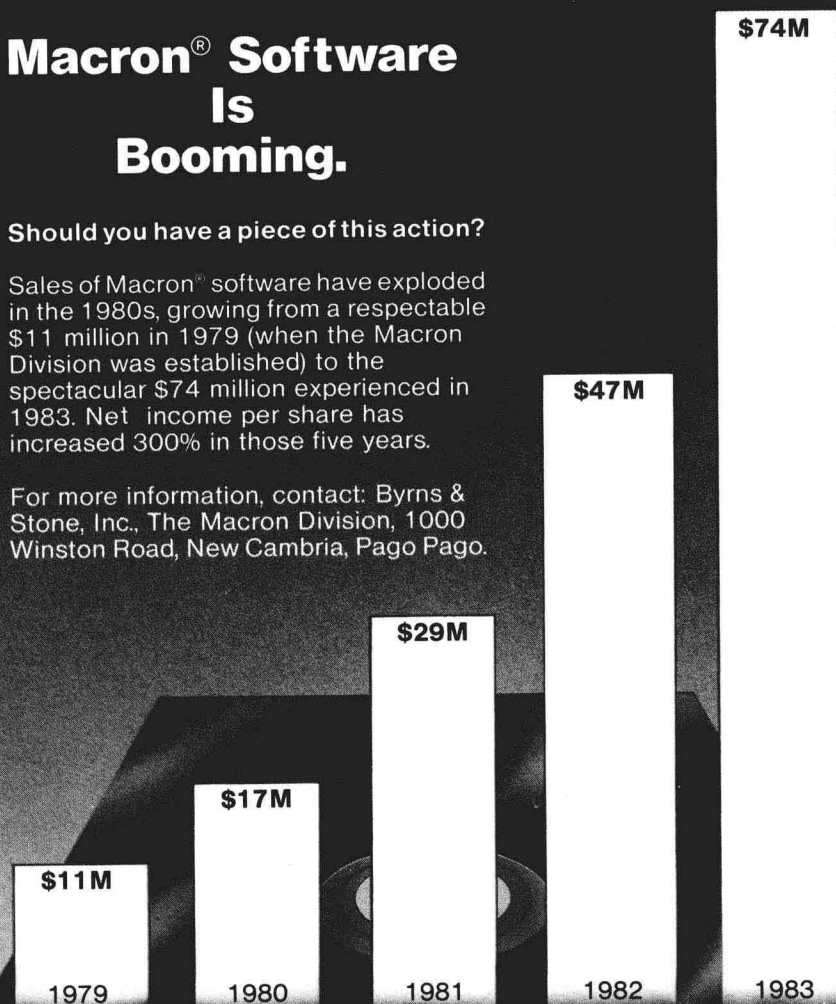
FIGURE 2 An Example of How Economic Data Can Be Graphically Depicted in an Advertisement

## Macron® Software Is Booming.

Should you have a piece of this action?

Sales of Macron® software have exploded in the 1980s, growing from a respectable \$11 million in 1979 (when the Macron Division was established) to the spectacular \$74 million experienced in 1983. Net income per share has increased 300% in those five years.

For more information, contact: Byrns & Stone, Inc., The Macron Division, 1000 Winston Road, New Cambria, Pago Pago.



Macron® is a registered trademark of Byrns & Stone, Inc.

This coordinate system divides a “space” into four areas called *quadrants*. The quadrants are numbered I through IV, beginning from the northeast area and then moving in a counterclockwise direction. A point in any one of the quadrants is located numerically by an ordered pair, denoted  $(x,y)$ . The first coordinate or number  $x$  directs rightward movement if  $x$  is positive or leftward movement if  $x$  is negative. The second coordinate  $y$  governs upward movement if  $y$  is positive or downward movement if  $y$  is negative. Thus, Quadrant I contains pairs for which both  $x$  and  $y$  are positive, Quadrant II shows pairs for which  $x$  is negative and  $y$  is positive, Quadrant III shows situations where both  $x$  and  $y$  are negative, and Quadrant IV depicts positive values of  $x$  paired with negative values of  $y$ .

The following points are placed on the coordinate system in Figure 1:  $(1,1)$ ,  $(1,4)$ ,  $(3,3)$ ,  $(4,1)$ ,  $(2,5)$ ,  $(-2,5)$ ,  $(-3,3)$ ,  $(-1,0)$ ,  $(-3,3)$ ,  $(0,-4)$ , and  $(3,-3)$ . Be sure that you know how to locate these coordinates graphically before proceeding. Remember, each set of numbers in parentheses gives two pieces of information; left–right for the value of  $x$ ; then up–down for the value of  $y$ . Even though economists consider multidimensional problems, this technique allows us to deal with very complex issues by considering only two dimensions of a problem at a time.

Most economic analysis uses only the first, or positive, quadrant (Quadrant I). Negative values of most economic variables do not make sense; examples of such nonsense include negative prices or negative unemployment rates.

