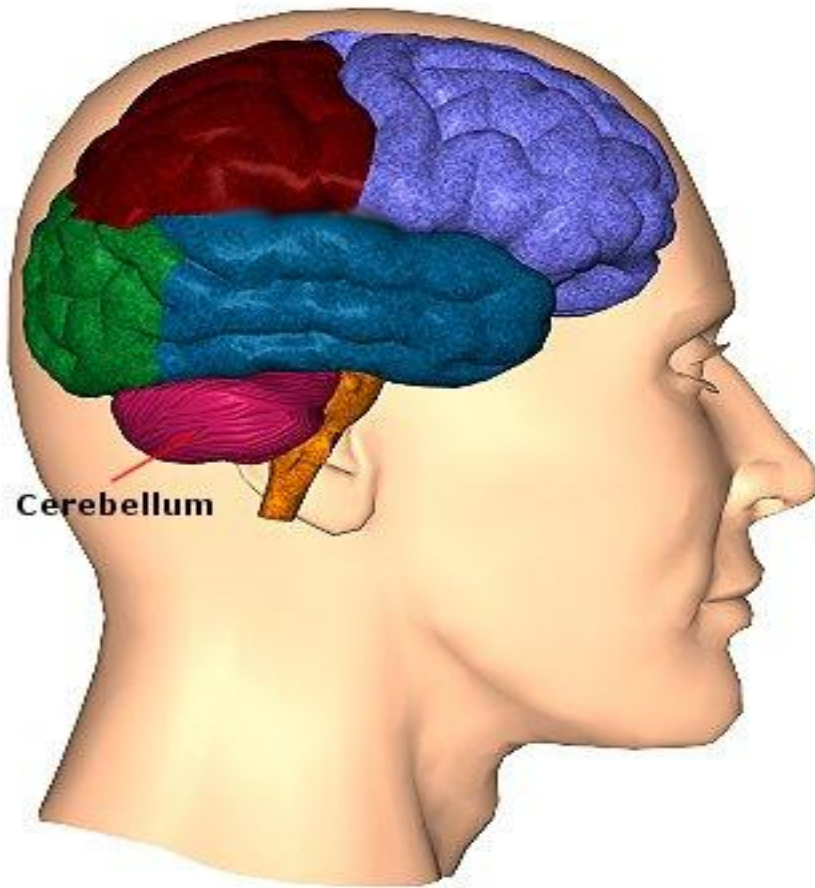


CEREBRUM

ملاحظة:

هذا الملف للمراجعة وترتيب المعلومات فقط وليس مرجع للمذاكرة لانه ليست كل المعلومات متضمنة



Done by:

خلود العنزي

CEREBRUM is the largest part of the FOREBRAIN (prosencephalon). Divided into two halves, the (**cerebral hemispheres**), separated by a deep median longitudinal fissure which lodges the **FALX CEREBRI**, connected by a bundle of fibers called the **CORPUS CALLOSUM**.

