

True / False

1. The parietal lobes are found rostral to the occipital lobes and posterior to the frontal lobes.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Moderate

KEYWORDS: Factual

2. The arachnoid layer of the meninges is found in both the central and peripheral nervous systems.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Easy

KEYWORDS: Factual

3. Nerves originating in the lumbar division of the spinal cord serve the lower back and legs.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Easy

KEYWORDS: Factual

4. The amygdala participates in emotional behavior and is particularly important in the fear response.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Easy

KEYWORDS: Factual

5. The reticular formation extends from the medulla through the pons and into the midbrain.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Easy

KEYWORDS: Factual

6. The primary auditory cortex is found in the parietal lobe of the cerebral cortex.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Easy

KEYWORDS: Factual

7. The primary somatosensory cortex is located in the precentral gyrus of the frontal lobe.

- a. True

b. False

ANSWER: False

DIFFICULTY: Easy

KEYWORDS: Factual

8. All cranial nerves carry both sensory and motor information to and from the brain.

a. True

b. False

ANSWER: False

DIFFICULTY: Easy

KEYWORDS: Factual

9. Neurons comprising the parasympathetic division of the autonomic nervous system are located in the brain and sacral divisions of the spinal cord.

a. True

b. False

ANSWER: True

DIFFICULTY: Easy

KEYWORDS: Factual

10. From early versions of the human being up until current homo sapiens, the brain has undergone virtually no change in size.

a. True

b. False

ANSWER: False

DIFFICULTY: Moderate

KEYWORDS: Factual

Multiple Choice

11. Structures located relatively toward the tail of a four-legged animal are referred to as

a. rostral.

b. caudal.

c. dorsal.

d. ventral.

ANSWER: b

DIFFICULTY: Moderate

KEYWORDS: Factual

12. Structures located relatively toward the belly of a four-legged animal are referred to as

a. rostral.

b. caudal.

c. dorsal.

d. ventral.

ANSWER: d

DIFFICULTY: Moderate

KEYWORDS: Factual

13. A dog's ears are _____ relative to its tail.

- a. rostral
- b. caudal
- c. dorsal
- d. ventral

ANSWER: a

DIFFICULTY: Moderate

KEYWORDS: Factual

14. Which of the following pairs of terms mean the same thing?

- a. ventral—superior
- b. dorsal—inferior
- c. rostral—anterior
- d. caudal—ipsilateral

ANSWER: c

DIFFICULTY: Moderate

KEYWORDS: Factual

15. An imaginary line that runs the length of the spinal cord to the front of the brain is known as the

- a. sagittal slice.
- b. proximal.
- c. neuraxis.
- d. plane of section.

ANSWER: c

DIFFICULTY: Moderate

KEYWORDS: Factual

16. The neuraxis runs in a straight line

- a. parallel to the ground in four-legged animals and humans.
- b. perpendicular to the ground in four-legged animals and humans.
- c. parallel to the ground in four-legged animals but makes a 90 degree turn in the brains of humans.
- d. parallel to the ground in humans but makes a 90 degree turn in the brains of four-legged animals.

ANSWER: c

DIFFICULTY: Moderate

KEYWORDS: Factual

17. A person's hand is _____ relative to his or her elbow.

- a. proximal
- b. distal
- c. contralateral
- d. ipsilateral

ANSWER: b

DIFFICULTY: Moderate

KEYWORDS: Factual

18. Two structures on opposite sides of the midline are referred to as

- a. proximal.
- b. distal.
- c. ipsilateral.
- d. contralateral.

ANSWER: b

DIFFICULTY: Moderate

KEYWORDS: Factual

19. Your right arm is _____ to your right leg.

- a. proximal
- b. distal
- c. contralateral
- d. ipsilateral

ANSWER: d

DIFFICULTY: Moderate

KEYWORDS: Factual

20. The nerve fibers that originate in the cerebral cortex and control movement cross the midline just above the junction of the medulla and spinal cord. As a result, these fibers provide input to _____ structures of the body, or structures that are on the _____ side of the midline as the cortical cells providing their motor input.

- a. ipsilateral; same
- b. contralateral; opposite
- c. ipsilateral; opposite
- d. contralateral; same

ANSWER: b

DIFFICULTY: Difficult

KEYWORDS: Factual

21. Given the fact that the motor cortex controls movement of contralateral body parts, if your grandfather experiences damage to his right hemisphere motor cortex due to a stroke, it is likely that he will

- a. not be able to walk at all because he will be paralyzed from the waist down.
- b. have some paralysis in the left side of his body.
- c. not be able to understand anything you say to him.
- d. have some paralysis on the right side of his body.

ANSWER: b

DIFFICULTY: 2

KEYWORDS: Conceptual

22. Researchers investigating appetite distinguish between the roles played by the ventromedial hypothalamus and the lateral hypothalamus. Where are these two structures located relative to one another?

- a. The lateral hypothalamus is contralateral to the ventromedial hypothalamus.
- b. The lateral hypothalamus is rostral to the ventromedial hypothalamus.
- c. The lateral hypothalamus is closer to the midline than the ventromedial hypothalamus.
- d. The ventromedial hypothalamus is located closer to the midline than the lateral hypothalamus.

ANSWER: d

DIFFICULTY: Moderate

KEYWORDS: Application

23. The superior and inferior colliculi are located in the midbrain. Where are these two structures located relative to one another?

- a. The superior colliculi are located above the inferior colliculi.
- b. The superior colliculi are located below the inferior colliculi.
- c. The superior colliculi are closer to the midline than the inferior colliculi.
- d. The superior colliculi are farther away from the midline than the inferior colliculi.

ANSWER: a

DIFFICULTY: Easy

KEYWORDS: Application

24. The anterior cingulate cortex (ACC) is located _____ the posterior cingulate cortex (PCC).

- a. behind
- b. in front of
- c. below
- d. above

ANSWER: b

DIFFICULTY: Easy

KEYWORDS: Application

25. Most of the neural input to your left eyebrow originates in the motor cortex of the left hemisphere. In other words, your eyebrow receives input from the _____ hemisphere.

- a. proximal
- b. distal
- c. contralateral
- d. ipsilateral

ANSWER: d

DIFFICULTY: Moderate

KEYWORDS: Application

26. Anatomical sections that divide the brain parallel to the midline are known as _____ sections.

- a. sagittal
- b. coronal
- c. horizontal
- d. axial

ANSWER: a

DIFFICULTY: Difficult

KEYWORDS: Factual

27. Researchers who wished to have a full view of a structure from the top of the head would use a _____ section.

- a. sagittal
- b. coronal
- c. horizontal
- d. midsagittal

ANSWER: c

DIFFICULTY: Moderate

KEYWORDS: Factual

28. Early computerized tomography (CT) equipment could take images from only one perspective, the axial or horizontal section. This means that the resulting images were from sections that are _____ to the ground, dividing the brain from _____.

- a. perpendicular; front to back
- b. perpendicular dividing the brain from side to side.
- c. parallel to the midline, dividing the brain from side to side.
- d. parallel to the ground, dividing the brain from top to bottom.

ANSWER: d

DIFFICULTY: Moderate

KEYWORDS: Factual

29. In order to assess the size of the lateral ventricles in patients with schizophrenia, Dr. Weinberger has decided to use a coronal or frontal section. In other words, he is looking at a plane of section that is

- a. perpendicular to the ground, dividing the brain from front to back.
- b. perpendicular to the ground, dividing the brain from side to side.
- c. parallel to the midline, dividing the brain from side to side.
- d. parallel to the ground, dividing the brain from top to bottom.

ANSWER: a

DIFFICULTY: Moderate

KEYWORDS: Application

30. The correct ordering of the layers of the meninges from the skull to the brain is:

- a. pia mater, arachnoid layer, dura mater.
- b. arachnoid layer, pia mater, dura mater.
- c. dura mater, pia mater, arachnoid layer.
- d. dura mater, arachnoid layer, pia mater.

ANSWER: d

DIFFICULTY: Easy

KEYWORDS: Factual

31. You just heard about a friend who has a tumor on the meninges of her right temporal lobe. This means that the tumor is _____ to the midline of the brain.

- a. contralateral

- b. medial
- c. ventral
- d. lateral

ANSWER: d

DIFFICULTY: Easy

KEYWORDS: Application

32. Your cat always walks up to you and wants you to pet it on its _____ surface, but your dog lies on its back and presents its _____ surface for you to scratch.

- a. ventral; dorsal
- b. dorsal; ventral
- c. rostral; caudal
- d. caudal; rostral

ANSWER: b

DIFFICULTY: Moderate

KEYWORDS: Application

33. A subdural hematoma is a “bruise” that often occurs following a head injury and affects a layer of the membranes that cover the central nervous system and the peripheral nerves. Given your knowledge of anatomical terms, which of the following is the likely location of this type of injury?

