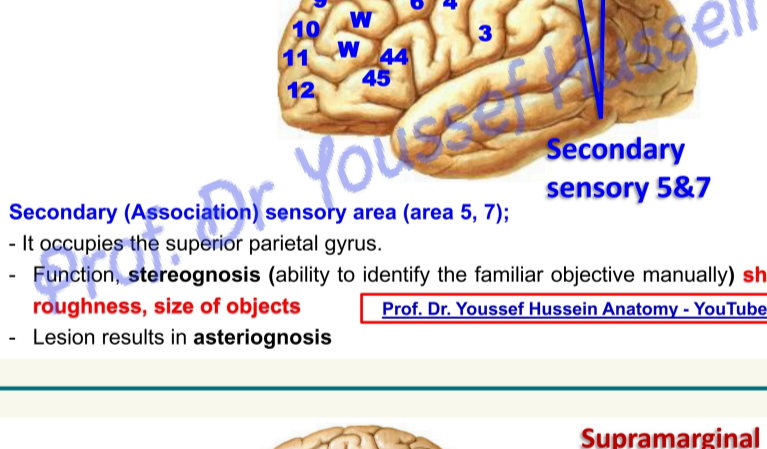
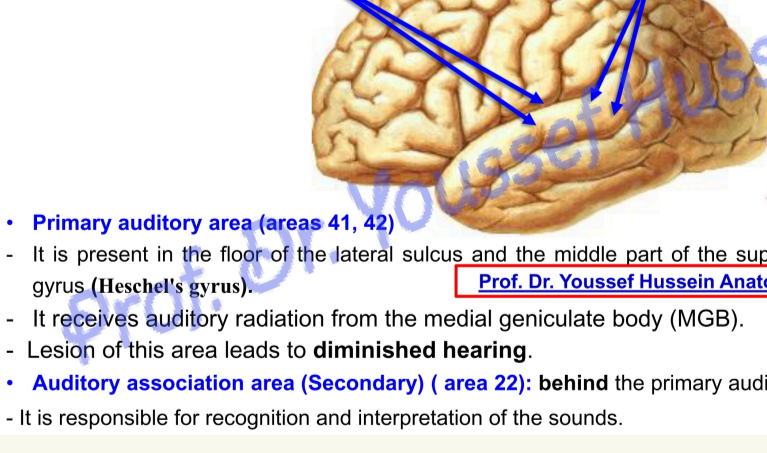


functional areas of superolateral surface of hemisphere ( 1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9 , 10 , 11 , 12 , 22 , 39 , 40 , 41 , 42 , 43 , 44 , 45 )

	number	location	function	damaging	notes	diagrame
motor area	4	precentral gyrus & anterior part of paracentral gyrus	controls motor function of <b>opposite side</b> of the body	contra-lateral hemiplegia (UMNL).	-A body represented in upside down. - <b>size depends on skill, not mass of the muscle</b> - The muscles of the head are represented most ventrally closest to the lateral fissure; then, proceeding dorsally, are the regions for the neck, upper limb, and trunk on the lateral aspect of the hemisphere. - On the medial aspect of the hemisphere is the motor representation for the pelvis and lower limb. - On the medial aspect of the hemisphere is the motor representation for the pelvis and lower limb.	 <ul style="list-style-type: none"> <li>A body represented in upside down.</li> <li>The muscles of the head are represented most ventrally closest to the lateral fissure; then, proceeding dorsally, are the regions for the neck, upper limb, and trunk on the lateral aspect of the hemisphere.</li> <li>On the medial aspect of the hemisphere is the motor representation for the pelvis and lower limb.</li> <li><b>size depends on skill, not mass of the muscle</b></li> <li>Lesion of the area 4 results in <b>contra-lateral hemiplegia (UMNL)</b>.</li> </ul>
premotor area	6	anterior to precentral gyrus	- controls more complex movements - involved in the planning of movements and storage of the learned movements to bring them later on	apraxia		 <ul style="list-style-type: none"> <li>Located anterior to the precentral gyrus</li> <li>It is the origin of extrapyramidal fibers</li> <li>Controls more complex movements</li> <li>Involved in the planning of movements and storage of the learned movements to bring them later on</li> </ul> <p>Dyspraxia results in an apraxia, a disruption of the patterning and execution of learned motor movements.</p> <ul style="list-style-type: none"> <li>Individual movements are intact, and there is no weakness, but the patient is unable to perform movements in the correct sequence.</li> </ul>
frontal eye field Brodmann area	8	anterior to premotor area ( area 6 )	controls movements of the eyes when eyes follow moving target .	inability to make voluntary eye movements toward the <b>contralateral side</b>		 <ul style="list-style-type: none"> <li>Frontal eye field (Brodmann area 8)</li> <li>It lies anterior to the premotor cortex</li> <li>It controls movements of the eyes when eyes follow a moving target.</li> <li>A lesion here results in an inability to make voluntary eye movements toward the <b>contralateral side</b>.</li> </ul>