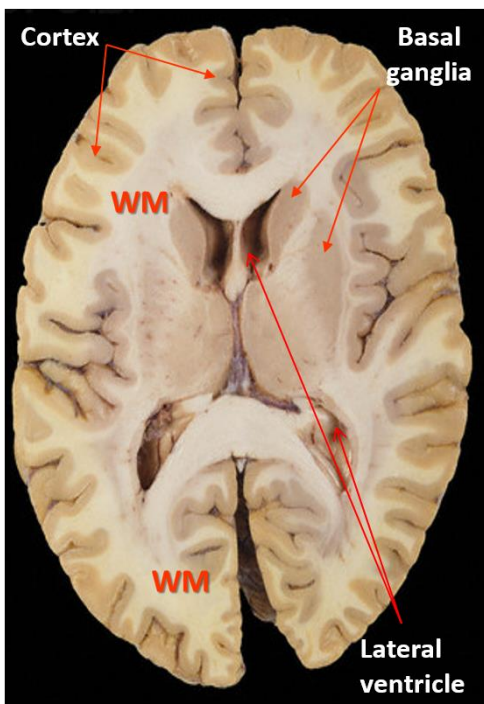
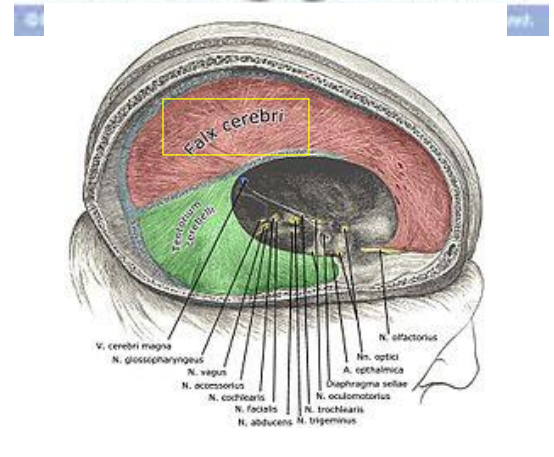
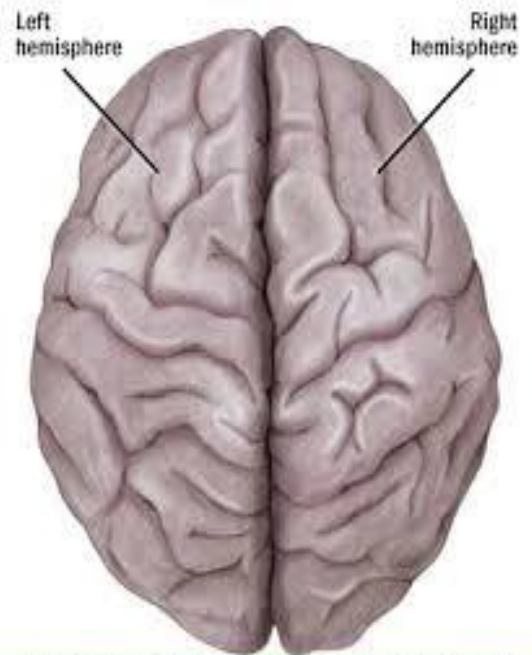
Structures of cerebrum:

Cerebral cortex: Superficial layer of grey matter

White matter (WM): Deeper to the cortex, contains axons to and from the cells of the cortex

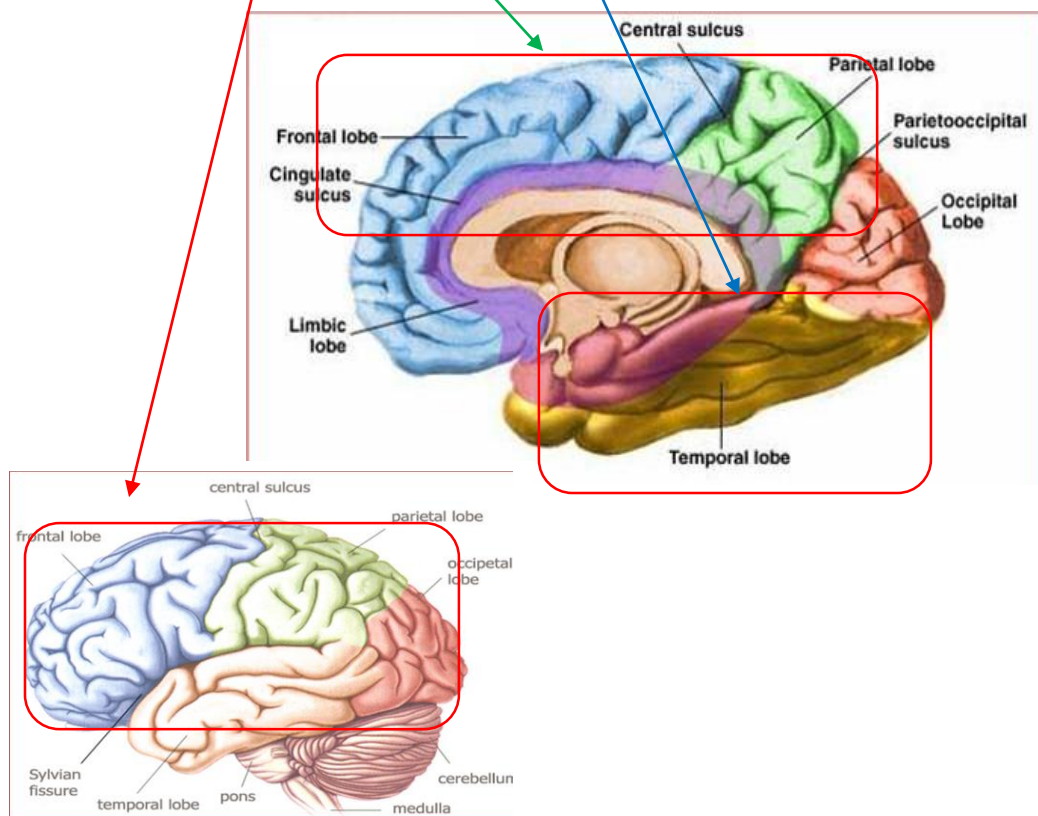
Basal ganglia: Number of nuclear masses buried within the white matter

