ANSWERS

Chapter Review

What Is Psychology?
1. think; feel; act
2. Aristotle; learning; memory; motivation; emotion; perception; personality
3. Wundt; Edward Titchener; structuralism; introspection; unreliable
4. James; adaptive; functionalism
5. Mary Calkins; Margaret Floy Washburn
6. biology; philosophy
7. learning; Sigmund Freud; children
8. mental; observable
9. behaviorism; Carl Rogers; Abraham Maslow; humanistic; growth; healthy
10. cognitive; mind; cognitive neuroscience
11. behavior; mental
12. observe; record; subjective experiences; infer
13. asking and answering questions

Contemporary Psychology
1. increasing; globalizing
2. biology; experience
3. Plato; Aristotle
4. Locke; Descartes
5. Charles Darwin; evolution; natural selection
6. nurture; nature; psychological; biological
7. system; social system; levels; analysis; psychological; social-cultural; biopsychosocial
8. neuroscience
9. evolutionary; behavior genetics
10. psychodynamic
11. behavioral
12. cognitive
13. social-cultural
14. complement
15. basic research; applied research
16. counseling; clinical
17. psychiatrists

Close-Up: Tips for Studying Psychology
1. actively

2. SQ3R; a. survey; b. question; c. read; d. review; e. reflect
   a. Distribute study time.
   b. Listen actively in class.
   c. Overlearn material.
   d. Learn to think critically.
   e. Be a smart test-taker.

Progress Test 1

Multiple-Choice Questions
1. a. is the answer. (p. 5)
   b. Psychology has never been defined in terms of conscious and unconscious activity.
   c. From the 1920s into the 1960s, psychology was defined as the scientific study of observable behavior.
   d. Psychology today is defined as the scientific study of behavior and mental processes. In its earliest days, however, psychology focused exclusively on mental phenomena.
2. c. is the answer. (p. 5)
   a. Wilhelm Wundt, the founder of the first psychology laboratory, was seeking to measure the simplest mental processes.
   b. Sigmund Freud developed an influential theory of personality that focused on unconscious processes.
   d. William James, author of the early textbook Principles of Psychology, was a philosopher and was more interested in mental phenomena than observable behavior.
3. d. is the answer. (p. 6)
   a. In its earliest days psychology was defined as the science of mental phenomena.
   b. Psychology has never been defined in terms of conscious and unconscious activity.
   c. From the 1920s into the 1960s, psychology was defined as the scientific study of behavior.
4. a. is the answer. (p. 3)
5. d. is the answer (p. 4)
   a. Wilhelm Wundt founded the first psychology laboratory.
   b. Ivan Pavlov pioneered the study of learning.
   c. Jean Piaget was this century’s most influential observer of children.
6. c. is the answer. (p. 9)
7. a. is the answer. Biology and experience are internal and external influences, respectively. (p. 7)
   b. Rewards and punishments are both external influences on behavior.
   c. Heredity and instinct are both internal influences on behavior.
d. The legitimacy of the study of mental processes does not relate to the internal/external issue.

8. d. is the answer. For Locke, the mind at birth was a blank tablet. (p. 7)
   a. Plato assumed that much of intelligence is inherited and therefore present at birth. Moreover, he was a philosopher of ancient Greece.
   b. Aristotle held essentially the same viewpoint as Locke, but he lived in the fourth century B.C.
   c. Descartes believed that knowledge does not depend on experience.

9. c. is the answer. (p. 7)
   a. Aristotle was a philosopher in ancient Greece who would have agreed with Locke that knowledge comes from experience.
   b. Plato assumed that character and intelligence are inherited.
   d. Locke believed that the mind is a blank slate at birth.

10. a. is the answer. (p. 9)
    b. The cognitive perspective is concerned with how we encode, process, store, and retrieve information.
    c. The behavioral perspective studies the mechanisms by which observable responses are acquired and changed.
    d. The behavior genetics perspective focuses on the relative contributions of genes and environment to individual differences.

11. d. is the answer. (p. 9)
    a. Behavioral psychologists investigate how learned behaviors are acquired. They generally do not focus on subjective opinions, such as attractiveness.
    b. The evolutionary perspective studies how natural selection favors traits that promote the perpetuation of one’s genes.
    c. Cognitive psychologists study the mechanisms of thinking and memory, and generally do not investigate attitudes. Also, because the question specifies that the psychologist is interested in comparing two cultures, d. is the best answer.

12. a. is the answer. (p. 10)
    b. & c. Applied and industrial/organizational psychologists tackle practical problems.
    d. Clinical psychologists (and researchers) focus on treating troubled people.

