

NAME _____ LAB TIME/DATE _____

REVIEW SHEET
exercise

Gross Anatomy of the Brain and Cranial Nerves

19

The Human Brain

1. Match the letters on the diagram of the human brain (right lateral view) to the appropriate terms listed at the left:

h _____ 1. frontal lobe

b _____ 2. parietal lobe

j _____ 3. temporal lobe

f _____ 4. precentral gyrus

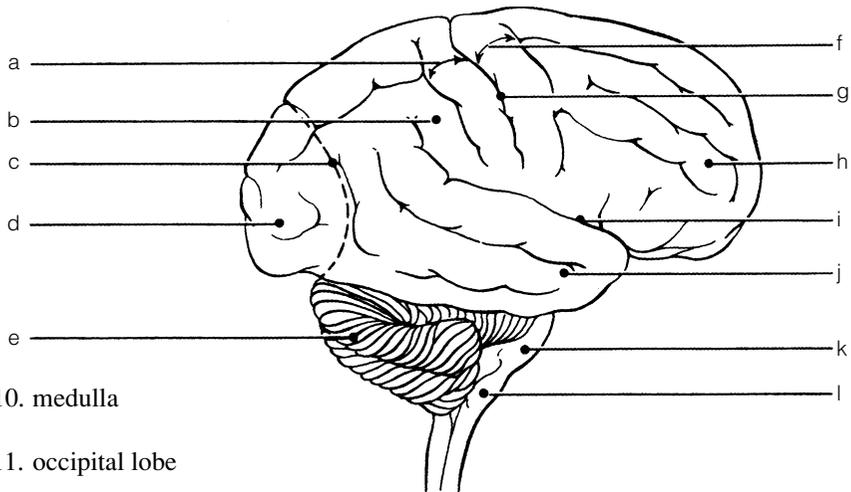
c _____ 5. parieto-occipital sulcus

a _____ 6. postcentral gyrus

i _____ 7. lateral sulcus l _____ 10. medulla

g _____ 8. central sulcus d _____ 11. occipital lobe

e _____ 9. cerebellum k _____ 12. pons



2. In which of the cerebral lobes would the following functional areas be found?

auditory area temporal

olfactory area temporal

primary motor area frontal

visual area occipital

primary sensory area parietal

Broca's area frontal

3. Which of the following structures are not part of the brain stem? (Circle the appropriate response or responses.)

cerebral hemispheres

pons

midbrain

cerebellum

medulla

diencephalon

4. Complete the following statements by writing the proper word or phrase on the corresponding blanks at the right.

A(n) 1 is an elevated ridge of cerebral tissue. The convolutions seen in the cerebrum are important because they increase the 2. Gray matter is composed of 3. White matter is composed of 4. A fiber tract that provides for communication between different parts of the same cerebral hemisphere is called a(n) 5, whereas one that carries impulses to the cerebrum from, and from the cerebrum to, lower CNS areas is called a(n) 6 tract. The lentiform nucleus along with the amygdaloid and caudate nuclei are collectively called the 7.

