

Chapter 1

The Scope and Method of Economics

Why Study Economics?

1. Define the term economics.

Economics is the study of how individuals and societies choose to use the scarce resources that nature and previous generations have provided.

Diff: 1 Skill: Definition Topic: economics

AACSB:

2. Review the following statement. “He who has choice has pain.” What is meant by this?

“He who has choice has pain” refers to the sad but unavoidable fact that whatever we decide to do is going to have a cost. If we decide to buy a hamburger it means we can’t buy a chicken sandwich. The sentence is primarily focused on the idea that all choices involve opportunity costs.

Diff: 1 Skill: Conceptual Topic: choice

AACSB:

3. List three key reasons to study economics.

- (1.) **Learn a way of thinking.**
- (2.) **Understand society.**
- (3.) **Be an informed citizen.**

Diff: 1 Skill: Factual Topic: economics

AACSB:

4. Explain what is meant by the term opportunity cost.

The opportunity cost of something is measured by the next best alternative that we forgo, or give up, when we make a choice or a decision.

Diff: 1 Skill: Definition Topic: opportunity cost

AACSB:

5. Explain how and why an all-volunteer army may actually be cheaper than an army staffed with drafted soldiers.

When men and women decide on their own to choose to join the military they are no doubt looking at their opportunity cost. If they elect to join they are signaling that their opportunity costs are lower compared to other choices they could have made. When people are drafted into the military their opportunity costs are not taken into account. As a result doctors, lawyers, engineers and other high-paid professional can be drafted just as easily as those in lower-paying occupations. This raises the cost to society as a whole by employing people who could be contributing economically to the country.

Diff: 2 Skill: Conceptual Topic: opportunity cost

AACSB: Reflective Thinking

6. When is it more expensive for a country to go to war – during a recession or during an economic boom? Explain.

It is clearly more expensive for a country to go to war during an economic boom because it is more likely that the soldiers that will be serving are men and women that are already gainfully employed. Society loses the goods and services that they otherwise could have produced. However, if the country were to go to war during a recession the opportunity cost is lower because in many cases large numbers of new recruits will be drawn from the ranks of the unemployed.

Diff: 2 Skill: Conceptual Topic: opportunity cost

AACSB: Reflective Thinking

7. It is widely known among baseball enthusiasts that Babe Ruth actually performed quite well as a pitcher before leaving the Boston Red Sox for the New York Yankees. He was also of course a famously successful hitter. Why do you believe the Yankees chose not to use him as a pitcher? Explain using economic reasoning. Hint: pitchers typically only play every third or fourth game whereas other players in other positions play in nearly every game. Baseball has a season of 162 games.

The economic reasoning probably had something to do with opportunity cost. Even though the Yankees may have won most of the games when Babe Ruth was pitching he would no doubt be able to contribute to more wins as a hitter since he would be playing in more games as an outfielder or any other non-pitching position. The opportunity cost of having him as a pitcher was simply too high in terms of the number of games that would be lost when he wasn't playing.

Diff: 2 Skill: Conceptual Topic: comparative advantage

AACSB: Reflective Thinking

8. Why would an economist argue that tuition is not the largest cost of attending a state university?

The largest cost of attending a university is the opportunity cost of the student's time. This could be measured by the foregone income that could have been earned if the student worked instead of attending classes.

Diff: 1 Skill: Conceptual Topic: opportunity cost

AACSB: Reflective Thinking

Situation #1 Assume that you have hired three executives to run your company each with a different job. All are equally productive and each can do the other person's job if necessary.

Assume that the first executive's contribution to the company is worth \$1,000,000 and is assigned to this task; the second one is worth \$800,000 and the third one is worth \$500,000.

9. Referring to Situation #1 suppose that for the time being you can only afford to hire the first executive. What is the opportunity cost of the first executive's work from the viewpoint of the company? Explain.

The opportunity cost of the first executive is \$800,000. That is the value of the next best available alternative which is currently forgone.

Diff: 1 Skill: Conceptual Topic: opportunity cost

AACSB: Analytic Skills

10. Referring to Situation #1 suppose that you can now hire two workers. What is the opportunity cost of the second executive's work from the viewpoint of the company? Explain.

The second executive's work is simply the value of the next best opportunity which is the work that could have been done by the third executive which is \$500,000

Diff: 1 Skill: Conceptual Topic: opportunity cost

AACSB: Analytic Skills

11. Referring to Situation #1 suppose that you decide that you have to fire the first and the third executive without hiring any replacements. What would be the opportunity cost of the second executive's work? Explain why your answer is not the same as in the question above.

The opportunity cost of second executive's work is \$800,000. The reason is that since each executive can perform any work that they other can then it makes sense to change the second executive's job so that he is now doing the most highly valued work – that with the \$1,000,000 value. That leaves the \$800,000 job undone which means that becomes the opportunity cost of the second executive's work.

Diff: 3 Skill: Conceptual Topic: opportunity cost

AACSB: Analytic Skills

12. Explain why it is more likely that the opportunity cost of attending a 7:00 a.m. class is forgone sleep but that this is not reasonably likely to be the case for a class that meets at 12:00 noon.