Lateral ventricle: The cavity of hemisphere



Cerebrum has 3 surfaces:

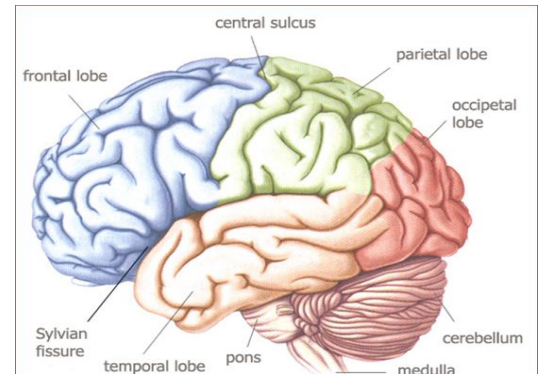
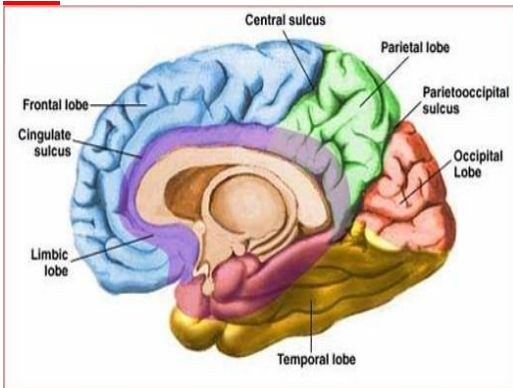
Superolateral, medial and inferior.



Lobes of Cerebrum:

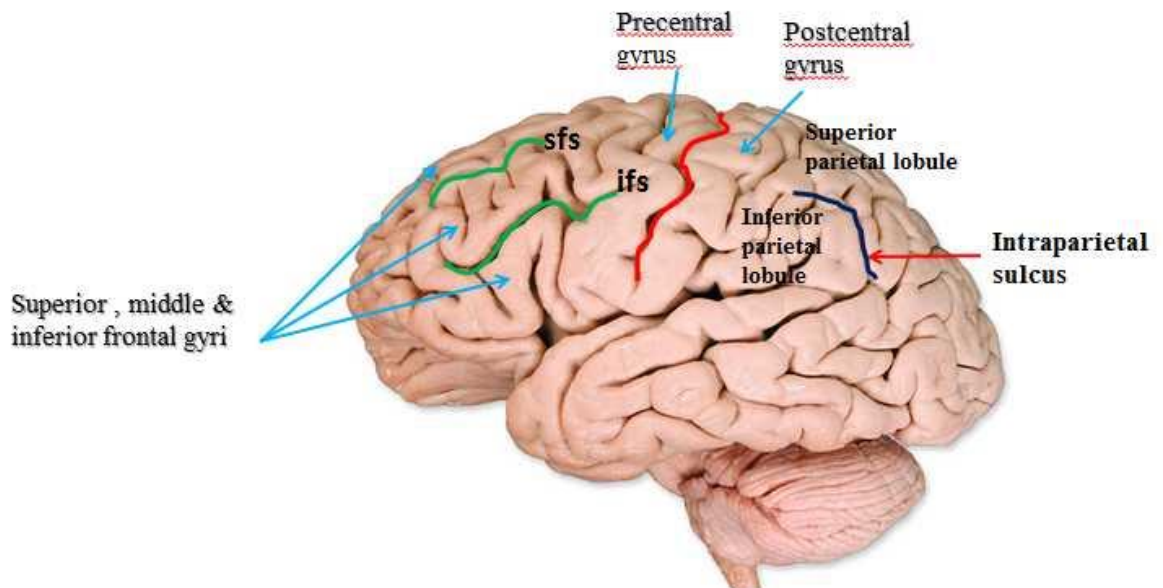
The superficial layer of grey matter is highly convoluted, has ridges (**gyri**) and grooves (**sulci**).