1. gyrus

2. surface area

3. neuron cell bodies

4. myelinated fibers

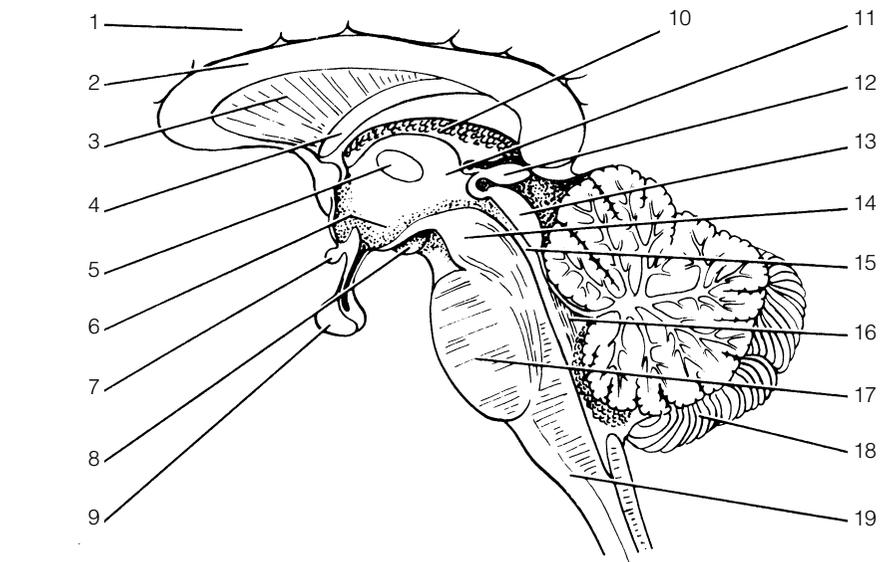
5. association tract

6. projection

7. basal nuclei

5. Identify the structures on the following sagittal view of the human brain by matching the numbered areas to the proper terms in the list.

- 18 a. cerebellum
- 15 b. cerebral aqueduct
- 1 c. cerebral hemisphere
- 14 d. cerebral peduncle
- 10 e. choroid plexus
- 13 f. corpora quadrigemina
- 2 g. corpus callosum
- 4 h. fornix
- 16 i. fourth ventricle
- 6 j. hypothalamus
- 8 k. mammillary bodies
- 5 l. massa intermedia
- 19 m. medulla oblongata



- 7 n. optic chiasma
- 17 q. pons
- 12 o. pineal body
- 3 r. septum pellucidum
- 9 p. pituitary gland
- 11 s. thalamus

6. Using the terms from item 5, match the appropriate structures with the descriptions given below:

- j 1. site of regulation of body temperature and water balance; most important autonomic center
- c 2. consciousness depends on the function of this part of the brain
- f 3. located in the midbrain; contains reflex centers for vision and audition
- a 4. responsible for regulation of posture and coordination of complex muscular movements
- s 5. important synapse site for afferent fibers traveling to the sensory cortex
- m 6. contains autonomic centers regulating blood pressure, heart rate, and respiratory rhythm, as well as coughing, sneezing, and swallowing centers
- g 7. large commissure connecting the cerebral hemispheres
- h 8. fiber tract involved with olfaction
- b 9. connects the third and fourth ventricles
- s 10. encloses the third ventricle

