# *Macroeconomics 3rd edition Acemoglu Test Bank*

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*Macroeconomics, 3e* **(Acemoglu/Laibson/List)**
**Chapter 2 Economic Methods and Economic Questions**

## 2.1 The Scientific Method

1) Empiricism refers to using _____ to analyze the world.
A) data
B) beliefs
C) traditions
D) value judgments
Answer: A
Difficulty: Easy
AACSB: Analytical Thinking
Topic: The Scientific Method

2) The scientific method refers to the process by which economists and other scientists _____.
A) collect data for further use in research
B) develop models of the world and test those models with data
C) develop models to explain the past but not to predict the future
D) plot graphs to illustrate relationships between different economic variables
Answer: B
Difficulty: Easy
AACSB: Analytical Thinking
Topic: The Scientific Method

3) Which of the following statements is TRUE?
A) Models that economists use are perfect replicas of reality.
B) The scientific method used by economists is based on idealism and not empiricism.
C) Models help economists explain the past but do not help predict the future.
D) Testing with data enables economists to distinguish between good models and bad models.
Answer: D
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Models and Data

4) Which of the following is a feature of the scientific method?
A) The scientific method is not based on data, statistics, or measurements.
B) The scientific method allows improvisation and correction of inconsistent models.
C) The scientific method enables the creation of perfectly accurate models of the real world.
D) The scientific method is used only for studying topics related to economics.
Answer: B
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Models and Data


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5) Which of the following statements is TRUE of the scientific method?
A) The scientific method may not reveal a "true" model of the world.
B) The scientific method does not require the models to be tested with data.
C) The scientific method used by economists and scientists is independent of empiricism.
D) The scientific method can help develop accurate models even when data are unavailable.
Answer: A
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Models and Data

6) A model refers to _____.
A) a perfect replica of reality
B) a simplified description, or representation, of reality
C) facts, measurements, or statistics that describe the world
D) a set of facts established by observation and measurement
Answer: B
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Models and Data

7) Which of the following is a feature of models?
A) Models are the same as hypotheses.
B) Models help in making predictions for the future.
C) Models are more complicated than real life phenomena.
D) Models are as complex as the phenomenon being studied.
Answer: B
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Models and Data

8) Which of the following statements is TRUE of models?
A) The predictions of a model are referred to as data.
B) A model is formulated after developing a hypothesis.
C) Models are always based on assumptions that are known to be true.
D) It is more important for a model to be simple and useful than to be precisely accurate.
Answer: D
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Models and Data


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9) A model _____.
A) is often based on simplifying assumptions that are not necessarily true
B) can be tested without data or statistics
C) is a more complex representation of reality than a theory
D) can never be used to predict the future, but it helps explain the past
Answer: A
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Models and Data

10) Facts, measurements, or statistics that describe the world are referred to as _____.
A) data
B) models
C) hypothesis
D) empiricism
Answer: A
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Models and Data

11) Which of the following statements is TRUE about data?
A) Empiricism does not necessarily involve data.
B) Consistency of models can be checked using data.
C) Facts that describe the world are not considered data.
D) Convincing data analysis in economics relies on using a small sample.
Answer: B
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Models and Data

12) Empirical evidence refers to _____.
A) a simplified representation of reality
B) a proposed explanation for a phenomenon
C) the process of developing and testing models
D) a set of facts established by observation and measurement
Answer: D
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Models and Data


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13) Which of the following statements is TRUE?
A) Theories are statistics that describe the real world.
B) Hypotheses are predictions that can be tested with data.
C) Data are facts established by observation and measurement.
D) Empirical evidence consists of facts, measurements, or statistics that describe the world.
Answer: B
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Models and Data

14) A model's predictions are referred to as _____.
A) statistics
B) theories
C) hypotheses
D) empirical evidence
Answer: C
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Models and Data

15) Which of the following statements correctly differentiates between a model and a hypothesis?
A) Testing a hypothesis does not require data, whereas testing a model requires data.
B) Testing a model requires data, whereas testing a hypothesis does not require data.
C) A hypothesis can be used to make predictions for the future, whereas a model can only explain the past.
D) A model is a simplified representation of reality, whereas hypotheses are a model's predictions.
Answer: D
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Models and Data

16) What is meant by the term "scientific method?" What are the key components of the scientific method?
Answer: The scientific method is the name for the ongoing process that economists, social scientists, and natural scientists use to develop models of the world and to test those models with data. The key components of the scientific method are:
i) Models, which are simplified descriptions, or representations, of reality
ii) Data, which are facts, measurements, or statistics that describe the world
iii) Empirical evidence, which consists of facts established by observation and measurement
iv) Hypotheses, which are predictions that can be tested with data
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Models and Data


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17) Why do almost all models begin with assumptions?
Answer: Researchers develop a model, which is a simplified description of reality, to study a problem at hand. Real-world phenomena are often very complex, thus making them difficult to analyze in their true form. Therefore, assumptions are required to simplify complex phenomena and help researchers make good predictions about the future.
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Models and Data

18) Why are data essential components of the scientific method?
Answer: Data are important for testing a model. Testing with data enables economists to separate the good models from the bad ones. When a model is overwhelmingly inconsistent with data, economists try to fix the model or replace it altogether. Thus, data enable empirical testing of models to determine whether a model is suitable for analyzing the problem at hand.
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Models and Data

19) Economic models are often based on assumptions because they _____.
A) help explain the past
B) help simplify complex real-world phenomena
C) help predict the future with greater accuracy
D) help test models even when relevant data are unavailable
Answer: B
Difficulty: Easy
AACSB: Analytical Thinking
Topic: An Economic Model

A model is based on an assumption that an additional year of education increases a student's future wage by 20 percent.