- a. the scalp
- b. the meninges
- c. the lateral ventricles
- d. the central canal of the spinal cord

ANSWER: b

DIFFICULTY: Moderate

KEYWORDS: Conceptual

34. Which of the meninges is described as a leatherlike tissue that follows the contours of the skull bones?

- a. pia mater
- b. dura mater
- c. arachnoid layer
- d. subarachnoid space

ANSWER: b

DIFFICULTY: Moderate

KEYWORDS: Factual

35. Which layers of the meninges are found in the peripheral nervous system?

- a. pia mater, arachnoid layer, and dura mater
- b. pia mater only
- c. pia mater and dura mater only
- d. arachnoid layer and dura mater only

ANSWER: c

DIFFICULTY: Moderate

KEYWORDS: Factual

36. Which layer(s) of the meninges is/are missing in the peripheral nervous system?

- a. pia mater, arachnoid layer, and dura mater
- b. pia mater only
- c. pia mater and dura mater only
- d. arachnoid layer and subarachnoid space

ANSWER: d

DIFFICULTY: Moderate

KEYWORDS: Factual

37. The subarachnoid space is found between the arachnoid layer and the

- a. pia mater.
- b. dura mater.
- c. skull bones.
- d. lateral ventricles.

ANSWER: a

DIFFICULTY: Moderate

KEYWORDS: Factual

38. Cerebrospinal fluid (CSF) is secreted by the

- a. meninges.
- b. subarachnoid space.
- c. choroid plexus.
- d. ventricles.

ANSWER: c

DIFFICULTY: Moderate

KEYWORDS: Factual

39. Cerebrospinal fluid (CSF) may be found in the

- a. central and peripheral nervous systems.
- b. peripheral nervous system only.
- c. lateral and distal ventricles of the brain.
- d. ventricles, subarachnoid space, and central canal of the spinal cord.

ANSWER: c

DIFFICULTY: Moderate

KEYWORDS: Factual

40. The primary purpose of cerebrospinal fluid (CSF) is to

- a. nourish the cells of the brain and spinal cord.
- b. float the brain within the skull.
- c. remove toxins from the brain and excrete them from the body.
- d. provide circulation for chemical messengers.

ANSWER: b

DIFFICULTY: Difficult

KEYWORDS: Factual

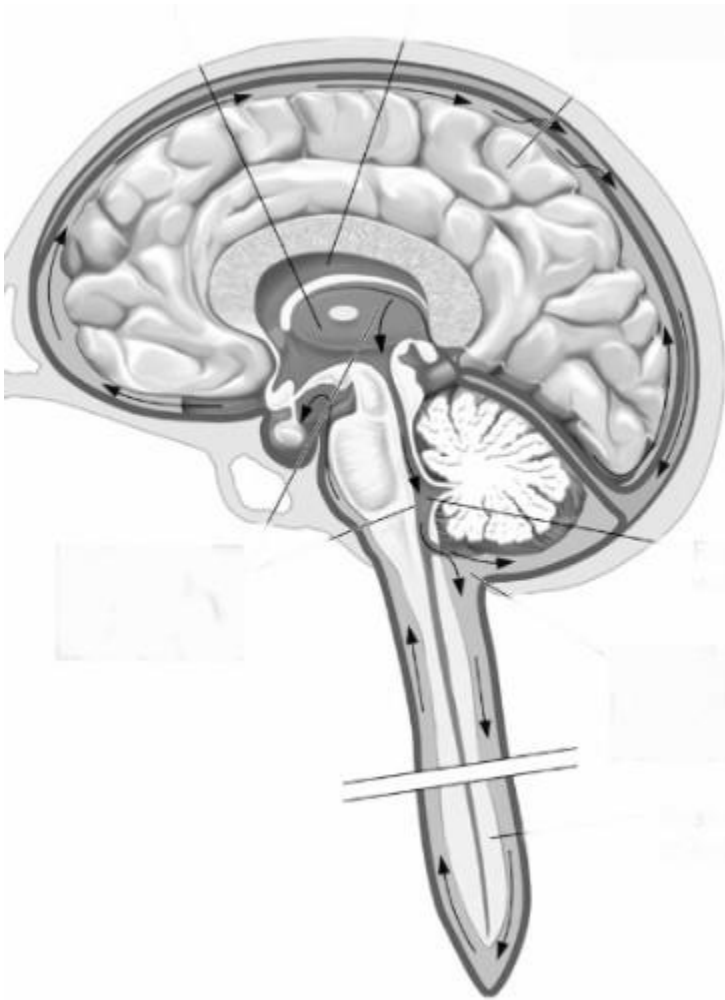
41. A friend calls and says his child is complaining of a severe headache. When the child bends her head forward she screams in pain. The parent asks you what to do. Given what you have read in this chapter, what would you suggest?

- a. Have the child lie down; she'll probably be fine.
- b. Call the pediatrician in the morning.
- c. Get the child immediately to a physician to be evaluated for meningitis.
- d. The child probably has a brain tumor and should see a neurologist.

ANSWER: d

DIFFICULTY: Easy

KEYWORDS: Application



42. This figure illustrates the circulation of

- a. blood through the brain and spinal cord.
- b. cerebrospinal fluid between the meninges and the upper layer of cortex.
- c. cerebrospinal fluid through the ventricles, the central canal of the spinal cord, and in the subarachnoid space.
- d. cerebrospinal fluid, from its manufacture in the subarachnoid space into the ventricles and central canal of the spinal cord.

ANSWER: c

DIFFICULTY: Difficult

KEYWORDS: Factual

43. A condition that results when the circulation of cerebrospinal fluid (CSF) is blocked is known as
- hydrocephalus.
 - meningioma.
 - meningitis.
 - septicemia.

ANSWER: a

DIFFICULTY: Easy

KEYWORDS: Factual

44. If you go to the doctor with a horrible headache and a stiff neck, why might she suggest a spinal tap?
- A spinal tap will tell if you have a brain tumor
 - The cerebrospinal fluid (CSF) to help diagnose specific diseases.
 - The cerebrospinal fluid (CSF) is the same as the blood supply, and the doctor can tell if you have an infection.
 - The cerebrospinal fluid (CSF) is the only way the doctor can tell if you are on drugs.

ANSWER: b

DIFFICULTY: Moderate

KEYWORDS: Application

45. Why would your doctor want to do a spinal tap if she suspected that you had an infection of the brain?
- Because the cerebrospinal fluid (CSF) of the spinal cord is continuous with the cerebrospinal fluid (CSF) of the brain.
 - Because the spinal cord is part of the central nervous system.
 - Because the peripheral and central nervous systems are connected.
 - She wouldn't do a spinal tap because the spinal cord is made of different kinds of neurons than the brain.

ANSWER: a

DIFFICULTY: Difficult

KEYWORDS: Conceptual

46. The blood supply to the brain is provided by the
- carotid and vertebral arteries.
 - subclavian and axillary arteries.
 - celiac artery.
 - aorta.

ANSWER: a

DIFFICULTY: Moderate

KEYWORDS: Factual

47. Which of the following is a component of the peripheral nervous system?
- the corpus callosum
 - the red nucleus
 - the sympathetic nervous system

d. the central canal

ANSWER: c

DIFFICULTY: Moderate

KEYWORDS: Factual

48. Which of the following statements is correct?

- a. The central nervous system is encased in bone, but has no cerebrospinal fluid.
- b. The peripheral nervous system is encased in bone, but has no cerebrospinal fluid.
- c. The peripheral nervous system is encased with bone and is bathed with cerebrospinal fluid.
- d. The central nervous system is encased with bone and is bathed with cerebrospinal fluid.

ANSWER: d

DIFFICULTY: Difficult

KEYWORDS: Factual

49. The spinal cord extends _____ of the vertebral column.

- a. down the entire length
- b. down about two-thirds the length
- c. about halfway down the length
- d. about a third of the way down the length

ANSWER: b

DIFFICULTY: Difficult

KEYWORDS: Factual

50. Running down the center of the spinal cord is the

- a. subarachnoid space.
- b. fourth ventricle.
- c. central canal.
- d. spinal ventricle.

ANSWER: c

DIFFICULTY: Moderate

KEYWORDS: Factual

51. The region consisting of the head, neck, and arms is served by nerves exiting the _____ division of the spinal cord.

- a. sacral
- b. lumbar
- c. thoracic
- d. cervical

ANSWER: d

DIFFICULTY: Easy

KEYWORDS: Factual

52. The correct order of the spinal divisions from rostral to caudal is:

- a. cervical, thoracic, lumbar, sacral, coccygeal.

- b. cervical, lumbar, thoracic, sacral, coccygeal.
- c. thoracic, cervical, lumbar, sacral, coccygeal.
- d. cervical, thoracic, lumbar, coccygeal, sacral.