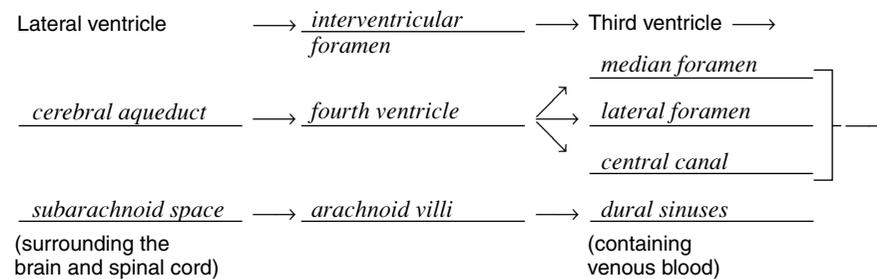
Meninges of the Brain

13. Identify the meningeal (or associated) structures described below:

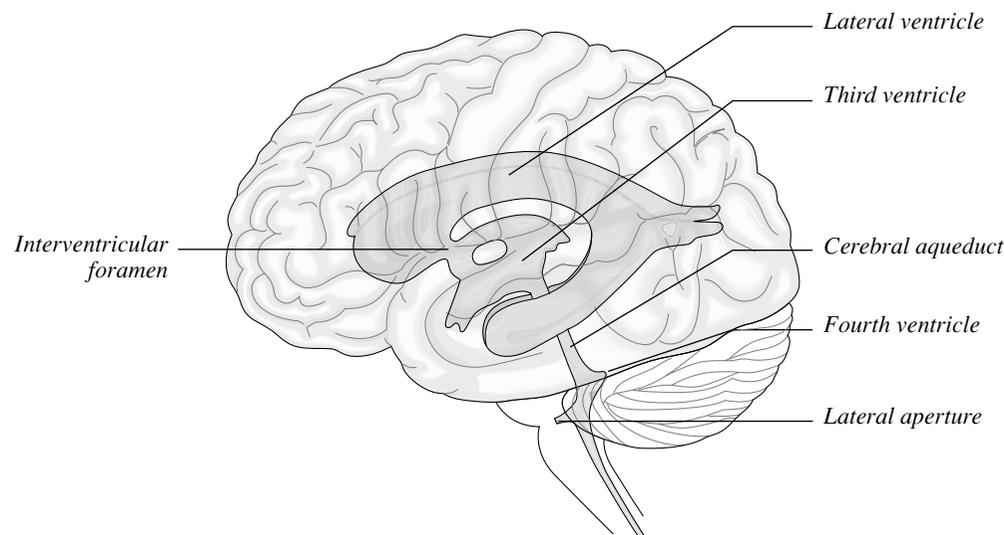
- | | |
|----------------------------------|--|
| <u>dura mater</u> _____ | 1. outermost meninx covering the brain; composed of tough fibrous connective tissue |
| <u>pia mater</u> _____ | 2. innermost meninx covering the brain; delicate and highly vascular |
| <u>arachnoid villi</u> _____ | 3. structures instrumental in returning cerebrospinal fluid to the venous blood in the dural sinuses |
| <u>choroid plexus</u> _____ | 4. structure that forms the cerebrospinal fluid |
| <u>arachnoid mater</u> _____ | 5. middle meninx; like a cobweb in structure |
| <u>dura mater</u> _____ | 6. its outer layer forms the periosteum of the skull |
| <u>falx cerebri</u> _____ | 7. a dural fold that attaches the cerebrum to the crista galli of the skull |
| <u>tentorium cerebelli</u> _____ | 8. a dural fold separating the cerebrum from the cerebellum |

Cerebrospinal Fluid

14. Fill in the following flowchart by delineating the circulation of cerebrospinal fluid from its formation site (assume that this is one of the lateral ventricles) to the site of its reabsorption into the venous blood:



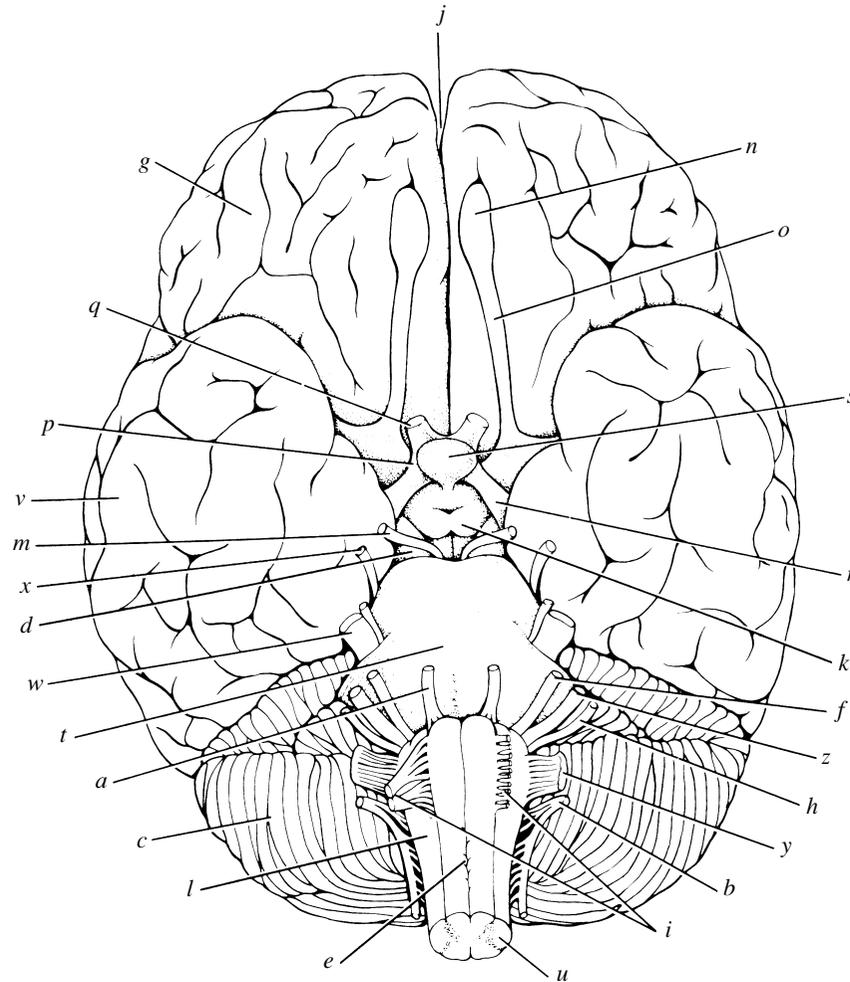
Now label appropriately the structures involved with circulation of cerebrospinal fluid on the accompanying diagram. (These structures are identified by leader lines.)