20) Refer to the scenario above. The hypothesis of the model is that _____.
A) college graduates will earn about 80 percent more than high school graduates
B) college graduates will earn about 107 percent more than high school graduates
C) college graduates will earn about 200 percent more than high school graduates
D) college graduates will earn about 275 percent more than high school graduates
Answer: B
Difficulty: Medium
AACSB: Application of Knowledge
Topic: An Economic Model


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21) Refer to the scenario above. Which of the following statements is TRUE of the model?
A) The predictions of this model cannot be tested with data.
B) The predictions of this model are accurate and will hold for all individuals.
C) The predictions of this model can be applied to unlimited years of additional education.
D) The model predicts that two additional years of education is likely to increase future earnings by 60 percent.
Answer: C
Difficulty: Medium
AACSB: Application of Knowledge
Topic: An Economic Model

22) Refer to the scenario above. Which of the followings statements is TRUE of the model?
A) The predictions of this model can be verified empirically.
B) The predictions of this model can only be applied for a limited number of years of additional education.
C) According to the model, 2 additional years of education will increase an individual's future wages 1.20 times.
D) According to the model, 2 additional years of education will increase an individual's future wages 2.98 times.
Answer: A
Difficulty: Medium
AACSB: Application of Knowledge
Topic: An Economic Model

23) Refer to the scenario above. Which of the following statements is TRUE about the model's prediction?
A) The prediction cannot be verified empirically.
B) The prediction is precise, exact, and accurate for the entire population.
C) The prediction is an approximate relationship and may not hold for everyone.
D) The prediction can be applied to estimate the returns only for a limited number of years of additional education.
Answer: C
Difficulty: Medium
AACSB: Application of Knowledge
Topic: An Economic Model

24) Refer to the scenario above. Which of the following statements is TRUE about the model?
A) The model is not based on any assumption.
B) The predictions of the model will hold for every individual.
C) The model describes the economic payoff of more education.
D) The model can be applied for a maximum of 10 years of additional education.
Answer: C
Difficulty: Medium
AACSB: Application of Knowledge
Topic: An Economic Model


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25) Which of the following implies that a model is an approximation?
A) The model is not based on any assumption.
B) The predictions of the model are mostly wrong.
C) The predictions of the model will hold in most cases but not all.
D) The predictions of the model cannot be tested with data.
Answer: C
Difficulty: Easy
AACSB: Analytical Thinking
Topic: An Economic Model

26) Which of the following is a key property of models?
A) All economic models begin with assumptions.
B) Empiricism is not essential for testing models.
C) All models can be used for a limited time only.
D) All models are consistent and do not make incorrect predictions.
Answer: A
Difficulty: Easy
AACSB: Analytical Thinking
Topic: An Economic Model

27) What are the two important properties of all models?
Answer: i) All models are approximations. A model cannot predict how a certain change in a particular variable will affect all individuals in the population. Instead, it predicts what will happen to most people in most circumstances. Thus, any model is just a simplified approximation of the features of a more complex real-life phenomenon.
ii) Predictions of all models can be tested with data. Data can be used to verify and evaluate the predictions of all models. Testing with data enables economists and other scientists to refute inconsistent models and accept good models.
Difficulty: Easy
AACSB: Analytical Thinking
Topic: An Economic Model

28) An economic model suggests that for every additional year of education, an individual's future wages increase by 5 percent. If Richard, with 12 years of education, earns $20 per hour, how much will he earn per hour if he decides to undertake 4 additional years of education?
Answer: The model suggests that if Richard earns $20 per hour, an additional year of education will increase his hourly wages to 1.05 × $20. Therefore, 4 additional years of education will increase his hourly wage to 1.05 × 1.05 × 1.05 × 1.05 × $20 or $24.31 per hour.
Difficulty: Medium
AACSB: Application of Knowledge
Topic: An Economic Model


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29) An economic model suggests that an additional year of education increases a student's future wages by 15 percent. Using this model, answer the following questions.
a) Gary completes 8 years of education, and John completes 9 years of education. If Gary earns $20 per hour, how much is John expected to earn?
b) John completes 9 years of education, and Kevin completes 12 years of education. Given John's earnings (as calculated in part a), how much is Kevin expected to earn?
c) Is there any limitation to such a model? Explain your answer.
Answer: a) The economic model suggests that an additional year of education increases a student's future wages by 15 percent. Hence an additional year of education will increase the student's per-hour income by 1.15 times. If Gary earns $20 per hour with 8 years of education, John is expected to earn 1.15 × $20 or $23 per hour.
b) If John earns $23 per hour with 9 years of education, and Kevin completes 3 additional years of education, Kevin is expected to earn 1.15 × 1.15 × 1.15 × $23 or $34.98 per hour.
c) One of the major limitations of models like these is that they are approximations of real-life phenomena. It is unlikely that an additional year of education will create the same wage increment for all individuals. It is also unlikely that the wage increment from an additional year of high school education will be similar to the wage increment from an additional year of college education. Hence, the relationship between education and earnings as established by this model is not exact and is only an approximation of the real-world relationship.
Difficulty: Medium
AACSB: Application of Knowledge
Topic: An Economic Model

30) Public-use data refer to _____.
A) data that have to be purchased from an external agent
B) data that are available to anyone who wants to use it
C) data published by the government only during political campaigns
D) data collected by a researcher only through field investigation
Answer: B
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Evidence-Based Economics: How Much More Do Workers with a College Education Earn?

