A&P 1
Brain & Cranial Nerves Guide -
*Pre-Lab Exercises*

*Have someone in your group read the following out loud, while the others read along:*

In this "Pre-lab Guide", we will be looking at the brain & cranial nerves. This should be done before lab, so we don't waste time in lab!

This guide should only be attempted after reading the correct sections in either the lab or lecture book, or watching any videos that have been assigned..

**The Steps** found in this first "Pre-lab Guide" do NOT have to be done in the order they are found. However, please do all the questions within a step before moving on to another step!
Step 1. Key Concepts on the Cranial Nerves (from the book and videos)

Answer these questions after reading the appropriate text in your book, or watching any video your instructor has assigned.

Q1. List the cranial nerves in order, starting with the anterior-most. Give yourself some room, because you'll be adding text under each name:

Q2. Under each cranial nerve name, write a short descriptive phrase explaining what each nerve does. There is a list on the next page that will allow you to check your list; however, you should try to make your list on your own.

Q3. Now, check your table with the list on the following page. (Darned! You mean there was a list on the next page??!! Why don't I read ahead?)
# Cranial Nerve Organization Table

<table>
<thead>
<tr>
<th>Cranial Nerve:</th>
<th>Major Functions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>I Olfactory</td>
<td>Sensory only: smell</td>
</tr>
<tr>
<td>II Optic</td>
<td>Sensory only: vision</td>
</tr>
<tr>
<td>III Oculomotor</td>
<td>Mainly Motor: eyelid and eyeball movement</td>
</tr>
<tr>
<td>IV Trochlear</td>
<td>Mainly Motor: eyeball movement</td>
</tr>
<tr>
<td>V Trigeminal</td>
<td>Motor &amp; Sensory: chewing, most face &amp; mouth senses of touch &amp; pain</td>
</tr>
<tr>
<td>VI Abducens</td>
<td>Mainly Motor: eyeball movement laterally</td>
</tr>
<tr>
<td>VII Facial</td>
<td>Motor &amp; Sensory: controls most facial expressions, taste</td>
</tr>
<tr>
<td>VIII Vestibulocochlear (auditory)</td>
<td>Mainly Sensory: hearing, equilibrium sensation</td>
</tr>
<tr>
<td>IX Glossopharyngeal</td>
<td>Motor &amp; Sensory (only sense listed here): taste, senses blood pressure</td>
</tr>
<tr>
<td>X Vagus</td>
<td>Motor &amp; Sensory: senses blood pressure, slows heart rate, stimulates most thoracic and abdominal visceral organs</td>
</tr>
<tr>
<td>XI Accessory (spinal accessory)</td>
<td>Mainly Motor: controls swallowing movements</td>
</tr>
<tr>
<td>XII Hypoglossal</td>
<td>Mainly Motor: controls tongue movements</td>
</tr>
</tbody>
</table>
Make a mnemonic device to remember the cranial nerves.

A mnemonic (or "mnemonic device"), is any learning technique that aids memory.

To improve long term memory, mnemonic systems are used to make memorization easier. They do so by increasing the efficiency of the process of consolidation.

This process involves the conversion of short term memory to long term memory. Commonly encountered mnemonics are often verbal, such as a very short poem or a special word used to help a person remember something, particularly lists, but a mnemonic may instead be visual, kinesthetic or auditory.

Mnemonics rely on associations between easy-to-remember constructs which can be related back to the data that are to be remembered. This is based on the observation that the human mind much more easily remembers spatial, personal, surprising, physical, sexual, humorous, or otherwise meaningful information, as compared to retrieving arbitrary sequences. Therefore, it is better to come up with your own, rather than memorizing someone else's. And make it as funny as you can.

A common way to do this is to take the first letter of each word you need to remember, and come up with some humorous phrase that uses the first letter. On our list that follows, we wrote out an example of a mnemonic for the cranial nerves

Example of a "not funny" mnemonic device:
Mnemonic: Oh, oh, oh, to touch and feel very good velvet...ah, heaven

Q4. Write down, in the space below, the mnemonic device you'll be using to remember the nerves in order.
Look for trends among the cranial nerves, to help make your life easier by answering some questions.

Answer these questions after reading the appropriate text in your book, or watching any video your instructor has assigned.

Q5. How many of the cranial nerves are involved with eye movement? List them:

Q6. How many of the cranial nerves are involved with chewing, moving the tongue, or swallowing? Name them:

Q7. How many are purely or mainly sensory? List their names here:
Q8. How many of the cranial nerves do you think have a completely obvious name, given their function? Below is a list of the nerves, plus a brief description of what their names mean (in mostly Latin). Place a check next to any name you think is obvious:

I Olfactory - "of smell"
II Optic - "of vision"
III Oculomotor - "eye mover"
IV Trochlear - "pulley" (what is being "pulled"?)
V Trigeminal - "3 bodies" (it has 3 big branches)
VI Abducens - "to cause abduction" (think about what is being abducted!)
VII Facial - "of the face"
VIII Vestibulocochlear - "from the vestibule and cochlea"
IX Glossopharyngeal - "tongue and throat"
X Vagus - "wandering" (ask yourself: why does it have this name??)
XI Accessory - "helper"
XII Hypoglossal - "below the tongue"

Q9. In Anatomy & Physiology class, you are going to hear a lot about the "vagal tone" of many visceral organs. What do you suppose this means? If you don't know, ask your instructor in lab, and write it down here:
Step 2. Key Concepts on the Brain Anatomy (from the book and videos)

Answer these questions, after reading your book or watching the online videos your instructor assigns you:

Q10. There are 4 commonly referred to subdivisions of the adult brain. Name them here:

Different instructors will have you know different names for regions, or may divide the brain differently, so you should check with him or her after making this list. For now, write down what you see in your book or online videos:

A.

B.

C.

D.

More on next page
Q2. Of course, all the subdivisions can be further subdivided into more specific regions. Different instructors will have you know different sub-regions, so you should check with him or her after making this list. For now, write down what you see in your book or online videos:

A. Cerebrum (telencephalon)
   1. 
   2. 

B. Diencephalon
   1. 
   2. 
   3. 

C. Brain Stem
   1. 
   2. 
   3. 

D. Cerebellum
   1. 
   2. 

More on next page
Q3. Here is what your final list should look like. Bring this to lab on a separate sheet of paper, as we’ll be adding to it there.

Use a separate sheet of paper to make this final list, and bring it to lab:

A. Cerebrum (telencephalon)
   1. cerebral cortex (outer gray matter)
      - Individual structures to know:
   2. inner white matter (inner tracts, nuclei, etc.)
      - Individual structures to know:

B. Diencephalon
   1. epithalamus
      - Individual structures to know:
   2. thalamus
      - Individual structures to know:
   3. hypothalamus
      - Individual structures to know:

C. Brain Stem
   1. midbrain
      - Individual structures to know:
   2. pons
      - Individual structures to know:
   3. medulla oblongata
      - Individual structures to know:

D. Cerebellum
   1. arbor vitae (inner white matter)
      - Individual structures to know:
   2. folia (outer gray matter)
      - Individual structures to know:
Step 3  Make a key

On the image below, indicate the 4 main regions of the brain (A, B, C & D on the outline we just made) by outlining them.