Handout 2 –2	Brain Structure Functions	Handout 2-2 driving functions
Cerebellum	Influences memory and learning; Coordinates voluntary movement and balance	Coordinates left and right hand movements on the steering wheel
Brain stem		
Medulla	Controls heartbeat & breathing	Regulates breathing and heart rate while we concentrate on driving
Pons		Assists in the coordination of driving motions and in alertness
Reticular formation	Controls arousal & monotony	Regulates our alertness or drowsiness while we are at the wheel
Thalamus	Switchboard between sensory neurons and higher brain regions that deal with seeing, hearing, tasting and touching	Relays visual and auditory cues to areas of the cerebrum
Limbic System		
Hypothalamus	Regulates thirst, hunger, body temperature and sexual behavior. Controls maintenance functions, i.e., eating; Linked to emotion & reward center	Makes us aware when we are too hot or too cold (to adjust the temperature controls), too hungry or thirsty, or in need of a restroom stop
Amygdala	Emotion, such as aggression, rage and fear [and anxiety]	May be active during road rage [i.e., anger generated by another driver behaving recklessly.]
Hippocampus	Memory	Contributes to the formation of memories or road hazards for future trips
Corpus Callosum		Shares sensory and motor driving information from both hemispheres
Cerebral Cortex		
Frontal Lobe	Speaking, muscle movements; making plans & judgments	
Motor Cortex	Moves body parts; sends messages out to the body; controls voluntary movements	Initiates driving actions [e.g., moves the right foot to the gas or brake pedals].
Broca's area		Initiates conversations with passengers or other drivers
Prefrontal cortex	Enables people to feel remorse or learn moral behavior, to make oral decisons	Helps us in planning our routes [e.g., if we notice a hazard or detour
Parietal lobe:	Includes sensory cortex	Helps us determine if our car may fit into a parking space (right parietal lobe).
Somatosensory cortex	Incoming messages from skin and movement of the body parts; registers & processes body sensations	Register the pressure of the right foot on the gas pedal. Ask students to trace the pathway from the right foot to the somatosensory cortex.
Occipital lobe: visual cortex	receives visual info from opposite visual field	Processes the visual road signals (e.g., stop lights, speed limit signs)
Temporal lobe:	Auditory	
Auditory cortex		Processes the sounds of other vehicles (e.g., sirens, horns, passing vehicles)
Wernicke's area		