At 7:00 a.m. there might not be too many other opportunity costs for your time. Forgone sleep might reasonably be an opportunity cost of your time. However, at 12:00 noon while it is possible that forgone sleep is your opportunity cost it is not likely since there are probably other things of higher value that you have given up by then unless you are a very late sleeper.

Diff: 1 Skill: Conceptual Topic: opportunity cost

AACSB: Reflective Thinking

13. Why would a company be more enthusiastic in providing more training to its workers during an economic downturn than during an economic boom (assuming that they do not layoff their workers and can keep them when the economy recovers)?

During an economic downturn the opportunity cost of training workers is likely to be much smaller in terms of lost production. However, during an economic boom the costs are much larger because while employees are being trained they are not producing and selling as much output as they otherwise could if they were performing their normal duties.

Diff: 1 Skill: Conceptual Topic: opportunity cost

AACSB: Reflective Thinking

14. If a good is scarce, does that imply that there is a shortage of it?

No. If a good is scarce, that means that it is limited in supply. All resources in the economy are scarce.

Diff: 1 Skill: Conceptual Topic: scarcity

AACSB: Reflective Thinking

15. Evaluate the following statement: “Water is plentiful, therefore it can’t be a scarce resource like oil which is not as plentiful.”

The truth is that both water and oil are scarce because they are both limited in supply. The fact that water happens to be more plentiful than oil doesn’t make it any less scarce of a resource.

Diff: 1 Skill: Conceptual Topic: scarcity

AACSB: Reflective Thinking

16. What is meant by the phrase, "There is no such thing as a free lunch"?

Markets are generally efficient, which implies that profit opportunities are eliminated quickly.

Diff: 1 Skill: Definition Topic: free lunch

AACSB:

17. Assume that you have heard news that a local radio station is hosting a luncheon at your school by offering hot dogs, chips and cola at no expense to the student body. Why would economists say that this lunch is not truly free?

The lunch is not free for a couple of reasons. First, in order for the radio station to offer it they had to give up real resources in order to provide it. Secondly, it is likely that if the luncheon is offered at no expense to the students they will likely have to spend at least some amount of time waiting in line to get it. This time represents an opportunity cost which is not likely to be free.

Diff: 2 Skill: Conceptual Topic: free lunch

AACSB: Reflective Thinking

18. Explain the concept of marginalism as it is used in economics.

The process of analyzing the additional or incremental costs or benefits arising from a choice or decision.

Diff: 1 Skill: Definition Topic: marginalism

AACSB:

19. Define an efficient market.

An efficient market is one in which profit opportunities are eliminated almost instantaneously.

Diff: 1 Skill: Definition Topic: efficient market

AACSB:

20. Consider the following scenario. Assume the price of gold in London is selling for \$1400 an ounce while in New York it is fetching a price of \$1450 an ounce. What would an economist say about the efficiency of this market? What would an economist predict about what would happen next?

An economist would argue that this market is currently not efficient. The reason is that there are still profit opportunities to be had. Market participants could buy gold in London and sell it in New York until there is no more incentive to do so, i.e. (when there are no more profit opportunities).

Diff: 1 Skill: Conceptual Topic: efficient market

AACSB:

21. Describe what took place during the Industrial Revolution.

The Industrial Revolution refers to the period in England during the late eighteenth and early nineteenth centuries in which new manufacturing technologies and improved transportation gave rise to the modern factory system and a massive movement of the population from the countryside to the cities.

Diff: 1 Skill: Conceptual Topic: Industrial Revolution

AACSB:

The Scope of Economics

22. Explain the difference between microeconomics and macroeconomics.

Microeconomics is the branch of economics that examines the functioning of individual industries and the behavior of individual decision-making units (such as households and firms). Macroeconomics is the branch of economics that examines the economic behavior of the entire economy, including aggregate income, aggregate employment, and the average level of prices.

Diff: 1 Skill: Definition Topic: macro and microeconomics

AACSB:

23. For each of the following, list whether the topic is microeconomic or macroeconomic in nature:

- (a.) The price of gasoline.
- (b.) The national unemployment rate.
- (c.) The quantity of new cars sold each year.
- (d.) The wage rate paid to steel workers.
- (e.) The amount of national output in an economy.

- (a.) **Microeconomic**
- (b.) **Macroeconomic.**
- (c.) **Microeconomic.**
- (d.) **Microeconomic.**
- (e.) **Macroeconomic.**

Diff: 1 Skill: Conceptual Topic: macro and microeconomics

AACSB:

24. List and describe four fields of economics.

Student responses will vary. Possible answers include industrial organization, urban and regional economics, econometrics, comparative economic systems, economic development, labor economics, finance, international economics, public economics, economic history, law and economics, and the history of economic thought.

Diff: 1 Skill: Factual Topic: economic fields of study

AACSB:

The Method of Economics

25. Explain the difference between positive economics and normative economics.

Positive economics seeks to understand behavior and the operation of systems without making judgments. It describes what exists and how it works. Normative economics analyzes outcomes of economic behavior, evaluates them as good or bad, and may prescribe courses of action.

Diff: 1 Skill: Definition Topic: normative and positive economics

AACSB:

26. Give an example of a positive economic statement and a normative economic statement.

Student responses will vary. What is important is that the positive statement is objective and attempts to explain "what is". The normative statement should include some value judgment or "what should be".