31) In country X, the average yearly salary of 50-year-olds with 16 years of education is $50,275, while the average yearly salary of 50-year-olds with 12 years of education is $36,265. According to these data, 4 additional years of education are likely to be correlated with higher future wages of about _____.
A) 24 percent
B) 38 percent
C) 50 percent
D) 88 percent
Answer: B
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Evidence-Based Economics: How Much More Do Workers with a College Education Earn?


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32) In a hypothetical country, the average wage of five 40-year-old citizens with a college education is $36,896, and the average wage of five 40-year-old citizens with a high school education is $25,864. What is the returns-to-college education in the country? Is there any limitation of this analysis? Explain your answer.
Answer: Dividing the average salary of 40-year-old college graduates by the average salary of 40-year-old high school graduates results in the ratio ($36,896/$25,864) = 1.426. Hence, a college education is likely to raise a citizen's income by 42.6 percent.
Yes, this analysis has a major limitation. It does not make sense to generalize overall returns to education on the basis of a sample representing a single age group. Thus, this model will provide information for only 40-year-old citizens. Returns to education could be high immediately after graduation but taper off with age, or they could increase with age. Either way, this measure does not capture the true returns to education. Moreover, to arrive at the conclusion, in each category, the average income of only five citizens is taken into account. The number of observations in this case is very small, and this may weaken the empirical argument presented here.
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Evidence-Based Economics: How Much More Do Workers with a College Education Earn?

33) The mean of a data set is the _____.
A) product of all values divided by the number of values
B) sum of all different values divided by the number of values
C) sum of all different values multiplied by the number of values
D) difference between the highest value and the lowest value
Answer: B
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Means and Medians

34) Which of the following statements is TRUE about the mean of a series?
A) The mean is equal to zero when all the values are identical.
B) The mean is a commonly used technique for summarizing data.
C) The mean is less than all the individual observations in the data set.
D) The mean is calculated as the sum of all values multiplied by the number of values.
Answer: B
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Means and Medians


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The following table shows the monthly wages of five different individuals.

| Individual | Monthly Wage |
|---|---|
| 1 | $200 |
| 2 | $450 |
| 3 | $640 |
| 4 | $700 |
| 5 | $800 |

35) Refer to the table above. What is the average monthly wage?
A) $450
B) $558
C) $612
D) $650
Answer: B
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Means and Medians

36) Annie, Darwin, Dorothy, Christian, and Isabella are five college students who work as part-time bartenders. If their average weekly earnings is $100, then their total weekly earnings is _____.
A) $500
B) $400
C) $250
D) $700
Answer: A
Difficulty: Medium
AACSB: Analytical Thinking
Topic: Means and Medians

37) A local swimming club enrolled thirty-five new members during the current year and charged each member a onetime membership fee of $200. What is the total membership fee collected by the club from the new members this year?
A) $1,750
B) $2,000
C) $7,000
D) $3,500
Answer: C
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Means and Medians


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38) The weights of six students in the seventh grade are 120 lbs, 110 lbs, 105 lbs, 100 lbs, 96 lbs, and 90 lbs. The average weight of the six students is _____.
A) 105 lbs
B) 103.5 lbs
C) 100 lbs
D) 95 lbs
Answer: B
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Means and Medians

The following table shows the monthly wages of five different individuals.

| Individual | Monthly Wage |
|---|---|
| 1 | $200 |
| 2 | $450 |
| 3 | $450 |
| 4 | $500 |
| 5 | $600 |

39) Refer to the table above. The average monthly wage of the five workers is _____.
A) $600
B) $450
C) $440
D) $0
Answer: C
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Means and Medians

40) The average income of 25 employees working in a firm is $1,754 per month. What is the total income of all the employees?
A) $40,000
B) $43,850
C) $56,225
D) $63,950
Answer: B
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Means and Medians


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41) Which of the following statements is TRUE?
A) Empirical arguments can be supported without the use of data.
B) Using a large data set will strengthen the force of an empirical argument.
C) Using fewer observations will strengthen the force of an empirical argument.
D) The number of observations used does not affect the strength of an empirical argument.
Answer: B
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Means and Medians

42) To judge a statistical relationship, should a researcher rely on a small sample or a large sample? Explain your answer.
Answer: A key feature of economic and statistical analyses is the amount of data used. Small samples are not representative of the entire population. Therefore, the predictions of a model based on smaller samples may be only a very weak approximation of some real-world phenomena and lead to inaccurate predictions. Using a larger sample (in other words, a lot of data) strengthens the force of an empirical argument, because the researchers can make more precise statements.
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Means and Medians

43) The following table displays the marks obtained by three students on an economics test.