13. c. is the answer. (p. 10)
    d. Psychiatrists are medical doctors rather than psychologists.

14. a. is the answer. (p. 10)
    c. & d. Psychologists are widely involved in both basic and applied research.

15. d. is the answer. (p. 12)
16. d. is the answer. (p. 5)

**Matching Items**

1. f (p. 9)           7. a (p. 10)           13. d (p. 3)
2. b (p. 9)           8. g (p. 9)           14. n (p. 3)
3. p (p. 11)          9. m (p. 10)          15. h (p. 5)
4. j (p. 10)          10. c (p. 10)         16. k (p. 5)
5. o (p. 9)           11. i (p. 9)          6. e (p. 9)   12. l (p. 9)

**Progress Test 2**

**Multiple-Choice Questions**

1. a. is the answer. (p. 2)
2. a. is the answer. (p. 2)
   b. & d. John Watson, like many American psychologists during this time, believed that psychology should focus on the study of observable behavior.
   c. Because he pioneered the study of learning, Pavlov focused on observable behavior and would certainly have disagreed with this statement.
3. b. is the answer. (p. 6)
4. d. is the answer. (p. 5)
5. a. is the answer. (p. 6)
   b. Psychology is equally involved in basic research.
   c. Psychology’s knowledge base is constantly expanding.
   d. Psychology is the scientific study of behavior and mental processes.
6. c. is the answer. (p. 4)
7. b. is the answer. (p. 7)
   a. Aristotle believed that all knowledge originates with sensory experience.
   c. Descartes was a philosopher of the seventeenth century.
   d. Simonides was a well-known Greek orator.
8. d. is the answer. (p. 9)
   a. The neuroscience perspective studies the biological bases for a range of psychological phenomena.
   b. The evolutionary perspective studies how natural selection favors traits that promote the perpetuation of one’s genes.
   c. The social-cultural perspective is concerned with variations in behavior across situations and cultures.
9. c. is the answer. After earning their M.D. degrees, psychiatrists specialize in the diagnosis and treatment of mental health disorders. (p. 11)
a., b., & d. These psychologists generally earn a Ph.D. rather than an M.D.

10. d. is the answer. The emphasis on change during the life span indicates that Dr. Jones is most likely a developmental psychologist. (p. 10)
a. Clinical psychologists study, assess, and treat people who are psychologically troubled.
b. Personality psychologists study our inner traits.
c. Psychiatrists are medical doctors.

11. c. is the answer. (p. 10)
a. Clinical psychologists study, assess, and treat people with psychological disorders.
b. & d. Personality psychologists and psychiatrists do not usually study people in work situations.

12. c. is the answer. (p. 9)
a. Psychologists who follow the behavioral perspective emphasize observable, external influences on behavior.
b. The evolutionary perspective focuses on how natural selection favors traits that promote the perpetuation of one’s genes.
c. & d. The cognitive perspective places emphasis on conscious, rather than unconscious, processes.

13. a. is the answer. (p. 9)

14. a. is the answer. The research is addressing a practical issue. (p. 10)
b. Basic research is aimed at contributing to the base of knowledge in a given field, not at resolving particular practical problems.
c. & d. Clinical and developmental research would focus on issues relating to psychological disorders and life-span changes, respectively.

15. a. is the answer. (p. 12)
b. & c. Although each of these is true, SQ3R is based on the more general principle of active learning.
d. In fact, just the opposite is true.

16. a. is the answer. (p. 8)
b. & c. The biopsychosocial approach has nothing to do with the relative importance of basic research and applied research and is equally applicable to both.
d. On the contrary, the biopsychosocial approach is based on the idea that single academic perspectives are often limited.

True-False Items
1. F (p. 8) 5. F (p. 9) 9. T (p. 6)
2. F (p. 3) 6. F (p. 9) 10. T (p. 3)
3. T (pp. 2-5) 7. T (p. 12)
4. T (p. 8) 8. F (p. 12)

Psychology Applied

Multiple-Choice Questions
1. b. is the answer. (p. 2)
a. As the founder of the first psychology laboratory, Wundt certainly based his research on the scientific method.
c. The earliest psychologists, including Wilhelm Wundt, were concerned with the self-examination of covert thoughts, feelings, and other mental processes.

2. c. is the answer. (p. 3)

3. d. is the answer. (pp. 5-6)

4. c. is the answer. (p. 10)
a. Industrial/organizational psychologists study and advise on behavior in the workplace.
b. Developmental psychologists investigate behavior and mental processes over the life span.
c. Psychiatrists are medical doctors who treat medical disorders. There is no indication that Terrence is suffering from a medical disorder.

