

# Chapter 2--The Brain: An Overview of Structure and Function

Student: \_\_\_\_\_

1. Evolutionary structures within the \_\_\_\_ are the most primitive.
  - A. hindbrain
  - B. thalamus
  - C. forebrain
  - D. midbrain
  - E. cerebral cortex
2. This structure transmits information from the spinal cord to the brain, and regulates life support functions such as respiration.
  - A. hypothalamus
  - B. medulla oblongata
  - C. pons
  - D. cerebellum
  - E. hippocampus
3. Which is NOT a function of the pons?
  - A. acting as a neural relay center
  - B. facilitating the crossover of information between the left side of the body and the right side of the brain
  - C. processing visual and auditory information
  - D. regulating homeostatic behaviors
  - E. balance
4. Muscle activity is coordinated in the primitive brain structure called the
  - A. pons
  - B. cerebellum
  - C. thalamus
  - D. hypothalamus
  - E. medulla oblongata
5. Many of the structures of the \_\_\_\_ are involved in relaying information between other brain regions.
  - A. midbrain
  - B. forebrain
  - C. hindbrain
  - D. cerebral cortex
  - E. none of the above

6. The thalamus, hypothalamus, and hippocampus are all structures of the
- A. hindbrain
  - B. forebrain
  - C. midbrain
  - D. medulla
  - E. spinal cord
7. The function of the thalamus is to
- A. coordinate muscle activity
  - B. relay information
  - C. regulate hormones
  - D. regulate emotional reactions
  - E. form memories
8. Which of the following controls the pituitary gland by releasing hormones?
- A. thalamus
  - B. medulla
  - C. hypothalamus
  - D. pons
  - E. none of the above
9. Which of the following is NOT regulated by the hypothalamus?
- A. memory formation
  - B. temperature
  - C. eating and drinking
  - D. sexual behavior
  - E. sleeping
10. Which of these structures is involved in the formation of long term memories?
- A. thalamus
  - B. hypothalamus
  - C. hippocampus
  - D. pons
  - E. amygdala
11. Which of these structures modulates the strength of emotional memories and is involved in emotional learning?
- A. thalamus
  - B. hypothalamus
  - C. hippocampus
  - D. pons
  - E. amygdala

12. The part of the cerebral cortex at the back of the head is called the \_\_\_\_ lobe.
- A. frontal
  - B. parietal
  - C. occipital
  - D. temporal
  - E. superior
13. The left and right hemispheres of the frontal, parietal and occipital lobes are connected by the
- A. medulla oblongata
  - B. anterior commissure
  - C. corpus callosum
  - D. amygdala
  - E. superior colliculi
14. A structure known as the \_\_\_\_ divides the frontal and parietal lobes.
- A. central sulcus
  - B. anterior commissure
  - C. corpus callosum
  - D. lateral sulcus
  - E. amygdala
15. The \_\_\_\_ lobes are involved in the processing of sensory information from the body, such as pain, pressure, touch, and temperature.
- A. occipital
  - B. temporal
  - C. frontal
  - D. prefrontal
  - E. anterior
16. Damage to the occipital lobe could result in difficulty processing
- A. auditory information
  - B. memory
  - C. sensations of pain
  - D. visual information
  - E. sensations of temperature
17. Which of the following is NOT a region of the frontal lobes?
- A. motor cortex
  - B. prefrontal cortex
  - C. premotor cortex
  - D. postcentral gyrus
  - E. none of the above

18. The \_\_\_\_ is involved in the planning of fine motor movements.
- A. premotor cortex
  - B. motor cortex
  - C. prefrontal cortex
  - D. frontal cortex
  - E. all of the above
19. "Executive functioning" involves which of the following?
- A. planning
  - B. making decisions
  - C. using working memory
  - D. inhibiting inappropriate behavior
  - E. all of the above
20. Who originated the idea of localization of function?
- A. Franz Gall
  - B. William James
  - C. Wilhelm Wundt
  - D. Paul Broca
  - E. Sigmund Freud
21. The idea that different mental abilities, such as reading and arithmetic, are independent functions carried out by different parts of the brain:
- A. faculty psychology
  - B. Gestalt psychology
  - C. functionalism
  - D. structuralism
  - E. phrenology
22. The major problem with phrenology was the assumption that
- A. different parts of the brain controlled different functions.
  - B. the size of a portion of the brain corresponded to its relative power.
  - C. different faculties were absolutely independent.
  - D. both (b) and (c)
  - E. all of the above
23. Disruption of language abilities is referred to as
- A. aphasia
  - B. deafness
  - C. prosopagnosia
  - D. somatosensory deficit
  - E. epilepsy