ANSWER: a

DIFFICULTY: Moderate

KEYWORDS: Factual

53. A thoracic surgeon operates in the vicinity of the thoracic division of the spinal cord; that is, the structures located in the

- a. neck
- b. torso
- c. lower back
- d. genitals and legs

ANSWER: b

DIFFICULTY: Moderate

KEYWORDS: Application

54. As a result of an accident that occurred while playing football, Michael must wear a device known as a cervical collar until his injuries heal. Based on this information, we know that Michael injured his

- a. shoulder
- b. knee
- c. neck
- d. lower back

ANSWER: c

DIFFICULTY: Moderate

KEYWORDS: Application

55. Julie's physician tells her that she damaged a disk in the lumbar region of her spinal cord. It is likely that Julie sought medical advice due to pain she experienced in her

- a. neck
- b. upper back
- c. shoulder
- d. lower back

ANSWER: d

DIFFICULTY: Moderate

KEYWORDS: Application

56. Spinal neurons that pass motor information to the body's muscles may be found in _____ of the spinal cord.

- a. the white matter
- b. the dorsal horns
- c. the ventral horns
- d. both the dorsal and ventral horns

ANSWER: c

DIFFICULTY: Difficult

KEYWORDS: Factual

57. Axons carrying sensory information to the brain may be found in
- a. the ventral white matter of the spinal cord.
 - b. the dorsal white matter of the spinal cord.
 - c. both the ventral and dorsal white matter of the spinal cord.
 - d. the lateral gray matter of the spinal cord only.

ANSWER: b

DIFFICULTY: Difficult

KEYWORDS: Factual

58. The knee jerk reflex, in which your foot kicks in response to a tap on your knee, is also known as a _____ reflex.

- a. withdrawal
- b. postural
- c. patellar
- d. polysynaptic

ANSWER: c

DIFFICULTY: Easy

KEYWORDS: Factual

59. You've just heard that someone's spinal cord has been injured at L2 (lumbar nerve 2). Given what you've learned in this chapter, which of the following will likely be true?

- a. The person will be totally paralyzed from the neck down.
- b. The person will be totally paralyzed from just below the arms.
- c. Depending on how severe the injury, the person may be unable to move or feel anything from around the waist down.
- d. Depending on how severe the injury, the person may be unable to move or feel anything from around the chest down.

ANSWER: c

DIFFICULTY: Difficult

KEYWORDS: Application

60. A person with cervical spinal cord damage is known as a _____ and experiences loss of sensation and motor control in the _____.

- a. paraplegic; arms and legs
- b. paraplegic; legs only
- c. quadriplegic; arms, legs, and torso
- d. quadriplegic; legs only

ANSWER: c

DIFFICULTY: Moderate

KEYWORDS: Conceptual

61. The myelencephalon and metencephalon are located in the

- a. hindbrain.
- b. midbrain.

- c. forebrain.
- d. cerebellum.

ANSWER: a

DIFFICULTY: Moderate

KEYWORDS: Factual

62. Another name for the midbrain is the

- a. myelencephalon.
- b. metencephalon.
- c. mesencephalon.
- d. diencephalon.

ANSWER: c

DIFFICULTY: Easy

KEYWORDS: Factual

63. The brainstem contains the

- a. hindbrain only.
- b. midbrain only.
- c. hindbrain and midbrain.
- d. hindbrain, midbrain, and forebrain.

ANSWER: c

DIFFICULTY: Moderate

KEYWORDS: Factual

64. The brainstem contains the

- a. rhombencephalon only.
- b. mesencephalon only.
- c. rhombencephalon and mesencephalon.
- d. rhombencephalon, mesencephalon, and proencephalon.

ANSWER: c

DIFFICULTY: Difficult

KEYWORDS: Factual

65. The _____ is the most caudal portion of the brain, and is a gradual swelling of tissue that lies above the cervical spine.

- a. medulla
- b. cerebellum
- c. pons
- d. reticular formation

ANSWER: a

DIFFICULTY: Moderate

KEYWORDS: Factual

66. Jonathan has been diagnosed with a tumor located in his medulla. His physician warns him that until treated, the tumor will most directly affect his

- a. balance and motor coordination.
- b. breathing, heart rate, and blood pressure.
- c. control of aggression.
- d. decision-making.

ANSWER: b

DIFFICULTY: Moderate

KEYWORDS: Application

67. The pons and cerebellum make up which of the following divisions?

- a. telencephalon
- b. diencephalon
- c. mesencephalon
- d. metencephalon

ANSWER: d

DIFFICULTY: Difficult

KEYWORDS: Factual

68. The brainstem contains which of the following structures?

- a. the central sulcus
- b. the corpus callosum
- c. the medulla
- d. the hypothalamus

ANSWER: c

DIFFICULTY: Easy

KEYWORDS: Factual

69. The medulla contains nuclei responsible for which of the following functions?

- a. balance and motor coordination
- b. heart rate and respiration
- c. visual reflexes
- d. auditory reflexes

ANSWER: b

DIFFICULTY: Moderate

KEYWORDS: Factual

70. The cochlear and vestibular nuclei are located in the

- a. midbrain.
- b. medulla.
- c. pons.
- d. cerebellum.

ANSWER: c

DIFFICULTY: Moderate

KEYWORDS: Factual

71. Lucy is experiencing problems with maintaining both her muscle tone and her balance. Her physician is likely to look for the source of her problems in the

- a. vestibular system and the cerebellum.
- b. reticular formation.
- c. red nucleus and the cerebellum.
- d. cochlear nucleus and the inferior colliculi.

ANSWER: a

DIFFICULTY: Moderate

KEYWORDS: Application

72. The reticular formation is involved with regulation of

- a. appetite.
- b. heart rate and respiration.
- c. sexual activity.
- d. consciousness and arousal.

ANSWER: d

DIFFICULTY: Moderate

KEYWORDS: Factual

73. The reticular formation is located in the

- a. medulla.
- b. medulla and pons.
- c. pons.
- d. medulla, pons, and midbrain.

ANSWER: d

DIFFICULTY: Difficult

KEYWORDS: Factual

74. The locus coeruleus is located in the

- a. medulla.
- b. pons.
- c. midbrain.
- d. cerebellum.

ANSWER: b

DIFFICULTY: Moderate

KEYWORDS: Factual

75. Which of the following structures does **not** contain any parts of the reticular formation?

- a. the midbrain
- b. the diencephalon
- c. the medulla
- d. the pons

ANSWER: b

DIFFICULTY: Difficult

KEYWORDS: Factual

76. Which of the following structures are important to the regulation of mood, states of arousal, and sleep?
- a. the vestibular nucleus and the cochlear nucleus
 - b. the raphe nuclei and the locus coeruleus
 - c. the red nucleus and substantia nigra
 - d. periaqueductal gray and the red nucleus

ANSWER: b

DIFFICULTY: Difficult

KEYWORDS: Factual

77. Alcohol interferes with skilled movements primarily through its action on the
- a. reticular formation.
 - b. hypothalamus.
 - c. cerebellum.
 - d. medulla.

ANSWER: c

DIFFICULTY: Easy

KEYWORDS: Factual

78. Autism spectrum disorder is frequently associated with abnormal development in the
- a. cerebellum.
 - b. reticular formation.
 - c. medulla.
 - d. vestibular nuclei.

ANSWER: a

DIFFICULTY: Moderate

KEYWORDS: Factual

79. Which of the following structures is found in humans, but not in other animals?
- a. periaqueductal gray
 - b. the superior colliculi
 - c. the neostriate nucleus
 - d. the substantia nigra

ANSWER: c

DIFFICULTY: Difficult

KEYWORDS: Factual

80. Stanley is experiencing ongoing degeneration in his cerebellum. Consequently, which of the following behaviors may become progressively more difficult for him?
- a. breathing
 - b. maintaining a normal core body temperature
 - c. sleeping
 - d. language skills

ANSWER: d

DIFFICULTY: Difficult

KEYWORDS: Application

81. The dorsal portion of the midbrain is also known as the

- a. tegmentum.
- b. tectum.
- c. cerebral aqueduct.
- d. reticular formation.

ANSWER: b

DIFFICULTY: Difficult

KEYWORDS: Factual

82. A pathway considered important to our experience of reward and pleasure originates in the ventral tegmentum. Where would we look to find this area?

- a. in the spinal cord
- b. in the hindbrain
- c. in the midbrain
- d. in the forebrain

ANSWER: c

DIFFICULTY: Moderate

KEYWORDS: Factual

83. The cerebral aqueduct links the

- a. third and fourth ventricles.
- b. two lateral ventricles.
- c. fourth ventricle and the spinal canal.
- d. fourth ventricle and the subarachnoid space.

ANSWER: a

DIFFICULTY: Difficult

KEYWORDS: Factual

84. Which of the following structures participates in our experience of pain?

- a. the red nucleus
- b. the substantia nigra
- c. periaqueductal gray
- d. the superior colliculi

ANSWER: c

DIFFICULTY: Difficult

KEYWORDS: Factual

85. Our enjoyment of a good surround sound system, which makes it seem like sounds are coming from different directions in our environment, depends on our

- a. superior colliculi.
- b. inferior colliculi.

- c. periaqueductal gray.
- d. substantia nigra.

ANSWER: b

DIFFICULTY: Moderate

KEYWORDS: Application

86. The basal ganglia, substantia nigra, and red nucleus are important for which of the following functions?

- a. memory
- b. motor control
- c. sympathetic nervous system control
- d. emotion

ANSWER: b

DIFFICULTY: Difficult

KEYWORDS: Factual

87. Several visual reflexes are managed by the

- a. red nucleus.
- b. periaqueductal gray.
- c. periaqueductal gray.
- d. inferior colliculi.