Diff: 1 Skill: Definition Topic: normative and positive economics

AACSB:

27. For each of the following, note whether the statement is an example of positive economic analysis or an example of normative economic analysis:

- (a.) An increase in the minimum wage will lead to a higher rate of teenage unemployment.
- (b.) If the government reduces the tax on tobacco, more individuals will start smoking.
- (c.) The government should lower taxes because tax rates are too high for the average U.S. family.

(d.) Wealthy senior citizens can afford to buy their own health insurance and therefore should not be given Medicare coverage.

(e.) If the price of apples increases, people will buy more bananas.

(a.) Positive.

(b.) Positive.

(c.) Normative.

(d.) Normative.

(e.) Positive.

Diff: 1 Skill: Definition Topic: normative and positive economics

AACSB:

28. List and describe the two areas of positive economics.

Descriptive economics involves the compilation of data that describe economic phenomena and facts. Economic theory involves a statement or a set of related statements about cause and effect (action and reaction).

Diff: 1 Skill: Factual Topic: positive economics

AACSB:

29. Evaluate the following statement – “Economists are fond of saying that there are positive statements and normative ones but the truth is that all questions are really normative”.

This statement could be interpreted as a normative statement but ironically it may actually be a positive statement. That is it may be a statement that can be verified with the use of logic. Whether it can be proved or not or whether it is true or not is not the issue. It is a statement of fact.

Diff: 3 Skill: Conceptual Topic: normative and positive economics

AACSB: Reflective Thinking

30. Explain what a model is.

A model is a formal statement of a theory. It is generally a mathematical statement of a presumed relationship between two or more variables.

Diff: 1 Skill: Definition Topic: models

AACSB:

31. A globe is a model. However, it lacks much of the detail that one would find on a map. Does that make the globe an inferior model? Why not?

No. The globe has a different purpose than a map. The details that are suppressed on a globe are simply not necessary for the objective that a globe was designed to serve. Including them would not enhance the power of the globe as a model but actually might get in the way.

Diff: 1 Skill: Conceptual Topic: models

AACSB:

32. Explain how a model can be useful even if it is not realistic.

Models are used to simplify reality to expose only those aspects of behavior that are important to the question being asked. Thus, while not realistic, the model gets at the heart of the matter and allows us to ignore irrelevant details.

Diff: 1 Skill: Conceptual Topic: models

AACSB:

33. Should economics be considered a science? Why or why not?

Yes. Economics uses models and theories to make predictions and then tests those predictions using empirical analysis.

Diff: 1 Skill: Conceptual Topic: science

AACSB: Reflective Thinking

34. Explain what is meant by the term *ceteris paribus*. Why is this concept often used in economic models?

Ceteris paribus means "all else equal". When used in economic models, this concept helps us to simplify reality in order to focus on the relationships we are most interested in.

Diff: 1 Skill: Definition Topic: *ceteris paribus*

AACSB:

35. Explain what post hoc fallacy means and give an example.

Post hoc fallacy is a common error in thinking about causation. An example would be "if Event A happens before Event B, Event A must have caused Event B to occur".

Diff: 1 Skill: Definition Topic: post hoc fallacy

AACSB:

36. Suppose an economics forecaster discovers that on days when the sunspot count is high stock market on the following day is bullish, that is stock market prices edge upwards. In addition, he also observes that on days with a low sunspot count the following day the stock market tends to be bearish, that is stock market prices tend to fall. The forecaster then concludes that there is a positive relationship between the sunspot count and stock market prices and proceeds to base his investment decisions on this premise. What kind of an error has this forecaster made?

The forecaster has fallen into the post hoc fallacy. Simply because one set of events precedes another is not enough to say that one is the cause of the other.

Diff: 1 Skill: Definition Topic: post hoc fallacy

AACSB: Analytic Skills

37. If crime rates in the United States fall, can incumbent lawmakers rightfully claim credit? Why or why not?

Probably not. Lower crime rates can occur for many reasons including a change in the age distribution of the population and lower unemployment rates. One cannot simply conclude that the lawmakers in office were responsible for the lower crime rates, until other plausible reasons have been ruled out.

Diff: 1 Skill: Conceptual Topic: causation

AACSB: Analytic Skills

38. Explain what the fallacy of composition is and give an example.

The fallacy of composition is the incorrect belief that what is true for a part is necessarily true for the whole. For example, intensive fishing in an area by a boat may increase profits earned by the boat owner. However, if many boats excessively fish in the same area, the stock of fish will become depleted and all will be worse off.

Diff: 2 Skill: Definition Topic: fallacy of composition

AACSB:

39. Your younger brother likes to yell at the dinner table so the rest of the family will give him what he wants. Assume that this has proved quite successful for him time and again. Let's say that you are from a family of eight and every member of your family starts to adopt the same strategy. Would this work? Why or why not? Explain.

This strategy will probably not work very well. With everyone yelling at the table it is unlikely that anyone will get heard. This is what is known as the fallacy of composition. What is good for the individual is not necessarily good for the whole.

Diff: 1 Skill: Conceptual Topic: fallacy of composition

AACSB: Reflective Thinking

40. What branch of economics involves the collection and use of data to test economic theories? Why is this task often more difficult in economics than it is in physical sciences?