## Descriptive Graphs

Economists and other users of business and social data (such as anthropologists, sociologists, and various members of the media) have devised some ingenious methods for depicting the relationships among numerous variables. The introduction of computer-generated graphics has merely enhanced their ability to present these data in new and interesting ways. Perhaps you have noticed that you are seeing more and more graphs on the network news,

in your local newspaper, and in news magazines and that these graphs are not just simple lines on grids. All of us are being asked to develop a certain amount of “graph sophistication” in order to keep pace with these changes. It will be easier for you to read and understand these graphs if you keep a few basic points in mind, and perhaps the most important of these is that the same set of data can be presented in a number of different ways. The following discussion will show you what we mean.

Let’s begin by examining Figure 2. In this short advertisement, Macron uses a set of vertical bars to indicate increased sales of their software over the period 1979–83. Does this figure use the Cartesian coordinate system we just discussed? The answer is yes, and Figure 3 shows why.

The bars in the Macron advertisement show sales in recent years. Cartesian coordinates for these data are depicted in Panels B and C of Figure 3. Sales are on the vertical axis and are graphed against years on the horizontal axis. Panels B and C are called *bar graphs* because they use bars to represent the volume of sales for each year.

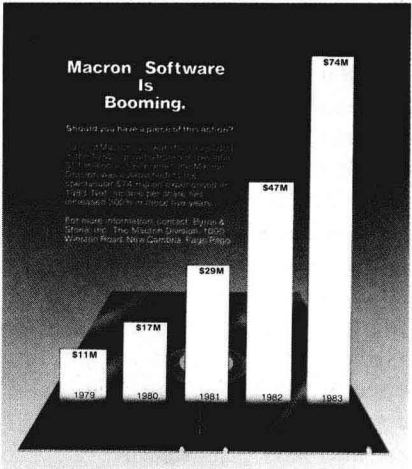
Line graphs are shown in Panels D and E. Rather than using a series of bars, the Cartesian points relating data for sales over time are connected by a line. All five panels illustrate the same information about Macron’s sales. Only five data points are presented in the simple graphs in Panels A, B, and C. Graphs (both bar and line) can be used to present much more complex pictures of data. However, reading them is easy if you concentrate on what the graph shows.

## Measuring the Slope of a Line

One of the most useful economic concepts that can be viewed graphically is the change in one variable relative to the change in another. Such relationships are mathematically equivalent to the *slope of the line* depicting the association between the two variables. Typically, two variables will be positively or negatively related to each other. That is, higher values of  $x$  will be associated either with higher values of  $y$  (a positive relation) or with lower values of  $y$  (a negative relation).

FIGURE 3 Different Ways the Same Data Can Be Depicted

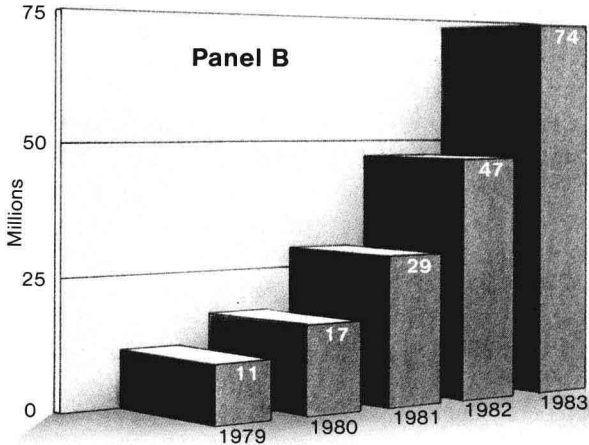
Panel A



The sales data shown in the Macron® advertisement are converted directly into bar graphs, and then into line graphs, using the Cartesian coordinate system.