ANSWER: c

DIFFICULTY: Moderate

KEYWORDS: Factual

88. When he wakes up in the morning, Matthew's mother turns on the overhead lights in his bedroom. Almost immediately, the _____ in his brain cause(s) a pupillary reaction that leads his pupils to dilate in the bright light.

- a. superior colliculi
- b. periaqueductal gray
- c. red nucleus
- d. inferior colliculi

ANSWER: a

DIFFICULTY: Difficult

KEYWORDS: Application

89. The diencephalon contains which of the following structures?

- a. the thalamus and hypothalamus
- b. the thalamus and the basal ganglia
- c. the inferior and superior colliculi
- d. the substantia nigra and the basal ganglia

ANSWER: a

DIFFICULTY: Easy

KEYWORDS: Factual

90. Before proceeding to the cerebral cortex, input from all sensory systems except smell converges on the

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

ANSWER: b

DIFFICULTY: Moderate

KEYWORDS: Factual

91. Katie has a tumor that is disrupting her ability to maintain her body temperature. Near which of the following structures is Katie's tumor most likely to be located?

- a. hypothalamus
- b. periaqueductal gray
- c. locus coeruleus
- d. raphe nuclei

ANSWER: a

DIFFICULTY: Easy

KEYWORDS: Application

92. Major regulatory functions, including eating, drinking, sex, biorhythms, and temperature control, are managed primarily by the

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

ANSWER: a

DIFFICULTY: Moderate

KEYWORDS: Factual

93. The release of hormones by the pituitary gland is regulated primarily by the

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

ANSWER: a

DIFFICULTY: Easy

KEYWORDS: Factual

94. The caudate nucleus, globus pallidus, putamen, and subthalamic nucleus make up the

- a. hypothalamus.
- b. reticular formation.
- c. basal ganglia.
- d. limbic system.

ANSWER: c

DIFFICULTY: Difficult

KEYWORDS: Factual

95. Anatomists often group the nucleus accumbens, which participates in our sense of pleasure and reward, with the
- a. reticular formation.
 - b. vestibular system.
 - c. cranial nerve nuclei.
 - d. basal ganglia.

ANSWER: d

DIFFICULTY: Moderate

KEYWORDS: Factual

96. Some anatomists group the _____ with the basal ganglia.
- a. thalamus
 - b. hippocampus
 - c. reticular formation
 - d. substantia nigra

ANSWER: d

DIFFICULTY: Moderate

KEYWORDS: Factual

97. Degeneration of the basal ganglia is a feature of which of the following conditions, which is noted for its interference in initiating movement?
- a. Alzheimer's disease
 - b. Parkinson's disease
 - c. schizophrenia
 - d. autism

ANSWER: b

DIFFICULTY: Easy

KEYWORDS: Factual

98. The structures of the limbic system are particularly important in
- a. motivated behavior, emotion, and learning.
 - b. sensation and perception.
 - c. motor control and sensory regulation.
 - d. regulation of hunger and thirst.

ANSWER: a

DIFFICULTY: Easy

KEYWORDS: Factual

99. The hippocampus is important in which of the following functions?
- a. learning and memory
 - b. motor control
 - c. recognition of biological danger
 - d. regulation of hunger and thirst

ANSWER: a

DIFFICULTY: Moderate

KEYWORDS: Factual

100. Stephen's surgery for epilepsy has made it very difficult for him to learn the names of new people he meets. It is most likely that Stephen's surgery affected the _____ in both of his temporal lobes.

- a. hippocampus
- b. locus coeruleus
- c. hypothalamus
- d. nucleus accumbens

ANSWER: a

DIFFICULTY: Moderate

KEYWORDS: Application

101. Damage to the hippocampus in both cerebral hemispheres is associated with

- a. Parkinson's disease.
- b. schizophrenia.
- c. retrograde amnesia.
- d. anterograde amnesia.

ANSWER: d

DIFFICULTY: Difficult

KEYWORDS: Factual

102. The amygdala participates in which of the following behaviors?

- a. learning and memory
- b. motor control
- c. fear, rage, and aggression
- d. regulation of hunger and thirst

ANSWER: c

DIFFICULTY: Moderate

KEYWORDS: Factual

103. Students in a biological psychology laboratory were investigating the ability of rats to form associations between tones and electrical shock. Lesions to which of the following structures would make it very difficult for the students to teach their rats to be afraid of the tones?

- a. the nucleus accumbens
- b. the amygdala
- c. the substantia nigra
- d. the hypothalamus

ANSWER: b

DIFFICULTY: Easy

KEYWORDS: Application

104. Cindy brought a fake rubber snake into the lab where her rhesus monkeys lived. Most of the monkeys responded with fear vocalizations, but one did not. Cindy knew this monkey had been in a lesion experiment prior to coming to her lab, but she didn't know what type of lesion had been done. What would you tell Cindy

about her monkey?

- a. He probably didn't have a lesion at all, as ignoring fake snakes is considered normal for rhesus monkeys.
- b. He probably had a lesion in the hippocampus of both hemispheres.
- c. He probably had a lesion in the amygdala of both hemispheres.
- d. He probably had a lesion of the ventromedial nucleus of the hypothalamus.

ANSWER: c

DIFFICULTY: Moderate

KEYWORDS: Application

105. Which of the following structures is **not** included in the limbic system?

- a. the hypothalamus
- b. the thalamus
- c. the cingulate cortex
- d. the amygdala

ANSWER: b

DIFFICULTY: Difficult

KEYWORDS: Factual

106. The olfactory bulbs participate in the processing of which sensory modality?

- a. vision
- b. touch
- c. audition
- d. smell

ANSWER: d

DIFFICULTY: Easy

KEYWORDS: Factual

107. Von Economo neurons are found in the

- a. hippocampus of all mammals.
- b. hippocampus of great apes, elephants, whales, dolphins, and humans.
- c. cingulate cortex of all mammals.
- d. cingulate cortex of great apes, elephants, whales, dolphins, and humans.

ANSWER: d

DIFFICULTY: Moderate

KEYWORDS: Factual

108. Jessica was playing poker while on a vacation in Las Vegas, and in a fit of exuberance, bet all of her money on one hand. Unfortunately, it turned out to be a losing hand. If we were using functional magnetic resonance imaging (fMRI) to observe Jessica's reactions to losing, which structure might have shown especially increased activation?

- a. her anterior cingulate cortex
- b. her posterior cingulate cortex
- c. her amygdala
- d. her hippocampus

ANSWER: a

DIFFICULTY: Difficult

KEYWORDS: Factual

109. Paul just found out that all of his friends in the dorm went to a party without him. Which of the following structures in Paul's brain would we expect to be especially activated by this social rejection?

- a. the amygdala
- b. the hippocampus
- c. the anterior cingulate cortex
- d. the posterior cingulate cortex

ANSWER: c

DIFFICULTY: Difficult

KEYWORDS: Application

110. Lesions of the _____ usually produce rage and attack behaviors.

- a. hippocampus
- b. amygdala
- c. septal area
- d. thalamus

ANSWER: c

DIFFICULTY: Difficult

KEYWORDS: Factual

111. The "hills" of the cerebral cortex are known as

- a. gyri.
- b. sulci.
- c. fissures.
- d. ganglia.

ANSWER: a

DIFFICULTY: Moderate

KEYWORDS: Factual

112. The "valleys" between ridges of cerebral cortex are known as

- a. gyri.
- b. sulci.
- c. nuclei.
- d. ganglia.

ANSWER: b

DIFFICULTY: Easy

KEYWORDS: Factual

113. A particularly large sulcus is known as a

- a. gyrus.
- b. fasciculus.

- c. fissure.
- d. lemniscus.

ANSWER: c

DIFFICULTY: Easy

KEYWORDS: Factual

114. The degree of cortical convolution in the brain predicts a species'

- a. level of advancement.
- b. physical size.
- c. identity as an herbivore, a carnivore, or an omnivore.
- d. identity as nocturnal or diurnal.

ANSWER: a

DIFFICULTY: Moderate

KEYWORDS: Conceptual

115. How many distinct layers are typically found in the cerebral cortex?

- a. two
- b. four
- c. six
- d. eight

ANSWER: c

DIFFICULTY: Difficult

KEYWORDS: Factual

116. Which of the cortical layer(s) contain(s) no cell bodies?

- a. layer I
- b. layers II and IV
- c. layers III and V
- d. layer VI

ANSWER: a

DIFFICULTY: Difficult

KEYWORDS: Factual

117. Granule cells are usually found in cortical

- a. layer I.
- b. layers II and IV.
- c. layers III and V.
- d. layer VI.

ANSWER: b

DIFFICULTY: Moderate

KEYWORDS: Factual

118. Pyramidal cells are usually found in cortical

- a. layer I.

- b. layers II and IV
- c. layers III and V.
- d. layer VI.