Broca's area	44 , 45	inferior frontal gyrus	controls muscles of speech ... language production.	aphasia ( inability to speech ) dysarthria ( partial loss of language , difficulty speak )	It brings about the formation of words by its connections with the adjacent primary motor areas; the muscles of the speech. يعني المنطقة رقم 4 يتحكم بالجسم اليمين من الشمال والشمال يمين ، والقوق تحت والتحت فوق ، هي يتربط . بعضلات الكلام يربط في ارتباط بينهم في إنتاج الكلام .	 <ul style="list-style-type: none"> <li>Motor speech (Broca's) area (areas 44, 45) Broca area is inferior frontal gyrus of frontal lobe of the dominant hemisphere (95%). Associated with language production. It brings about the formation of words by its connections with the adjacent primary motor areas.</li> <li>Lesion in this area produces <b>Aphasia</b>—higher-order language deficit (inability to understand/produce/learn language appropriately); caused by pathology in dominant cerebral hemisphere (usually left in right-handed people).</li> <li>Damage of Broca area and primary motor cortex = full loss of language</li> <li><b>Dysarthria</b>—partial loss of language (difficulty speaking), damage to the muscles or nerves that control speech.</li> </ul>
writing area (Exner's area)	-----	middle frontal gyrus	control writing centers	agraphia ( inability to write )		 <ul style="list-style-type: none"> <li>Writing area (Exner's area)</li> <li>It lies in the middle frontal gyrus.</li> <li>The person able to express himself in written words</li> <li>Lesion leading to <b>Agraphia</b> (loss of ability to write)</li> </ul>
prefrontal	9 , 10 , 11 , 12	most anterior part if the frontal lobe ( الناصية )	اي حاجة انها علاقة بالمشاعر ، ومجموعة من قدرات الذهن المتعلقة بالتفكير والتذكر A- Planning التخطيط ، التفكير ، remember حل المشكلات and problem solving والتذكر B- Motivating التحفيز ، emotions الانفعالات ، good & sinful behavior السلوك الحسن والباطن ، المزاج mood الانشطة النفسية ، psychological activities . C- Telling of lie and truth الخفية والحقبة قول الكذب	frontal lobe syndrome		 <ul style="list-style-type: none"> <li>Lesions in the prefrontal area produce what is called the frontal lobe syndrome.</li> <li>It lies in the most anterior part of the frontal lobe</li> <li>It is responsible for:</li> <li>A- Planning التخطيط ، التفكير ، remember حل المشكلات and problem solving والتذكر</li> <li>B- Motivating التحفيز ، emotions الانفعالات ، good &amp; sinful behavior السلوك الحسن والباطن ، المزاج mood الانشطة النفسية ، psychological activities .</li> <li>C- Telling of lie and truth الخفية والحقبة قول الكذب</li> </ul>
somatosensory	1 , 2 , 3	postcentral gyrus and posterior part of paracentral lobule	recive sensation from <b>opposite side</b> of the body ( من اسمها بتعرف انها للاحاساس )	loss of sensation in <b>opposite side</b>	The body represented upside down	 <ul style="list-style-type: none"> <li>Somatosensory (Primary sensory) cortex corresponds to postcentral gyrus (areas 1, 2, 3) posterior part of paracentral lobule</li> <li>It receives sensations from opposite side of body</li> <li>The body represented upside down</li> <li>Lesion in this area leads to <b>loss of sensation</b> in opposite side of the body.</li> </ul>
secondary sensory	5 , 7	superior paraital gyrus	<b>steriognosis</b> (ability to identify the familiar objective manually ... shape, roughness, size of objects)	asteriognosis		 <ul style="list-style-type: none"> <li>Secondary (Associative) sensory area (area 5, 7):</li> <li>It occupies the superior parietal gyrus.</li> <li>Function: <b>steriognosis</b> (ability to identify the familiar objective manually) <b>shape, roughness, size of objects</b></li> <li>Lesion results in <b>asteriognosis</b></li> </ul>
