NAME _____

LAB TIME/DATE _____

REVIEW SHEET EXERCISE 17

Gross Anatomy of the Brain and Cranial Nerves

The Human Brain

1. Using the terms from the key, identify the structures of the brain.

Key:

a. brain stem

b. central sulcus

c. cerebellum

d. frontal lobe

e. lateral sulcus

f. occipital lobe

g. parietal lobe

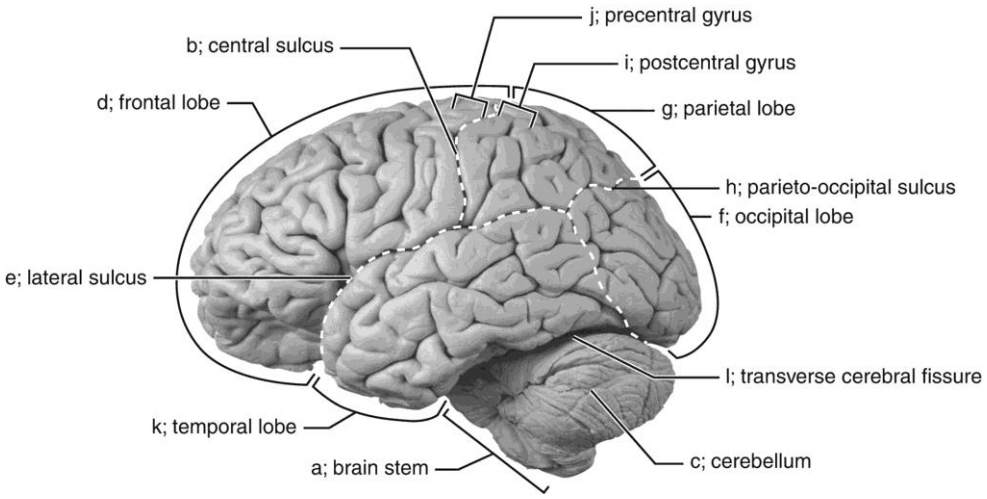
h. parieto-occipital sulcus

i. postcentral gyrus

j. precentral gyrus

k. temporal lobe

l. transverse cerebral fissure



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

primary auditory cortex: *temporal*

olfactory cortex: *temporal*

primary motor cortex: *frontal*

primary visual cortex: *occipital*

primary somatosensory cortex: *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 oblongata diencephalon

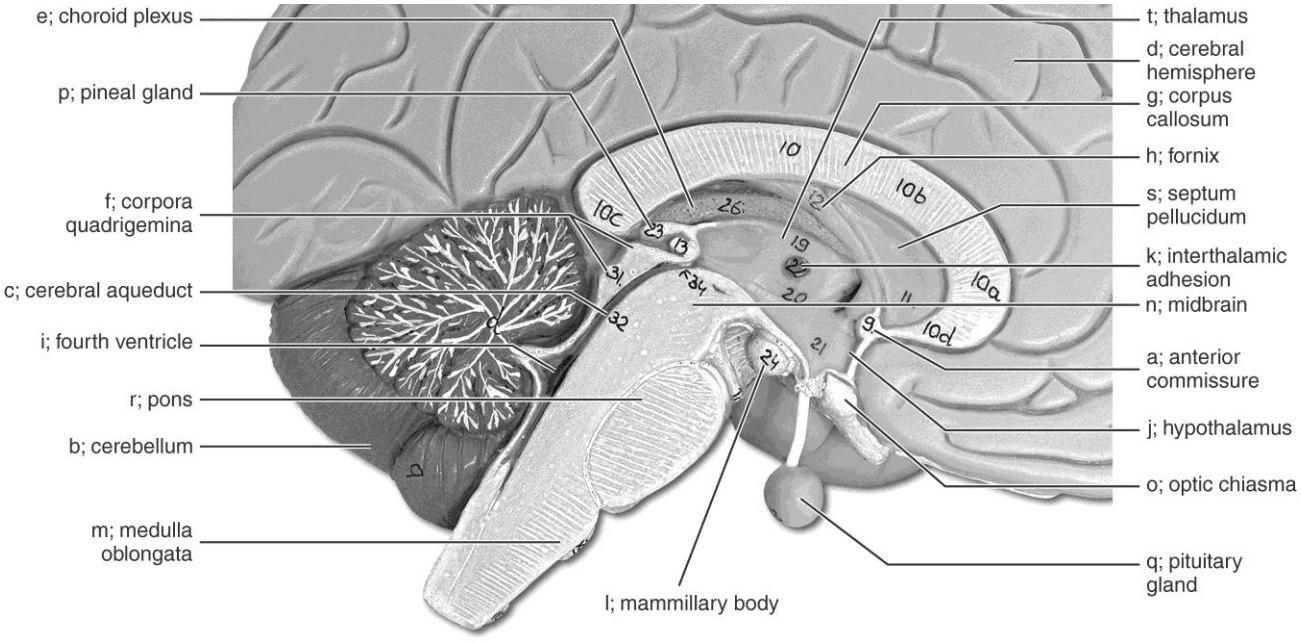
4. Complete the following statements by writing the proper word or phrase on the corresponding blanks at the right.

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 tract, whereas one that carries impulses from the cerebrum to lower CNS areas is called a(n) 6 tract. The caudate nucleus, putamen, and globus pallidus are collectively called the 7.