ANSWER: c

DIFFICULTY: Moderate

KEYWORDS: Factual

119. Output from the cortex to other parts of the nervous system usually originates in which of the cortical layers?

- a. II and IV
- b. III and IV
- c. II and II
- d. V and VI

ANSWER: b

DIFFICULTY: Moderate

KEYWORDS: Factual

120. Korbinian Brodmann's system for dividing the cerebral cortex into 52 areas is based on

- a. divisions of the surface by sulci and fissures
- b. regular units covering one square inch.
- c. the function of the underlying cortex of each area.
- d. the distribution of cell bodies in the six layers of cortex.

ANSWER: d

DIFFICULTY: Difficult

KEYWORDS: Factual

121. Although the human cerebral cortex performs many higher order cognitive functions,

- a. its volume is similar to the cortex of cats and dogs.
- b. its functions are quite different from the functions performed by the cortex of other mammals.
- c. it makes up nearly the entire volume of the cerebral hemisphere.
- d. it makes up only a thin layer of tissue covering the cerebral hemispheres.

ANSWER: d

DIFFICULTY: Moderate

KEYWORDS: Conceptual

122. The caudal boundary of the frontal lobe is formed by the

- a. longitudinal fissure.
- b. lateral sulcus.
- c. calcarine fissure.
- d. central sulcus.

ANSWER: d

DIFFICULTY: Difficult

KEYWORDS: Factual

123. The most rostral lobes of the cerebral cortex are the _____ lobes.

- a. frontal
- b. parietal
- c. temporal
- d. occipital

ANSWER: a

DIFFICULTY: Easy

KEYWORDS: Factual

124. At the very back of the cerebral cortex are the _____ lobes.

- a. frontal
- b. parietal
- c. temporal
- d. occipital

ANSWER: d

DIFFICULTY: Easy

KEYWORDS: Factual

125. The primary somatosensory cortex is located within the _____ lobes.

- a. frontal
- b. parietal
- c. temporal
- d. occipital

ANSWER: b

DIFFICULTY: Moderate

KEYWORDS: Factual

126. The postcentral gyrus contains primary _____ cortex.

- a. somatosensory
- b. motor
- c. auditory
- d. visual

ANSWER: a

DIFFICULTY: Easy

KEYWORDS: Factual

127. The primary visual cortex is located in the _____ lobes.

- a. frontal
- b. parietal
- c. temporal
- d. occipital

ANSWER: d

DIFFICULTY: Easy

KEYWORDS: Factual

128. The primary auditory cortex is located in the _____ lobes.

- a. frontal
- b. parietal
- c. temporal
- d. occipital

ANSWER: c

DIFFICULTY: Moderate

KEYWORDS: Factual

129. The primary motor cortex is located in the precentral gyrus of the _____ lobes.

- a. frontal
- b. parietal
- c. temporal
- d. occipital

ANSWER: a

DIFFICULTY: Moderate

KEYWORDS: Factual

130. Following a serious head injury, Robert began to make a series of impulsive decisions that led to negative consequences, such as quitting his job and leaving his wife for a woman he met in a bar. It is most likely that Robert's injury affected his _____ lobes.

- a. occipital
- b. frontal
- c. parietal
- d. temporal

ANSWER: b

DIFFICULTY: Moderate

KEYWORDS: Application

131. Clare's head injury has left her with serious problems in planning and executive cognitive functions, such as being able to remember a new friend's telephone number long enough to put it in her cell phone. It is likely that Clare's injury damaged her

- a. amygdala.
- b. hippocampus.
- c. dorsolateral prefrontal cortex.
- d. posterior cingulate cortex.

ANSWER: c

DIFFICULTY: Difficult

KEYWORDS: Application

132. The two cerebral hemispheres are connected by the

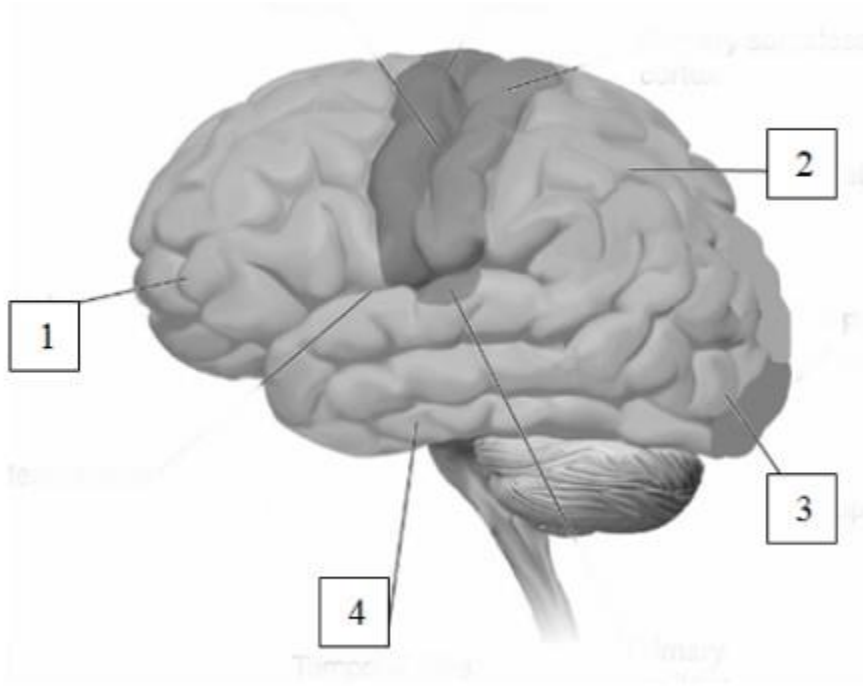
- a. anterior commissure and the corpus callosum.
- b. anterior and medial commissures.

- c. medial commissure and the corpus callosum.
- d. arcuate fasciculus and the corpus callosum.

ANSWER: a

DIFFICULTY: Difficult

KEYWORDS: Factual



133. Among the functions localized in the area designated “1” above are
- a. decision-making and planning.
 - b. processing of sound and visual recognition of objects
 - c. generating movement and perceiving body position.
 - d. primary visual processing and perception of movement.

ANSWER: a

DIFFICULTY: 2

KEYWORDS: Factual

134. A patient who demonstrates uncharacteristically poor judgment and is unable to maintain their typical attention span may have experienced damage to their _____ lobes.

- a. frontal
- b. parietal
- c. temporal
- d. occipital

ANSWER: a

DIFFICULTY: Moderate

KEYWORDS: Application

135. Extreme antisocial behavior has been correlated with damage to the

- a. hippocampus.
- b. orbitofrontal cortex.
- c. primary visual cortex.
- d. corpus callosum.

ANSWER: b

DIFFICULTY: Moderate

KEYWORDS: Factual

136. Damage to which of the following areas results in problems producing speech?

- a. Broca's area
- b. Wernicke's area
- c. the orbitofrontal cortex
- d. the cingulate cortex

ANSWER: a

DIFFICULTY: Moderate

KEYWORDS: Factual

137. For the vast majority of the population, which of the following functions are localized to the left hemisphere?

- a. language
- b. spatial abilities
- c. intuition
- d. artistic and musical abilities

ANSWER: a

DIFFICULTY: Moderate

KEYWORDS: Factual

138. Which of the following peripheral nerves enter and exit the brain itself?

- a. cervical
- b. thoracic
- c. cranial
- d. lumbar

ANSWER: c

DIFFICULTY: Easy

KEYWORDS: Factual

139. How many pairs of cranial nerves do humans have?

- a. 6
- b. 8
- c. 10
- d. 12

ANSWER: d

DIFFICULTY: Moderate

KEYWORDS: Factual

140. Which of the cranial nerves provides input and feedback from the heart, liver, and digestive tract?

- a. the trochlear nerve (IV)
- b. the abducens nerve (VI)
- c. the hypoglossal nerve (XII)
- d. the vagus nerve (X)

ANSWER: d

DIFFICULTY: Moderate

KEYWORDS: Factual

141. Which of the cranial nerves do we use to produce facial expressions?

- a. the trigeminal nerve (V)
- b. the facial nerve (VII)
- c. the trochlear nerve (IV)
- d. The spinal accessory nerve (XI)

ANSWER: b

DIFFICULTY: Easy

KEYWORDS: Factual

142. Which of the following statements accurately describes the ability of cranial nerves to carry sensory and motor information?

- a. Half of the cranial nerves carry sensory information and the other half of the cranial nerves carry motor information.
- b. All cranial nerves carry both sensory and motor information.
- c. Some cranial nerves carry just sensory information, while all of the others carry both sensory and motor information.
- d. Some cranial nerves carry sensory information, others carry motor information, and still others carry both sensory and motor information.