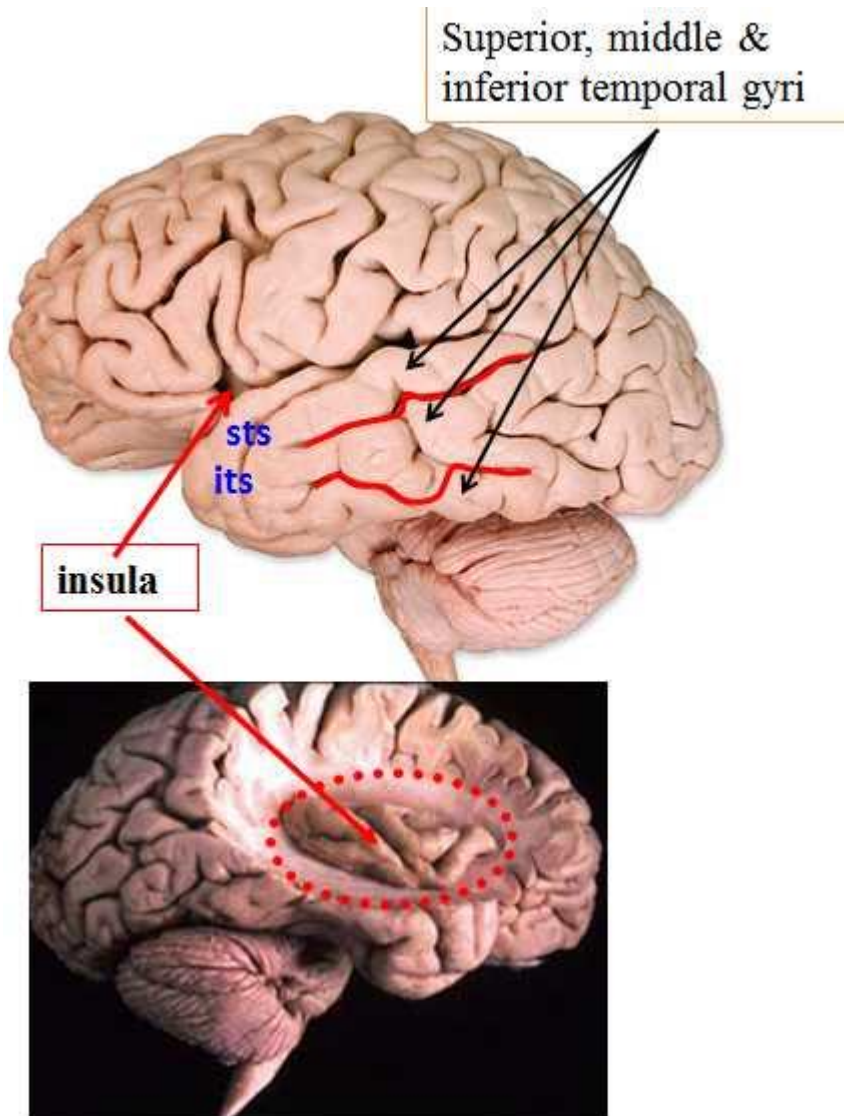
- 3 main sulci:
Central, lateral (Sylvain), parieto-occipital.
- 4 lobes:
Frontal, Parietal, Temporal & Occipital, **Functionally** each hemisphere contains a '**limbic lobe**' on the medial surface.