5. b. is the answer. (p. 8)
a., c., & d. Each of these perspectives is too narrow to apply to Professor Gutierrez’s belief. Moreover, the psychodynamic perspective (a.) emphasizes unconscious processes, in which Professor Gutierrez has not expressed a belief.

6. b. is the answer. Locke believed that all knowledge comes from experience (nurture). Descartes believed that some ideas are innate (nature). (p. 7)
c. & d. The text does not discuss the views of these philosophers regarding this issue.

7. c. is the answer. Like Darwin, James assumed that thinking, like smelling, developed because it was adaptive. (p. 3)

8. d. is the answer. Because both nature and nurture influence most traits and behaviors, the tension surrounding this issue has dissolved. (p. 7)

9. c. is the answer. (p. 9)
a. This perspective emphasizes the influences of physiology on behavior.
b. This perspective emphasizes environmental influences on observable behavior.
d. This perspective emphasizes how behavior and thinking vary across situations and cultures.

10. c. is the answer. (p. 10)
   a. Clinical psychology is concerned with the study and treatment of psychological disorders.
   b. Psychiatry is the branch of medicine concerned with the physical diagnosis and treatment of psychological disorders.
   d. Industrial/organizational psychologists study behavior in the workplace.

11. a. is the answer. (p. 9)

12. b. Neither perspective places any special emphasis on unconscious processes.
    c. Neither perspective emphasizes covert behaviors.
    d. Introspection was a research method used by the earliest psychologists, not those working from the cognitive perspective.

13. c. is the answer. (pp. 9–10)
   a. The text suggests just the opposite: By studying behavior from several perspectives, psychologists gain a fuller understanding.
   b. & d. Each perspective is useful in that it calls researchers’ attention to different aspects of behavior. This is equally true of those perspectives that do not emphasize objective measurement.

14. c. is the answer. (p. 12)
   a. To be effective, study must be active rather than passive in nature.
   b. Most exams are based on lecture and textbook material.
   d. Cramming hinders retention.

15. d. is the answer. (p. 12)

16. d. is the answer. James emphasized the adaptive value of our thoughts and behaviors (functionalism). Titchener used the method of introspection to examine the basic contents of the mind (structuralism). (p. 3)
   a. & b. The text does not discuss the views of these psychologists regarding the nature-nurture issue.

**Essay Question**

A psychologist working from the neuroscience perspective might study the brain circuits and body chemistry that trigger attraction and sexual arousal. A psychologist working from the evolutionary perspective might analyze how love has facilitated the survival of our species. A psychologist working from the behavior genetics perspective might attempt to compare the extent to which the emotion is attribut-able to our genes and the extent to which it is attributable to our environment. A psychologist working from the psychodynamic perspective might search for evidence that a person’s particular emotional feelings are disguised effects of unfulfilled wishes. A psychologist working from the behavioral perspective might study the external stimuli, such as body language, that elicit and reward approach behaviors toward another person. A psychologist working from the cognitive perspective might study how our thought processes, attitudes, and beliefs foster attachment to loved ones, and a psychologist working from the social-cultural perspective might explore situational influences on attraction and how the development and expression of love vary across cultural groups.

**Key Terms**

1. Introduced by Edward Bradford Titchener, structuralism is the early school of psychology that used self-reflection (introspection) to examine the structural elements of the human mind. (p. 3)

2. Introduced by William James, functionalism is the early school of psychology that emphasized how behavior and mental processes enable the organism to adapt, survive, and flourish. (p. 3)

3. Behaviorism is the view that psychology should focus only on the scientific study of observable behaviors without reference to mental processes. (p. 5)

4. Humanistic psychology is the branch of psychology that emphasizes the growth potential of healthy people. (p. 5)

5. Cognitive neuroscience is the study of how brain activity is linked with thought processes such as memory and perception. (p. 5)

6. Psychology is the scientific study of behavior and mental processes. (p. 6)

7. The nature-nurture issue is the controversy over the relative contributions that genes (nature) and experience (nurture) make to the development of psychological traits and behaviors. (p. 7)

8. Natural selection is the principle that those traits of a species that contribute to reproduction and survival are most likely to be passed on to succeeding generations. (p. 7)

9. Psychologists analyze behavior and mental processes from differing complementary views, or levels of analysis. (p. 8)

10. The biopsychosocial approach is an integrated perspective that focuses on biological, psychological, and social-cultural levels of analysis for a given behavior or mental process. (p. 8)
11. Basic research is pure science that aims to increase psychology’s scientific knowledge base rather than to solve practical problems. (p. 10)

12. Applied research is scientific study that aims to solve practical problems. (p. 10)

13. Counseling psychology is the branch of psychology that helps people cope with challenges in their daily lives. (p. 10)