ANSWER: d

DIFFICULTY: Easy

KEYWORDS: Factual

143. Efferent spinal nerves arise from the _____ root of the spinal cord and carry _____ information.

- a. ventral; sensory
- b. ventral; motor
- c. dorsal; sensory
- d. dorsal; motor

ANSWER: b

DIFFICULTY: Difficult

KEYWORDS: Factual

144. Damage to a mixed nerve is likely to produce impairments in _____ for a part of the body.

- a. both sensation and motor control
- b. sensation only
- c. motor control only

d. neither sensation nor motor control

ANSWER: a

DIFFICULTY: Easy

KEYWORDS: Factual

145. Dorsal root ganglia

- a. are located in the ventral horns of the spinal cord.
- b. contain the cell bodies of efferent nerves.
- c. are located in the dorsal horns of the spinal cord.
- d. contain the cell bodies of afferent nerves.

ANSWER: d

DIFFICULTY: Difficult

KEYWORDS: Factual

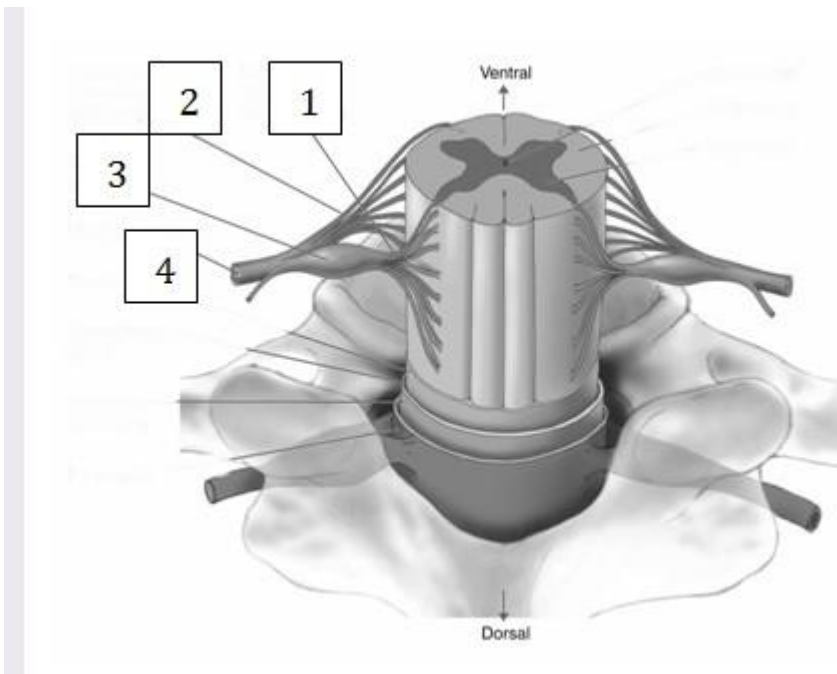
146. _____ spinal nerves are myelinated.

- a. All
- b. None of the
- c. All efferent
- d. All afferent

ANSWER: c

DIFFICULTY: Moderate

KEYWORDS: Factual



147. The structure designated “3” in this illustration

- a. transmits efferent data from the central nervous system to muscles and glands.
- b. transmits afferent data from the periphery to the central nervous system.
- c. is a mixed nerve, carrying both afferent and efferent data to and from the central nervous system.
- d. is a sympathetic ganglion, and participates in autonomic arousal.

ANSWER: b

DIFFICULTY: Difficult

KEYWORDS: Factual

148. The dull, aching feeling that often follows injury is probably carried by _____ nerves.

- a. myelinated efferent
- b. unmyelinated efferent
- c. myelinated afferent
- d. unmyelinated afferent

ANSWER: d

DIFFICULTY: Easy

KEYWORDS: Factual

149. The autonomic nervous system directly controls

- a. the skeletal muscles.
- b. the heart, lungs, and other organs.
- c. the reticular formation.
- d. temperature regulation.

ANSWER: b

DIFFICULTY: Easy

KEYWORDS: Factual

150. Biofeedback training allows people to consciously control processes normally managed by the

- a. frontal lobe.
- b. reticular formation
- c. somatic nervous system.
- d. autonomic nervous system.

ANSWER: d

DIFFICULTY: Easy

KEYWORDS: Factual

151. Internal stimuli, such as the arrival of food in the digestive system, normally activate

- a. the somatic nervous system.
- b. the parasympathetic nervous system.
- c. the sympathetic nervous system.
- d. both the parasympathetic and sympathetic nervous systems.

ANSWER: b

DIFFICULTY: Moderate

KEYWORDS: Factual

152. The body's "fight or flight" response is managed by _____ nervous system(s).

- a. the somatic
- b. the parasympathetic
- c. the sympathetic
- d. both the parasympathetic and sympathetic

ANSWER: c

DIFFICULTY: Moderate

KEYWORDS: Factual

153. Salivation and digestion are inhibited during activation of
- a. the somatic nervous system.
 - b. the parasympathetic nervous system.
 - c. the sympathetic nervous system.
 - d. both the parasympathetic and sympathetic nervous systems.

ANSWER: c

DIFFICULTY: Easy

KEYWORDS: Factual

154. Which of the following is a consequence of sympathetic nervous system activity?
- a. increased heart rate
 - b. increased digestion
 - c. increased salivation
 - d. decreased blood pressure

ANSWER: a

DIFFICULTY: Easy

KEYWORDS: Factual

155. Sexual activity involves
- a. the parasympathetic nervous system only.
 - b. the sympathetic nervous system only.
 - c. both the parasympathetic and sympathetic nervous systems.
 - d. neither the parasympathetic nor the sympathetic nervous system.

ANSWER: c

DIFFICULTY: Moderate

KEYWORDS: Factual

156. Constriction of blood vessels near the skin's surface is a characteristic of activity in
- a. the somatic nervous system.
 - b. the sympathetic nervous system.
 - c. the parasympathetic nervous system.
 - d. both the sympathetic and parasympathetic nervous systems.

ANSWER: b

DIFFICULTY: Moderate

KEYWORDS: Factual

157. The neurons associated with the parasympathetic nervous system are located in the _____ of the spinal cord.
- a. lumbar and sacral divisions
 - b. thoracic and lumbar divisions
 - c. brain and sacral division
 - d. brain and lumbar division

ANSWER: c

DIFFICULTY: Difficult

KEYWORDS: Factual

158. The brain structure with the most direct responsibility over the autonomic nervous system is the

- a. amygdala.
- b. cingulate cortex.
- c. hippocampus.
- d. hypothalamus.

ANSWER: d

DIFFICULTY: Moderate

KEYWORDS: Factual

159. Which of the following statements offers the best definition of evolution?

- a. Evolution describes descent with modifications from a common ancestor.
- b. Evolution describes how humans evolved from chimpanzees.
- c. Evolution describes the origin of life from the big bang.
- d. Evolution describes the transmission of dominant and recessive traits to offspring.

ANSWER: a

DIFFICULTY: Moderate

KEYWORDS: Factual

160. Researchers studying two species of frogs found that one species seemed to be more numerous in ponds with lots of fishes whereas the other species was more numerous in ponds with relatively fewer fishes. Using your understanding of the evolutionary concept of fitness, choose the statement that best describes the situation.

- a. It is only a matter of time before one of these species becomes more numerous in both ponds because certain traits are reproduced more successfully than others regardless of environment.
- b. It is likely that the two species differ in a trait that makes one better suited to ponds with lots of fishes and one better suited to ponds with fewer fishes.
- c. Both species are likely to become extinct in the near future as neither can successfully cohabit with fishes.
- d. Over time the numbers of the two species will become more equal, regardless of the type of pond they inhabit.

ANSWER: b

DIFFICULTY: Difficult

KEYWORDS: Application

161. Natural selection refers to the

- a. ability of farmers and breeders to develop animals with specific traits, such as fast horses and hairless Chihuahuas.
- b. ability to select embryos with certain characteristics during in vitro fertilization.
- c. success of one trait over another in the survival of a species.
- d. dominance of genes for one trait, such as dark eye color, over another, such as blue eye color.

ANSWER: c

DIFFICULTY: Moderate

KEYWORDS: Factual

162. The first animals with simple nerve nets probably evolved about _____ years ago.

- a. 4.5 billion
- b. 3.5 billion
- c. 700 million
- d. 250 million

ANSWER: c

DIFFICULTY: Moderate

KEYWORDS: Factual

163. Animals with the first rudimentary brains probably evolved about _____ years ago.

- a. 4.5 billion
- b. 3.5 billion
- c. 700 million
- d. 250 million

ANSWER: d

DIFFICULTY: Moderate

KEYWORDS: Factual

164. The first hominin brain probably developed about _____ million years ago.

- a. 700
- b. 250
- c. 10
- d. 7

ANSWER: d

DIFFICULTY: Moderate

KEYWORDS: Factual

165. True brains and spinal cords occurred first in

- a. chordates.
- b. mollusca.
- c. crustacean.
- d. hemichordates.

ANSWER: a

DIFFICULTY: Moderate

KEYWORDS: Factual

166. Chordate nervous systems differ from nonchordate nervous systems in that

- a. chordate nervous systems run along the ventral, or front, side of the animal.
- b. chordate nervous systems run along the dorsal, or back, side of the animal.
- c. nonchordate nervous systems have brains rather than ganglia.
- d. nonchordate nervous systems provide faster reactions to sensory information.

