

# CHAPTER 1      The Science of the Mind

## LEARNING OBJECTIVES

- 1.1. Describe the scope and goals of cognitive psychology.
- 1.2. Understand the case of H.M., and the many ways that memory influences our lives.
- 1.3. Describe the limitations of introspection as a method for scientific inquiry.
- 1.4. Compare and contrast classical (Watsonian) behaviorism and cognitive psychology.
- 1.5. Kant's "transcendental method" is sometimes called "inference to best explanation." Explain this method and how it works.
- 1.6. Describe the role, in the emergence of cognitive psychology, that was played by computer science and the development of "computer intelligence."

## MULTIPLE CHOICE

1. Which of the following topics is NOT commonly studied within cognitive psychology?
  - a. anger management
  - b. decision making
  - c. memory
  - d. attention

ANS: A                      DIF: Easy                      REF: The Scope of Cognitive Psychology  
OBJ: 1.1                      MSC: Understanding

2. Cognitive processes are NOT necessary for which daily activity?
  - a. reading a newspaper
  - b. studying for a test
  - c. talking on the phone
  - d. breathing

ANS: D                      DIF: Easy                      REF: The Scope of Cognitive Psychology  
OBJ: 1.1                      MSC: Applying

3. Alyssa wants to be a psychologist but is unsure which topic within psychology most interests her. Which of the following topics would be LEAST likely to lead her into cognitive psychology?
  - a. amnesia
  - b. language acquisition
  - c. Lyme disease
  - d. problem-solving strategies

ANS: C                      DIF: Easy                      REF: The Scope of Cognitive Psychology  
OBJ: 1.1                      MSC: Applying

4. Consider the sequence "Betsy wanted to bring Jacob a present. She shook her piggy bank." Most people, after hearing this sequence, believe Betsy was checking her piggy bank to see if she had money to spend on the gift. This inference about Betsy's goals depends on the fact that
  - a. our previous knowledge fills in background information whenever we're understanding an event or conversation.
  - b. readers are likely to know someone named Jacob.
  - c. English, unlike other languages, requires speakers to mention all of the people involved in an event.

d. the individual sentences are short.

ANS: A                      DIF: Easy                      REF: The Broad Role for Memory  
OBJ: 1.1                      MSC: Understanding

5. Which of the following statements is LEAST likely to apply to patient H.M.?

- a. "He cannot remember what he did earlier today, including events that took place just an hour ago."
- b. "He read this story last month, but he was still surprised by how the story turned out."
- c. "Even though he has encountered the nurse many times, he is still unable to recognize her."
- d. "He remembered that it was only a week ago that he'd heard the sad news that his uncle had died."

ANS: D                      DIF: Moderate                      REF: Amnesia and Memory Loss  
OBJ: 1.2                      MSC: Applying

6. Research with H.M. provides an illustration for which major theme of the chapter?

- a. Introspection is an important research tool for cognitive psychologists.
- b. Cognitive psychology can help us understand a wide range of activities that depend on someone's ability to remember.
- c. Memory is not very important.
- d. The disruption caused by brain damage depends on how widespread the damage is, and not on the specific sites that are damaged.

ANS: B                      DIF: Moderate                      REF: The Scope of Cognitive Psychology  
OBJ: 1.2                      MSC: Evaluating

7. Patients suffering from clinical amnesia are characterized by

- a. memory dysfunction.
- b. an inability to recognize patterns.
- c. inarticulate speech.
- d. impaired language comprehension.

ANS: A                      DIF: Easy                      REF: Amnesia and Memory Loss  
OBJ: 1.2                      MSC: Remembering

8. The term "introspection" refers to the

- a. process by which one individual seeks to infer the thoughts of another individual.
- b. procedure of examining thought processing by monitoring the brain's electrical activity.
- c. process of each person looking within, to observe his or her own thoughts and ideas.
- d. technique of studying thought by interpreting the symbols used in communication.

ANS: C                      DIF: Easy                      REF: The Limits of Introspection  
OBJ: 1.3                      MSC: Remembering

9. A participant is asked to look within himself or herself and report on his or her own mental processes. This method is called

- a. logical inference.
- b. reconstruction.
- c. introspection.
- d. mentalistic study.

ANS: C                      DIF: Easy                      REF: The Limits of Introspection  
OBJ: 1.3                      MSC: Remembering

10. Of the following, introspection is LEAST useful for studying

- a. topics that are strongly colored by emotion.
- b. mental events that are unconscious.
- c. processes that involve conceptual knowledge.
- d. events that take a long time to unfold.

ANS: B                      DIF: Moderate                      REF: The Limits of Introspection  
OBJ: 1.3                      MSC: Understanding

11. Which of the following statements about introspection is FALSE?

- a. It is the only way to observe conscious events directly.
- b. It is subjective.
- c. It provides strong evidence for hypothesis-testing.
- d. It was a technique used historically to study cognition.

ANS: C                      DIF: Moderate                      REF: The Limits of Introspection

OBJ: 1.3 MSC: Understanding

12. Genie wonders why she can never remember the names of new acquaintances. In search of an answer, she examines and reflects on her feelings about meeting new people. Genie is engaged in which process?
- practical rehearsal
  - introspection
  - learning history analysis
  - goal retrieval

ANS: B DIF: Moderate REF: The Limits of Introspection  
OBJ: 1.3 MSC: Applying

13. Introspection was employed as a research tool in the late 1800s because
- it was regarded as the only way to observe the mind's contents directly.
  - it provided data from individuals without any specialized training.
  - conscious events are just as important as unconscious events.
  - it provided cognitive psychology's first testable claims.

ANS: A DIF: Moderate REF: The Limits of Introspection  
OBJ: 1.3 MSC: Analyzing

14. Which of the following statements about introspection is FALSE?
- A verbal report based on introspection may provide a distorted picture of mental processes that are nonverbal in nature.
  - Different participants might be using different terms to describe similar experiences.
  - Introspection provides valuable scientific data, but only after the person doing the introspection has received many hours of training.
  - Participants cannot possibly introspect about events that are unconscious.

ANS: C DIF: Difficult REF: The Limits of Introspection  
OBJ: 1.3 MSC: Evaluating

15. Which of the following statements provides the most serious obstacle to the use of introspection as a source of scientific evidence?
- When facts are provided by introspection, we have no way to assess the facts themselves, independent of the reporter's perspective.
  - Introspection is only effective for children, because children have not yet learned to inhibit their own self-reports.
  - Introspection is a valid method only if the person doing the introspection goes into a trancelike state.
  - The process of reporting on one's own mental events is too slow to be scientifically useful.

ANS: A DIF: Difficult REF: The Limits of Introspection  
OBJ: 1.3 MSC: Evaluating

16. In cognition, as in other sciences, we develop claims that can be tested. These claims are generally referred to as
- research proposals.
  - empirical models.
  - statistical comparisons.
  - hypotheses.

ANS: D DIF: Moderate REF: The Limits of Introspection  
OBJ: 1.3 | 1.4 MSC: Understanding

17. A behaviorist, like John Watson, is LEAST likely to believe which of the following statements?
- Our learning history powerfully influences our behaviors.
  - Children are a good source for data.
  - The mind is not amenable to scientific inquiry because it is not easily observed.
  - When it comes to collecting data, introspection is as valuable as behavior.

ANS: D DIF: Moderate REF: The Years of Behaviorism  
OBJ: 1.3 | 1.4 MSC: Analyzing

18. Historically, the movement known as behaviorism was to a large extent encouraged by scholars' concerns regarding
- psychotherapy.
  - an exaggerated focus on participants' responses.
  - research based on introspection.
  - a focus on brain mechanisms and a corresponding inattention to mental states.

ANS: C                      DIF: Easy                      REF: The Years of Behaviorism  
OBJ: 1.4                      MSC: Understanding

19. Behaviorists study organisms'

- a. expectations.
- b. desires and motivations.
- c. dreams.
- d. responses.

ANS: D                      DIF: Easy                      REF: The Years of Behaviorism  
OBJ: 1.4                      MSC: Remembering

20. Of the following, behaviorists argued that \_\_\_\_\_ were most important in analyzing behavior.

- a. expectations
- b. beliefs
- c. wishes
- d. learning histories

ANS: D                      DIF: Easy                      REF: The Years of Behaviorism  
OBJ: 1.4                      MSC: Remembering

21. Which of the following would a classical behaviorist be LEAST likely to study?

- a. a participant's response to a regularly occurring situation
- b. a participant's beliefs
- c. changes in a participant's behavior that follow changes in the environment
- d. principles that apply equally to human behavior and to the behavior of other species

ANS: B                      DIF: Moderate                      REF: The Years of Behaviorism  
OBJ: 1.4                      MSC: Applying

22. Modern psychology turned away from behaviorism in its classic form for many reasons, including the fact that

- a. classical behaviorism failed to consider the mental processes underlying cognition.
- b. humans are more similar to computers than to other species studied in the laboratory.
- c. psychology rejected behaviorism's emphasis on an organism's subjective states.
- d. an organism's behavior can be changed by learning.

ANS: A                      DIF: Difficult                      REF: The Years of Behaviorism  
OBJ: 1.4                      MSC: Analyzing

23. If Sheila says, "Pass the salt, please," you are likely to pass her the salt. You'll probably respond in the same way if Sheila (a chemistry major) instead asks, "Could you please hand me the sodium chloride crystals?" This observation seems to indicate that our behavior is

- a. primarily controlled by the physical characteristics of the stimuli we encounter.
- b. shaped by the literal meanings of the stimuli we encounter.
- c. determined by simple associations among the stimuli we encounter.
- d. governed by what the stimuli we encounter mean to us.

ANS: D                      DIF: Difficult                      REF: The Years of Behaviorism  
OBJ: 1.4                      MSC: Evaluating

24. The process of taking observable information and inferring a cause is known as

- a. mentalistic inference.
- b. the transcendental method.
- c. cause and effect.
- d. introspection.

ANS: B                      DIF: Moderate  
REF: The Intellectual Foundations of the Cognitive Revolution  
OBJ: 1.4                      MSC: Remembering

25. One important difference between classical behaviorism and cognitive psychology is that cognitive psychology

- a. argues that unobservable mental states can be scientifically studied.
- b. rejects the use of human participants.
- c. insists on studying topics that can be directly and objectively observed.
- d. emphasizes the evolutionary roots of human behavior.

ANS: A                      DIF: Easy  
REF: The Intellectual Foundations of the Cognitive Revolution  
OBJ: 1.4                      MSC: Analyzing

26. Cognitive psychology often relies on the transcendental method, in which
- mental events are explained by referring to events in the central nervous system.
  - information from introspection transcends behavioral data.
  - researchers seek to infer the properties of unseen events on the basis of the observable effects of those events.
  - theories are tested via computer models.

ANS: C

DIF: Easy

REF: The Intellectual Foundations of the Cognitive Revolution

OBJ: 1.4

MSC: Remembering

27. The philosopher Immanuel Kant based many of his arguments on transcendental inferences. A commonplace example of such an inference is a
- physicist inferring what the attributes of the electron must be on the basis of visible effects that the electron causes.
  - computer scientist inferring what the attributes of a program must be on the basis of his or her long-range goals for the program's functioning.
  - biologist inferring how an organism is likely to behave in the future on the basis of assessment of past behaviors.
  - behaviorist inferring how a behavior was learned on the basis of a deduction from well-established principles of learning.

ANS: A

DIF: Difficult

REF: The Intellectual Foundations of the Cognitive Revolution

OBJ: 1.4

MSC: Analyzing

28. Cognitive psychologists try to make inferences about causes, based on the observed effects. In this way, cognitive psychologists use methods like those commonly employed by
- crime scene investigators.
  - garbage collectors.
  - chefs.
  - construction workers.

ANS: A

DIF: Moderate

REF: The Intellectual Foundations of the Cognitive Revolution

OBJ: 1.4

MSC: Applying

29. The "cognitive revolution" is named as such because
- the focus changed from behaviors to the processes underlying those behaviors.
  - the change was accompanied by violence.
  - the focus changed from animals to humans.
  - philosophers such as Kant were strongly opposed to the change.

ANS: A

DIF: Easy

REF: The Intellectual Foundations of the Cognitive Revolution

OBJ: 1.4

MSC: Understanding

30. The branch of psychology concerned with the scientific study of knowledge is
- cognitive psychology.
  - humanistic psychology.
  - neuropsychology.
  - behaviorism.

ANS: A

DIF: Easy

REF: The Scope of Cognitive Psychology

OBJ: 1.1

MSC: Remembering

31. Wilhelm Wundt would be LEAST interested in an individual's
- feelings.
  - perception of temperature.
  - reaction to a conditioned stimulus.
  - recollections.

ANS: C

DIF: Moderate

REF: The Limits of Introspection

OBJ: 1.3

MSC: Evaluating

32. The seminal work of \_\_\_\_\_ was instrumental in the development of experimental psychology.
- Donald Broadbent
  - Wilhelm Wundt
  - John Watson
  - Immanuel Kant

ANS: B

DIF: Easy

REF: The Limits of Introspection

OBJ: 1.3 MSC: Remembering

33. Which technique was commonly used in Wilhelm Wundt's laboratory?
- introspection
  - physiological analysis
  - operant conditioning
  - classical conditioning

ANS: A DIF: Easy REF: The Limits of Introspection  
OBJ: 1.3 MSC: Remembering

34. What evidence supports Edward Tolman's belief that it is possible for rats to acquire new knowledge?
- development of a cognitive map
  - increased physiological response to a reward
  - decreased avoidance of punishment
  - observational introspection

ANS: A DIF: Difficult  
REF: The Path from Behaviorism to the Cognitive Revolution OBJ: 1.4  
MSC: Evaluating

35. Who proposed the concept of a "cognitive map"?
- Ulric Neisser
  - Frederic Bartlett
  - Noam Chomsky
  - Edward Tolman

ANS: D DIF: Easy  
REF: The Path from Behaviorism to the Cognitive Revolution OBJ: 1.4  
MSC: Remembering

36. For 10 days, a group of rats is simply allowed to explore a maze. On Day 11, food is introduced at a specific location within the maze, and the rats find it. On Day 12, the rats move to the food's location just as quickly as rats who had been trained for many days with food in that location. The most plausible explanation for this result is that
- the rats permitted only to explore learned the layout of the maze.
  - the reward of food was not sufficient to shape the trained rat's behavior.
  - the ability of rats to locate food is innate.
  - the rats trained to locate food learned the layout of the maze.

ANS: A DIF: Moderate  
REF: The Path from Behaviorism to the Cognitive Revolution OBJ: 1.4  
MSC: Analyzing

37. Noam Chomsky criticized \_\_\_\_\_ and noted that it failed to explain \_\_\_\_\_.
- Gestalt psychology; visual perception
  - introspection; individual differences
  - behaviorism; language development
  - direct observations; abstract thinking

ANS: C DIF: Moderate  
REF: The Path from Behaviorism to the Cognitive Revolution OBJ: 1.4  
MSC: Applying

38. Contemporary cognitive psychologists are MOST interested in examining the relationship between \_\_\_\_\_ and \_\_\_\_\_.
- stress hormones; behavior
  - memory capacity; lifetime achievement
  - introspection; self-awareness
  - cognitive processes; behavior

ANS: D DIF: Difficult  
REF: Research in Cognitive Psychology: The Diversity of Methods  
OBJ: 1.1 MSC: Analyzing

39. \_\_\_\_\_ techniques allow us to scrutinize the precise structure and moment-by-moment pattern of activation in the brain.
- Introspection
  - Neuropsychological
  - Neuroimaging
  - Observational

ANS: C DIF: Easy  
REF: Research in Cognitive Psychology: The Diversity of Methods  
OBJ: 1.1 MSC: Remembering

40. A Gestalt psychologist is likely to focus on which of the following?

- a. individual elements of an experience
- b. differences in reaction time
- c. how elements of an experience interact to form new wholes
- d. objective and subjective experiences

ANS: C                      DIF: Moderate                      REF: European Roots of the Cognitive Revolution  
 OBJ: 1.5                      MSC: Remembering

41. A(n) \_\_\_\_\_ is general knowledge about what is typically involved in a type of situation or event.

- a. schema
- b. response set
- c. cognitive map
- d. instinct

ANS: A                      DIF: Easy                      REF: European Roots of the Cognitive Revolution  
 OBJ: 1.5                      MSC: Remembering

42. Schemas reflect a(n) \_\_\_\_\_ that \_\_\_\_\_ comprehension of a specific experience.

- a. objective appraisal; inhibits
- b. mental framework; facilitates
- c. pattern of thought; inhibits
- d. habit; facilitates

ANS: B                      DIF: Moderate                      REF: European Roots of the Cognitive Revolution  
 OBJ: 1.5                      MSC: Applying

43. The development of computers facilitated research in cognition by

- a. suggesting hypotheses that framed the steps of cognition as stages of information processing.
- b. more accurately capturing reaction time.
- c. integrating elements of subjective experiences.
- d. discrediting behavioral principles.

ANS: A                      DIF: Moderate                      REF: Computers and the Cognitive Revolution  
 OBJ: 1.6                      MSC: Understanding

44. Who used the language of computer science to describe human cognition?

- a. Donald Broadbent
- b. Colin Cherry
- c. Frederic Bartlett
- d. Wilhelm Wundt

ANS: A                      DIF: Easy                      REF: Computers and the Cognitive Revolution  
 OBJ: 1.6                      MSC: Remembering

45. An information processing approach to understanding cognition does NOT

- a. propose a sequence of mental operations to explain cognition.
- b. use computer models to describe cognitive processes.
- c. describe cognition as processing information in stages.
- d. rely on behavioral principles to explain specific stimulus-response relationships.

ANS: D                      DIF: Moderate                      REF: Computers and the Cognitive Revolution  
 OBJ: 1.6                      MSC: Understanding

## ESSAY

1. You've just ordered your lunch and are waiting for your food to be delivered when your friend Jill says, "I don't understand why you would need to take a whole class on cognitive psychology. It doesn't seem that important to our everyday lives." Describe to Jill all the ways she will rely on cognitive processing during this meal.

ANS:  
 Answers will vary.

DIF: Difficult                      REF: The Scope of Cognitive Psychology  
 OBJ: 1.1                      MSC: Creating

2. Describe the case of H.M. What does his story tell us about the role that memory plays in our sense of self?

ANS:  
 Answers will vary.

DIF: Moderate      REF: Amnesia and Memory Loss      OBJ: 1.2  
MSC: Analyzing

3. Compare and contrast the introspection, behaviorist, and cognitive approaches to studying mental activities. Which approach do you find most compelling, and why?

ANS:  
Answers will vary.

DIF: Difficult      REF: The Cognitive Revolution      OBJ: 1.3 | 1.4  
MSC: Evaluating

4. Mikey is 4 years old and has begun acting out. Every time he throws a tantrum, his mother rushes over to console him. In analyzing this behavior, what sort of factors would most interest a behaviorist? On what factors would a cognitive psychologist using the transcendental method focus? What conclusions will each psychologist reach?

ANS:  
Answers will vary.

DIF: Difficult      REF: The Years of Behaviorism | European Roots of the Cognitive Revolution  
OBJ: 1.4 | 1.5      MSC: Applying

5. Despite the fact that we cannot directly observe mental activity, cognitive psychologists are able to scientifically study these processes. Explain why this is possible by describing Kantian logic. Next, provide at least three measurable variables and explain why they could be reliably used as proxies for mental behavior.

ANS:  
Answers will vary.

DIF: Moderate      REF: European Roots of the Cognitive Revolution  
OBJ: 1.4 | 1.5      MSC: Understanding

6. Describe introspection and then describe two limitations to this method.

ANS:  
Answers will vary.

DIF: Moderate      REF: The Limits of Introspection      OBJ: 1.3  
MSC: Understanding

7. Define “schema.” Describe how schemas shape and organize our experiences.

ANS:  
Answers will vary.

DIF: Moderate      REF: European Roots of the Cognitive Revolution  
OBJ: 1.5      MSC: Understanding

8. Cognitive psychologists utilize different methods to understand cognitive processes. Describe three different methods to investigate memory functioning.

ANS:  
Answers will vary.

DIF: Moderate      REF: Research in Cognitive Psychology: The Diversity of Methods  
OBJ: 1.1      MSC: Understanding



# CHAPTER 2      The Neural Basis for Cognition

## LEARNING OBJECTIVES

- 2.1. Describe the disorder of Capgras syndrome, including the behavioral and neural correlates.
- 2.2. Explain what we can learn about the relationship between the mind and the brain by studying the effects of brain disorders and trauma.
- 2.3. Describe the distinct functions of the hindbrain, midbrain, and forebrain regions.
- 2.4. Describe the functions of these subcortical structures: the hypothalamus, the hippocampus, and the amygdala.
- 2.5. Explain the role that the corpus callosum plays in the brain, and how lesioning that structure affects behavior.
- 2.6. Explain what is meant by the terms “lateralization” and “localization of function.”
- 2.7. Describe the various imaging and recording techniques that can be used to study brain activity.
- 2.8. Explain what is meant by the word “projection” in describing the brain’s “projection areas.”
- 2.9. Explain the different functions of the motor and sensory areas of cortex.
- 2.10. Name and describe main parts of a neuron.
- 2.11. Describe the events that occur at the synapse, and describe the differences between within-cell and between-cell neural communication.

**MULTIPLE CHOICE**

1. Which of the following statements is LEAST likely to be true of a person with Capgras syndrome?
- a. She thinks that her mother has been replaced by a look-alike alien.
  - b. She cannot recognize that her father looks like her father.
  - c. She also has Alzheimer’s syndrome.
  - d. She has no warm sense of familiarity when she sees a close friend.

ANS: B                      DIF: Moderate              REF: Explaining Capgras Syndrome  
OBJ: 2.1                      MSC: Applying

2. Some researchers explain Capgras syndrome as
- a. a failure of visual recognition.
  - b. the result of a disconnection between cognitive appraisal and sense of familiarity.
  - c. a subtype of schizophrenia.
  - d. a failure of long-term memory, because patients cannot remember what close family members look like.

ANS: B                      DIF: Moderate              REF: The Neural Basis for Capgras Syndrome  
OBJ: 2.1                      MSC: Understanding

3. Neuroimaging techniques such as PET suggest a link between Capgras syndrome and abnormalities in each of the following brain regions EXCEPT the
- a. prefrontal cortex.
  - b. amygdala.
  - c. temporal lobe.
  - d. fusiform face area.

ANS: D                      DIF: Moderate              REF: The Neural Basis for Capgras Syndrome  
OBJ: 2.1                      MSC: Analyzing

4. For most people, encountering a family member who looks a little bit different may elicit a response like “He must have gotten a haircut!” However, that same experience will elicit a response like \_\_\_\_\_ from someone with Capgras syndrome.
- a. “He lost weight!”
  - b. “He is mad at me.”
  - c. “He is an impostor!”
  - d. “He looks like a hat!”

ANS: C                      DIF: Moderate              REF: The Neural Basis for Capgras Syndrome  
OBJ: 2.1                      MSC: Applying

5. Capgras syndrome suggests there are two parts to recognition. These parts are
- a. factual and auditory.
  - b. factual and emotional.
  - c. visual and factual.
  - d. visual and auditory.

ANS: B                      DIF: Moderate              REF: What Do We Learn from Capgras Syndrome?  
OBJ: 2.1                      MSC: Understanding

6. Capgras syndrome provides an illustration of several important themes in Chapter 2. All of the following are true of Capgras EXCEPT
- a. damage to a specific part of the brain is likely to produce specific symptoms.
  - b. the brain has many interconnected and interacting systems.
  - c. cognitive disorders often co-occur, such as Alzheimer’s syndrome and Capgras syndrome.
  - d. damage to the amygdala will result in an inability to recognize impostors.

ANS: D                      DIF: Difficult              REF: What Do We Learn from Capgras Syndrome?  
OBJ: 2.2                      MSC: Evaluating

7. Capgras syndrome teaches us many things, but is LEAST informative about which of the following?
- a. the function of the temporal lobe in memory
  - b. the function of the amygdala in people without Capgras syndrome
  - c. the function of the frontal lobe in schizophrenia
  - d. the function of visual area V1

ANS: D                      DIF: Difficult              REF: What Do We Learn from Capgras Syndrome?  
OBJ: 2.2                      MSC: Evaluating

8. Capgras syndrome and other cognitive disorders are useful to consider because they
- a. provide information about normal cognitive functioning.

- b. highlight the importance of proper nutrition and health care.
- c. provide evidence that people with Capgras syndrome need medication.
- d. show that all brain damage is irreversible.

ANS: A                      DIF: Difficult                      REF: What Do We Learn from Capgras Syndrome?  
 OBJ: 2.2                      MSC: Analyzing

9. Which of the following statements about Phineas Gage is FALSE?
- a. He had Capgras syndrome.
  - b. A rod went through his face and head, removing part of his frontal lobe.
  - c. His personality changed after his trauma.
  - d. He was able to perform basic cognitive tasks (talking, remembering, etc.) after his trauma.

ANS: A                      DIF: Moderate                      REF: The Study of the Brain  
 OBJ: 2.2                      MSC: Understanding

10. Damage to the brain can be caused in many ways, but in general the damage is referred to as a
- a. stroke.
  - b. lesion.
  - c. syndrome.
  - d. problem.

ANS: B                      DIF: Easy                      REF: Data from Neuropsychology  
 OBJ: 2.2                      MSC: Understanding

11. Research has suggested that, among its other functions, the amygdala serve as a(n)
- a. important relay station between the eye and occipital cortex.
  - b. storage location for information received from the skin.
  - c. “emotional evaluator” or threat detector.
  - d. “index” for locating memories in the brain.

ANS: C                      DIF: Easy                      REF: The Neural Basis for Capgras Syndrome  
 OBJ: 2.4                      MSC: Understanding

12. Mike has damage to his hindbrain. He is likely to experience problems with which of the following?
- a. rhythm of breathing, level of alertness, and posture
  - b. complex thought and long-term memory
  - c. planned motor activity
  - d. perception and visual imagery

ANS: A                      DIF: Easy                      REF: Hindbrain, Midbrain, Forebrain  
 OBJ: 2.4                      MSC: Applying

13. Lisa has recently suffered a brain injury. Her symptoms include deficits in coordination and interpretation of pain. Which structure is most likely damaged?
- a. primary motor area
  - b. midbrain
  - c. forebrain
  - d. hindbrain

ANS: B                      DIF: Moderate                      REF: Hindbrain, Midbrain, Forebrain  
 OBJ: 2.4                      MSC: Applying

14. The cerebral cortex makes up the surface of what brain structure?
- a. hindbrain
  - b. midbrain
  - c. thalamus
  - d. forebrain

ANS: D                      DIF: Easy                      REF: Hindbrain, Midbrain, Forebrain  
 OBJ: 2.4                      MSC: Remembering

15. Damage to the \_\_\_\_\_ is likely to cause problems with precise eye movements.
- a. forebrain
  - b. midbrain
  - c. hindbrain
  - d. amygdala

ANS: B                      DIF: Moderate                      REF: Hindbrain, Midbrain, Forebrain  
 OBJ: 2.4                      MSC: Understanding

16. Which of the following is included in the limbic system?

- a. thalamus
- b. amygdala
- c. cerebellum
- d. hypothalamus

ANS: B      DIF: Moderate      REF: Subcortical Structures  
OBJ: 2.4      MSC: Remembering

17. Commissures are
- a. blood vessels that carry blood to all areas of the brain.
  - b. brain areas associated with various types of sensory information.
  - c. pockets of oxygen found throughout the brain.
  - d. thick bundles of fibers that allow communication between the brain's hemispheres.

ANS: D      DIF: Easy      REF: Subcortical Structures  
OBJ: 2.4      MSC: Remembering

18. Most of the brain's structures are hidden deep underneath the \_\_\_\_\_, which is the outer, visible layer.
- a. cerebellum
  - b. cortex
  - c. midbrain
  - d. hindbrain

ANS: B      DIF: Easy      REF: Hindbrain, Midbrain, Forebrain  
OBJ: 2.3      MSC: Understanding

19. Which of the following structures is NOT visible when viewing an image of an intact brain?
- a. occipital lobe
  - b. cortex
  - c. primary motor cortex
  - d. amygdala

ANS: D      DIF: Moderate      REF: Hindbrain, Midbrain, Forebrain  
OBJ: 2.3      MSC: Analyzing

20. Which lobe or cortex is closest to someone's forehead?
- a. frontal
  - b. parietal
  - c. occipital
  - d. temporal

ANS: A      DIF: Moderate      REF: Hindbrain, Midbrain, Forebrain  
OBJ: 2.3      MSC: Analyzing

21. Which of the following statements about the association cortex is FALSE?
- a. These areas of the brain are involved in higher-level sensory processing.
  - b. These areas contain specialized subregions.
  - c. There are association areas for both sensory and motor areas.
  - d. The visual association cortex is located in the subcortical parts of the brain.

ANS: D      DIF: Difficult      REF: The Cerebral Cortex  
OBJ: 2.4      MSC: Understanding

22. We know that the amygdala is especially activated when someone is looking at an emotional scene. This result on its own does not allow us to make \_\_\_\_\_ statements.
- a. causal
  - b. important
  - c. scientific
  - d. functional

ANS: A      DIF: Moderate      REF: The Power of Combining Techniques  
OBJ: 2.4 | 2.7      MSC: Analyzing

23. Lindsay participated in an fMRI experiment. The researchers found high activity levels in visual areas when she was looking at a photograph and similar activity in many of those same areas when she was
- a. sleeping.
  - b. imagining the scene shown in the photograph.
  - c. drawing the scene shown in the photograph.
  - d. speaking.

ANS: B      DIF: Moderate      REF: Localization of Function  
OBJ: 2.6 | 2.7      MSC: Applying

24. When a photograph is shown in the right visual field, the signal will be sent to the \_\_\_\_\_ hemisphere.

- a. right
- b. left
- c. visual
- d. cortical

ANS: B                      DIF: Moderate                      REF: Hindbrain, Midbrain, Forebrain  
OBJ: 2.5                      MSC: Remembering

25. Kareena has undergone a split-brain procedure. Her doctor briefly presents the word “hammer” to only her left visual field and then asks her what she saw. Which set of responses is Kareena most likely to give?

- a. She will say she doesn’t know what word appeared, but she will be able to draw a picture of the object with her right hand.
- b. She will say she doesn’t know what word appeared, but she will be able to draw a picture of the object with her left hand.
- c. She will say she doesn’t know what word appeared, and she will not be able to identify the object using either hand.
- d. She will say “hammer.”

ANS: B                      DIF: Difficult                      REF: Lateralization  
OBJ: 2.6                      MSC: Applying

26. The corpus callosum serves what major function?

- a. processing sensory information
- b. long-term memory
- c. communication between hemispheres
- d. emotion

ANS: C                      DIF: Easy                      REF: Lateralization  
OBJ: 2.5 | 2.6                      MSC: Remembering

27. A patient might elect to have split-brain surgery, which involves

- a. severing the corpus callosum.
- b. removing the amygdala.
- c. removing one hemisphere of the brain.
- d. removing a section of the frontal lobe.

ANS: A                      DIF: Moderate                      REF: Lateralization  
OBJ: 2.5 | 2.6                      MSC: Remembering

28. The corpus callosum is a large

- a. muscle.
- b. neuron.
- c. commissure.
- d. damaged area of the brain.

ANS: C                      DIF: Moderate                      REF: Lateralization  
OBJ: 2.5                      MSC: Applying

29. Patients who have epilepsy often experience a decreased seizure frequency after a split-brain procedure. But these patients have also provided evidence for scientists. Specifically,

- a. this procedure has led to the well-supported notion that someone can be “left-brained” or “right-brained.”
- b. research with these patients suggests that there is not significant localization of function in the brain.
- c. research with these patients suggests that someone cannot live without an intact corpus callosum, indicating its importance in survival and functioning.
- d. research with these patients has provided evidence for some degree of localization of function of the right and left hemispheres.

ANS: D                      DIF: Moderate                      REF: Lateralization  
OBJ: 2.5 | 2.6                      MSC: Analyzing

30. Transcranial magnetic stimulation (TMS) uses a strong magnetic pulse to

- a. record the amount of glucose a specific brain region used during a cognitive task.
- b. measure the blood flow using blood oxygenation level dependent (BOLD) signals.
- c. produce a temporary disruption to the brain area, and thus brain function, where it is applied.
- d. create a detailed “map” of the different brain areas.

ANS: C                      DIF: Moderate                      REF: Data from Neuroimaging  
OBJ: 2.7                      MSC: Understanding

31. Researchers using functional magnetic resonance imaging (fMRI) find activity in the fusiform face area (FFA) when participants view faces. This result on its own tells us that the FFA
- is responsible for recognizing faces.
  - is necessary to recognize faces.
  - is activity correlated with recognizing faces.
  - has no role in recognizing faces.

ANS: C                      DIF: Difficult                      REF: Data from Neuroimaging  
OBJ: 2.7                      MSC: Evaluating

32. Magnetic resonance imaging (MRI) and functional MRI (fMRI)
- are less useful than other types of neuroimaging for the study of brain function.
  - create three-dimensional representations of the brain's structure and function.
  - are useful only for studying features on the outer surface of the brain.
  - make self-report data unnecessary.

ANS: B                      DIF: Easy                      REF: Data from Neuroimaging  
OBJ: 2.7                      MSC: Understanding

33. A number of techniques have been developed that allow us to examine the activation of specifically defined brain areas. These techniques are called
- fMRI.
  - neuroimaging techniques.
  - chronometric techniques.
  - psychometric assessment.

ANS: B                      DIF: Easy                      REF: Data from Neuroimaging  
OBJ: 2.7                      MSC: Understanding

34. A CT or computerized axial tomography scan
- can only be performed on a cadaver.
  - uses X-rays to study the living brain's anatomy.
  - is primarily useful for measuring blood flow in the brain.
  - can detect the activity taking place in different brain areas in real time.

ANS: B                      DIF: Moderate                      REF: Data from Neuroimaging  
OBJ: 2.7                      MSC: Analyzing

35. Positron emission tomography (PET) scans show
- continuous details of brain anatomy.
  - what a participant is thinking the moment the scan is taken.
  - brain areas that are currently consuming a particularly high level of glucose.
  - whether a participant is learning something new or remembering prior learning.

ANS: C                      DIF: Moderate                      REF: Data from Neuroimaging  
OBJ: 2.7                      MSC: Analyzing

36. Doctors suspect that Paolo has a tumor in his brain, and they hope to learn the exact position of the tumor. For this purpose, they are likely to rely on
- TMS.
  - fMRI.
  - EEG.
  - MRI.

ANS: D                      DIF: Moderate                      REF: Data from Neuroimaging  
OBJ: 2.7                      MSC: Applying

37. The electroencephalogram (EEG) provides an estimate of brain activity by measuring
- glucose consumption.
  - blood flow.
  - neurotransmitter release.
  - electrical signals recorded at the surface of the scalp.

ANS: D                      DIF: Easy                      REF: Data from Electrical Recording  
OBJ: 2.7                      MSC: Remembering

38. Researchers have used fMRI to investigate activation in the FFA and the parahippocampal place area (PPA). When participants are shown a picture of a face to one eye and a picture of a house to the other eye (producing binocular rivalry), we expect to see

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- a. no increase in activation in either the FFA or the PPA relative to a baseline level of activation.
- b. equal activation in the FFA and the PPA.
- c. activation only in the brain region linked to the picture in the dominant eye (e.g., if a picture of a face is presented to the dominant eye, then only the FFA will show increased activation).
- d. an increase in activation in the FFA when the participant is consciously aware of the face and similarly increased activation in the PPA when the participant is consciously aware of the house.

ANS: D

DIF: Difficult

REF: The Power of Combining Techniques

OBJ: 2.7

MSC: Analyzing