14. Clinical psychology is the branch of psychology concerned with the study, assessment, and treatment of people with psychological disorders. (p. 10)

15. Psychiatry is the branch of medicine concerned with the physical diagnosis and treatment of psychological disorders. (p. 11)

16. SQ3R is a study method consisting of five steps: survey, question, read, rehearse, and review. (p. 12)
ANSWERS

Chapter Review

*The Need for Psychological Science*
1. hindsight bias; common; both children and adults
2. overconfidence
3. equally wrong
4. curiosity; skepticism; humility
5. critical thinking

*How Do Psychologists Ask and Answer Questions?*
1. scientific method; observations; theories; revised; observations
2. theory; hypotheses; research
3. operational definitions; replicate
4. organizes; predictions
5. descriptive; correlational; experimental
6. case study
7. hypotheses; atypical
8. survey; wording
9. vivid
10. random; population; does
11. are
12. naturalistic observation
13. describe
14. social; solitary; varies
15. correlated; predict; correlation coefficient; scatter-plot
16. positively correlated; negatively correlated; inversely
17. strength; weakness; causation; cause-effect
This is an example of a negative correlation. As one factor (time spent studying) increases, the other factor (anxiety level) decreases.
18. predicted
19. event; caused; explanation
20. illusory correlation
21. confirm; superstitious
22. random events
23. more; do not
24. cause; effect; statistically; factors
25. do; experiments; randomly; manipulates; holding constant
26. behavior; experimental; effect
27. double-blind
28. placebo; placebo effect
29. experimental; control
30. random assignment
31. independent; dependent
32. manipulate; independent; dependent; control
Experimentation has the advantage of increasing the investigator’s control of both relevant and irrelevant variables that might influence behavior. Experiments also permit the investigator to go beyond observation and description to uncover cause-effect relationships in behavior.

*Statistical Reasoning in Everyday Life*
1. statistics
2. data; organize; bar graph; scale labels; range
3. mode; median; mean
4. mode
5. total sum; number
6. 50th
7. skewed; mean
8. low; high
9. range; standard deviation
10. difference between the lowest and highest scores
11. crude; is
12. more accurate; does
13. mean; normal curve (normal distribution)
14. representative; biased
15. low
16. less
17. significance; chance; reliable; relatively large
18. practical

*Frequently Asked Questions About Psychology*
1. principles
2. control; general principles
3. ideas; behaviors; attitudes; traditions
4. processes; dyslexia; brain; genders
5. similarities; diseases
6. ethical; well-being
7. safeguards
Ethical guidelines require investigators to (1) obtain informed consent from potential participants, (2) protect them from harm and discomfort, (3) treat information obtained from participants confidentially, and (4) fully explain the research afterward.
8. do
9. can; enlighten
Progress Test 1

Multiple-Choice Questions

1. a. is the answer. In a case study, one person is studied in depth. (p. 22)
   b. In survey research, a group of people is interviewed.
   c. Correlations identify whether two factors are related.
   d. In an experiment, an investigator manipulates one variable to observe its effect on another.

2. c. is the answer. Exercise is the variable being manipulated in the experiment. (p. 32)
   a. A control condition for this experiment would be a group of people not permitted to exercise.
   b. An intervening variable is a variable other than those being manipulated that may influence behavior.
   d. The dependent variable is the behavior measured by the experimenter—in this case, the effects of exercise.

3. c. is the answer. The control condition is that for which the experimental treatment (the new drug) is absent. (p. 31)
   a. A random sample is a subset of a population in which every person has an equal chance of being selected.
   b. The experimental condition is the group for which the experimental treatment (the new drug) is present.
   d. “Test group” is an ambiguous term; both the experimental and control group are tested.

4. d. is the answer. (p. 21)
   a. Hypotheses are testable propositions.
   b. Dependent variables are factors that may change in response to manipulated independent variables.
   c. Statistical indexes may be used to test specific hypotheses (and therefore as indirect tests of theories), but they are merely mathematical tools, not general principles, as are theories.

5. d. is the answer. In this case, the children are being observed in their normal environment rather than in a laboratory. (p. 24)
   a. Correlational research measures relationships between two factors. The psychologist may later want to determine whether there are correlations between the variables studied under natural conditions.
   b. In a case study, one subject is studied in depth.
   c. This is not an experiment because the psychologist is not directly controlling the variables being studied.