24. Injury to Broca's area results in an inability to
- A. produce language fluently
  - B. understand spoken language
  - C. understand written language
  - D. write
  - E. both (b) and (c)
25. Patients with Wernicke's aphasia are often unable to
- A. produce speech
  - B. speak with fluent rhythm
  - C. understand speech
  - D. modulate pitch when speaking
  - E. all of the above
26. The primary somatosensory cortex is organized such that
- A. each part receives information from a specific part of the body
  - B. the total amount of "brain real estate" devoted to a particular body part is proportional to the size of that body part
  - C. more sensitive parts of the body have correspondingly larger areas of the brain associated with them
  - D. both (a) and (c) above
  - E. all of the above
27. Lashley's studies of ablation in rats suggested that maze running was related to
- A. the total amount of cortex removed
  - B. the particular part of the cortex removed
  - C. the rat's age at the time of cortex removal
  - D. both (a) and (b)
  - E. All of the above
28. Around 95% of all human beings show a specialization for language in the
- A. left hemisphere
  - B. right hemisphere
  - C. frontal lobe
  - D. temporal lobe
  - E. occipital lobe
29. Which of the following is associated primarily with the left hemisphere?
- A. working on geometric puzzles
  - B. language processing
  - C. musical ability
  - D. navigating around familiar spaces
  - E. drawing sketches

30. A technique in which a highly focused beam of X rays is passed through the body from many different angles, allowing visualization of an organ such as the brain:
- A. MRI
  - B. CAT scan
  - C. PET scan
  - D. fMRI
  - E. EEG
31. CAT scans are usually used to
- A. pinpoint areas of brain damage
  - B. measure cerebral blood flow
  - C. track areas of brain activity while performing a particular task
  - D. detect different states of consciousness
  - E. measure the electrical activity of a single brain cell
32. An advantage of MRI as compared to CAT scans:
- A. MRI provides information about neuroanatomy
  - B. MRI requires no exposure to radiation
  - C. MRI often permits clearer pictures
  - D. MRI can be used on people who have pacemakers
  - E. both b and c
33. Which of the following neuropsychological methods provide(s) information about the amount of dynamic blood flow to various regions of the brain?
- A. CAT scans
  - B. MRI
  - C. PET scans
  - D. fMRI
  - E. both c and d
34. Which of the following can detect different states of consciousness?
- A. CAT
  - B. MRI
  - C. EEG
  - D. ERP
  - E. SPECT
35. To measure an area of the brain's response to a specific event, we use
- A. CAT
  - B. MRI
  - C. EEG
  - D. ERP
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36. The \_\_\_\_\_ is an area of the hindbrain that transmits information from the spinal cord to the brain.
- \_\_\_\_\_
37. The \_\_\_\_\_ facilitates the crossover of information from the right side of the body and the left side of the brain, and vice versa.
- \_\_\_\_\_
38. The \_\_\_\_\_ is one of the most primitive brain structures, and contains neurons that coordinate muscle activity and balance.
- \_\_\_\_\_
39. The \_\_\_\_\_ contains structures that are involved in relaying information between other brain regions, and also keep us awake and alert.
- \_\_\_\_\_
40. The \_\_\_\_\_ controls the pituitary gland by releasing hormones.
- \_\_\_\_\_
41. The \_\_\_\_\_ controls homeostatic behaviors such as eating, drinking, sleeping, and sexual behaviors.
- \_\_\_\_\_
42. Modulation of the strength of emotional memories is accomplished by the \_\_\_\_\_.
- \_\_\_\_\_
43. The \_\_\_\_\_ lobe of the cerebral cortex is located underneath the forehead.
- \_\_\_\_\_
44. The \_\_\_\_\_ lobes are located on the sides of the head.
- \_\_\_\_\_
45. A structure known as the \_\_\_\_\_ divides the frontal and parietal lobes.
- \_\_\_\_\_
46. The \_\_\_\_\_ cortex directs fine motor movement.
- \_\_\_\_\_