The branch of economics that involves the collection and use of data to test economic theories is called empirical economics. This is often more difficult in economics than in the physical sciences because economists rarely are able to set up controlled experiments.

Diff: 1 Skill: Definition Topic: empirical economics

AACSB:

41. Explain what is meant by allocative efficiency.

Allocative efficiency means producing the goods and services that people most want at the lowest possible cost.

Diff: 1 Skill: Definition Topic: allocative efficiency

AACSB:

42. List the four criteria that are generally used to evaluate economic outcomes.

(1.) Efficiency.

(2.) Equity.

(3.) Growth.

(4.) Stability.

Diff: 1 Skill: Factual Topic: economic criteria

AACSB:

43. Most economists will argue that the minimum wage causes unemployment. Even politicians will recognize this when pressed. However, typically liberals will tout the benefits of the minimum wage while conservatives will decry the disruption that it causes in the labor market. Which economic objective seems to be more important for liberals and which is more important to conservatives if this general observation is correct? Which side is right?

If this general observation is correct then it would seem that liberals are more concerned with equity and conservatives are more concerned with efficiency. Neither side is right. That is a normative question. The reason is that there is a tradeoff between equity and efficiency. Which one you want more of is a question of your values.

Diff: 1 Skill: Conceptual Topic: equity and efficiency

AACSB: Analytic Skills

44. Some politicians have recently suggested changing the income tax system in the U.S. to a flat tax system where all taxpayers would pay the same percentage of their income in tax to the federal government. Explain how such a change can be analyzed in terms of efficiency. Do you believe that this tax will have equity effects as well?

The flat tax will lower the cost of filing taxes for taxpayers and therefore increase the efficiency of government financing. However, this will place a larger tax burden on the poor than currently exists which may lead to some equity concerns.

Diff: 2 Skill: Analytical Topic: equity and efficiency

AACSB: Analytic Skills

45. Assume that you are the new CEO of a major corporation that has five major product lines each run as separate corporations. You discover that if you invested the company's money outside of the firm that it could earn a 15% rate of return on the investment. You tell all the presidents of each of these subsidiary companies that in order for them to remain with the company that their return on capital must equal to or exceed 15% rate of return. Use two economic principles discussed in chapter 1 to explain why the CEO's advice is sound.

Essentially there is a high opportunity cost associated with investing large sums of money in a corporation when the rate of return is higher if invested elsewhere. By getting the presidents of each of the subsidiary companies to push the rate of return on their capital upwards the stockholder's money is being more efficiently managed.

Diff: 3 Skill: Conceptual Topic: opportunity cost

AACSB: Analytic Skills

46. Assume that the research team of a major company is building a model of consumer demand that contains approximately 250 variables. Can you think of a principle that might be violated here that was discussed in chapter 1? Explain.

The principle that is probably being violated is Ockham's Razor. This is the idea that irrelevant data should be cut away. With 250 variables it is very likely that many of them are unnecessary and will only make the model more complicated.

Diff: 1 Skill: Conceptual Topic: Ockham's Razor

AACSB: Analytic Skills

47. Explain the difference between economic growth and stability. Can a country experience both at the same time? Why or why not?

Economic growth refers to an increase in the total output of the economy. Stability occurs when output is steady or growing, with low inflation and full employment of resources. Yes, a country can experience both economic growth and stability at the same time, as long as the increase in output is not accompanied by a rising price level. The late 1990s were a period of growth for the U.S. economy with low inflation.

Diff: 1 Skill: Definition Topic: economic growth and stability

AACSB:

48. Define a variable and give two examples that would apply to economics.

A variable is a measure that can change from time to time or from observation to observation. Income is a variable—it has different values for different people and different values for the same person at different times. The rental price of a movie on a DVD is a variable; it has different values at different stores and at different times.

Diff: 1 Skill: Definition Topic: economic growth and stability

AACSB:

49. Define the concept used in economics known as Ockham's Razor.

Ockham's Razor is the principle that irrelevant data should be cut away.

Diff: 1 Skill: Definition Topic: economic growth and stability

AACSB:

50. What does the phrase "post hoc, ergo propter hoc" mean?

Literally it means, "after this (in time), therefore because of this." It is common error made in thinking about causation: If Event A happens before Event B, it is not necessarily true that A caused B.

Diff: 1 Skill: Definition Topic: economic growth and stability

AACSB:

Appendix: How to REad and understand graphs

51. Explain what a graph is and how it can be used.

A graph is a two-dimensional representation of a set of numbers. It can be used to demonstrate the relationship between two or more variables.

Diff: 1 Skill: Definition Topic: graphs

AACSB:

52. Describe what is meant by the Cartesian coordinate system.

The Cartesian coordinate system is a method used to graph two variables. There are two axes that are perpendicular to one another. One is a horizontal line (the x-axis) and one is a vertical line (the y-axis). The intersection of these two lines is called the origin. Positive values of x lie to the right of the origin, while positive values of y lie above the origin.