1. *gyrus*
2. *surface area*
3. *neuron cell bodies*
4. *myelinated fibers*
5. *association*
6. *projection*
7. *basal nuclei (basal ganglia)*

5. Using the terms from the key, identify the structures on the following midsagittal view of the human brain.

Key:
a. anterior commissure
b. cerebellum
c. cerebral aqueduct
d. cerebral hemisphere
e. choroid plexus
f. corpora quadrigemina
g. corpus callosum
h. fornix
i. fourth ventricle
j. hypothalamus
k. interthalamic adhesion
l. mammillary body
m. medulla oblongata
n. midbrain
o. optic chiasma
p. pineal gland
q. pituitary gland
r. pons
s. septum pellucidum
t. thalamus



6. Using the key from question 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

o 2. site where medial fibers of the optic nerves cross

f 3. located in the midbrain; contains reflex centers for vision and hearing

b 4. responsible for regulation of posture and coordination of complex muscular movements

t 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 fiber tract connecting the cerebral hemispheres

l 8. relay stations for olfactory pathways

c 9. canal that connects the third and fourth ventricles

n 10. portion of the brain stem where the cerebral peduncles are located

7. Embryologically, the brain arises from the rostral end of a tubelike structure that quickly becomes divided into three major regions. Groups of structures that develop from the embryonic brain are listed below. Designate the embryonic origin of each group as the hindbrain, midbrain, or forebrain.

forebrain 1. the diencephalon, including the thalamus, optic chiasma, and hypothalamus

hindbrain 2. the medulla oblongata, pons, and cerebellum

forebrain 3. the cerebral hemispheres

8. What is the function of the basal nuclei? *They are involved in the regulation, modulation, and refinement of voluntary motor activity.*

Meninges of the Brain

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

dura mater 1. outermost meninx covering the brain; composed of tough fibrous connective tissue

pia mater 2. innermost meninx covering the brain; delicate and highly vascular

arachnoid villi 3. structures instrumental in returning cerebrospinal fluid to the venous blood in the dural venous sinuses

choroid plexus 4. structure that produces the cerebrospinal fluid

arachnoid mater 5. middle meninx; like a cobweb in structure

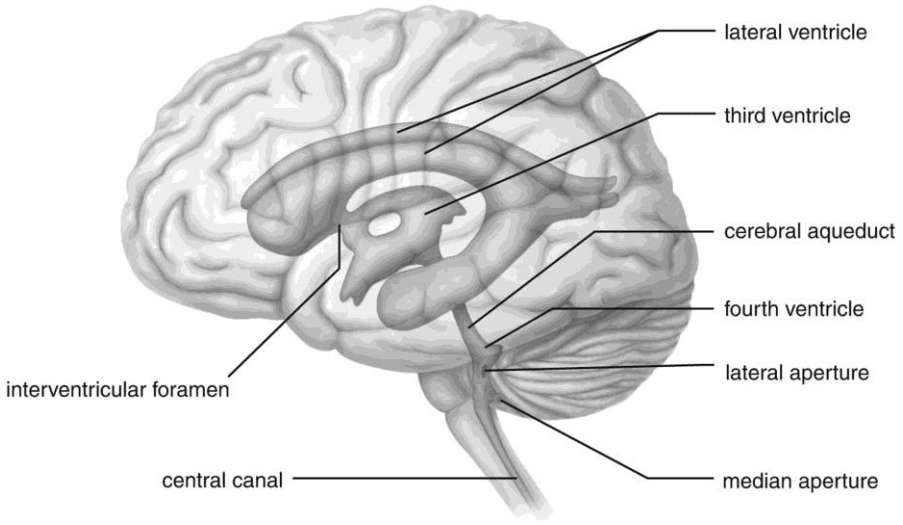
dura mater 6. its outer layer forms the periosteum of the skull

falx cerebri 7. a dural fold that attaches the cerebrum to the crista galli of the skull

tentorium cerebella 8. a dural fold separating the cerebrum from the cerebellum

Cerebrospinal Fluid

10. Label the structures involved with circulation of cerebrospinal fluid on the accompanying diagram.



Add arrows to the figure above to indicate the flow of cerebrospinal fluid from its formation in the lateral ventricles to the site of its exit from the fourth ventricle. Then fill in the blanks in the following paragraph.

Cerebrospinal fluid flows from the fourth ventricle into the 1 space surrounding the brain and spinal cord. From this space it drains through the 2 into the 3.

1. *subarachnoid*
2. *arachnoid villi*
3. *dural venous sinuses*

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

accessory (XI) 1. rotating the head

olfactory (I) 2. smelling a flower

oculomotor (III) 3. raising the eyelids; pupillary constriction

vagus (X) 4. slowing the heart; increasing motility of the digestive tract

facial (VII) 5. involved in Bell's palsy (facial paralysis)

trigeminal (V) 6. chewing food

vestibularcochleat (VIII) 7. listening to music; seasickness

facial (VII) 8. secretion of saliva; tasting well-seasoned food

III, IV, VI 9. involved in "rolling'' the eyes (three nerves—provide numbers only)

trigeminal (V) 10. feeling a toothache

optic (II) 11. reading the newspaper

(I, II, VIII) 12. purely or mostly sensory in function (three nerves—provide numbers only)

Cranial Nerves

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

a. abducens nerve (VI)
b. accessory nerve (XI)
c. facial nerve (VII)
d. glossopharyngeal nerve (IX)
e. hypoglossal nerve (XII)
f. longitudinal fissure
g. mammillary body
h. medulla oblongata
i. oculomotor nerve (III)
j. olfactory bulb
k. olfactory tract
l. optic chiasma
m. optic nerve (II)
n. optic tract
o. pons
p. trigeminal nerve (V)
q. trochlear nerve (IV)
r. vagus nerve (X)
s. vestibulocochlear nerve (VIII)