47. The \_\_\_\_\_ cortex or lobe is involved in executive functioning.  
\_\_\_\_\_
48. Franz Gall believed in \_\_\_\_\_ psychology, the idea that different mental abilities are independent and carried out in different parts of the brain.  
\_\_\_\_\_
49. \_\_\_\_\_ is a now-discredited idea that psychological strengths and weaknesses could be precisely correlated to the relative sizes of different brain regions.  
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50. Disruption of language ability is referred to as \_\_\_\_\_.  
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51. Patients with \_\_\_\_\_'s aphasia can produce speech, but it often makes no sense, and they have difficulty understanding spoken language.  
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52. Neuropsychologists have mapped out an area of the brain in the parietal lobe, located just behind the motor cortex, called the \_\_\_\_\_.  
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55. The left and right hemispheres are connected by a large neural structure known as the \_\_\_\_\_.  
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56. Since the 1970s, various techniques of \_\_\_\_\_ have allowed us to construct pictures of the anatomy and functioning of intact brains.  
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57. \_\_\_\_\_ is a technique for providing information about neuroanatomy without requiring exposure to radiation.

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58. A functional brain imaging technique that involves injecting a radioactively-labelled compound, allowing measurement of blood flow to different parts of the brain: \_\_\_\_\_.

\_\_\_\_\_

59. \_\_\_\_\_ is used to detect different states of consciousness.

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60. An electrical recording technique called \_\_\_\_\_ measures an area of the brain's response to a specific event.

\_\_\_\_\_

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### Key

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**medulla oblongata**

37. The \_\_\_\_\_ facilitates the crossover of information from the right side of the body and the left side of the brain, and vice versa.

**pons**

38. The \_\_\_\_\_ is one of the most primitive brain structures, and contains neurons that coordinate muscle activity and balance.

**cerebellum**

39. The \_\_\_\_\_ contains structures that are involved in relaying information between other brain regions, and also keep us awake and alert.

**midbrain**

40. The \_\_\_\_\_ controls the pituitary gland by releasing hormones.

**hypothalamus**

41. The \_\_\_\_\_ controls homeostatic behaviors such as eating, drinking, sleeping, and sexual behaviors.

**hypothalamus**

42. Modulation of the strength of emotional memories is accomplished by the \_\_\_\_\_.

**amygdala**

43. The \_\_\_\_\_ lobe of the cerebral cortex is located underneath the forehead.

**frontal**

44. The \_\_\_\_\_ lobes are located on the sides of the head.

**temporal**

45. A structure known as the \_\_\_\_\_ divides the frontal and parietal lobes.

**central sulcus**

46. The \_\_\_\_\_ cortex directs fine motor movement.

**motor**



47. The \_\_\_\_\_ cortex or lobe is involved in executive functioning.

**prefrontal**

48. Franz Gall believed in \_\_\_\_\_ psychology, the idea that different mental abilities are independent and carried out in different parts of the brain.

**faculty**

49. \_\_\_\_\_ is a now-discredited idea that psychological strengths and weaknesses could be precisely correlated to the relative sizes of different brain regions.

**Phrenology**

50. Disruption of language ability is referred to as \_\_\_\_\_.

**aphasia**

51. Patients with \_\_\_\_\_'s aphasia can produce speech, but it often makes no sense, and they have difficulty understanding spoken language.

**Wernicke**

52. Neuropsychologists have mapped out an area of the brain in the parietal lobe, located just behind the motor cortex, called the \_\_\_\_\_.

**primary somatosensory cortex**

53. Removal of parts of the brain is known as \_\_\_\_\_.

**ablation**

54. Some brain regions can adapt to take over functions of damaged regions; this ability is known as \_\_\_\_\_ and is more prominent in younger patients.

**plasticity**

55. The left and right hemispheres are connected by a large neural structure known as the \_\_\_\_\_.

**corpus callosum**

56. Since the 1970s, various techniques of \_\_\_\_\_ have allowed us to construct pictures of the anatomy and functioning of intact brains.

**brain imaging**

57. \_\_\_\_\_ is a technique for providing information about neuroanatomy without requiring exposure to radiation.

**MRI** *or*  
**Magnetic resonance imaging**

58. A functional brain imaging technique that involves injecting a radioactively-labelled compound, allowing measurement of blood flow to different parts of the brain: \_\_\_\_\_.

**PET** *or*  
**Positron emission tomography**

59. \_\_\_\_\_ is used to detect different states of consciousness.

**EEG** *or*  
**Electroencephalography**

60. An electrical recording technique called \_\_\_\_\_ measures an area of the brain's response to a specific event.

**ERP** *or*  
**Event-related potential**