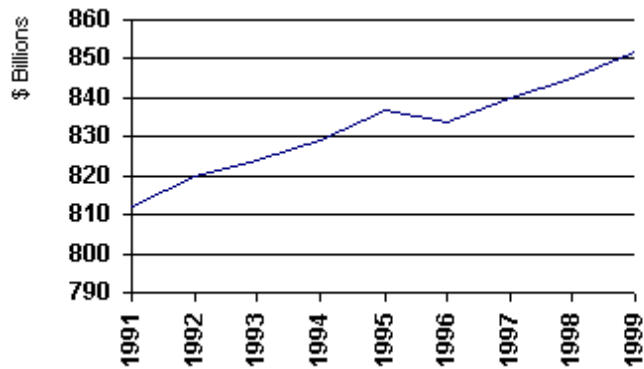
Diff: 1 Skill: Definition Topic: Cartesian coordinate system

AACSB:

53. Create a time series graph with the data in the table below:

Year	Total Household Purchases (in billions of dollars)
1991	812
1992	820
1993	824
1994	829
1995	837
1996	834
1997	840
1998	845
1999	852

The time series chart should look like the one presented below.



Diff: 1 Skill: Conceptual Topic: time series graph

AACSB:

54. Draw a graph showing a line with a positive slope. Draw a graph showing a line with a negative slope. Explain what the shape of these lines implies about the relationship between the variable on the x-axis and the variable on the y-axis?

The graph of the line with the positive slope should be upward sloping, while the graph of a line with a negative slope should be downward sloping. When the line is upward sloping, this implies that as the variable on the x-axis increases the variable on the y-axis also increases. These two variables move in the same direction. When the line is downward sloping, this implies that as the variable on the x-axis increases the variable on the y-axis decreases. The two variables move in opposite directions.

Diff: 1 Skill: Conceptual Topic: line graph

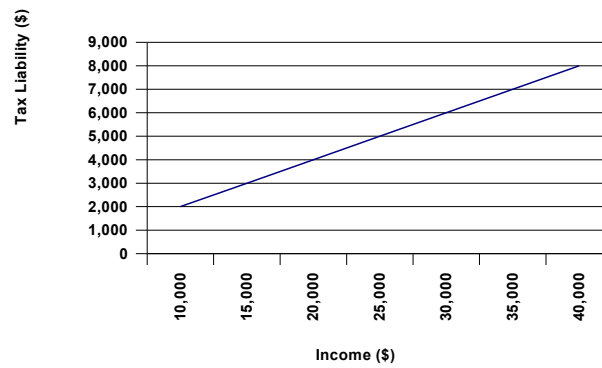
AACSB:

55. Use the Cartesian coordinate system (and putting income on the horizontal axis) to plot the following data:

Income	Tax Liability
10,000	2,000
15,000	3,000
20,000	4,000

25,000	5,000
30,000	6,000
35,000	7,000
40,000	8,000

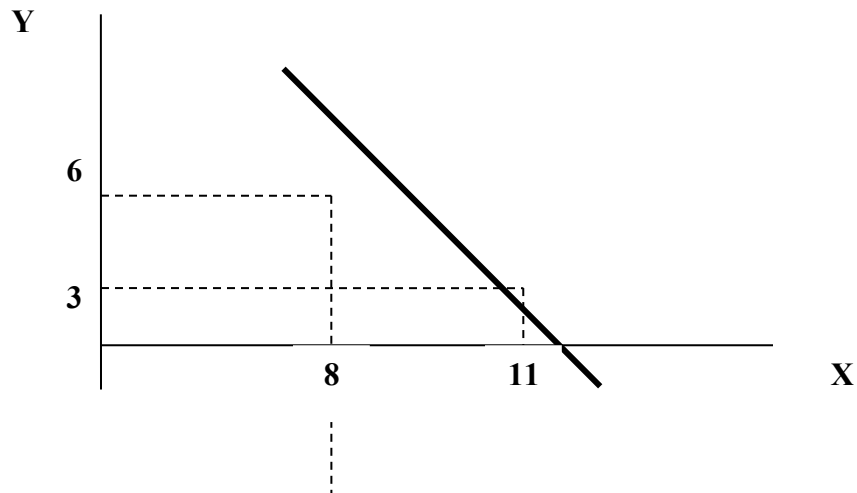
The graph should look like the one below.



Diff: 1 Skill: Conceptual Topic: Cartesian coordinate system

AACSB:

56. In the figure below, is the slope positive or negative? Calculate the slope.



The slope is negative because the line is downward sloping. The slope is equal to the change in Y (which is equal to -3) divided by the change in X (which is equal to 3). Therefore, the slope is equal to $(-3/3)$ which equals -1 .

Diff: 1 Skill: Analytical Topic: slope

AACSB:

57. Explain how to calculate the slope of a line. What does the slope measure?

The slope of a line is a measure that indicates whether the relationship between the variables is positive or negative. It tells us how much of a response there is in variable y (on the vertical axis) when variable x (on the horizontal axis) changes. The slope is calculated by taking the change in variable y and dividing by the change in variable x.

Diff: 1 Skill: Definition Topic: slope

AACSB:

58. Explain how to calculate the slope of a non-linear function. What does the slope measure?

Since the slope of a non-linear function changes throughout the function one can only measure slope at a specific point along the function. Essentially you would take a line and make it tangent to the point that you want to measure and calculate the slope of that tangent line. The slope of that tangent line will be equivalent to the slope at that point on the function.

Diff: 1 Skill: Definition Topic: slope

AACSB:

59. The manager of a company has been told by his engineers and cost accountants that the marginal cost of producing additional electronic wafers is likely to remain constant at a \$.50 each for the hundred thousand in production. Explain what the marginal cost function would look like and why. What is the slope of this cost function?

