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Bone Test- Cranial Nerves

For bone test, you just need to know where each nerve exits the skull and summaries 1-17 and questions 1-7 at the end of this review.
Everything else is on the final.

Central nervous system - brain and spinal cord (central=along midline)
Neural tube forms 3 ventricle brain and spinal cord with central canal.
3 ventricle brain forms 5 ventricle brain.
1) Forebrain/prosencephalon—> a) telencephalon—> cerebrum
b) diencephalon—> thalamus, hypothalamus, epithalamus

2) Midbrain/mesencephalon—> mesencephalon—> midbrain

3) Hindbrain/rhombencephalon—> a) metencephalon—> anterior-Pons, posterior-cerebellum
b) myelencephalon—> medulla oblongata

Peripheral nervous system
Cranial nerves-grow out of brain- 12 bilateral pairs
Spinal nerves-grow out of spinal cord- 31 bilateral pairs
CNS and PNS-ways to describe nervous system based on position

How do cranial nerves get out of skull?

Cranial Nerve	Ventricle of Brain	Name of Nerve	Sensory, Motor, or Mixed	Function	Skull Exit
I	Telencephalon	Olfactory nerve	special sensory	smell (nose to brain)	Nasal foramena of cribriform plate of the ethmoid
II	Diencephalon	Optic nerve	special sensory	vision	Optic foramen

III	Mesencephalon	Occulomotor nerve	mixed	**Motor**-innervates intrinsic and 4/6 extrinsic eye muscles. Leaves midbrain to go to muscles. (Contols movement of eye muscles, not what we see. Intrinsic-ex: iris, muscles of lens) **Sensory**-propioception-muscle tells you how contracted it is, enters midbrain from muscles receiving stimulation.	Superior orbital fissure
IV	Mesencephalon	Trochlea nerve	mixed	**Motor**-to 1/6 extrinsic eye muscles **Sensory**-propioception	Superior orbital fissure
V	B/t mes and metencephalon	Trigeminal nerve a) superior = **opthalamic** branch	general sensory	Touch, temp, pressure, propioception. Found from upper eyelid to top of skull	Superior orbital fissure
		b) middle = **maxillary** branch	general sensory	Found from lower eyelid to upper lip and branches innervate upper teeth and roof of mouth=hard palate.	Foramen rotundum
		c) inferior = **mandibular** branch	mixed-general sensory and motor	**General sensory**-lower lip to upper chin, including lower teeth. **Motor**- to muscles of mastication (can raise jaw)	Foramen ovale

VI	Metencephalon	Abducens nerve	mixed	**Motor**-to 1/6 extrinsic eye muscles **Sensory**- propioception	Superior orbital fissure
VII	Metencephalon	Facial nerve	mixed	**Motor**- to muscles that raise and lower eyebrows, corners of eyes, corners of lips (innervates salivary glands) **Sensory**- propioception of facial muscles **Special sensory**- gustation from anterior 2/3 of tongue	enters- Internal auditory meatus, exits- stylomastoid foramen (to reach facial muscles)
VIII	Between metencephalon and myelencephalon	Auditory nerve/ Vestibulocochlear nerve	special sensory	equilibrium- (vestibule) audition- (cochlea)	enters Internal auditory meatus (stays in petrous portion to go to hearing apparatus)
IX	Myelencephalon	Glossopharyngeal nerve	mixed	Goes to tongue and throat. **Motor**- to swallowing muscles. (Innervates salivary glands) **Sensory**- propioception **Special sensory**- gustation from posterior 1/3 of tongue	Jugular canal

X	Myelencephalon	Vagus nerve	mixed	exits skull, goes down neck to chest cavity-touches e/t in between, sends nerves to stomach, heart...and ends at anus. **Motor**-to pharyngeal muscles-skeletal muscles in neck and throat. Can help modify peristalsis-ex: speed it up. Part of parasympathetic nervous system-ex: innervates heart to slow down heart rate. **Sensory**-from visceral organs-ex: sense when stomach or bladder is full **Special sensory**-gustation-innervates epiglottis for taste (most taste has to do with tongue though)	Jugular canal
XI	Myelencephalon	Accessory nerve (spinal)	mixed	comes from medulla oblongata. **Motor**- innervates neck muscles-ex: trapezius and sternocleidomastoid (upper shoulder and back muscle-turning head pulls mastoid process and muscle splits into 2 bands-1 to sternum and 1 to clavicle) **Sensory**-propioception to these muscles.	Superior branch-Jugular canal Inferior branch-Foramen magnum

XII	Myelencephalon	Hypoglossal nerve	mixed	**Motor**-to muscles of tongue **Sensory**-propioception	Hypoglossal canal

Summaries:

1) **Superior orbital fissure**
Cranial nerves III, IV, VI, and superior branch of V

2) **Jugular canal**
Cranial nerves IX, X, and superior branch of XI, internal jugular vein

3) **Foramen magnum**
medulla oblongata, meninges (dura mater, arachnoid, pia mater), inferior branch of cranial nerve XI, vertebral arteries and veins

4) **Foramen rotundum**- maxillary branch of cranial nerve V

5) **Foramen ovale**- mandibular branch of cranial nerve V

6) **Carotid canal**- internal carotid artery

7) **Hypoglossal canal**- cranial nerve XII

8) **Optic foramen**- optic nerve (cranial nerve II)

9) **Nasal foramena**- branches of cranial nerve I

10) **Crista galli**- where meninges attach

11) **Internal auditory meatus**
Cranial nerve VII and VIII

12) **Stylomastoid foramen**- Cranial nerve VII

13) **Transverse foramen**- vertebral arteries and veins

14) **External auditory meatus**- sound waves

15) **Mental foramen**- mental nerve

16) **Nasal cavity**- air

17) **Intervertebral foramen**- spinal nerves

18) **Special sense only**
Cranial nerves I, II, and VIII

19) **Special senses**
Cranial nerves I, II, VII, VIII, IX, and X

20) **Gustation**
Cranial nerves VII, IX, and X

21) **Eye muscles**
Cranial nerves III, IV, and VI

22) **Salivary Glands**
Cranial nerves VII and IX

Questions:
1) Where does medulla end?
Between cervical vertebrae 1 and 2 (atlas and axis)

2) Where does spinal cord begin?
Between cervical vertebrae 1 and 2 (atlas and axis)

3) Where does spinal cord end?
Between lumbar vertebrae 1 and 2 (L1 and L2)

4) Where are spinal nerves found?
Between vertebrae

5) What is **cauda equina**?
Makes up lower lumbar nerves and sacral nerves-runs through lumbar vertebrae after spinal cord ends
It ends as one nerve= **filum terminale**.

6) What is found running through atlas?
Medulla oblongata and meninges

7) What is found running through axis and the rest of cervical vertebrae and thoracic vertebrae?
Spinal cord and meninges