| Student | Mark Obtained (out of 100) |
|---|---|
| Mary | 78 |
| Charles | 83 |
| Tony | 65 |

a) Calculate the mean marks obtained by the three students.
b) Suppose one of the scores was reported incorrectly. Charles scored 38 instead of 83. How will the mean change if the correction is incorporated?
c) How does the amount of data used affect the accuracy of a model?
Answer: a) The mean, or average, is the sum of the observations in a data set divided by the number of observations. In this case, the sum of the marks of the three students is 78 + 83 + 65, or 226. Therefore, the average score of the three students is 226/3, or 75.33.
b) Because one of the scores was wrongly reported, there would be a change in the sum of the scores. If the correct score is considered, the new sum of marks is 226 - 83 + 38, or 181. Hence the corrected average score is 181/3, or 60.33.
c) The amount of data used plays an important role in determining the accuracy of a model. A key feature in economic analysis is the amount of data used. Using lots of data, or observations, strengthens the force of an empirical argument and allows the researcher to make more precise statements.
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Means and Medians


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44) Which of the following arguments based on anecdotes is most likely to be incorrect?
A) Increased government spending lowers the unemployment rate in an economy but can lead to inflation.
B) Based on a local survey of a small town, it was argued that greater opportunities to work from home are the prime cause of obesity among the elderly workforce in the country.
C) The average annual earnings of high school dropouts in the United States was much less than that of graduates in 2015.
D) A health survey of preschoolers in Mexico showed that the average height of preschoolers is between 3.5 feet and 4 feet.
Answer: B
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Argument by Anecdote

45) Which of the following statements is TRUE?
A) Arguments based on anecdotes are always true.
B) In the scientific method, anecdotes are more important than data.
C) Arguments by example are appropriate when contradicting a blanket statement.
D) It is easier for a researcher to jump to a wrong conclusion when she uses a large data set.
Answer: C
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Argument by Anecdote

46) 5 friends are comparing GPAs and find that they have a mean GPA of 3.0. If they make another friend with a GPA of 2.5, which of the following statements is TRUE?
A) The mean GPA of the friend group will rise.
B) The mean GPA of the friend group will fall.
C) The mean GPA of the friend group will not change.
D) There is not enough information to answer this question.
Answer: A
Difficulty: Hard
AACSB: Analytical Thinking
Topic: Means and Medians


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Cam'ryn, Lejla, Shaun, Tyson, and Elvira work 40 hours, 25 hours, 35 hours, 38 hours and 45 hours, respectively, each week.

47) Refer to the scenario above. On average, how much do they work each week?
A) 30 hours
B) 34.2 hours
C) 36.6 hours
D) 38.4 hours
Answer: C
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Means and Medians

48) Refer to the scenario above. What is the median of their hours worked each week?
A) 35 hours
B) 36 hours
C) 38 hours
D) 40 hours
Answer: C
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Means and Medians

49) Refer to the scenario above. If Kayla joins the group and works 42 hours a week, what would happen to the average hours worked for this group?
A) The average would increase.
B) The average would decrease.
C) The average would not change.
D) There is not enough information to tell.
Answer: A
Difficulty: Hard
AACSB: Application of Knowledge
Topic: Means and Medians

50) Philip Oreopolous found a 10% return to a year of schooling in the UK. If Rashmi could earn 25,000 pounds after completing 15 years of schooling. This result implies that she could earn _____ pounds if she completes 16 years of schooling.
A) 22,500
B) 27,500
C) 30,000
D) 250,000
Answer: B
Difficulty: Medium
AACSB: Analytical Thinking
Topic: Evidence-Based Economics: How Much More Do Workers with a College Education Earn?


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51) Which of the following is NOT a reason that schooling and earnings might be positively correlated?
A) Workers with higher wages become smarter and more productive.
B) Additional schooling makes workers more productive and thus firms are willing to pay them more.
C) A person's level of schooling and their innate ability (or innate productivity) are positively correlated, so more productive workers end up earning more.
D) People who obtain more years of schooling might enjoy learning and complete more training once they are hired.
Answer: A
Difficulty: Hard
AACSB: Analytical Thinking
Topic: Evidence-Based Economics: How Much More Do Workers with a College Education Earn?

## 2.2 Causation and Correlation

1) Causation occurs when _____.
A) two variables tend to move in the same direction
B) two variables tend to move in opposite directions
C) a change in one variable is the reason for a change in another variable
D) a change in one variable does not cause any change in another variable
Answer: C
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Causation versus Correlation

2) Which of the following is most likely to be an example of causation?
A) The crime rate is high in a country. The literacy rate is high as well.
B) A firm producing compact fluorescent light bulbs installs new machinery. Their per-day production of light bulbs increases.
C) A soccer player scores four goals when he wears red socks. He concludes that the red socks helped him score the goals.
D) A student wins money by scratching a ticket with a particular coin. He decides to scratch all tickets with the same coin in the future.
Answer: B
Difficulty: Hard
AACSB: Analytical Thinking
Topic: Causation versus Correlation

3) A variable is a factor that _____.
A) cannot be measured
B) is not affected by changes in other factors
C) is independent and cannot be determined
D) takes different values at different points of time
Answer: D
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Causation versus Correlation


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4) A correlation between two variables implies that _____.
A) there is a cause-effect relationship between the two variables
B) it is impossible to measure one variable without measuring the other
C) there is a mutual relationship between both the variables
D) when one variable changes, the other variable always changes by exactly the same amount
Answer: C
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Causation versus Correlation