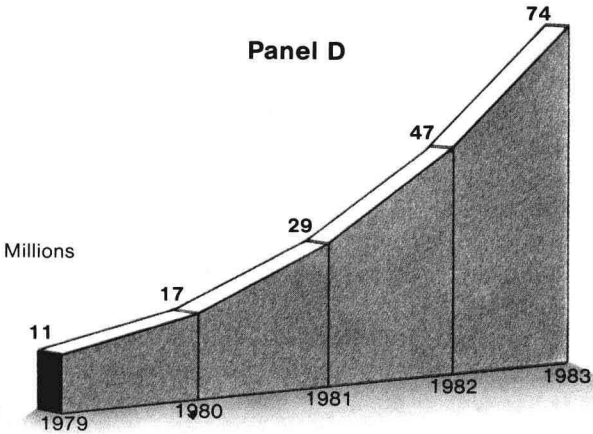
Bar Graphs

Panel B

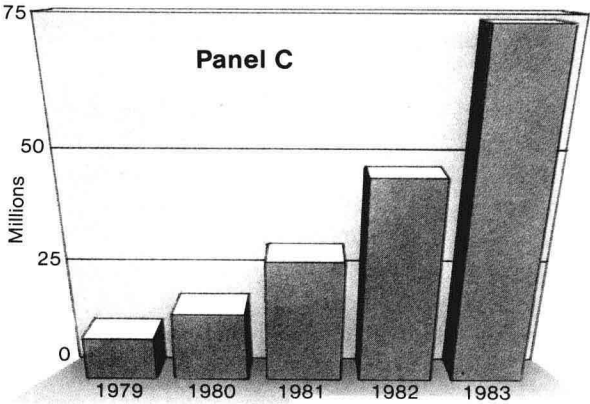


Line Graphs

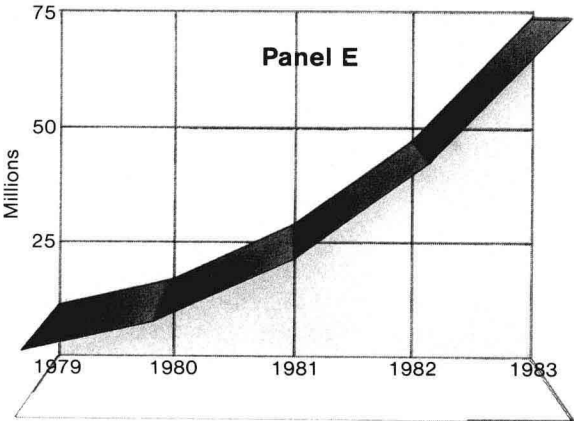
Panel D



Panel C



Panel E





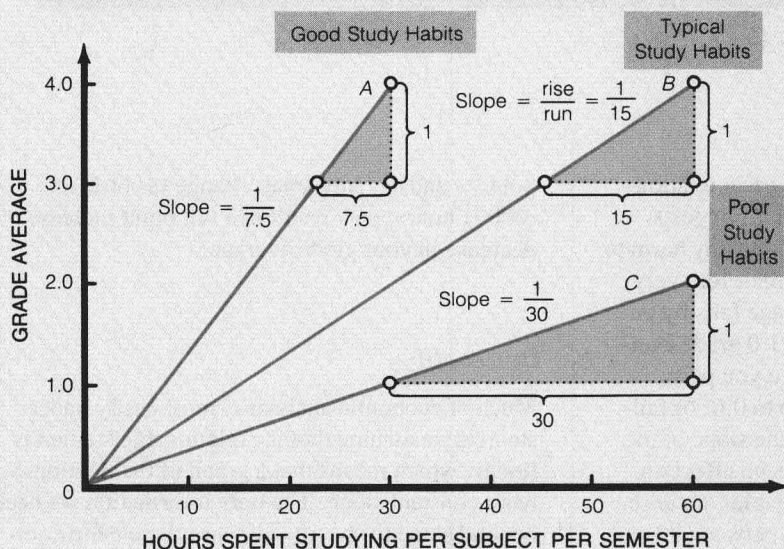
For example, Figure 4 depicts possible relationships for students with good, typical, and poor study habits between hours spent studying ( $x$ ) and grade average ( $y$ ). Generally, the more you study, the higher your grade average will be. Thus, the relationship is positive. But how much will you have to study to raise your grade point one full grade? The answer is found by determining the slope of the grade average/study hours line. You may have heard slope described as “rise over run” (rise/run). In this case, the grade is the *rise*; study hours is the *run*. For example, if you have average efficiency at studying and you study each subject for 30 hours a semester, your grade average will be a 2.0, or C. If you increase your study time to 45 hours per subject, your grade average will rise to 3.0, or B. Fifteen hours of extra studying per subject will raise your grade aver-

age by one full point if the middle line in Figure 4 corresponds to the relationship between your grade average and the number of hours you studied.

The **slope of a line** is defined as the ratio of the vertical change (rise) to the horizontal change (run) as we move along a line from left to right. In this typical instance, the slope is  $1/15$ . Notice that the slope of each line reflects the efficiency of each individual’s study time. For the student with superior work habits, only 7.5 hours of study are necessary to raise the average grade by one point, while the person with poor habits must study 30 hours more to achieve the same results. Thus, the slopes showing these relationships are  $1/7.5$  and  $1/30$ , respectively.

The slope of a line can also be negative. A line could be drawn relating grades to hours of partying per semester. Extensive partying almost invariably

FIGURE 4 Hypothetical Relationship Between Hours Spent Studying and Cumulative Grade Average



Grade	Value
A	
B	
C	
D	
F	

The *slope* of a line is defined as the ratio of the vertical change (rise) to the horizontal change (run). Curve A might reflect very efficient study habits; each one-point improvement in your grade average requires only an extra 7.5 hours of study per course. Curve B might depict average study habits; an extra 15 hours of study are required to raise your grade average by a full point. Curve C shows the problem faced by someone with inferior study habits; 30 hours of extra study time are required per course to raise the grade average by one point.