The marginal cost function would be horizontal at a price of \$.50. Since production costs don't change the slope of this function is zero.

Diff: 2 Skill: Analytical Topic: slope

AACSB:

60. An engineer has informed the city manager that the marginal cost of an additional car crossing the city bridge is zero? If you were required to draw this cost function on a graph what would it look like? What is the slope of this graph?

The graphs would be a horizontal line at a cost of \$0. The slope of the line is also zero since the cost of additional cars traveling on it don't change.

Diff: 2 Skill: Analytical Topic: slope

AACSB:

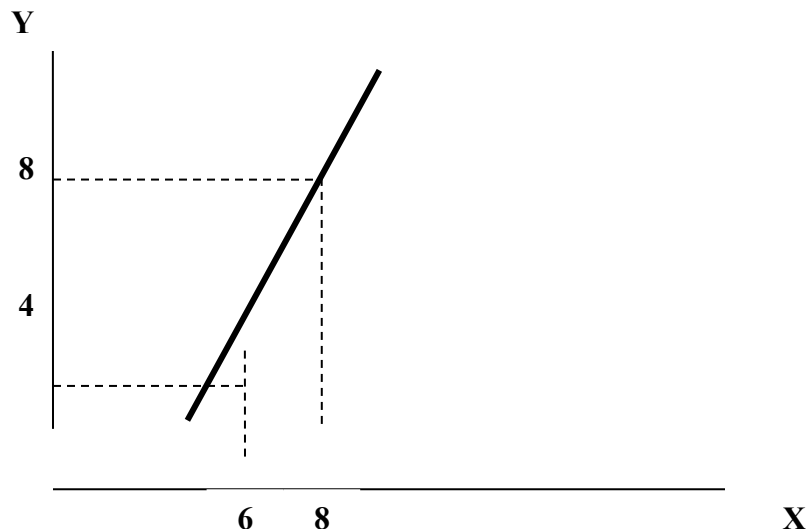
61. Your boss explains to you that the total fixed costs of the company are \$1 million. He also informs you that each unit of production will cost twenty five cents more with each 100-unit increase. He has asked you to draw the fixed costs of the company with costs on the vertical axis and quantity of goods sold on the horizontal axis. Without drawing a graph tell your boss what the graph will look like using words. What information did your boss give you that you didn't need in order to draw the graph?

The fixed cost graph will be a horizontal line. The costs do not change with changes in output. The information that he gave me concerning how much additional units of production would cost is irrelevant since those are variable expenses and the boss was asking me to draw the fixed cost graph as a function of output.

Diff: 2 Skill: Analytical Topic: slope

AACSB:

62. In the figure below, is the slope positive or negative? Calculate the slope.



The slope is positive because the line is upward sloping. The slope is equal to the change in Y (which is equal to 4) divided by the change in X (which is equal to 2). Therefore, the slope is equal to $(4/2)$ which equals 2.

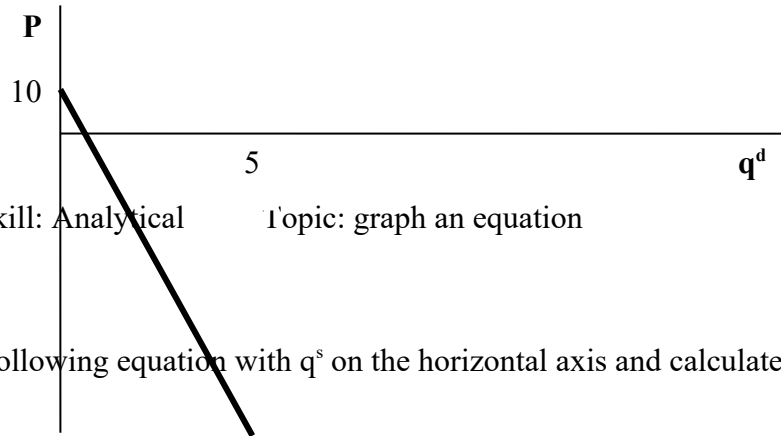
Diff: 1 Skill: Analytical Topic: slope

AACSB:

63. Graph the following equation with q^d on the horizontal axis and calculate the slope:

$$P = 10 - 2q^d.$$

The student's graph should look like the one below. The slope of the line is equal to the change in P (which is equal to -10) divided by the change in q^d (which is equal to 5). Thus, the slope is $(-10/5)$ which is equal to -2 .



Diff: 2 Skill: Analytical Topic: graph an equation

AACSB:

64. Graph the following equation with q^s on the horizontal axis and calculate the slope:

$$P = 6 + 3q^s.$$

The student's graph should look like the one below. The slope of the line is equal to the change in P (which is equal to 3) divided by the change in q^s (which is equal to 1). Thus, the slope is $(3/1)$ which is equal to 3.



Diff: 2 Skill: Analytical Topic: graph an equation

AACSB:

65. Examine the following function: $Y = 3x + 2$. What is the slope of this function and why?

The slope of this function is 3. That's because slope measures rise divided by run. If X were equal zero then Y would equal 2. If X were equal to 1 then Y would equal to 5. This change is equal to 3.

