Name: _____

Physiology: The Autonomic Nervous System (ANS) Worksheet

Directions: Write in and circle best answer on this sheet.

1. In the **Somatic Nervous System** (SNS), the effector tissue is: _____, and ___ motor neuron signals this tissue causing it to _____. That's it.

2. In the **Autonomic Nervous System** (ANS), there are ___ motor neurons. The _____ axons of neurons are myelinated whereas the _____ axons are unmyelinated.

3. A nerve fiber is _____ and a ganglion is _____ _____.

4. For the 2 divisions of the ANS: The (Para or Sym) _____ preganglionic nerve fibers are very long and the (Para or Sym) _____ postganglionic nerve fibers are very long.

5. For the 2 divisions of the ANS: The _____ division has ganglion very close to the CNS and the _____ division has its ganglion far away from the CNS.

6. What are the Origins in the CNS of the **Para** division? _____.

7. What are the Origins in the CNS of the **Sym** division? _____.

8. What Neurotransmitter does the **Sym** division release onto the heart? _____.

9. What Neurotransmitter does the **Para** division release onto the heart? _____.

10. What Division of the ANS is involved in preparing for eating? _____.

11. The _____ division turns up sweat gland activity. It also turns _____ saliva production.

12. Dilation of bronchioles = a(n) _____ in air flow to the lungs. Due to _____ stimulation.

13. What is the pupil of the eye? _____.

14. **a)** When the pupil diameter is _____, it is for fine (near) focus, that's the _____ division.

b) When the pupil diameter is _____, it is for distant (far) focus, that's the _____ division.

15. **a)** If you are *sitting reading* after having lunch, your heart rate is: ☐ High or ☐ Low? (tick one).

b) Whereas, the activity in your stomach and small intestine is: ☐ High or ☐ Low? (tick one).

c) Also, air flow in the bronchioles is: ☐ High or ☐ Low? Why? _____.

16. What Division of the ANS controls *most* blood vessels? _____.

17. If NE acts on alpha receptors, blood vessels would _____. This would _____ blood flow and _____ blood pressure.

18. If NE acts on beta receptors (for example to supply skeletal muscle), blood vessels would _____. This would _____ blood flow and _____ blood pressure.

19. What is the **Effector Tissue** for blood vessels? _____.

20. The exception to the rule in Q 16 is that the _____ division of the ANS controls blood flow to the _____ in females and to the _____ in males.

21. What's the purpose of a Convergent arrangement of neurons in the Parasympathetic division?

22. What's the purpose of the Divergent arrangement of the Sympathetic division?

23. List one Effector Tissue not shown in the table below that only **Parasympathetic** effects, and how so.

24. List one Effector Tissue not shown in the table below that only **Sympathetic** effects, and how so.

25. Fill in table below with words regarding how each effector tissue responds to the two divisions.

Effector Tissue	**PARA Stimulation**	**SYM Stimulation**
Heart		
Bronchioles (lungs)		
Pupil (intrinsic eye muscles)		
Salivary Glands		
G. I. Tract Activity		
Sweat Glands		
Blood Vessels in general		
Erectile Tissue ('point')		
Repro Ducts/Tracts ('shoot')		
Liver		
Adrenal medulla		
Bladder Wall		

Quick Review of the Autonomic Nervous System (ANS) as part of the Peripheral Nervous System (PNS)

1. In the PNS, the ANS is responsible for the _____ control of three types of effector tissue, _____ muscle, _____ muscle and _____ tissue.

2. What are the 2 divisions of the ANS? _____ and _____.

3. If you were about to give a presentation to the class, list 4 specific physiological changes your body might experience that would be caused by sympathetic innervation.

1)
2)
3)
4)

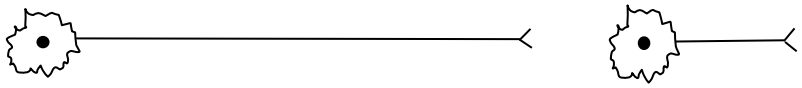
4. If you were lounging at home reading a novel and enjoying a tart lemon drink, list 4 physiological events your body might experience that would be caused by parasympathetic innervation.

1)
2)
3)
4)

5. Label and add to the diagram below, and include all of the following: Preganglionic and postganglionic neurons (and nerve fibers), ganglion, nicotinic and muscarinic, alpha and beta receptors, acetylcholine, norepinephrine, CNS, PNS and the types of target tissue acted on.

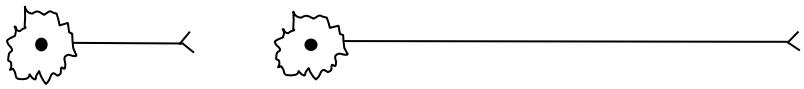
The _____ Division

Target tissue



The _____ Division

Target tissue



6. Use the letters (and acronym) below to list the general differences that exist between the 2 divisions:

	PARASYMPATHETIC	SYMPATHETIC
S		*E*
L		*E*
U		*E*
D		*E*
D		