I. The Brain
   a. Be able to label a diagram of the brain with:
      i. Frontal lobe
      ii. Parietal lobe
      iii. Occipital lobe
      iv. Temporal lobe
      v. Brain stem
      vi. Cerebellum
      vii. Touch
      viii. Taste
      ix. Hearing
      x. Vision
      xi. Balance and movement
      xii. Automatic functions

II. The Nature of Sensation
   a. Define sensation
   b. Define perception
   c. Describe the process of sensation
   d. Understand the role of receptor cells and their location for each sense
   e. Recall the process of adaptation

III. Vision
   a. Rank among the senses
   b. Home of the receptor cells
   c. Name of the receptor cells
   d. Role of the fovea
   e. Problem presented by night driving in regard to adaptation
   f. Afterimage
   g. Color blindness

IV. Hearing
   a. Human ability to create meaning from sound
   b. Home of the receptor cells in hearing
   c. Role of the anvil, stirrup and hammer
   d. Reasons for hearing loss as we age
   e. National Association for the Deaf's view on medical correction of deafness

V. The Role of Your Other Senses
   a. Evolutionary/animal connection to human sense of smell
   b. Rank the importance of smell (esp compared to taste)
   c. Home of the receptor cells for smell
   d. Role of the olfactory bulb
   e. Explain pheromones
   f. Role of smell in flavor
   g. Home of taste receptor cells
   h. Reason our tastes can change over time
   i. Sense of touch
   j. Sense of movement (role of inner ear fluid)
   k. Pain- why is it different from all other senses

VI. Perception
   a. Gestalt Psychology
   b. Identify figure and ground in images
   c. Examples of the 4 Gestalt principles
   d. Monocular and binocular cues
   e. Real and apparent movement
   f. Role of individual differences and culture in perception

<table>
<thead>
<tr>
<th>Role</th>
<th>The Occipital Lobe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audience</td>
<td>The other parts of the brain</td>
</tr>
</tbody>
</table>

| Format | Persuasive letter or lecture |
| Topic | Why the occipital lobe is the most important part of the human brain. |

| Directions | Explain to the other lobes of the brain why you are the most important part of the brain for sensation and perception. |
| 1. | Explain your role in the brain |
| 2. | Justify yourself as the most important part of the brain |
| 3. | Include 5 vocabulary words from this unit in your letter. Be sure to underline or highlight your vocabulary words! |

Grading Criteria:
1. Correct use of 5 unit vocabulary words: _____/5 points
2. Demonstration of correct understanding of Sensation and Perception unit concepts, including:
   a. parts of the brain and their responsibilities _____/3 points
   b. rank of senses in terms of importance for perception _____/3 points
   i. evidence supporting claims for rank of senses _____/4 points
3. Response is written in correct voice and format: _____/3 points
4. Response demonstrates creativity and effort: _____/2 points
His Brain, Her Brain
By Rich Maloof for MSN Health & Fitness
Brain & Body

An old joke circulates among neurologists, and it goes something like this: A patient must undergo brain-replacement surgery, and the patient's family asks how much a brain will cost. "Well, it's $5,000 for a male brain and $250 for a female brain," says the surgeon. Just as the men of the family start to snicker, the surgeon clarifies: "We mark down the price of the female brains because they've actually been used."

While surely more popular among female neuroscientists, the joke begs significant questions about gender and the brain. Do women and men share the same mental potential, and are our brains identically equipped?

We've been poking around under the cranial hood for centuries now, yet the brain remains by far the least understood organ in the body. However, research has revealed a few intriguing distinctions between the sexes.

For years it was assumed that gender differences in brain functionality were controlled by sex hormones like testosterone and estrogen. Now we understand that every one of the brain's four lobes differs between men and women in size, neurochemical makeup and function.

Superhighways and country roads

The female predisposition for empathy and social grace, for example, has been linked to a part of the brain called the isthmus. The isthmus is a narrow stretch of the corpus callosum, a band of tissue that connects the left and right sides of the brain, and in women it is pronouncedly thicker. Greater connectivity between the brain's two hemispheres may explain why women are typically better at linking emotion with language.

In general, the left hemisphere is in charge of functions of precision and logic; science, reading and writing, analysis, and fact management are all characteristic. The right hemisphere is in charge of nonlinear, imaginative thinking, as used in creativity, perception and humor. Even in scientific circles, these right-side aspects were long undervalued—for years, the right brain was known as the "minor" hemisphere.

You can see, then, why a strong link between sides is assumed to come with certain benefits. For instance, the left side can more easily assign the appropriate expression to a feeling that the right side has processed.

This doesn't mean men have any less right- or left-brain capacity—just less connectivity between the two. When the isthmus is thicker (say that 10 times fast), the brain stands to
operate more holistically. "Women have a superhighway going on there," the poet Robert Bly once told The New York Times, while men "have a country road."

**What's the matter?**

Also, while men tend to have physically bigger brains—because brain size is related to body size—women's brains have a cortex that is 15 to 20 percent more developed. Commonly referred to as gray matter, the cortex is that top layer full of folds that's responsible for primary functions like speech, movement and perception. It's actually not gray, but a girly pink color—coincidence?

Despite these evolutionary advantages, and the claims of wives and girlfriends everywhere, the male brain is not an entirely lost cause. Men counter all of that gray matter with proportionally more white matter. This is where the brain's interconnections are made. An elaborate system of nerve fibers provides conduits among everything the brain learns; the more connections made in your white matter, the smarter you get.

The components of knowledge—memories, sensations, skills—are all stored in different parts of the brain, and they're only put to good use when they're put in touch with one another. Each is like a light bulb that can't shine any light until it becomes part of the circuit. Men are sometimes advantaged with organization, attention to detail, spatial relations and problem solving due to an abundance of white-matter connectivity. At a young age, males' ability to think systematically is evident at play with toys like Legos, which call on strengths like visualization and understanding of a geometric system. Grown men often show similar acuity with navigation and engineering.

**Life outside the brain**

The differences between male and female brains shouldn't be overemphasized. As most researchers will tell you, there are far greater neurological differences between individuals than there are between men and women at large. The number of nerve fibers in the corpus callosum, for example, can vary from one person to the next by threefold. Back in the 1960s, surgeons even cut the corpus callosum clean through as a last-ditch effort to treat uncontrolled epilepsy. They found that these patients could carry on most functions quite well.

Still, we're inclined toward generalizations. Women are sympathizers and men are systemizers. Left-brained people are calculating and right-brainers are dreamers. We like sweeping ideas like these because they promise to explain clashes, when true peace of mind—and peace among the sexes—is in managing a balance between two perfectly matched halves of a whole.
Carl Sagan: On the Human Brain

1. The oldest part of the brain is the ________________, which controls our ________________.

2. 3 stages of brain evolution

<table>
<thead>
<tr>
<th>Name</th>
<th>Special Origin</th>
<th>Functions</th>
<th>Year Formed</th>
</tr>
</thead>
<tbody>
<tr>
<td>R complex</td>
<td></td>
<td></td>
<td>100s of millions of years ago</td>
</tr>
<tr>
<td>Limbic System</td>
<td></td>
<td>mood, emotion, care</td>
<td></td>
</tr>
<tr>
<td>Primate</td>
<td></td>
<td></td>
<td>Millions of years ago</td>
</tr>
</tbody>
</table>

3. Brain cells are specialized cells called ________________.

4. Why is the cortex “deeply furrowed?”

5. ________________________________

<table>
<thead>
<tr>
<th>Hemisphere</th>
<th>Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right</td>
<td></td>
</tr>
<tr>
<td>Left</td>
<td></td>
</tr>
</tbody>
</table>

6. The hemispheres of the brain communicate through the ________________.

7. Which contains more information: genetic code or human brain/memory?

8. Many neurological studies are preformed on monkeys.
   a. Infer 1 similarity between monkeys and humans that may account for why this is done.

   ________________________________

   b. Infer 1 physiological difference, which make monkey brains easy to study than their human counterpart.

   ________________________________
The Process of Sensation

Directions: For each sense, draw a stick man and show the process of sensation.

Vision

Hearing

Taste

Touch

Smell
Vision (blindfold) Activity

Step 1: Find a partner. 1 group of 3 is ok, if the class population requires it.

Step 2: Get a blindfold that fits the biggest head in your group.

Step 3: Take your partner upstairs and THEN blindfold your partner.

Step 4: Have your blindfolded partner find
   a. Their own locker
   b. Their math class
   c. The gender appropriate bathroom in the commons

   ***This step should be completed in 10 minutes or less. The whole thing should take less than 20 minutes***

   ***You are responsible for your blind friend. Guide them when necessary; do not allow them to fall. NO ONE will go up or down stairs with blindfolds on. (If one of their locations is downstairs, think of another place to find (science class, drinking fountain, etc) SAFETY FIRST!***

Step 5: SWITCH

Step 6: Remove blindfolds and return to class to answer some questions over your mission.
Return Questions
Please title these questions “BLINDFOLD ACTIVITY” and answer in your binder.

1. Which alternate sense did you most rely on? Explain.

2. Were any of your other senses heightened? Explain how you know.

3. How much guidance did you have to provide for your “blind” partner? Provide examples.

4. How successful were you in finding your assigned locations? Had you done this activity alone, would you have made it to the right spots safely?

5. Based on your experience, how important is vision to perception. Explain your answer.

6. Evaluate this activity. Do you feel you learned from it? Do you have suggestions for making it more effective?
1. _____% of our body's sense receptors are located in our eyes.
2. This means that vision is our __________ important sense.
3. Light enters the eye through the __________, which is the __________

4. In bright light your pupil will... expand or contract?
5. In dim light your pupil will... expand or contract?
6. The muscles which control the size of the pupil are located in your __________, the colored part of the eye.
7. Describe the role of the lens __________

8. Which part of the eye contains receptor cells that are sensitive to light?
9. Define blind spot __________

10. The center of our visual field, where objects are in sharpest focus is called the __________
11. Draw and label your own version of figure 3-2 here:
12. The retina contains 2 types of receptor cells. They are known as ________ and ________.

13. Rods do NOT respond to ________________, which makes them chiefly responsible for ____________________________.

14. Cones are found mainly in the ________________, where no ________ are found.

15. The further from the fovea on the retina, the greater/fewer number of rods and cones can be located.

16. Rods and cones connect to specialized neurons called ________________.

17. The one to one connection between cones and bipolar cells in the fovea allows for maximum ____________________________.

18. Both light and dark adaptation involve ________________ and ________________ becoming more or less sensitive to light.

19. Explain the problem with dark adaptation that causing more car accidents to occur at night.

20. If you draw a black dot on a white page, then look at a plain white piece of paper, you will see a black dot where one does not exist. The word used to explain this phenomenon is ________________.

21. We don't actually see with our eye, we see with our ________________.

22. Ganglion cells lead sensation out of the eye to the ________________, which transmits the message to the brain.

23. Certain cells in the brain, called ________________, are highly specialized to respond to particular elements in the visual field (like vertical lines, horizontal lines, angles, etc).

24. HUE is the word used to describe the colors we see. (there is nothing to answer here)

25. The vividness or richness of a hue is known as its ________________.

26. Brightness refers to the nearness of a color to white as opposed to black (again nothing to answer)

27. I am a trichromat. This means I have normal/abnormal vision.

28. ________________ ________________ occurs in 10% of men and 1% of women and means they cannot perceive all colors like a trichromat can.

29. A ________________ is color blind to either red and green OR yellow and blue.

30. A ________________ sees no color whatsoever, but responds to shades of light and dark.
### Label the Brain Anatomy Diagram

**The Brain**

Read the definitions below, then label the brain anatomy diagram.

#### Lateral View of the Brain

<table>
<thead>
<tr>
<th>Cerebellum</th>
<th>Parietal Lobe of the Cerebrum</th>
</tr>
</thead>
<tbody>
<tr>
<td>the part of the brain below the back of the cerebrum. It regulates balance, posture, movement, and muscle coordination.</td>
<td>the middle lobe of each cerebral hemisphere between the frontal and occipital lobes; it contains important sensory centers (located at the upper rear of the head).</td>
</tr>
<tr>
<td><strong>Corpus Callosum</strong> - a large bundle of nerve fibers that connect the left and right cerebral hemispheres. In the lateral section, it looks a bit like a &quot;C&quot; on its side.</td>
<td><strong>Pituitary Gland</strong> - a gland attached to the base of the brain (located between the Pons and the Corpus Callosum) that secretes hormones.</td>
</tr>
<tr>
<td><strong>Frontal Lobe of the Cerebrum</strong> - the top, front regions of each of the cerebral hemispheres. They are used for reasoning, emotions, judgment, and voluntary movement.</td>
<td><strong>Pons</strong> - the part of the brainstem that joins the hemispheres of the cerebellum and connects the cerebrum with the cerebellum. It is located just above the Medulla Oblongata.</td>
</tr>
<tr>
<td><strong>Medulla Oblongata</strong> - the lowest section of the brainstem (at the top end of the spinal cord); it controls automatic functions including heartbeat, breathing, etc.</td>
<td><strong>Spinal Cord</strong> - a thick bundle of nerve fibers that runs from the base of the brain to the hip area, running through the spine (vertebrae).</td>
</tr>
<tr>
<td><strong>Occipital Lobe of the Cerebrum</strong> - the region at the back of each cerebral hemisphere that contains the centers of vision and reading ability (located at the back of the head).</td>
<td><strong>Temporal Lobe of the Cerebrum</strong> - the region at the lower side of each cerebral hemisphere; contains centers of hearing and memory (located at the sides of the head).</td>
</tr>
</tbody>
</table>
Label the Ear Anatomy Diagram

Sound is collected by the pinna (the visible part of the ear) and directed through the outer ear canal. The sound makes the eardrum vibrate, which in turn causes a series of three tiny bones (the hammer, the anvil, and the stirrup) in the middle ear to vibrate. The vibration is transferred to the snail-shaped cochlea in the inner ear; the cochlea is lined with sensitive hairs which trigger the generation of nerve signals that are sent to the brain.

Read the definitions below, then label the ear anatomy diagram.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>pinna</td>
<td>(also called the auricle) the visible part of the outer ear. It collects sound and directs it into the outer ear canal</td>
</tr>
<tr>
<td>outer ear canal</td>
<td>the tube through which sound travels to the eardrum.</td>
</tr>
<tr>
<td>anvil</td>
<td>(also called the incus) a tiny bone that passes vibrations from the hammer to the stirrup.</td>
</tr>
<tr>
<td>cochlea</td>
<td>a spiral-shaped, fluid-filled inner ear structure; it is lined with cilia (tiny hairs) that move when vibrated and cause a nerve impulse to form.</td>
</tr>
<tr>
<td>eardrum</td>
<td>(also called the tympanic membrane) a thin membrane that vibrates when sound waves reach it.</td>
</tr>
<tr>
<td>Eustachian tube</td>
<td>a tube that connects the middle ear to the back of the nose; it equalizes the pressure between the middle ear and the air outside. When you &quot;pop&quot; your ears as you change altitude (going up a mountain or in an airplane), you are equalizing the air pressure in your middle ear.</td>
</tr>
<tr>
<td>hammer</td>
<td>(also called the malleus) a tiny bone that passes vibrations from the eardrum to the anvil.</td>
</tr>
<tr>
<td>nerves</td>
<td>these carry electro-chemical signals from the inner ear (the cochlea) to the brain.</td>
</tr>
<tr>
<td>semicircular canals</td>
<td>three loops of fluid-filled tubes that are attached to the cochlea in the inner ear. They help us maintain our sense of balance.</td>
</tr>
<tr>
<td>stirrup</td>
<td>(also called the stapes) a tiny, U-shaped bone that passes vibrations from the stirrup to the cochlea. This is the smallest bone in the human body (it is 0.25 to 0.33 cm long).</td>
</tr>
</tbody>
</table>
1. Place earplugs in your ears the beginning of Psychology class. Wear them all (school) day. You MUST remove them before you drive a vehicle!!!! When you return to school, put them back in and wear them until the beginning of your psychology class.

2. Answer the following questions DUE tomorrow (Wednesday, 2/16)
   1) How does your sense of hearing compare in importance to your sense of sight? Smell? Taste?

   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________

2) What was the most difficult part of being hearing impaired for the day?

   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________

3) What was the easiest part of being hearing impaired for the day?

   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________

4) How did people around you (peers, friends, teachers) react to you?

   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________

5) Cite specific examples of your behavior changing as a result of your hearing impairment.

   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
<table>
<thead>
<tr>
<th>Hour</th>
<th>Teacher/Parent Initials</th>
<th>Earplugs in? Participatory? Behavior? Additional Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
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<td>2</td>
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<td>7</td>
<td></td>
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</tr>
<tr>
<td>Advisory</td>
<td></td>
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</tr>
<tr>
<td>Home</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. No other species on Earth use sound to create meanings as extensively as __________ do.
2. __________ is the sensation created in the brain in response to changes in air pressure.
3. __________ waves is the name assigned to a situation in which changes in air pressure occur.
4. The primary determinant of pitch is ________________
5. Hertz measure ________________
6. The primary determinant of loudness (or volume) is ________________
7. As soon as sound waves strike the eardrum, the ________________, ________________, and ________________ (bones in the middle ear) relay these vibrations to the inner ear.
8. The membrane between the hammer, anvil and stirrup and the cochlea is known as the ________________
9. The part of our inner ear, which contains fluid (responsible for sound and balance) is known as the ________________.
10. Sensory Receptors for hearing are located on the ________________
11. ________________ theory contends that pitch is determined by the location of greatest vibration on the basilar membrane.
12. ________________ theory holds that pitch is determined by the frequency with which hair cells in the cochlea fire.
13. ______ MILLION Americans suffer from partial or complete deafness.
14. The three most common reasons for hearing loss in old age are ________________, ________________, and ________________
15. Cochlear ________________ have helped many people with hearing disorders resulting from cochlea defects.
16. The National Association of the Deaf argues ________________ correcting deafness in children born with hearing disorders. Their major reason stem from the fact that they feel all of their other senses are ________________, and deafness is just a part of human diversity.

Answer in complete sentences: If you had a deaf child, would you support measures being taken to restore hearing? Why or why not?
10. Explain the American Deaf Association’s stance on any surgery to improve hearing in the hearing impaired.

11. Flavor is determined most by ____________.
12. The receptor cells for smell are located on the ________________

13. The receptor cells for taste are located on the ____________ ____________.
14. Touch is important for safety and ________________ ________________.
15. Balance is influenced by fluid in the ________.
16. Explain why pain is an “odd” sense.

17. Determine the psychological significance of phantom limb syndrome.
**Lemon/Lime Reflection**

1. What strategies did you incorporate in “feeling” your lemon/lime to help you recognize it later?

   ____________________________________________________
   ____________________________________________________
   ____________________________________________________
   ____________________________________________________
   ____________________________________________________

2. Describe the texture of your lemon/lime.

   ____________________________________________________
   ____________________________________________________
   ____________________________________________________
   ____________________________________________________
   ____________________________________________________

3. Were there any distinguishing features you noticed as you “got acquainted” with your lemon/lime? (squishy, bumpy, etc)

   ____________________________________________________
   ____________________________________________________
   ____________________________________________________
   ____________________________________________________
   ____________________________________________________

4. Having participated in this activity, how does your sense of “touch” compare (in terms of accuracy/sensitivity/necessity) to:
   a. Sight?

      ____________________________________________________
      ____________________________________________________
      ____________________________________________________
      ____________________________________________________
      ____________________________________________________
   b. Hearing?

      ____________________________________________________
      ____________________________________________________
      ____________________________________________________
      ____________________________________________________
      ____________________________________________________
   c. Smell? Taste?

      ____________________________________________________
      ____________________________________________________
      ____________________________________________________
      ____________________________________________________
      ____________________________________________________

5. Explain your reasoning for the answers you provided for question 4.

   ____________________________________________________
   ____________________________________________________
   ____________________________________________________
   ____________________________________________________
   ____________________________________________________
Neuronal Growth In The Brain May Explain Phantom Limb Syndrome

ScienceDaily (May 2, 2000) — One of the most troubling aftereffects of an arm or leg amputation is the phantom limb syndrome, in which the person reports receiving sensations from the lost limb. Neuroscientists at Vanderbilt University report the first direct evidence that significant growth and reconnection of neurons in the brains of amputees may be at the root of this problem. The finding may ultimately lead to a treatment for phantom limb sensation. It also raises the hope that it may become possible to repair severed spinal cord injuries as scientists find ways to promote and regulate such growth.

For some time, neuroscientists have known that the phantom limb syndrome and its close companion, phantom limb pain, are an unpleasant side effect of the brain's attempt to reorganize itself following a serious disruption in the sensory information that it receives from the rest of the body. The specific regions of the brain in the cerebral cortex, thalamus and brainstem that process sensory information from the central nervous system-called somatosensory regions-are highly organized, and this organization begins to change after an amputation or major spinal cord injury.

Writing in the April 25 issue of the Proceedings of the National Academy of Science (PNAS), Assistant Professors of Psychology Neeraj Jain and Sherre L. Florence, Research Associate Hui-Xin Qi, and Psychology Professor Jon H. Kaas report that neurons in adult brains of monkeys grow and make new connections in somatosensory areas when they are massively deprived of sensory input. This strongly suggests that neuronal growth underlies the brain's reorganization following such injuries, they argue.

"We have suspected for some time that this is the case," says Jain. "But, until recently, the prevailing view has been that this kind of regenerative growth is unlikely to occur in adult brains. Hopefully, this new insight will suggest ways to stop or reverse phantom limb sensations, which tend to become more real over time."

Phantom limb syndrome is the most dramatic and mysterious example of a phenomenon called neuropathic pain, pain that does not seem to have a physical cause because it is produced by a malfunctioning nervous system. Neuropathic pain responds poorly to standard pain treatment and may get worse instead of better over time. For some people, it becomes a serious disability.

In the PNAS paper, the Vanderbilt researchers report on the results of a series of studies of the brains of adult monkeys who had sustained spinal cord injuries or had an arm amputated for therapeutic reasons.
The nerve endings in the hand, arm, face and other parts of the body are connected to the brain through the spinal cord. Sensory information from each part of the body is localized in specific areas of the brainstem, thalamus and cortex. These areas show up much more clearly in the cortex of monkeys than in those of humans because the monkey cortex is smooth, not highly convoluted like the human cortex. This has allowed researchers to map these somatosensory areas extensively and they have found that the areas connected to the face are adjacent to those connected to the hand and arm.

"The human brain is organized in much the same fashion. People who have lost an arm frequently report that when they are touched on the face they feel as if the sensation came from the missing limb," Jain says.

To determine how the brains of the monkeys with spinal cord injuries or amputated arms had changed as a result of their loss, the researchers first injected a tracer compound into their chins. When their brains were examined, the scientists found evidence for the tracer not only in the regions of the brain associated with the chin, but also in the areas associated with the hand and arm.

"This shows that the brain does not stay still, but it reacts to major changes," Jain says.

When the sensory input from part of the body suddenly vanishes, the brain reacts by reprogramming the area that is no longer serving a useful function. This is a very slow process, taking months to years. Also, the sensory loss has to be massive to trigger such changes: the brain has other ways of responding to smaller insults, such as the loss of a finger, the scientist says.

In order to determine if neuronal growth was involved in the reprogramming process, the researchers turned to the brainstem, where the somatosensory areas are much more compact. They hypothesized that even modest neuronal growth in this part of the brain would have significant consequences.

The researchers found clear evidence that neurons from the face area in the brainstem had extended axons and made a number of connections in the hand area. Although the number of such connections was limited there were enough to activate many of the neurons from the hand area, the researchers found.

"We conclude that the adult primate [central nervous system] is capable of extensive new growth and that the growth of even a few new connections can have a major impact on the functional organization of the brain," they conclude.
Questions for Consideration:

1. Cite the suspected root of phantom limb syndrome.

2. In your own words, define neuropathic pain.

3. How does neuropathic pain respond to typical treatment (i.e. pain killers)?

4. Explain what features of the monkey made it a great candidate for this study?

5. Describe the process used to prove this hypothesis.

6. Summarize the process of neural reprogramming and its effect on amputees.
1. Title of the illusion: ____________________________
   a. Describe what it is you are seeing:
      ___________________________________________
      ___________________________________________
      ___________________________________________
   b. Explain WHY you experience this illusion:
      ___________________________________________
      ___________________________________________
      ___________________________________________

2. Title of the illusion: ____________________________
   a. Describe what it is you are seeing:
      ___________________________________________
      ___________________________________________
      ___________________________________________
   b. Explain WHY you experience this illusion:
      ___________________________________________
      ___________________________________________
      ___________________________________________

3. Title of the illusion: ____________________________
   a. Describe what it is you are seeing:
      ___________________________________________
      ___________________________________________
      ___________________________________________
   b. Explain WHY you experience this illusion:
      ___________________________________________
      ___________________________________________
      ___________________________________________

4. Title of the illusion: ____________________________
   a. Describe what it is you are seeing:
      ___________________________________________
      ___________________________________________
      ___________________________________________
   b. Explain WHY you experience this illusion:
      ___________________________________________
      ___________________________________________
      ___________________________________________

5. Title of the illusion: ____________________________
   a. Describe what it is you are seeing:
      ___________________________________________
      ___________________________________________
      ___________________________________________
   b. Explain WHY you experience this illusion:
      ___________________________________________
      ___________________________________________
      ___________________________________________
Gestalt Principles

1. Describe their belief in regard to perception.

2. Using the picture determine what would be considered figure? Ground?

3. The 4 Gestalt Principles are Proximity, Similarity, Closure and Continuity. Label each picture with the appropriate principle. Principles can be used more than once.

   Proximity
   - ○ ○ ○ ○ ○
   - × × × × ×
   - ○ ○ ○ ○ ○

   Similarity
   - ○ ○ ○ ○ ○
   - × × × × ×
   - ○ ○ ○ ○ ○

   Good continuation
   - . . . . . . . .
   - . . . . . . . .

   Closure
   - ○ ○
Sensation and Perception Unit
Psychology

1. Diagram the 3 step process of sensation.

2. Define sensation

3. draw and label the parts and functions of the brain (see white board)

4. Rank our 3 most important senses in order of importance.
   a. 
   b. 
   c. 

5. The receptor cells for vision are located on the ____________
6. The location of greatest visual acuity is the ____________
7. Provide an example of the process of adaptation

8. Using the process of adaptation, defend the statement “driving is most dangerous after dark.”

9. The receptor cells for hearing exist in the ____________ ____________