5) Which of the following statements identifies a difference between correlation and causation?
A) Correlation occurs when one thing directly affects another, whereas causation implies a mutual relationship between two things.
B) Correlation implies a mutual relationship between two things, whereas causation occurs when one thing directly affects another.
C) A causal relationship exists between two variables when they are correlated, but correlation does not necessarily exist if there's a causal relationship between two variables.
D) Causation cannot arise when correlation is present, and correlation cannot arise when causation is present.
Answer: B
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Causation versus Correlation

6) Which of the following statements is TRUE?
A) Correlation can only arise when causation is not present.
B) Causation can only arise when correlation is not present.
C) Correlation arises when there is causation and can also arise when there is no causation.
D) Causation arises when there is correlation between two variables and can also arise when there is no correlation.
Answer: C
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Causation versus Correlation

7) When two variables move in the same direction, they are said to be _____.
A) uncorrelated
B) equivalent
C) positively correlated
D) negatively correlated
Answer: C
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Causation versus Correlation


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8) Which of the following pairs of variables is likely to be positively correlated?
A) Income and consumption
B) Price and consumption
C) Education and unemployment
D) Availability of health care and death rate
Answer: A
Difficulty: Medium
AACSB: Analytical Thinking
Topic: Causation versus Correlation

9) When two variables move in opposite directions, they are said to be _____.
A) uncorrelated
B) positively correlated
C) negatively correlated
D) equivalent
Answer: C
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Causation versus Correlation

10) Which of the following relationships is likely to exhibit a negative correlation?
A) The relationship between the amount saved with a bank and the interest earned
B) The relationship between the level of professional training and unemployment
C) The relationship between inflation in the United States and traffic congestion in China
D) The relationship between the amount of precipitation in a year and the number of umbrellas sold
Answer: B
Difficulty: Medium
AACSB: Analytical Thinking
Topic: Causation versus Correlation

11) Zero correlation between two variables implies that _____.
A) both variables move in the same direction
B) the variables are not related to each other
C) both variables move in the opposite direction
D) change in one variable causes the other to change
Answer: B
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Causation versus Correlation


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12) Which of the following relationships is most likely to exhibit zero correlation?
A) The relationship between income and savings
B) The relationship between education and income
C) The relationship between wind velocity and the rotational speed of wind turbines
D) The relationship between the amount received as unemployment benefits in China and the unemployment rate in Canada
Answer: D
Difficulty: Medium
AACSB: Analytical Thinking
Topic: Causation versus Correlation

13) Data show that in 2012, the college enrollment in Lithasia increased. In the same year, the sale of hot dogs in Lithasia also increased. The relationship between college enrollment and the sale of hot dogs exhibits _____.
A) a zero correlation
B) a causal relationship
C) a positive correlation
D) a negative correlation
Answer: C
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Causation versus Correlation

14) An omitted variable is a variable that _____.
A) is purposely left out as it does not aid an economic analysis
B) does not cause other variables in a study to change when it changes
C) is removed from a study as it can lead to the problem of reverse causality
D) has been left out, and if included, would explain why the variables considered in a study are correlated
Answer: D
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Causation versus Correlation

15) _____ occurs when the direction of cause and effect is mixed up in a study.
A) Adverse causality
B) Reverse causality
C) Omitted variable bias
D) Limited information bias
Answer: B
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Causation versus Correlation


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16) Which of the following claims is most likely to suffer from reverse causality?
A) Higher income increases consumption.
B) Relatively wealthy people tend to be relatively healthy.
C) More hours of study are likely to lead to better results.
D) Crime rate is seen to be lower in countries having a higher level of poverty.
Answer: B
Difficulty: Medium
AACSB: Analytical Thinking
Topic: Causation versus Correlation

17) What are the three categories of correlation? Illustrate with real-life examples.
Answer: Correlation can be divided into three categories. These are:
i) Positive correlation, which implies that two variables tend to move in the same direction. For example, when income increases, consumption increases.
ii) Negative correlation, which implies that two variables tend to move in the opposite direction. For example, when people have more professional training, they are less likely to be unemployed.
iii) Zero correlation, which implies that there is no relationship between two variables. For example, the amount of air pollution in India is likely to have no relationship with the pollution control measures adopted in the United States.
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Causation versus Correlation

18) A survey recently indicated that being happy at work tends to make workers more productive. What can be a possible error of this conclusion?
Answer: The conclusion derived from the survey is likely to be a correlation rather than causation. In other words, saying that happiness causes workers to be productive can be a misleading conclusion. It is also likely that workers who are productive are happier, because they are performing better than their colleagues. There can be other explanations to being happy at work. For example, if the job provides workers a good match for their skills, they will be happy to use their skills, which will make them more productive.
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Causation versus Correlation

19) What is meant by the term "omitted variable" in correlation analysis? Explain with an example.
Answer: An omitted variable is something that has been left out of a study that, if included, would explain why two variables are correlated. For example, it is seen that the rate of employees quitting is lower in firms that pay higher wages. Thus, a conclusion can be drawn that higher wages result in lower quit rates. But many other variables might influence the quit rates apart from wages, such as employee benefits provided by the firm, age of employees, and work-life balance. These variables that have been left out are omitted variables and if included in the study would better explain the quit rates of firms.
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Causation versus Correlation


