NAME _____

LAB TIME/DATE _____

REVIEW SHEET EXERCISE 21

Spinal Cord, Spinal Nerves, and the Autonomic Nervous System

Anatomy of the Spinal Cord

1. Match each anatomical term in the key to the descriptions given below.

Key: a. cauda equina b. conus medullaris c. filum terminale d. foramen magnum

_____ 1. most superior boundary of the spinal cord

_____ 2. meningeal extension beyond the spinal cord terminus

_____ 3. spinal cord terminus

_____ 4. collection of spinal nerves traveling in the vertebral canal below the terminus of the spinal cord

2. Match the key letters on the diagram with the following terms.

_____ 1. arachnoid mater

_____ 2. central canal

_____ 3. dorsal (posterior) horn

_____ 4. dorsal ramus of spinal nerve

_____ 5. dorsal root ganglion

_____ 6. dorsal root of spinal nerve

_____ 7. dura mater

_____ 8. gray commissure

_____ 9. lateral horn

_____ 10. pia mater

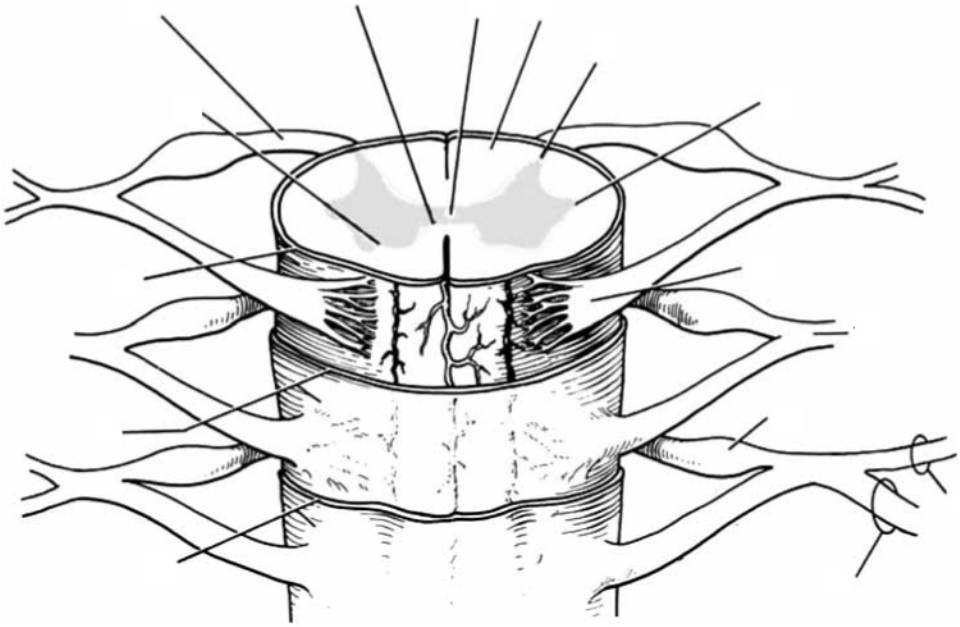
_____ 11. spinal nerve

_____ 12. ventral (anterior) horn

_____ 13. ventral ramus of spinal nerve

_____ 14. ventral root of spinal nerve

_____ 15. white matter



3. Choose the proper answer from the following key to respond to the descriptions relating to spinal cord anatomy.

Key: a. sensory b. motor c. both sensory and motor d. interneurons

_____ 1. neuron type found in dorsal horn

_____ 2. neuron type found in ventral horn

_____ 3. neuron type in dorsal root ganglion

_____ 4. fiber type in ventral root

_____ 5. fiber type in dorsal root

_____ 6. fiber type in spinal nerve

4. Where in the vertebral column is a lumbar puncture generally done? _____
vertebrae.

Why is this the site of choice? _____

_____

5. The spinal cord is enlarged in two regions, the _____ and the _____ regions.

What is the significance of these enlargements? _____

_____

6. How does the position of the gray and white matter differ in the spinal cord and the cerebral hemispheres?

_____

_____

7. From the key, choose the name of the tract that might be damaged when the following conditions are observed. (More than one choice may apply.)

_____ 1. uncoordinated movement

_____ 2. lack of voluntary movement

_____ 3. tremors, jerky movements

_____ 4. diminished pain perception

_____ 5. diminished sense of touch

Key: a. fasciculus cuneatus
b. fasciculus gracilis
c. lateral corticospinal tract
d. anterior corticospinal tract
e. tectospinal tract
f. rubrospinal tract
g. vestibulospinal tract
h. lateral spinothalamic tract
i. anterior spinothalamic tract
j. posterior spinocerebellar tract
k. anterior spinocerebellar tract

Dissection of the Spinal Cord

8. Compare and contrast the meninges of the spinal cord and the brain. _____
meninges:

_____
vertebral bone and the dura, but the dura of the brain is tightly adhered to the skull.

9. How can you distinguish between the dorsal and ventral horns? _____

_____

Spinal Nerves and Nerve Plexuses

10. In the human, there are 31 pairs of spinal nerves, named according to the region of the vertebral column from which they issue. The spinal nerves are named below. Indicate how they are numbered.

cervical nerves _____ sacral nerves _____

lumbar nerves _____ thoracic nerves _____

11. The ventral rami of spinal nerves C_1 through T_1 and T_{12} through S_4 take part in forming _____, which serve the _____ of the body. The ventral rami of T_2 through T_{12} run between the ribs to serve the _____. The dorsal rami of the spinal nerves serve _____.

12. What would happen if the following structures were damaged or transected? (Use the key choices for responses.)

Key: a. loss of motor function b. loss of sensory function c. loss of both motor and sensory function

_____ 1. dorsal root of a spinal nerve

_____ 2. ventral root of a spinal nerve

_____ 3. ventral ramus of a spinal nerve

13. Define *plexus*. _____

_____

14. Name the major nerves that serve the following body areas.

_____ 1. head, neck, shoulders (name plexus only)

_____ 2. diaphragm

_____ 3. posterior thigh

_____ 4. leg and foot (name two)

_____ 5. anterior forearm muscles (name two)

_____ 6. arm muscles (name two)

_____ 7. abdominal wall (name plexus only)

_____ 8. anterior thigh

_____ 9. medial side of the hand

The Autonomic Nervous System

15. For the most part, sympathetic and parasympathetic fibers serve the same organs and structures. How can they exert antagonistic effects? (After all, nerve impulses are nerve impulses—aren't they?)

_____

16. Name three structures that receive sympathetic but not parasympathetic innervation.

17. A pelvic splanchnic nerve contains (circle one):

a. preganglionic sympathetic fibers
b. postganglionic sympathetic fibers
c. preganglionic parasympathetic fibers
d. postganglionic parasympathetic fibers

18. The following chart states a number of conditions. Use a check mark to show which division of the autonomic nervous system is involved in each.

Sympathetic division	Condition	Parasympathetic division
	Secretes norepinephrine; adrenergic fibers	
	Secretes acetylcholine; cholinergic fibers	
	Long preganglionic axon; short postganglionic axon	
	Short preganglionic axon; long postganglionic axon	
	Arises from cranial and sacral nerves	
	Arises from spinal nerves T_1 through L_3	
	Normally in control	
	"Fight-or-flight" system	
	Has more specific control (Look it up!)	

Galvanic Skin Response Using BIOPAC®

19. Describe exactly how, from a physiological standpoint, GSR can be correlated with activity of the autonomic nervous system.

20. Based on this brief and unprofessional exposure to a polygraph, explain why this might not be an exact tool for testing the sincerity and honesty of a subject.