Functions of lobes:

- **Frontal lobe:** motor function, motivation, aggression, smell and mood
- **Parietal lobe:** reception and evaluation of sensory information
- **Temporal lobe:** smell, hearing, memory and abstract thought
- **Occipital lobe:** visual processing
- **Limbic lobe:** emotions, memory storage & linking conscious intellectual functions with the unconscious autonomic functions.





Superolateral surface:

- Frontal lobe:

Precentral gyrus.

Superior & inferior frontal sulci divide the lobe into superior, middle & inferior frontal gyri.

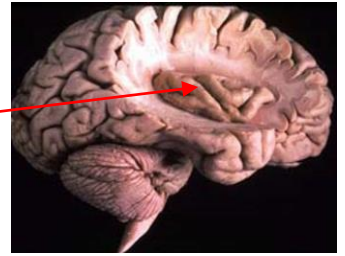
- Parietal lobe:

Postcentral gyrus.

Intraparietal sulcus divide the lobe into superior & inferior parietal lobules.

- Temporal lobe:

Superior & inferior temporal sulci giving rise to superior, middle & inferior temporal gyri.

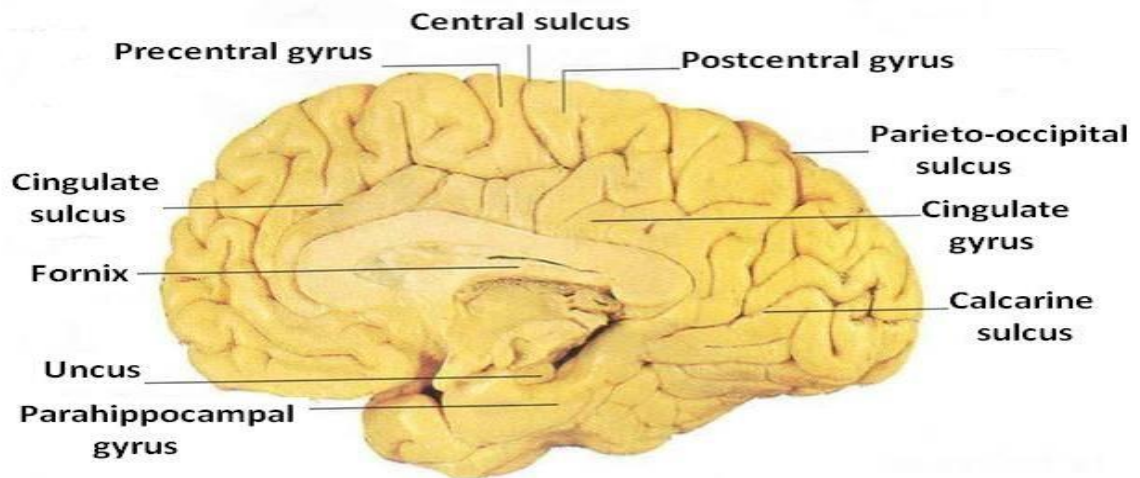


Insula:

The gyrus in the depth of lateral fissure, covered by parts of frontal, parietal & temporal lobes called the **opercula**.