wernicke's area	supramarginal gyrus ( 40 ) angular gyrus ( 39 )	Wernicke area (receptive) in superior temporal gyrus of temporal lobe extending to inferior parietal gyrus, angular and marginal gyri .	- Sensory speech area . <b>speech comprehension</b> - connected to motor speech area, auditory area and visual area.	بشكل عام ، حصيل مشكلة في استيعاب الكلام مش انتاجه ، بالتالي تتكون الكلمات ملخطة وغير مفهومة مثل السلطة - Lesion Associated with <b>impaired language comprehension</b> - Patients do not have insight . Wernicke is a word salad and makes no sense. - Lesion in this area produces <b>sensory aphasia</b> (can not understanding spoken and written words.) The deficit is characterized by fluent verbalization and lacks meaning.	Global aphasia is caused by lesion both Broca and Wernicke areas.	 <ul style="list-style-type: none"> <li>Sensory speech area (Wernicke's- area 39, 40), language comprehension</li> <li>Wernicke area (receptive) in superior temporal gyrus of temporal lobe extending to inferior parietal gyrus, angular and marginal gyri</li> <li>Lesion Associated with <b>impaired language comprehension</b>.</li> <li>Patients do not have insight. Wernicke is a word salad and makes no sense.</li> <li>It is connected to motor speech area, auditory area and visual area.</li> <li>Lesion in this area produces <b>sensory aphasia</b> (can not understanding spoken and written words.) The deficit is characterized by fluent verbalization and lacks meaning.</li> <li>Global aphasia is caused by lesion both Broca and Wernicke areas.</li> </ul>
primary auditory area	41, 42	floor of the lateral sulcus , and the middle part of the superior temporal gyrus ( Heschell's gyrus )	recives auditory radiation from the medial geniculate body	primary auditory area . Auditory association area		 <ul style="list-style-type: none"> <li>Primary auditory area (areas 41, 42)</li> <li>It is present in the floor of the lateral sulcus and the middle part of the superior temporal gyrus (Heschel's gyrus)</li> <li>It receives auditory radiation from the medial geniculate body (MGB).</li> <li>Lesion of this area leads to <b>diminished hearing</b>.</li> <li>Auditory association area (Secondary) ( area 22): behind the primary auditory area.</li> <li>It is responsible for recognition and interpretation of the sounds.</li> </ul>
secondary auditory area Auditory association area	22	behind primary auditory area	recognition and interpretation of sounds			 <ul style="list-style-type: none"> <li>Primary auditory area (areas 41, 42)</li> <li>It is present in the floor of the lateral sulcus and the middle part of the superior temporal gyrus (Heschel's gyrus)</li> <li>It receives auditory radiation from the medial geniculate body (MGB).</li> <li>Lesion of this area leads to <b>diminished hearing</b>.</li> <li>Auditory association area (Secondary) ( area 22): behind the primary auditory area.</li> <li>It is responsible for recognition and interpretation of the sounds.</li> </ul>
gustatory area	43	in the insula .	concerned with the recognition of the taste sensation.			 <ul style="list-style-type: none"> <li>Insula</li> <li>the lips of the lateral sulcus are separated</li> <li>Insula lies at the bottom of the deep lateral sulcus and cannot be seen from the surface unless the lips of the sulcus are separated.</li> <li>Gustatory area (area 43): lies in the insula .</li> <li>It is concerned with the recognition of the taste sensation.</li> </ul>