6. d. is the answer. (p. 21)
7. d. is the answer. (p. 19)
8. b. is the answer. Replication is the repetition of an experiment in order to determine whether its findings are reliable. It is not a research method. (p. 21)
9. c. is the answer. (pp. 41–42)
   a., b., & d. Psychologists’ personal values can influence all of these.
10. b. is the answer. (pp. 25–26)
    a. & c. These answers would have been correct had the question stated that there is a positive correlation between shoe size and IQ. Actually, there is probably no correlation at all!
11. d. is the answer. In an experiment, it would be possible to manipulate alcohol consumption and observe the effects, if any, on memory. (p. 31)
    a., b., & c. These answers are incorrect because only by directly controlling the variables of interest can a researcher uncover cause-effect relationships.
12. d. is the answer. (p. 24)
    a. A sample is a subset of a population.
    b. & c. Control and experimental groups are used in experimentation, not in survey research.
13. c. is the answer. The mean is the sum of scores divided by the number of scores. \[ \frac{(2 + 3 + 7 + 6 + 1 + 4 + 9 + 5 + 8 + 2)}{10} = 4.7 \] (p. 34)
14. d. is the answer. When the scores are put in order \([1, 2, 3, 4, 7, 7, 8]\), 4 is at the 50th percentile, splitting the distribution in half. (p. 34)
15. b. is the answer. The mode is the most frequently occurring score. Because there are more “twos” than any other number in the distribution, 2 is the mode. (p. 34)
16. d. is the answer. (p. 37)
17. c. is the answer. (p. 37)
   a. A statistically significant difference may or may not be of practical importance.
   b. This is often the case when a difference is not statistically significant.
18. c. is the answer. (p. 35)
19. d. is the answer. (p. 18)
   a. In an experiment, a placebo effect means that results were achieved by expectation alone.
   b. This is the false perception of a relationship between two events.
   c. This is the tendency to believe, after learning an outcome, that one could have foreseen it.
20. a. is the answer. As an average, calculated by adding all scores and dividing by the number of scores, the mean could easily be affected by the inclusion of a few extreme scores. (p. 34)
   b. The range is not a measure of central tendency. c. & d. The median and mode give equal weight to all scores; each counts only once and its numerical value is unimportant.

Matching Items

1. i (p. 39)  6. b (p. 35)  11. d (p. 35)
2. f (p. 34)  7. h (p. 35)  12. k (p. 20)
3. l (p. 31)  8. g (p. 25)  13. m (p. 28)
4. j (p. 16)  9. c (p. 34)
5. e (p. 34)  10. a (p. 34)

Progress Test 2

Multiple-Choice Questions

1. d. is the answer. Only experiments can reveal cause-effect relationships; the other methods can only describe relationships. (p. 31)

2. d. is the answer. (p. 31)
   a. & b. The double-blind procedure is one way to create experimental and control groups.
   c. Research participants are randomly assigned to either an experimental or a control group.

3. d. is the answer. Animal shelters are forced to kill 50 times as many dogs and cats as are used in research. (p. 42)

4. d. is the answer. (p. 40)
   a. The control condition is the comparison group, in which the experimental treatment (the treatment of interest) is absent.
   b. Memory is a directly observed and measured dependent variable in this experiment.
   c. Attention is the independent variable, which is being manipulated.

5. c. is the answer. Only about 68 percent of all cases in a normal curve fall within one standard deviation on either side of the mean. (p. 36)

6. b. is the answer. (p. 16)
   a. The phenomenon is related to hindsight rather than foresight.
   c. & d. The phenomenon doesn’t involve whether or not the intuitions are correct but rather people’s attitude that they had the correct intuition.

7. b. is the answer. If enough participants are used in an experiment and they are randomly assigned to the two groups, any differences that emerge between the groups should stem from the experiment itself. (p. 31)
   a., c., & d. None of these terms describes precautions taken in setting up groups for experiments.

8. b. is the answer. (p. 28)

9. a. is the answer. (p. 37)
   b. & c. Large, random samples are more likely to be representative of the populations from which they are drawn.

10. d. is the answer. Because we are sensitive to dramatic or unusual events, we are especially likely to perceive a relationship between them. (p. 28)
    a., b., & c. The relationship between vivid events is no more likely to be significant, positive, or negative than that between less dramatic events.

11. b. is the answer. (p. 21)
    a. In fact, the artificiality of experiments is part of an intentional attempt to create a controlled environment in which to test theoretical principles that are applicable to all behaviors.
    c. Some psychological theories go against what we consider common sense; furthermore, on many issues that psychology addresses, it’s far from clear what the “common sense” position is.
    d. Psychology has always had ties to other disciplines, and in recent times, these ties have been increasing.