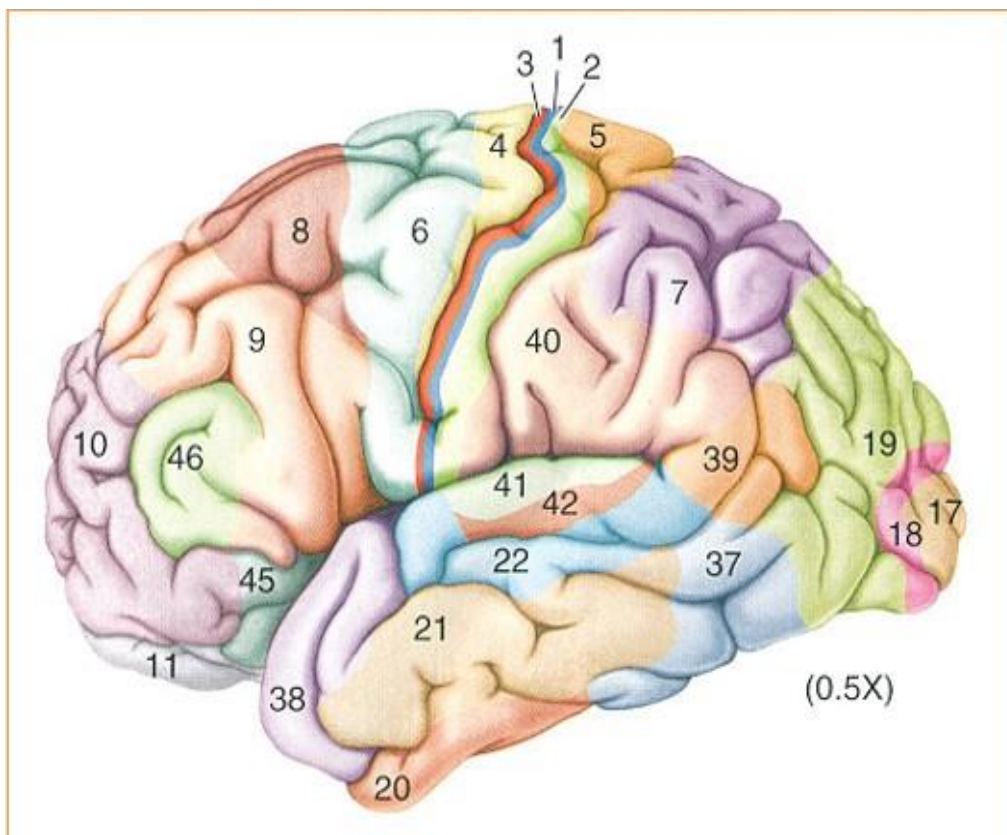
Medial Surface:

- Sulci: **Parietooccipital, Calcarine, Cingulate.**
- Gyri: **Cingulate, Parahippocampal.**



Brodmann's Map:

Subdivisions of the cerebral cortex with similar cellular and laminar structure. why? To identify brain areas.



Functional Areas of the Cerebral Cortex:

Frontal Lobe:

Primary motor cortex:

Located in precentral gyrus (Brodmann area 4).

Premotor cortex:

Located in the region immediately anterior to the precentral gyrus (Brodmann's area 6).

Prefrontal cortex:

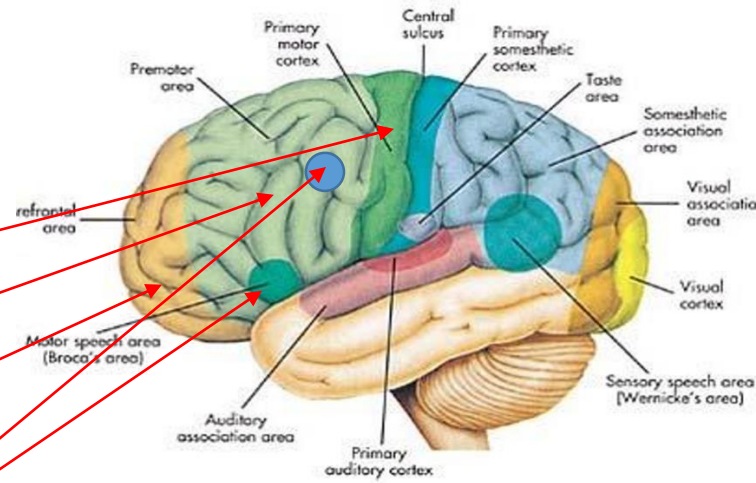
Extensive region of the frontal lobe anterior to premotor area.

Broca's (motor speech) area:

In the inferior frontal gyrus of the dominant hemisphere, usually left (Brodmann's area 44 & 45).

Frontal eye field:

in the middle frontal gyrus immediately in front of motor cortex (Brodmann's area 8).