Cranial Nerves

15. Using the terms below, correctly identify all structures indicated by leader lines on the diagram.

- | | | |
|--|---------------------------|---|
| a. abducens nerve (VI) | j. longitudinal fissure | s. pituitary gland |
| b. accessory nerve (XI) | k. mammillary body | t. pons |
| c. cerebellum | l. medulla oblongata | u. spinal cord |
| d. cerebral peduncle | m. oculomotor nerve (III) | v. temporal lobe of cerebral hemisphere |
| e. decussation of the pyramids | n. olfactory bulb | w. trigeminal nerve (V) |
| f. facial nerve (VII) | o. olfactory tract | x. trochlear nerve (IV) |
| g. frontal lobe of cerebral hemisphere | p. optic chiasma | y. vagus nerve (X) |
| h. glossopharyngeal nerve (IX) | q. optic nerve (II) | z. vestibulocochlear nerve (VIII) |
| i. hypoglossal nerve (XII) | r. optic tract | |



16. Provide the name and number of the cranial nerves involved in each of the following activities, sensations, or disorders:

- | | |
|---------------------------------|--|
| <u>accessory (XI)</u> | 1. shrugging the shoulders |
| <u>olfactory (I)</u> | 2. smelling a flower |
| <u>oculomotor (III)</u> | 3. raising the eyelids; focusing the lens of the eye for accommodation; and pupillary constriction |
| <u>vagus (X)</u> | 4. slows the heart; increases the mobility of the digestive tract |
| <u>facial (VII)</u> | 5. involved in Bell's palsy (facial paralysis) |
| <u>trigeminal (V)</u> | 6. chewing food |
| <u>vestibulocochlear (VIII)</u> | 7. listening to music; seasickness |
| <u>facial (VII)</u> | 8. secretion of saliva; tasting well-seasoned food |
| <u>III, IV, VI</u> | 9. involved in "rolling" the eyes (three nerves—provide numbers only) |
| <u>trigeminal (V)</u> | 10. feeling a toothache |
| <u>optic (II)</u> | 11. reading <i>Mad</i> magazine |
| <u>I, II, VIII</u> | 12. purely sensory in function (three nerves—provide numbers only) |

Dissection of the Sheep Brain

17. In your own words, describe the firmness and texture of the sheep brain tissue as observed when cutting into it.

Very soft; much like thickened oatmeal in consistency.

Because formalin hardens all tissue, what conclusions might you draw about the firmness and texture of living brain tissue? It must be very soft and fragile.

18. Compare the relative sizes of the cerebral hemispheres in sheep and human brains? The cerebral hemispheres are

much larger in humans.

What is the significance of these differences? Evolution of the cerebral hemispheres in humans has encompassed higher functions; i.e. speech, reasoning, etc.

19. Compare the sizes of the brain stems in sheep and human brains. They are similar in size.

What is the significance? The brain stem is responsible for automatic behavior necessary for survival. These functions are similar in sheep and humans.

20. Why are the olfactory bulbs much larger in the sheep brain than in the human brain? The sense of smell is an important

survival sense (food finding, recognition of predators) in sheep. This is not true in humans.