ANSWER: b

DIFFICULTY: Easy

KEYWORDS: Factual

167. Among chordates, early brains have _____ than later developing brains.

- a. larger cerebellums
- b. more convoluted cortices
- c. larger olfactory bulbs
- d. smaller cerebellums and less convoluted cortices

ANSWER: a

DIFFICULTY: Moderate

KEYWORDS: Factual

168. The first *Homo sapiens* appeared between _____ years ago.

- a. 4 million and 5 million
- b. 1 million and 2 million
- c. 300,000 and 500,000
- d. 100,000 and 200,000

ANSWER: d

DIFFICULTY: Moderate

KEYWORDS: Factual

169. Brain development among hominid species

- a. occurred very quickly.
- b. occurred very slowly and unevenly.
- c. occurred very slowly and gradually.
- d. has appeared to speed up in the last century.

ANSWER: a

DIFFICULTY: Moderate

KEYWORDS: Factual

170. Compared with early examples of *Homo erectus*, modern humans have

- a. much larger brains.
- b. smaller brains.
- c. brains that are about the same size.
- d. more convoluted brains.

ANSWER: a

DIFFICULTY: Easy

KEYWORDS: Factual

171. Agriculture, urbanization, and literacy appear to have produced _____ in human brain size.

- a. large amounts of additional growth
- b. modest amounts of additional growth
- c. no apparent changes
- d. possible reductions

ANSWER: c

DIFFICULTY: Difficult

KEYWORDS: Factual

172. Factors that may limit human brain size include

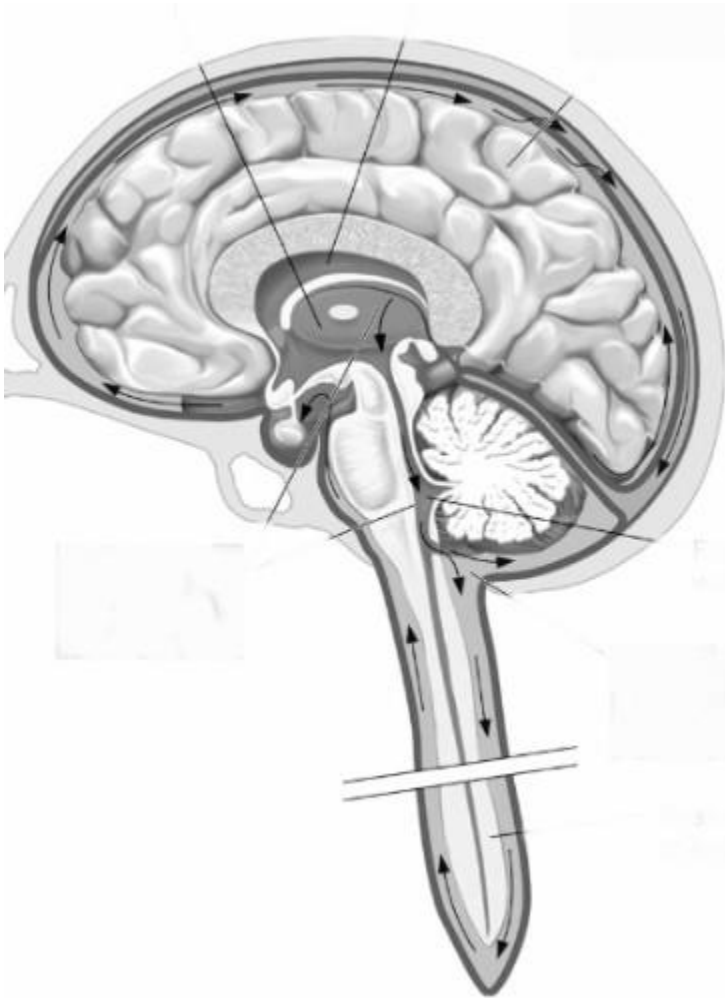
- a. the brain's requirements for calcium.
- b. gender differences in brain size.
- c. the brain's need for fatty acids.
- d. difficulties in childbirth.

ANSWER: d

DIFFICULTY: Moderate

KEYWORDS: Factual

Completion



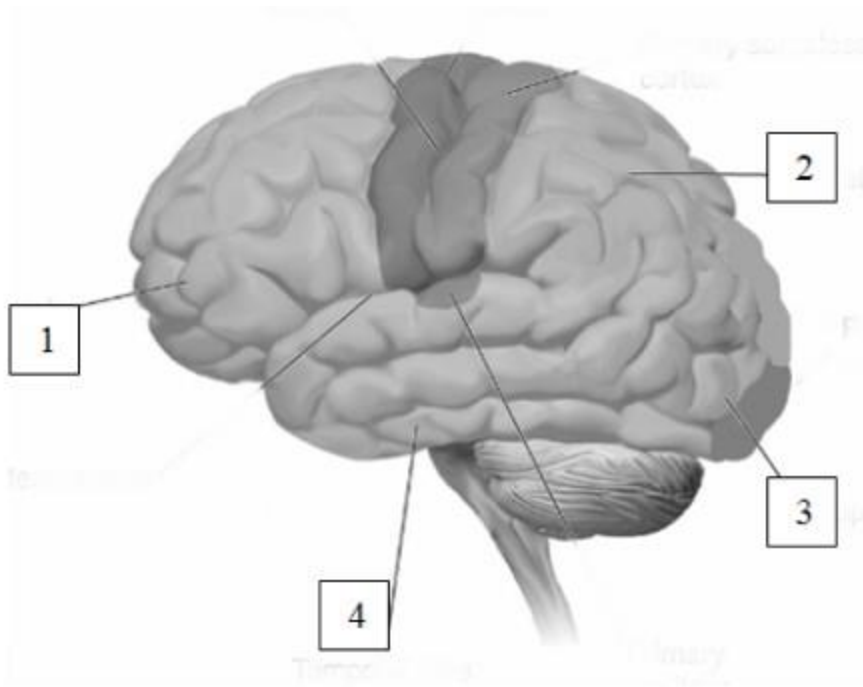
173. In this illustration, cerebrospinal fluid is shown moving from its place of synthesis in the _____ of the ventricles, through the third and fourth ventricles and then into the _____ of the spinal cord. Finally it flows into the _____ within the meninges.

ANSWER:

choroid plexus, central canal, subarachnoid space
(See Figure 2.5).

DIFFICULTY: Difficult

KEYWORDS: Factual



174. Fill in the names of the four lobes depicted in this figure:

Area 1: _____

Area 2: _____

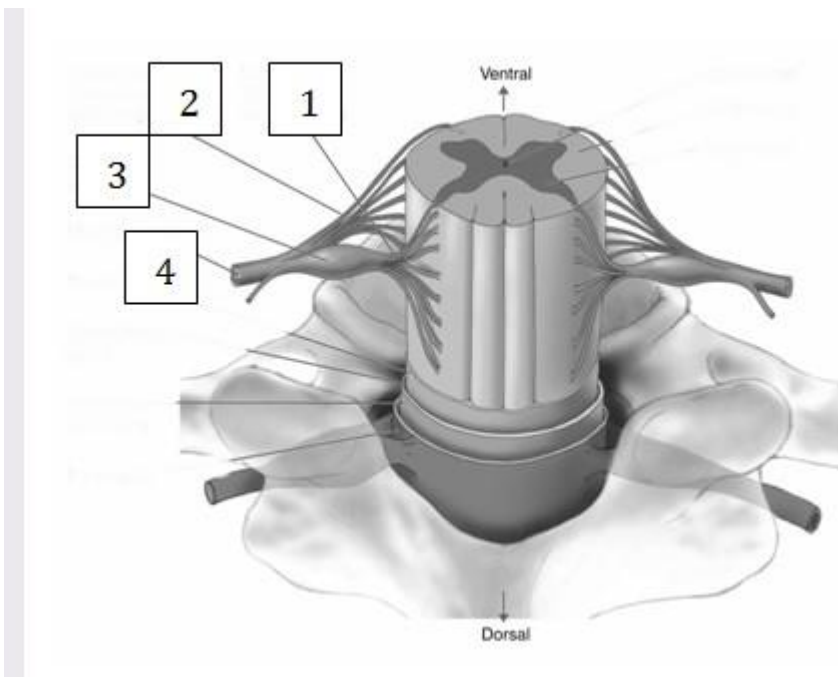
Area 3: _____

Area 4: _____

ANSWER: frontal, parietal, occipital, temporal
(see Figure 2.21)

DIFFICULTY: Moderate

KEYWORDS: Factual



175. The nerve fibers designated as “1” in this illustration carry _____ information, and the nerve fibers designated as “2” carry _____ information.

ANSWER: sensory (afferent), motor (efferent)
sensory, motor
afferent, efferent
(see Figure 2.25)

DIFFICULTY: Difficult

KEYWORDS: Factual

Subjective Short Answer

176. What are the three major planes of sections used in neuroanatomy?

ANSWER: Sagittal sections are parallel to the midline, coronal sections divide the brain from front to back, and horizontal sections divide the brain from top to bottom.