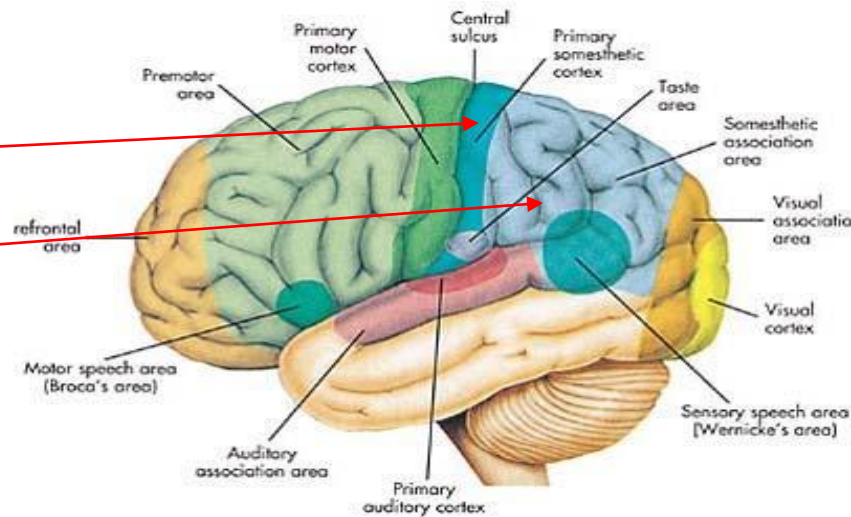
Parietal lobe:

Primary somatosensory cortex:

in postcentral gyrus (Brodmann's area 1, 2, 3).

Parietal association cortex:

Posterior to somatosensory cortex.



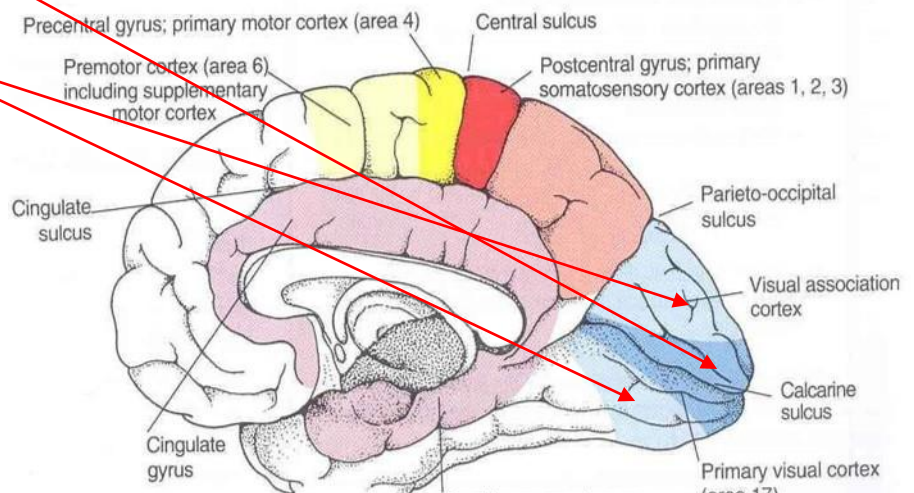
Occipital lobe:

Primary visual cortex:

on the medial surface of the hemisphere, in the gyri surrounding the calcarine sulcus (Brodmann's area 17).

Visual association cortex:

around the primary visual cortex.



Temporal Lobe:

Primary auditory cortex:

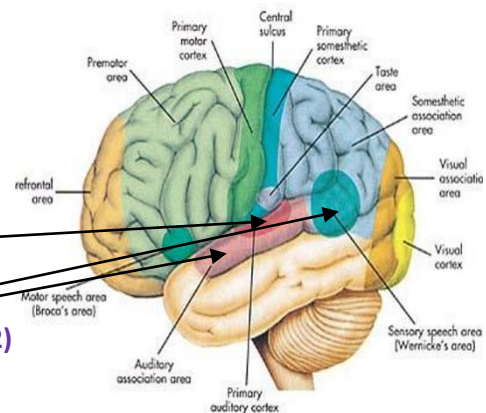
in the superior surface of the superior temporal gyrus (Brodmann's area 41, 42)

Auditory association cortex:

around the primary auditory cortex (also includes Wernick's area)

Parahippocampal gyrus:

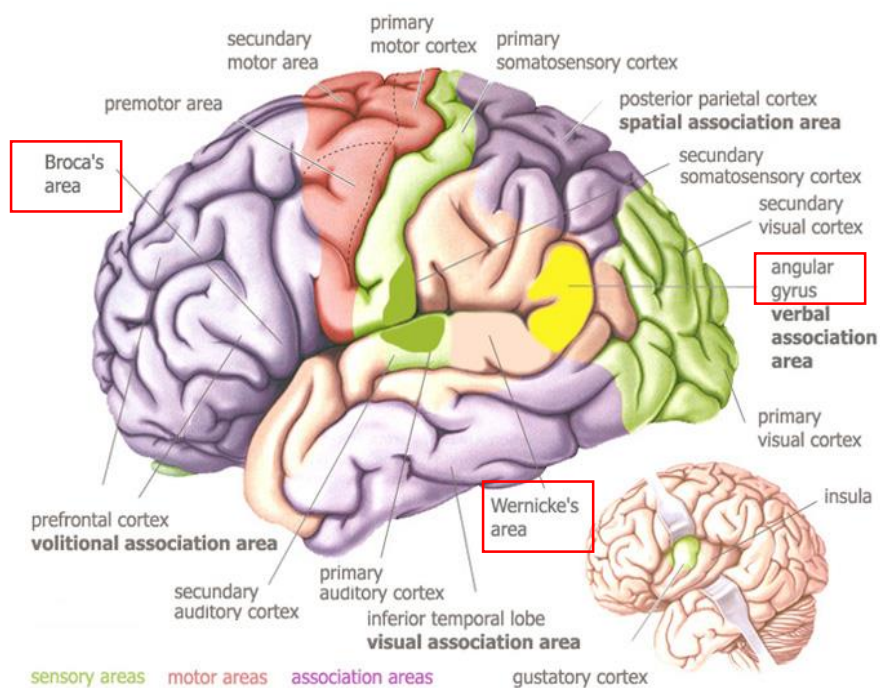
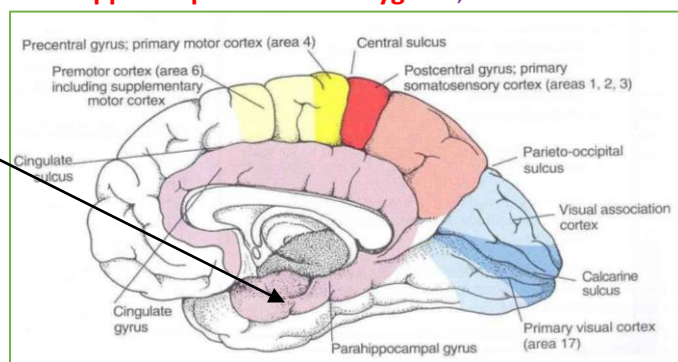
in the inferomedial part of temporal lobe. Deep to this gyrus lies the hippocampus and the amygdala, which are parts of limbic system.



Language Area:

Organized around the lateral fissure.

- **Broca's area:** concerned with expressive aspects of language.
- **Wernick's area:** responsible for comprehension of the spoken words.
- (**angular gyrus & supramarginal gyrus** of the inferior parietal lobule) important in naming, reading, writing, and calculation.



Hemispheric Dominance:

speech centers & mathematical ability is the criterion for defining the dominant cerebral hemisphere.

96% of normal right-handed individuals and 70% of normal left-handed individuals, the left hemisphere contains the language centers. These are left hemisphere dominant.

becomes established during the first few years after birth.

White Matter:

Underlies the cortex, contains nerve fibers, neuroglia cells and blood vessels.

nerve fibers originate, terminate or sometimes both, within the cortex.

Depending on their origin & termination, these nerve fibers are classified into three types: Association, Projection & Commissural

Association fibers: Unite different parts of the same hemisphere, are of two types: long & short

Commissural fibers: Connect the corresponding regions of the two hemispheres.

Projection fibers: Consist of afferent and efferent fibers of the cerebral cortex.