Diff: 2 Skill: Analytical Topic: slope

AACSB:

66. The following table shows how the unit costs of producing cotton rugs varies with daily output for a given factory:

Daily Number of Rugs Produced	Cost per Rug (\$)
100	\$25
200	20

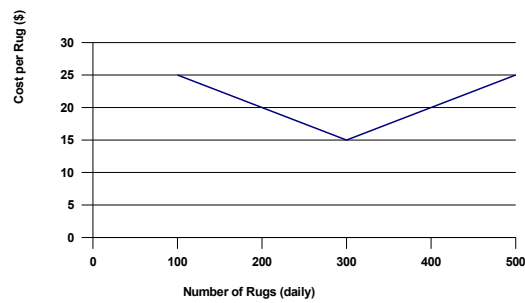
300	15
400	20
500	25

Plot the points and trace a curve through them. Describe the relationship between cost per rug and the number of rugs produced daily.

The graph should look like the one below. The graph shows that as daily output increases, cost per unit begins to fall, reaches a minimum, and begins to rise again.

Diff: 2 Skill: Analytical

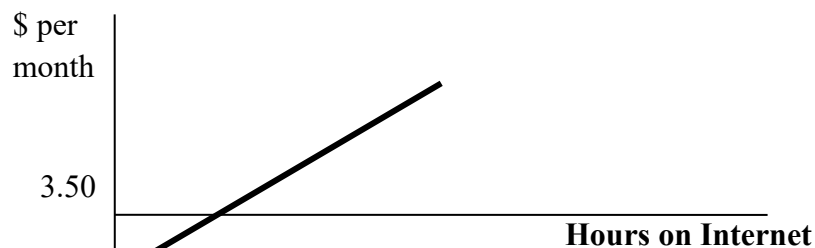
Topic: line graph



AACSB:

67. Suppose that you buy Internet service from Friendly ISP Corporation. You are charged a monthly fee of \$3.50 and must also pay an hourly charge of \$1.00 for every hour you use the Internet. Draw a diagram of the relationship between your monthly bill from Friendly ISP and the number of hours you use the Internet. What is the slope of the line drawn?

The graph is drawn below. The slope of the line will be equal to \$1/hour.



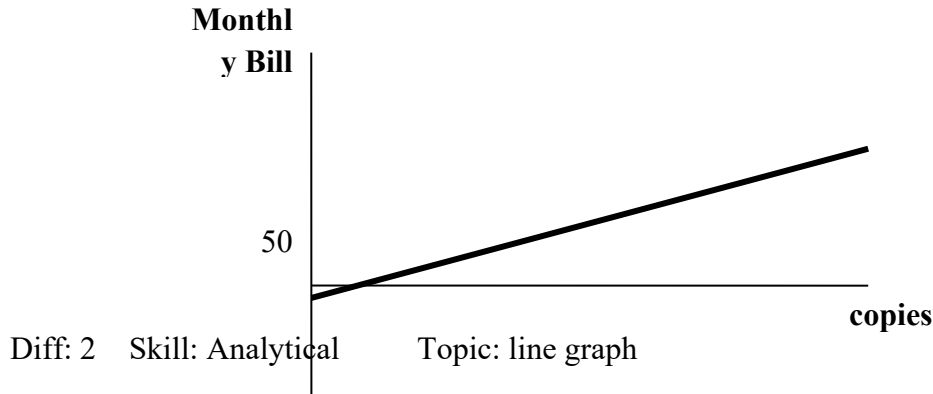
Diff: 2 Skill: Analytical

Topic: line graph

AACSB:

68. Michelle's Secretarial Services rents a copying machine for \$50 per month plus a per copy charge of \$0.10 per copy. Draw a diagram showing the relationship between the number of copies made and the firm's monthly copying bill. What is the slope of the line drawn? If the firm makes 5,000 copies in one month, what will be the bill for copying?

The graph is shown below. The slope of the line is equal to 0.10. If the firm makes 5,000 copies in one month, its copying bill will be equal to \$550.

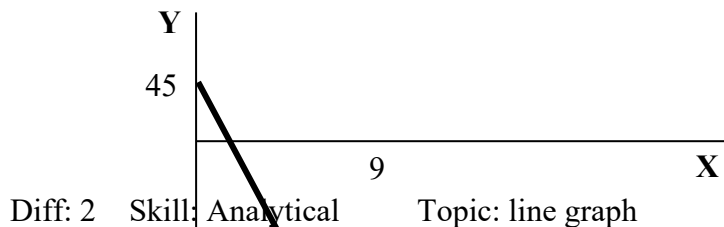


AACSB:

69. Graph the following equation and then calculate the slope. If variable X increases by 5, what will happen to variable Y?

$$Y = 45 - 5X$$

The graph is shown below. The slope of the line is equal to -5. This implies that if variable X increases by 5, variable Y will fall by 25.



