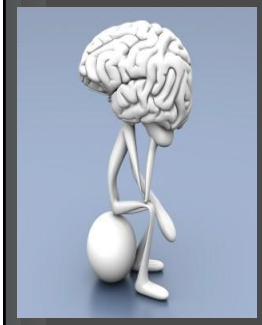


How is the Cortex Organized?

Module 4
The Brain

1

The Cerebral Cortex

Where does complex thought and behavior come from?

2

Why are they different?

- In humans, the cortex makes _____of the brain's weight
  - compared with just _____in most other mammals.
- The larger cortex of mammals offers increased capacities for _____
  - Making them more adaptable.

3

When it comes to brains, does bigger mean smarter?

4

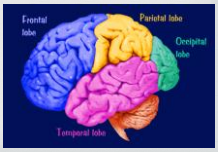
Did you know?…

- The brain of an elephant weighs about 10.5 lbs and an adult human brain weighs about 3 lbs.
- Einstein's brain was similar in size to other humans except in the region that is responsible for math and spatial perception. In that region, his brain was 35% wider than average.
- The total surface area of the cerebral cortex is about 2500 sq. cm (~2.5 sq. ft).
- Your brain consists of about 100 billion neurons.

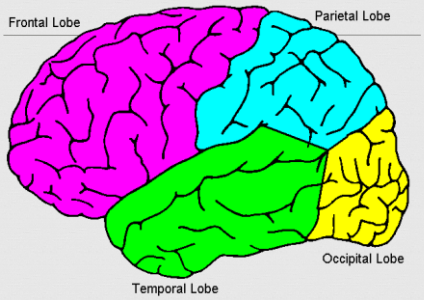
5

Cerebral Cortex

- The cerebral cortex is responsible for the most _____
_____
- This area is made up of four lobes:
  - Occipital Lobe
  - Parietal Lobe
  - Temporal Lobe
  - Frontal Lobe



Four Lobes of the Brain



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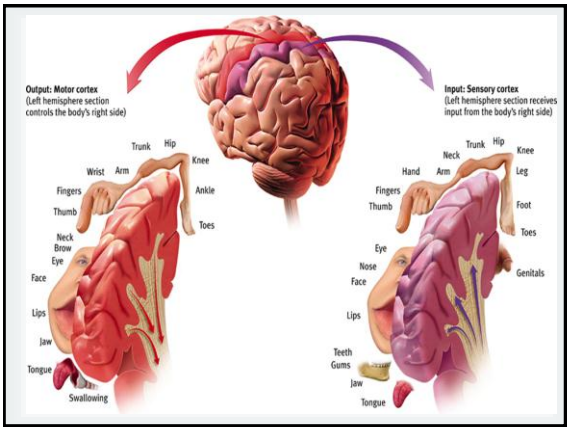


Motor Cortex

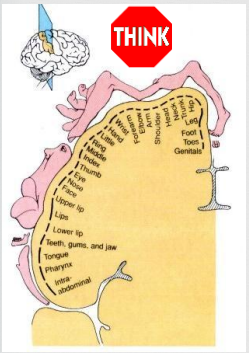
- The Motor Cortex is the area at the rear of the frontal lobes that control _____
- Each area of the motor cortex controls _____
  - Larger areas are devoted to _____of the tongue and fingers
  - Smaller areas are devoted to _____ of the shoulders and elbows

9

The Sensory Cortex, is a band of tissue on the front of the parietal lobe

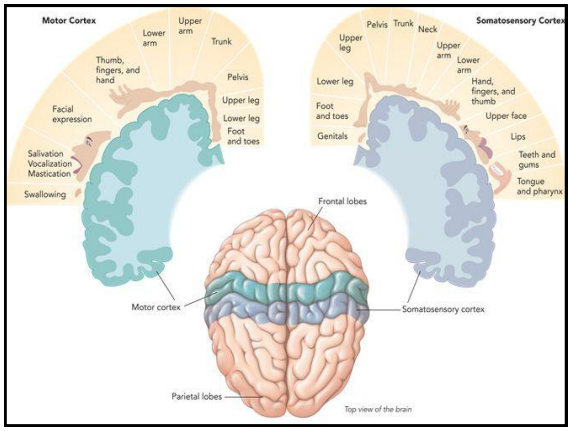
Each area of the sensory cortex receives

10



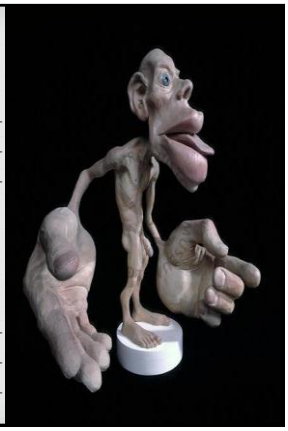
The more sensitive the body region,

11



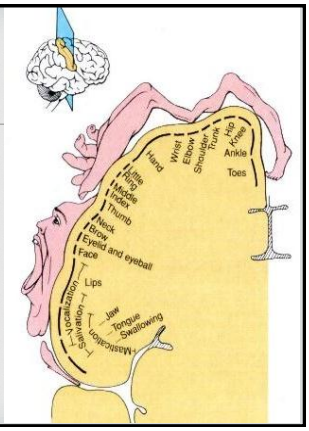
•Larger areas are devoted to touch in the most _____

•Smaller areas are devoted to touch in _____



THINK

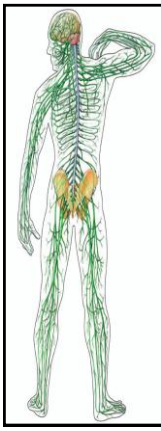
Once again, notice the areas of the body that have more motor cortex devoted
Motor Homunculus



Sensory Cortex

- Visual information is received in the _____
- Sound is processed in the auditory cortex by the temporal lobe

15



The brain controls the sensation and the movements of the body

16

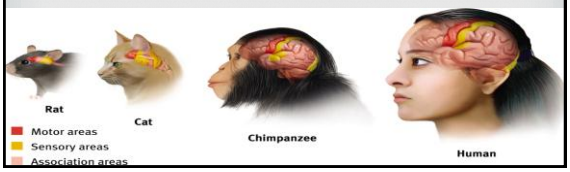
Association Areas

These areas (found in all four lobes) interpret, integrate, and act on information processed by sensory areas.

17

Association Areas

- They link sensory inputs with stored memories, which is very important _____
  - More intelligent animals have increased _____



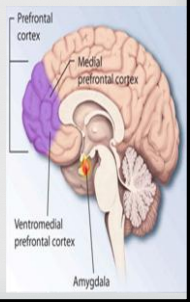
Association Areas

- These areas in the frontal lobes are involved in higher cognitive functions such as planning, reasoning, _____
- Math and spatial reasoning skills are associated with the _____
- The right temporal lobe enables us to _____

19

The Frontal Lobe

- The frontal lobe is involved in _____ _____
- ***The prefrontal cortex*** is part of the executive control system because of its role in _____ _____
  - The prefrontal cortex is involved in higher cognitive functions such as planning, reasoning, and self-control



Why did it get harder at the end?

THINK

- _____ _____ _____ _____
  - The conflicting word information arrives at the decision process stage earlier than the color information and results in confusion

21