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20) Reverse causality can create confusion between correlation and causation. What does reverse causality imply?
Answer: Reverse causality is said to happen when the direction of cause and effect is mixed up in a study. This can lead to wrong conclusions. For example, researchers may claim that jogging causes people to be healthy. There's a possibility of reverse causality in this claim, because it might be the case that healthy people tend to jog more.
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Causation versus Correlation

21) It has been observed in country X that with an increase in college enrollment over a period of 6 years, the demand for televisions has also increased. Would it be right to conclude that the increase in college enrollment has caused the increase in demand for televisions? Why or why not?
Answer: The error in drawing such a conclusion is that the increase in both the variables may represent a correlation and not necessarily a causal relationship. Although both variables move together, it would be wrong to conclude that an increase in college enrollment is causing an increase in the demand for televisions. There may be other omitted variables, such as changes in the per capita income in country X or changes in the price of satellite television connections over the 6 years.
Difficulty: Easy
AACSB: Application of Knowledge
Topic: Causation versus Correlation

22) State the type of correlation between the following sets of variables.
a) Consumption and income
b) Education and unemployment
c) Availability of health care and death rate
d) Pollution control measures adopted in Canada and the number of cases of respiratory diseases in Australia
Answer: a) Consumption and income are likely to be positively correlated.
b) Education and unemployment are likely to be negatively correlated.
c) Health care and death rate are likely to be negatively correlated.
d) The relationship between pollution control in Canada and the number of cases of respiratory diseases in Australia is likely to have zero correlation.
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Causation versus Correlation


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23) Does correlation always imply causation? Why or why not? Explain with the help of real-life examples.
Answer: No, correlation does not always imply causation. Both causation and correlation study the relationship between two or more variables and are therefore often mistaken for each other. Correlation means that there is a mutual relationship between two variables; as one variable changes, the other changes as well. Correlation between two variables does not necessarily imply that one causes the other. Correlation just looks at the strength of association between two variables, whereas causation occurs when one variable directly affects the other variable through a causal relationship. For example, if the use of some new packaging material improves the shelf life of bread, it represents a causal relationship. In contrast, if someone claims watching violent movies increases crime rates in a country, it is not necessarily a causal relationship. However, some degree of correlation may exist between both.
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Causation versus Correlation

24) An experiment refers to _____.
A) a simplified representation of some real-life phenomenon
B) the process of collecting, measuring, and organizing data
C) validating the claims of a model using statistics and facts
D) a controlled method of investigating causal relationships among variables
Answer: D
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Experimental Economics and Natural Experiments

25) Which of the following is a feature of experiments?
A) Experiments are restricted to laboratories.
B) Experiments are carried out only in the study of economics.
C) Experiments help determine cause and effect between variables.
D) Experiments require the division of participants into a treatment group and a test group.
Answer: C
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Experimental Economics and Natural Experiments

26) To conduct a randomized experiment, researchers usually classify the participants into a _____.
A) study group and a control group
B) treatment group and a test group
C) study group and a treatment group
D) treatment group and a control group
Answer: D
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Experimental Economics and Natural Experiments


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27) Randomization is the assignment of subjects by _____ to a _____.
A) chance, rather than by choice; treatment group or to a test group
B) choice, rather than by chance; treatment group or to a test group
C) choice, rather than by chance; treatment group or to a control group
D) chance, rather than by choice; treatment group or to a control group
Answer: D
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Experimental Economics and Natural Experiments

28) Which of the following statements is TRUE?
A) Randomization is not used in medical experiments.
B) Randomization allows for the classification of participants according to their choice.
C) The subjects in the treatment group and the control group of an experiment are identical in all respects and they are treated identically.
D) The subjects in the treatment group and the control group of an experiment are treated identically, except along a single dimension.
Answer: D
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Experimental Economics and Natural Experiments

29) A researcher wants to test the effects of daily meditation on the stress levels of individuals. She divides the participants randomly into a treatment group and a control group and conducts an experiment. She pays for meditation classes for half of the subjects, and the other half does not join the class. Which of the following statements is TRUE of the two groups in this experiment?
A) The participants in the treatment group are assigned by chance, whereas the ones in the control group are assigned by choice.
B) The participants in the control group are assigned by chance, whereas the participants in the treatment group are assigned by choice.
C) The treatment group is the group of subjects that receives payment from the researcher for meditation classes; the control group is the group that does not.
D) The control group is the group of subjects that receives payment from the researcher to join the meditation class; the treatment group is the group that does not.
Answer: C
Difficulty: Medium
AACSB: Analytical Thinking
Topic: Experimental Economics and Natural Experiments

30) Which of the following is NOT a problem associated with randomized experiments?
A) Experiments can sometimes get expensive for the researcher.
B) The participants in the treatment group and the control group are not identical in all respects.
C) Getting immediate answers to some important questions may not be possible.
D) Sometimes experiments are conducted poorly, which may lead to inaccurate results.
Answer: B
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Experimental Economics and Natural Experiments


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31) A natural experiment is an empirical study _____.
A) in which the predictions of the model are not required to be tested with data
B) that can only be used to understand natural phenomena and is widely used in subjects such as physics and biology
C) in which the researcher assigns subjects to the control and treatment groups to verify a cause-effect relationship
D) in which some process, outside the control of the experimenter, has assigned subjects to the control and treatment groups in a random or nearly random way
Answer: D
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Experimental Economics and Natural Experiments

