**Chapter 12- THE CENTRAL NERVOUS SYSTEM** pp. 431-450 Information is from Neuroscience for Kids

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Brain Region | Page | Related Terms | Image | Physiology |
| Cerebral hemisphere | 433-441435-439 | Lobes: frontal,parietal,occipital,temporal, insulaFissure-longitudinal, transverse cerebral, Sulci- ridges separating gyriGyri- spaces between sulciCerebral Cortex- The conscious mind; be aware of ourselves, sensations, to communicate, recall, understand, initiate voluntary movements | 434438 | Most superficialMakes up 83% massThought, voluntary movement, language, reasoning perception1. contains 3 areas: motor, sensory and association
2. hemispheres work together
3. conscious behavior involves the cortex
 |
| Diencephalon | 441-445 | ThalamusThe hypothalamus is composed of several different areas and is located at the base of the brain. The hypothalamus is only 1/300 of the total brain weight. One function of the hypothalamus is the control of body temperature. The hypothalamus detects changes in body temperature and sends commands to adjust the temperature. For example, the hypothalamus can detect fever and respond by sending a command to expand capillaries in the skin. The expansion of the capillaries cools the blood and results in a drop in body temperature. The hypothalamus also controls the pituitary.Epithalamus | 442443443 | The thalamus receives sensory information from other areas of the nervous system and sends this information to the cerebral cortex. The thalamus is also important for processing information related to movement.Autonomic Nervous System1. Emotional response
2. Body temp regulation
3. Regulation of food intake
4. Regulation of water balance/thirst
5. Regulation of sleep-wake cycles
6. Control of endocrine system functioning

Contains pineal gland-secretes melatonin (sleep inducement & antioxidant) |
| Brain Stem | 445-450 | MidbrainPonsMedulla Oblongata | 445447447 | Controls breathingCardio center, respiratory center and various (vomit, hiccup, swllow, cough, sneeze |
| Cerebellum | 450-451 | Located behind the brain stem, the cerebellum is similar to the cerebral cortex because it has hemispheres and a cortex that surrounds the hemispheres |  | Controls balance and equilibrium using the inner ear, eye and skeletal muscles; |

|  |
| --- |
| Meninges1. cover and protect the CNS
2. protect blood vessels and enclose venous sinuses
3. contain cerebrolspinal fluid
4. form partitions in the skull
5. Made up of superficial to interior: Dura Mater, Arachnoid, Pia Mater; all layers are fused together

Cerebrospinal Fluid1. (CSF) found in and around the brain and spinal cord
2. forms liquid cushion that gives buoyancy to the CNS structures
3. reduces brain weight by 97% and prevents brain from crushing under its own weight
4. protects from trauma
5. helps nourish the brain, carries hormones
6. About one half cup of CSF are in an adult

Blood-Brain BarrierA protective mechanism that helps maintain a stable environment for the brain.Injury to the brain 🡪 breaks down the blood brain barrier |

**PNS- PERIPHERAL NERVOUS SYSTEM:** consists of nerves and ganglia found outside of the CNS.

**Cranial Nerves: 12 pairs in the head and neck**; OH, OH, OH, TO TOUCH AND FEEL VERY GOOD VELVET, AH…………. Convert the silly sentence into an illustration in the space below:

|  |
| --- |
| 1. Olfactory: smell
 |
| 1. Optic: vision
 |
| 1. Oculomotor: direct eyeball; eyelid; control lense and pupil
 |
| 1. Trochlear: external eye muscle
 |
| 1. Trigeminal: sensory impulses from skin of face, mucosa of nos/mouth; activate chewing
 |
| 1. Abducens: rolls eye
 |
| 1. Facial: facial expression; lacrimal&salivary glands; taste buds
 |
| 1. vestibucocochlear: balance/hearing
 |
| 1. Glossopharyngeal: swallowing/saliva production
 |
| 1. Vagus: promote digestive activity and help regulate heart
 |
| 1. Accessory: muscles that allow head to rotate and shrug shoulders
 |
| 1. Hypoglossal: tongue movements
 |

**SPINAL NERVES- 31 pairs divided into four plexuses: Cervical, brachial, lumbar, sacral**

|  |  |
| --- | --- |
| Cervical | Diaphragm, shoulder and neck |
| Brachial | Deltoid, triceps, forearm, hand, arm, wrist |
| Lumbar | Lower abs, glutes, thigh, hip, leg |
| Sacral  | Lower trunk, leg, foot |