12. d. is the answer. Correlations show how well one factor can be predicted from another. (p. 25)
    a. Because a case study focuses in great detail on the behavior of an individual, it’s probably not useful in showing whether predictions are possible.
    b. Naturalistic observation is a method of describing, rather than predicting, behavior.
    c. In experimental research the effects of manipulated independent variables on dependent variables are measured. It is not clear how an experiment could help determine whether IQ tests predict academic success.

13. b. is the answer. The control condition is the one in which the treatment—in this case, pollution—is absent. (p. 31)
    a. Students in the polluted room would be in the experimental condition.
    c. Presumably, all students in both conditions were randomly assigned to their groups. Random assignment is a method for establishing groups, rather than a condition.
    d. The word dependent refers to a kind of variable in experiments; conditions are either experimental or control.
14. c. is the answer. The lighting is the factor being manipulated. (p. 32)
   a. & d. These answers are incorrect because they involve aspects of the experiment other than the variables.
   b. This answer is the dependent, not the independent, variable.

15. b. is the answer. (p. 34)

16. c. is the answer. The mean is the sum of the scores divided by the number of scores (60/10 = 6). (p. 34)

17. c. is the answer. When the scores are put in order (5, 6, 7, 8, 9, 10, 11), 8 is at the 50th percentile, splitting the distribution in half. (p. 34)

18. d. is the answer. Since the range is the difference between the highest and lowest scores, it is by definition affected by extreme scores. (p. 35)
   a. & c. The mean and mode are measures of central tendency, not of variation.
   b. The standard deviation is less affected than the range because, when it is calculated, the deviation of every score from the mean is computed.

19. b. is the answer. Averages derived from scores with low variability tend to be more reliable estimates of the populations from which they are drawn. Thus, a. and c. are incorrect. Because the standard deviation is a more accurate estimate of variability than the range, d. is incorrect. (p. 35)

20. d. is the answer. A difference that is statistically significant is a true difference, rather than an apparent difference due to factors such as sampling variation, and it is reliable. (p. 37)

Matching Items

1. e (p. 21)  5. j (p. 31)  9. f (p. 21)
2. h (p. 21)  6. d (p. 31) 10. g (p. 31)
3. b (p. 32)  7. a (p. 22) 11. i (p. 31)
4. c (p. 32)  8. k (p. 23) 12. l (p. 31)

Psychology Applied

Multiple-Choice Questions

1. b. is the answer. A general belief such as this one is a theory; it helps organize, explain, and generate testable predictions (called hypotheses) such as "men drink more soft drinks than women." (p. 21)
   c. & d. Independent and dependent variables are experimental treatments and behaviors, respectively. Beliefs and predictions may involve such variables, but are not themselves those variables.

2. c. is the answer. The members of one sorority are likely to share more interests, traits, and attitudes than will the members of a random sample of college students. (pp. 25–26)
   a. & b. Unlike experiments, surveys do not specify or directly manipulate independent and dependent variables. In a sense, survey questions are independent variables, and the answers, dependent variables.

3. b. is the answer. (p. 31)
   a. Although the descriptive methods of case studies, surveys, naturalistic observation, and correlational research do not involve control of variables, they nevertheless enable researchers to describe and predict behavior.
   c. Whether or not a sample is representative of a population, rather than control over variables, determines whether results can be generalized from a sample to a population.

4. c. is the answer. To determine the effects of caffeine on reaction time, Martina needs to measure reaction time in a control, or comparison, group that does not receive caffeine. (p. 31)
   a. Caffeine is the independent variable.
   b. Reaction time is the dependent variable.
   d. Whether or not Martina's experiment can be replicated is determined by the precision with which she reports her procedures, which is not an aspect of research strategy.

5. b. is the answer. (p. 25)
   a. This is not an experiment because the researcher is not manipulating the independent variable (seating position); she is merely measuring whether variation in this factor predicts test performance.
   c. If the study were based entirely on students' self-reported responses, this would be a survey.
   d. This study goes beyond naturalistic observation, which merely describes behavior as it occurs, to determine if test scores can be predicted from students' seating position.

6. d. is the answer. (p. 39)

7. d. is the answer. Selecting every tenth person would probably result in a representative sample of the entire population of students at the university. (p. 24)
   a. It would be difficult, if not impossible, to survey every student on campus.
   b. Psychology students are not representative of the entire student population.
   c. This answer is incorrect for the same reason as b. This would constitute a biased sample.
8. d. is the answer. (p. 27)
   a. Correlation does not imply causality.
   b. Again, a positive correlation simply means that
      two factors tend to increase or decrease together;
      further relationships are not implied.
   c. A separate factor may or may not be involved.
      That the two factors are correlated does not imply
      a separate factor. There may, for example, be a
      direct causal relationship between the two factors
      themselves.

9. b. is the answer. Psychology is a science because
    psychologists use the scientific method and
    approach the study of behavior and mental
    processes with attitudes of curiosity, skepticism,
    and humility. (p. 25)
   a. Psychologists study both overt (observable)
      behaviors and covert thoughts and feelings.
   c. Psychologists' values definitely do influence
      their research.

10. b. is the answer. (p. 31)
    a. The low-dose comparison group is the control
       group.
    c. Rashad was not given a placebo.

11. d. is the answer. (p. 39)
    a. In fact, just the opposite is true.
    b. Actually, psychological experiments tend to
       use the most readily available people, often white
       North American college students.
    c. Although this may be true, psychological
       experiments remain important because they help
       explain underlying processes of human behavior
       everywhere. Therefore, d. is a much better re-
       sponse than c.

12. d. is the answer. (p. 19)
    a. This follows from the attitude of skepticism,
       rather than humility.
    b. & c. Although both of these are true of the sci-
       entific method, neither has anything to do with
       humility.

13. a. is the answer. (p. 31)
    b. Use of a placebo tests whether the behavior of
       a research participant, who mistakenly believes
       that a treatment (such as a drug) is in effect, is
       the same as it would be if the treatment were actually
       present.
    c. & d. These are examples of blind and double-
       blind control procedures.

14. c. is the answer. If height and weight are posi-
      tively correlated, increased height is associated with
      increased weight. Thus, one can predict a person's
      weight from his or her height. (p. 25)
    a. Correlation does not imply causality.
    b. This situation depicts a negative correlation
       between height and weight.

15. d. is the answer. A small or large standard de-
     viation indicates whether a distribution is homo-
     geneous or variable. (p. 35)
    a., b., & c. These statistics would not give any
    information regarding the consistency of perform-
    ance.

16. c. is the answer. A correlation that is perceived
    but doesn't actually exist, as in the example, is
    known as an illusory correlation. (p. 28)
    a. Statistical significance is a statement of how
       likely it is that an obtained result occurred by
       chance.
    b. Overconfidence is the tendency to think we are
       more right than we actually are.
    d. Hindsight bias is the tendency to believe, after
       learning an outcome, that one would have fore-
       seen it.

17. d. is the answer. (pp. 34, 35)

18. c. is the answer. (p. 34)
    a. The mean is computed as the sum of the scores
       divided by the number of scores.
    b. The median is the midmost score in a distribu-
       tion.
    d. The range is the difference between the highest
       and lowest scores in a distribution.

19. a. is the answer. The mean is strongly influenced
    by extreme scores. In this example, the mean
    would change from $25,000 to $(75,000 + 25,000 +
    25,000 + 25,000 + 25,000)/5 = $35,000. (p. 34)
    b. & c. Both the median and the mode would
       remain $25,000, even with the addition of the fifth
       family's income.
    d. The standard deviation is a measure of vari-
       ation, not central tendency.

20. b. is the answer. (p. 37)
    a. If the difference between the sample means is
       not significant, then the groups probably do not
       differ in the measured ability.
    c. When a result is not significant it means that
       the observed difference is unreliable.

Essay Question

Elio's hypothesis is that daily aerobic exercise for one
month will improve memory. Exercise is the indepen-
dent variable. The dependent variable is memory.
Exercise could be manipulated by having people in
an experimental group jog for 30 minutes each day.
Memory could be measured by comparing the num-
ber of words they recall from a test list studied before
the exercise experiment begins, and again afterward.
A control group that does not exercise is needed so
that any improvement in the experimental group's
memory can be attributed to exercise, and not to
some other factor, such as the passage of one month's
time or familiarity with the memory test. The control group should engage in some nonexercise activity for the same amount of time each day that the experimental group exercises. The participants should be randomly selected from the population at large, and then randomly assigned to the experimental and control groups.

**Key Terms**

**Writing Definitions**

1. **Hindsight bias** refers to the tendency to believe, after learning an outcome, that one would have foreseen it; also called the I-knew-it-all-along phenomenon. (p. 16)
2. **Critical thinking** is careful reasoning that examines assumptions, discerns hidden values, evaluates evidence, and assesses conclusions. (p. 20)
3. **A theory** is an explanation using an integrated set of principles that organizes observations and predicts behaviors or events. (p. 21)
4. **A hypothesis** is a testable prediction, often implied by a theory; testing the hypothesis helps scientists to test the theory. (p. 21)
   Example: In order to test his theory of why people conform, Solomon Asch formulated the testable hypothesis that an individual would be more likely to go along with the majority opinion of a large group than with that of a smaller group.
5. An operational definition is a precise statement of the procedures (operations) used to define research variables. (p. 21)
6. **Replication** is the process of repeating an experiment, often with different participants and in different situations, to see whether the basic finding generalizes to other people and circumstances. (p. 21)
7. The case study is an observation technique in which one person is studied in great depth, often with the intention of revealing universal principles. (p. 22)
8. The survey is a technique for ascertaining the self-reported attitudes or behaviors of a representative, random sample of people. (p. 23)
9. **A population** consists of all the members of a group being studied. (p. 24)
10. A random sample is one that is representative because every member of the population has an equal chance of being included. (p. 24)
11. **Naturalistic observation** involves observing and recording behavior in naturally occurring situations without trying to manipulate and control the situation. (p. 24)
12. **Correlation** is a measure of the extent to which two factors vary together, and thus of how well either factor predicts the other. (p. 25)
13. The **correlation coefficient** is a statistical measure of the relationship; it can be positive or negative (from -1 to +1). (p. 25)
   Example: If there is a positive correlation between air temperature and ice cream sales, the warmer (higher) it is, the more ice cream is sold. If there is a negative correlation between air temperature and sales of cocoa, the cooler (lower) it is, the more cocoa is sold.
14. **A scatterplot** is a depiction of the relationship between two variables by means of a graphed cluster of dots. (p. 25)
15. **Illusory correlation** is the perception of a relationship where none exists. (p. 28)
16. An **experiment** is a research method in which a researcher directly manipulates one or more factors (independent variables) to observe the effect on some behavior or mental process (the dependent variable); experiments therefore make it possible to establish cause-effect relationships. (p. 31)
17. **Random assignment** is the procedure of assigning participants to the experimental and control conditions by chance, thus minimizing preexisting differences between those assigned to the different groups. (p. 31)
18. A double-blind procedure is an experimental procedure in which neither the experimenter nor the research participants are aware of which group is receiving the treatment. It is used to prevent experimenters’ and participants’ expectations from influencing the results of an experiment. (p. 31)
19. The **placebo effect** occurs when the results of an experiment are caused by expectations alone. (p. 31)
20. The **experimental group** in an experiment is one in which participants are exposed to the independent variable being studied. (p. 31)
   Example: In the study of the effects of a new drug on reaction time, participants in the experimental group would actually receive the drug being tested.
21. The **control group** in an experiment is one in which the treatment of interest, or independent variable, is withheld so that comparison to the experimental condition can be made. (p. 31)
Example: The control group in an experiment testing the effects of a new drug on reaction time would be a group of participants given a placebo (inactive drug or sugar pill) instead of the drug being tested.

22. The independent variable of an experiment is the factor being manipulated and tested by the investigator. (p. 32)
   Example: In the study of the effects of a new drug on reaction time, the drug is the independent variable.

23. The dependent variable of an experiment is the factor being measured by the investigator, that is, the factor that may change in response to manipulations of the independent variable. (p. 32)
   Example: In the study of the effects of a new drug on reaction time, the participants' reaction time is the dependent variable.

24. The mode is the most frequently occurring score in a distribution; it is the simplest measure of central tendency to determine. (p. 34)

25. The mean is the arithmetic average, the measure of central tendency computed by adding the scores in a distribution and dividing by the number of scores. (p. 34)

26. The median, another measure of central tendency, is the score that falls at the 50th percentile, cutting a distribution in half. (p. 34)
   Example: When the mean of a distribution is affected by a few extreme scores, the median is the more appropriate measure of central tendency.

27. The range is a measure of variation computed as the difference between the highest and lowest scores in a distribution. (p. 35)

28. The standard deviation is a computed measure of how much scores in a distribution deviate around the mean. Because it is based on every score in the distribution, it is a more precise measure of variation than the range. (p. 35)

29. The normal curve is the symmetrical, bell-shaped distribution describing many types of psychological data, in which most scores fall near the mean, with fewer and fewer at the extremes. (p. 36)

30. Statistical significance means that an obtained result, such as the difference between the averages for two samples, very likely reflects a real difference rather than sampling variation or chance factors. Tests of statistical significance help researchers decide when they can justifiably generalize from an observed instance. (p. 37)

31. Culture is the enduring behaviors, ideas, attitudes, and traditions shared by a large group of people and transmitted from one generation to the next. (p. 39)

Cross-Check

ACROSS
1. median
7. theory
9. mode
13. case study
14. range
15. mean
18. illusory
19. survey
20. scatterplot
21. random

DOWN
2. experimental
3. independent
4. naturalistic
5. operational
6. critical thinking
8. hindsight
10. double-blind
11. hypothesis
12. correlation
16. control
17. placebo