32) Which of the following is an example of a natural experiment?
A) A laboratory research on the effectiveness of solar power as an alternative source of fuel
B) A research on the effectiveness of a new medicine among some voluntary participants
C) A research on the effect of air pollution on lung disorders by observing the health conditions of people who stay close to industrial areas and those who stay away from industries
D) A study on the benefits of regular exercise by paying for the membership fees at fitness clubs for one-half of the participants
Answer: C
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Experimental Economics and Natural Experiments

33) Which of the following is NOT an example of a natural experiment?
A) A study looks at the income distribution across countries to compare the level of income inequality in high income countries and low income countries
B) A study examining the effect of blind auditions on the gender composition of orchestras by observing the fractions of females in orchestras that switch to blind auditions versus those who do not
C) A study examining the effects of in utero stress on a child's birth weight by comparing birth weights of babies in utero during a devastating tsunami and those who were not
D) A study examining the effects of a minimum wage on employment by observing employment in a state that raised their minimum wage and a nearby state that did not change their minimum wage
Answer: A
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Experimental Economics and Natural Experiments


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34) Which of the following are the most likely to exhibit a negative correlation?
A) Number of cigarettes smoked per day and life expectancy
B) Number of times a person works out each week and life expectancy
C) Income and life expectancy
D) Beard length and life expectancy
Answer: A
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Correlation Does Not Imply Causality

35) In research, what is the importance of experiments? What is meant by randomization in experiments?
Answer: An experiment is a controlled method of investigating causal relationships among variables. Randomization in experiments refers to the assignment of participants by chance, rather than by choice, to a treatment group or a control group.
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Experimental Economics and Natural Experiments

36) To test the effectiveness of a newly developed medicine, 300 patients suffering from a heart ailment were divided into two groups of 150 people each. One group was treated with the new medicine, while the other was treated with an already existing, widely used medicine. In this scenario, identify the treatment group and the control group. What is the rationale behind dividing patients into two groups?
Answer: The treatment group refers to the group of patients who received the new medicine. The control group refers to the group of people who were not given the new medicine but were instead given the medicine that was already in widespread use. The rationale behind this division is to compare the health changes of the two groups over time. This experiment tests whether the new drug is better than the old drug.
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Experimental Economics and Natural Experiments

37) What are the problems with experimentation?
Answer: There are three main problems associated with experimentation:
i) Experiments can be very costly to conduct.
ii) Experiments do not provide immediate answers to a number of important questions.
iii) Experiments are sometimes conducted poorly, which can lead to inefficient results.
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Experimental Economics and Natural Experiments


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38) Suppose a pharmaceutical company wants to test the effectiveness of a new drug in curing cancer. Which approach should it use to test whether the new drug is more effective than existing medicines that are widely used?
Answer: The best way to test the effectiveness of the new drug is to conduct a randomized experiment. An experiment is a controlled method of investigating causal relationships among variables. To check the effectiveness of the drug, the researcher creates a treatment group and a control group chosen from all the patients with cancer. The participants are randomly divided into a treatment group or a control group. The patients in the treatment group receive the new medicine, while the patients in the control group receive the standard existing medication. The researcher then has to investigate the participants over a period of time, keeping a track of how their health changes. If the participants of the treatment group recover faster than the control group, it can be concluded that the new drug is more effective than the existing medicines prescribed currently.
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Experimental Economics and Natural Experiments

## 2.3 Economic Questions and Answers

1) Which of the following statements correctly indicates a property of good economic questions?
A) A good economic question should always be easy to answer.
B) A good economic question should always be positive and not normative.
C) A good economic question must always include arithmetic calculations and graphical solutions.
D) A good economic question addresses topics that are important to economic agents and/or to society.
Answer: D
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Economic Questions and Answers

2) Which of the following is a property of a good economic question?
A) A good economic question can be answered.
B) A good economic question should always have a single solution.
C) A good economic question always addresses topics that are important to the whole society and not to an individual economic agent.
D) A good economic question should never incorporate elements from disciplines other than economics.
Answer: A
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Economic Questions and Answers


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## Appendix: Constructing and Interpreting Charts and Graphs

1) A circular chart split into segments to show the percentages of parts relative to the whole is called _____.
A) a histogram
B) a time-series graph
C) a pie chart
D) a bar chart
Answer: C
Difficulty: Easy
AACSB: Application of Knowledge
Topic: Pie Charts

2) Which of the following graphical representations can be used most appropriately to show the distribution of a household's income, in terms of percentages, among the various categories of expenses?
A) A bar chart
B) A pie chart
C) A histogram chart
D) A time-series graph
Answer: B
Difficulty: Easy
AACSB: Application of Knowledge
Topic: Pie Charts

3) Which of the following statements is TRUE?
A) A bar chart has many limitations in comparison to pie charts.
B) A bar chart does not allow for the comparison of a single variable across many segments.
C) A bar chart can only be used to represent independent variables.
D) A bar chart indicates the frequency of a variable by using rectangles of different heights or lengths.
Answer: D
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Bar Charts

4) Which of the following graphical representations is ideal for comparing a single variable across different groups?
A) A histogram
B) A bar chart
C) A scatter plot
D) A time series graph
Answer: B
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Bar Charts


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5) An independent variable _____.
A) cannot be measured
B) cannot be represented on a bar chart
C) is manipulated by the experimenter in an experiment
D) is determined by the other variables in an experiment
Answer: C
Difficulty: Medium
AACSB: Analytical Thinking
Topic: Bar Charts

6) A variable that is potentially affected by an experimental treatment is referred to as a(n) _____.
A) omitted variable
B) independent variable
C) dependent variable
D) compulsory variable
Answer: C
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Bar Charts

7) When the objective of an experiment or a study is to understand the changes in the attributes of a variable on a month-to-month basis, a _____ is most useful.
A) pie chart
B) time series graph
C) histogram
D) bar chart
Answer: B
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Time Series Graphs

8) Which of the following is most likely to be represented by a time series graph?
A) The relationship between hourly wages and a worker's productivity
B) The growth in consumer income over 5 years
C) The contribution of each sector to the total output of an economy
D) The different sources of tax revenue for the government
Answer: B
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Time Series Graphs


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9) On a line chart, the income of a consumer is measured along the horizontal axis, and his consumption is measured along the vertical axis. The slope of the line is equal to _____.
A) change in consumption plus change in income
B) change in consumption minus change in income
C) change in consumption multiplied by change in income
D) change in consumption divided by change in income
Answer: D
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Correlation Does Not Imply Causality

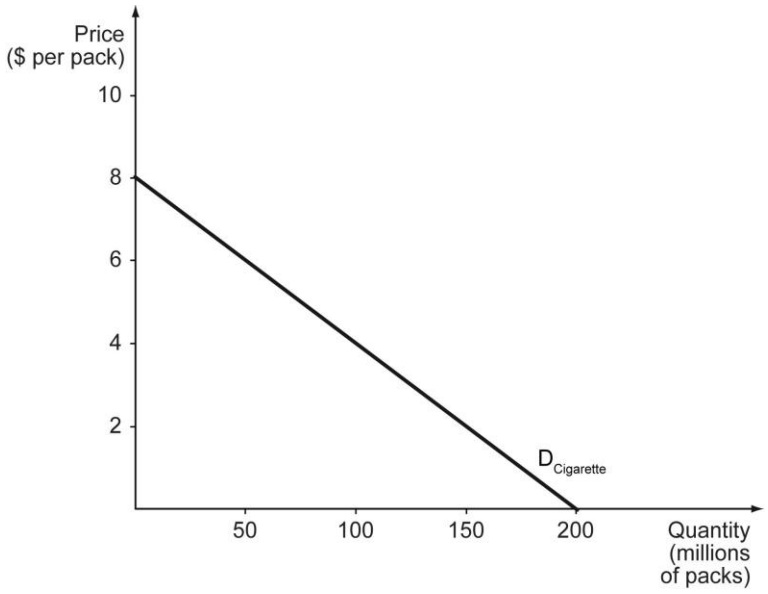
10) The slope of the line on a line chart measures the rate of change in _____.
A) only the independent variable
B) only the dependent variable
C) the dependent variable as the independent variable changes
D) the independent variable as the dependent variable changes
Answer: C
Difficulty: Easy
AACSB: Analytical Thinking
Topic: Correlation Does Not Imply Causality

11) As the number of billboards for a firm's product increases from 100 to 500, its sales increase from $1,000 to $10,000. If this information is plotted on a line chart, the slope of the line equals _____.
A) $20
B) $0.044
C) $22.5
D) $30.33
Answer: C
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Correlation Does Not Imply Causality


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Tobac Co. is a monopolist in the cigarette market in the Nicotiana Republic, where the U.S. dollar is used as the official currency. The firm faces the demand curve shown below.




12) What is the slope of this demand curve?
A) 25
B) 1/25
C) 50
D) 1/50
Answer: B
Difficulty: Medium
AACSB: Application of Knowledge
Topic: Slope of a Line


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The table below provides data on opium sales and farmgate prices of opium in Afghanistan from 1994 to 2008.

**Opium Prices and Production in Afghanistan: 1994-2008**

| Year | Opium Quantity purchased (metric tons) | National Average Farmgate Price of Opium (US$/kg) at Harvest |
|---|---|---|
| 1994 | 3100 | 30 |
| 1995 | 2300 | 23 |
| 1996 | 2200 | 24 |
| 1997 | 2800 | 34 |
| 1998 | 2693 | 33 |
| 1999 | 4565 | 40 |
| 2000 | 3276 | 28 |
| 2001 | 185 | 301 |
| 2002 | 3400 | 250 |
| 2003 | 3600 | 283 |
| 2004 | 4200 | 92 |
| 2005 | 4100 | 102 |
| 2006 | 6100 | 94 |
| 2007 | 8200 | 86 |
| 2008 | 7700 | 70 |

**Source:** http://www.unodc.org/documents/crop-monitoring/Afghanistan_Opium_Survey_2008.pdf

13) Which of the following statements is FALSE based on the table above?
A) The best way to visualize how the quantity of opium purchased varies with the price of opium is with a scatter plot
B) The best way to visualize how the price of opium has changed over time would be with a time series graph.
C) The best way to visualize how the quantity of opium purchased varies with the price of opium is with a pie chart
D) There might be other factors besides price that are influencing the quantity of opium that is purchased.
Answer: C
Difficulty: Hard
AACSB: Analytical Thinking
Topic: Interpreting Graphs and Data


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