DIFFICULTY: Moderate

KEYWORDS: Factual

177. What is the purpose of the cerebrospinal fluid?

ANSWER: Cerebrospinal fluid cushions the brain, minimizing damage in the event of head injury and preventing unwanted stimulation of neurons due to pressure.

DIFFICULTY: Moderate

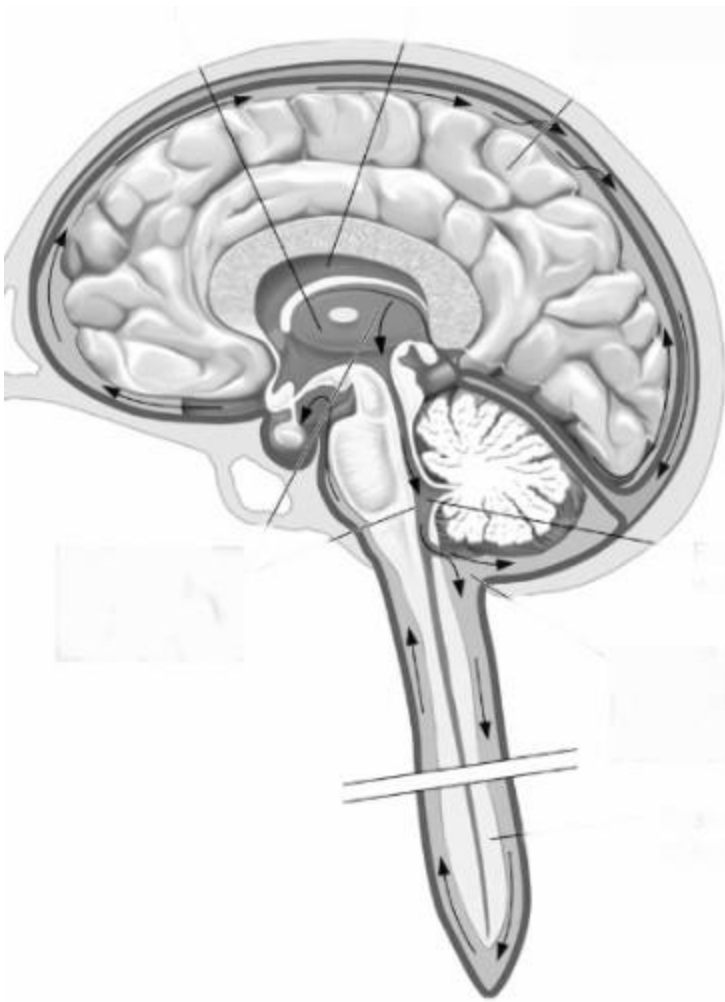
KEYWORDS: Factual

178. What are the major functions of the spinal cord?

ANSWER: The spinal cord carries information to and from the brain and manages a variety of protective and movement reflexes.

DIFFICULTY: Easy

KEYWORDS: Factual



179. Briefly describe the circulation of the cerebrospinal fluid, beginning with its synthesis and ending with its reabsorption.

ANSWER: Refer to Figure 2.5.

DIFFICULTY: Moderate

KEYWORDS: Factual

180. Describe the major functions of the cerebellum.

ANSWER: The cerebellum traditionally has been viewed as contributing to muscle coordination, muscle tone, balance, and some types of learning. More recently it is believed to participate in higher level cognitive processing in humans.

DIFFICULTY: Easy

KEYWORDS: Factual

181. What is the limbic system?

ANSWER: The limbic system is a collection of structures embedded within the forebrain that participate in learning, memory, and emotion.

DIFFICULTY: Easy

KEYWORDS: Factual

182. What functions are primarily managed by the occipital lobe?

ANSWER: The occipital lobe is primarily involved with visual processing.

DIFFICULTY: Easy

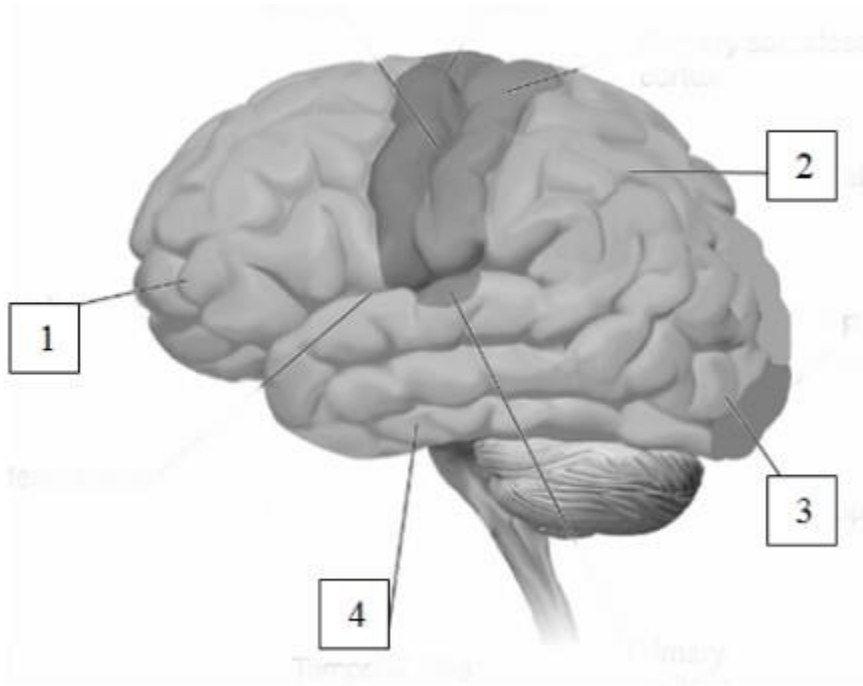
KEYWORDS: Factual

183. Define association cortex.

ANSWER: Association cortex does not have a designated role in the processing of either sensory or motor information. Instead, it provides bridges or connections between these two functions.

DIFFICULTY: Easy

KEYWORDS: Factual



184. Provide one example of a function that is localized to each of the four areas illustrated in this figure.

ANSWER: (Refer to Figure 2.21)

DIFFICULTY: Moderate

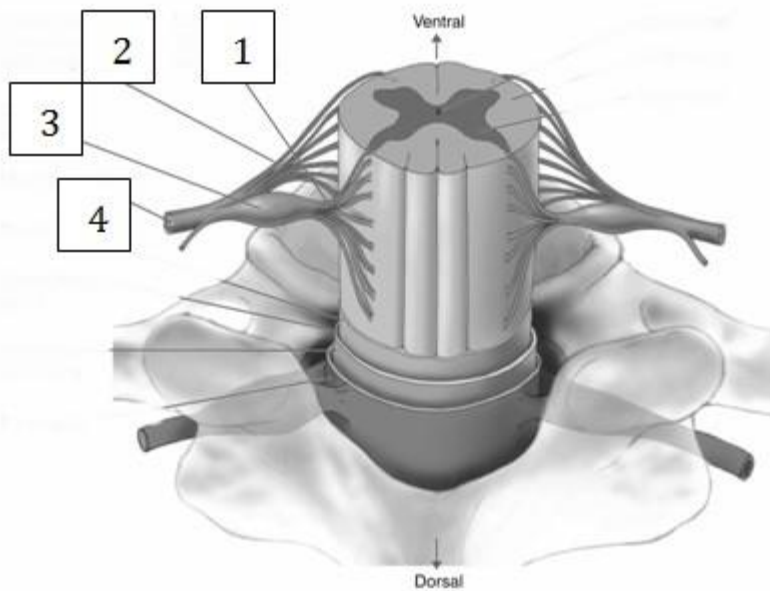
KEYWORDS: Factual

185. Describe the functions of two of the cranial nerves.

ANSWER: Various. Example: The olfactory nerve (Cranial N. 1) carries information from the olfactory neurons of the nose to the brain. The vagus nerve (Cranial N. 10) carries information both to and from various internal organs, including the heart, lungs, and digestive system.

DIFFICULTY: Moderate

KEYWORDS: Factual



186. Briefly identify the structures labeled 1, 2, 3, and 4, and describe their functions.

ANSWER: Refer to Figure 2.25.

DIFFICULTY: Moderate

KEYWORDS: Factual

187. What are the major functions of the sympathetic and parasympathetic nervous systems?

ANSWER: The sympathetic nervous system is active during periods of arousal, stress, and emergency, and prepares the body for “fight-or-flight.” The parasympathetic nervous system is active during times of calm, and participates in the storage of nutrients and the repair of the body.

DIFFICULTY: Moderate

KEYWORDS: Factual

Essay

188. The actor Christopher Reeve damaged his cervical spinal cord during a tragic horseback riding accident. Based on your knowledge of the structure and functions of the spinal cord, what challenges did Reeve face as a result of his accident?

ANSWER: Answer will vary

189. Stress usually involves higher-than-normal levels of sympathetic arousal. Given your understanding of the autonomic nervous system, what effects might extend sympathetic arousal produce?

ANSWER: Answer will vary

190. Emotion is processed at various levels in the brain. Why do you think we would see this apparent duplication of function?

ANSWER: Answer will vary