AACSB:

70. The following equation describes the relationship between the price of scanners (P) and the quantity that buyers will purchase each week (Q):

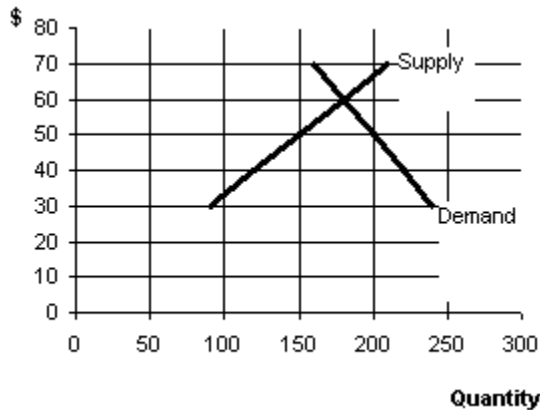
$$Q = 300 - 2P.$$

The following equation describes the relationship between the price of scanners (P) and the quantity that sellers will sell each week (Q):

$$Q = 3P.$$

On a graph (with Q on the horizontal axis and P on the vertical axis), plot the two equations using the following values for P: \$30, \$40, \$50, \$60, and \$70. At what price do the two curves intersect? What is the quantity of scanners at this point?

The graph is drawn below. The two lines intersect at a price of \$60. The quantity of scanners at that price is 180.



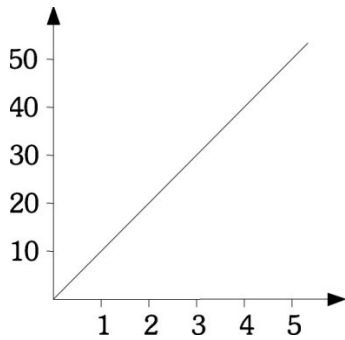
Diff: 3 Skill: Analytical Topic: simultaneous equations

AACSB:

71. Graph the relationship between variables X and Y according to the table below:

X	Y
1	10
2	20
3	30
4	40
5	50

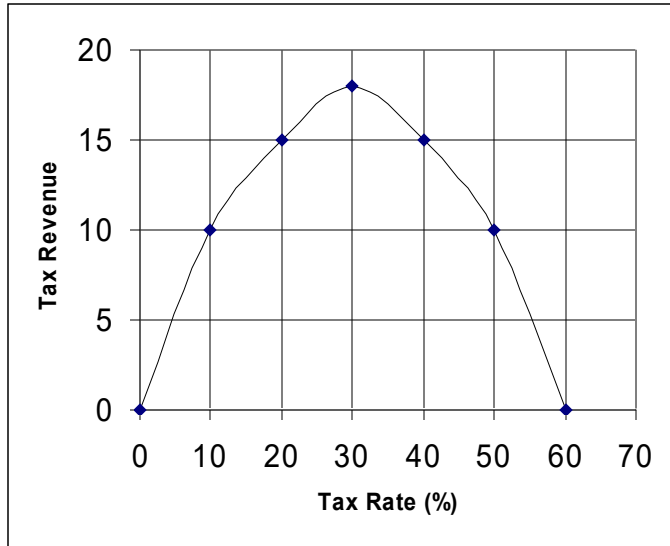
Answer:



Diff: 1 Skill: Analytical Topic: line graph

72. Assume that at very low tax rates the government collects a very modest amount of revenue from personal taxes. As the rate is raised the government collects more revenue but at a decreasing rate. Suppose furthermore that at some tax rate of let's say 30% the total amount of tax revenue is maximized. Any tax rate above that leads to a reduction in tax revenue collected. From this information and that contained in the table below graph the relationship between the tax rate and tax revenue with the tax rate on the horizontal axis and tax revenue on the vertical axis.

Tax Rate	Tax Revenue
0	0
10	10
20	15
30	18
40	15
50	10
60	0

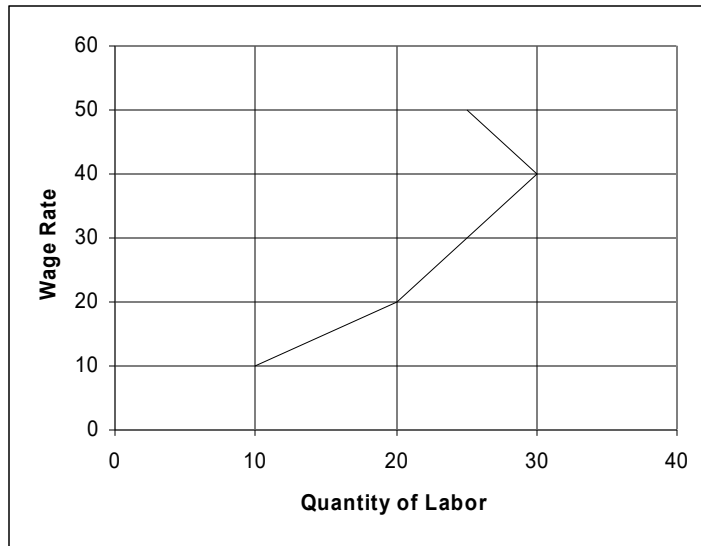


Diff: 2 Skill: Analytical Topic: non-linear graph

AACSB:

73. Suppose that as wages increase the quantity of labor supplied increases as well. However, assume that at some point as indicated in the table below increases in wages actually lead to a reduction in the quantity of labor supplied. Graph this relationship with the quantity of labor on the horizontal axis and the wage rate on the vertical axis.

Wage	Quantity of Labor
10	10
20	20
30	25
40	30
50	25



Diff: 2 Skill: Analytical Topic: non-linear graph

AACSB: