ANATOMY

THE SKULL

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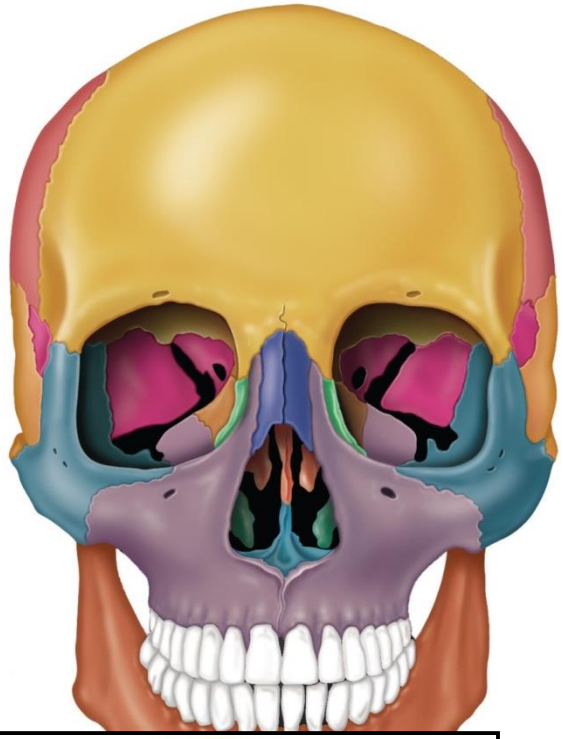
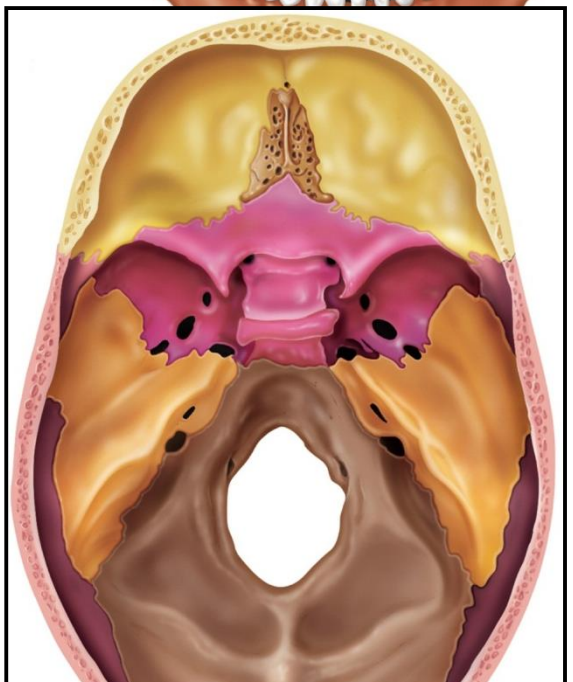
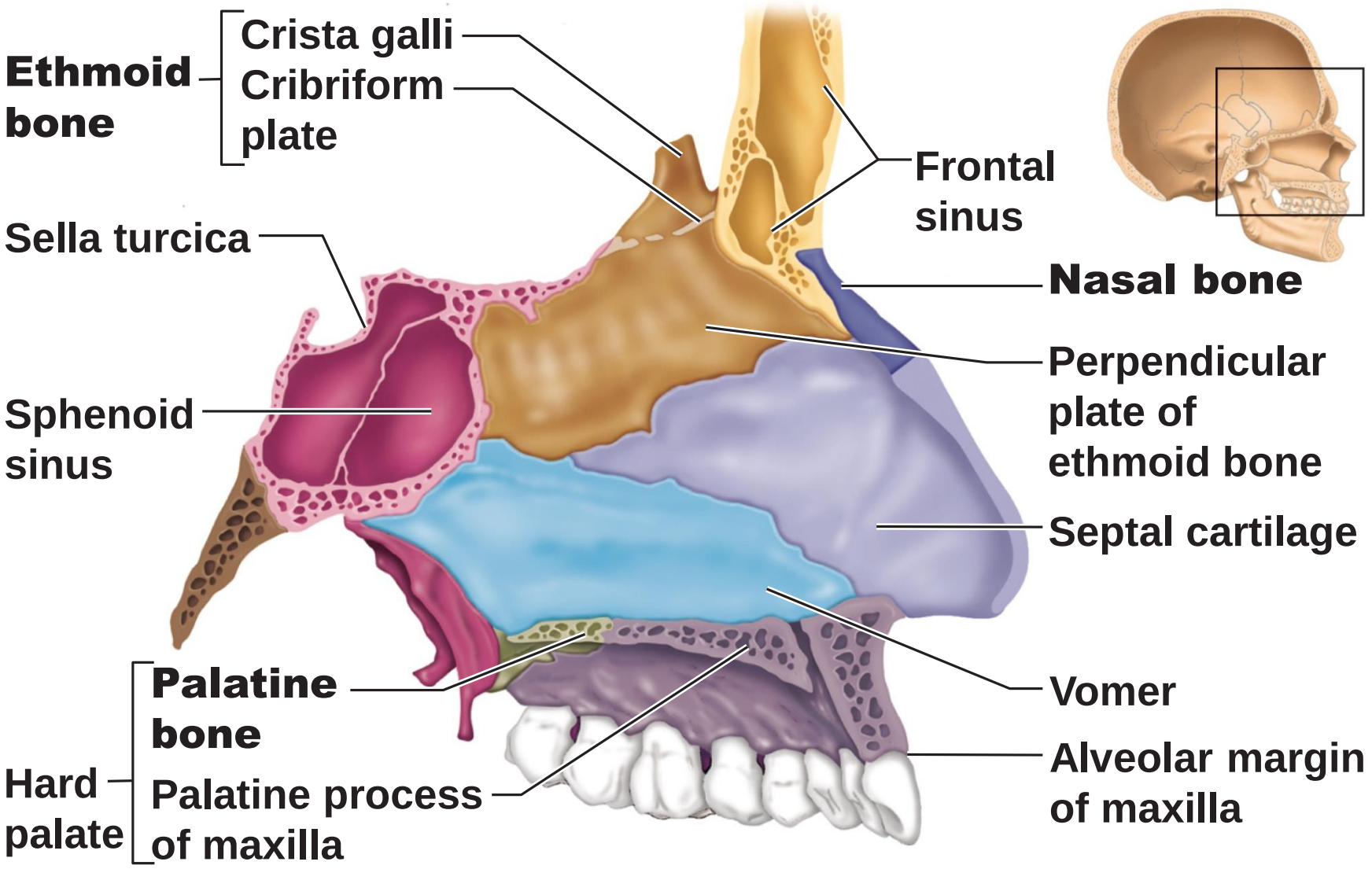
F. Ethmoid Bone

- Deepest skull bone
- Contributes to
- **Perpendicular Plates–**
- **Superior & Middle Nasal Concha–**
- **Cribriform Plate–**
- **Crista Galli–**





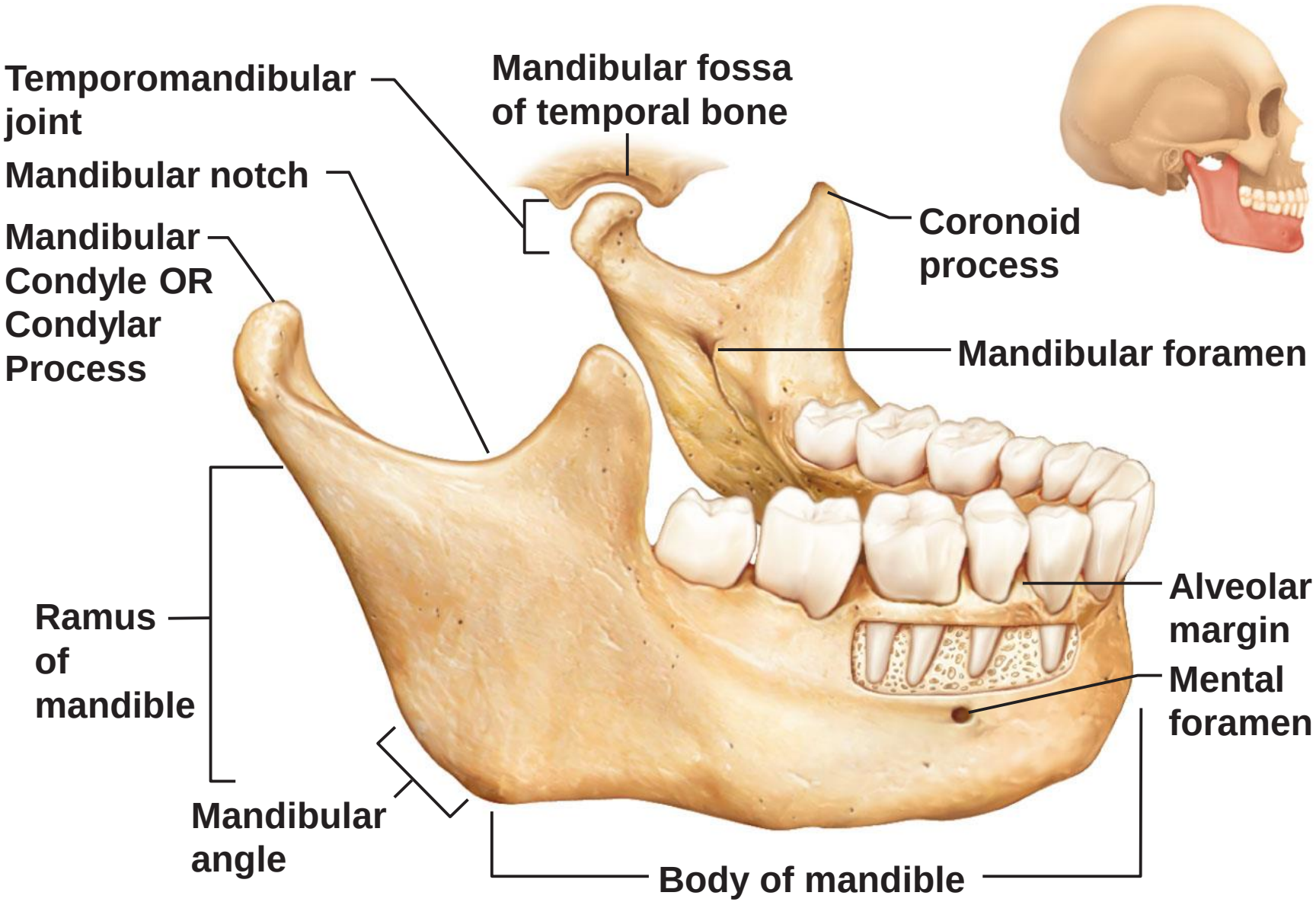
- Foramina of the Ethmoid
  - **Olfactory foramina**
    - In the cribriform plate
    - For olfactory nerves



(b) Nasal cavity with septum in place showing the contributions of the ethmoid bone, the vomer, and septal cartilage

Figure 7.14b

A. Mandible …



(a) Mandible, right lateral view

Figure 7.11a

- The Mandible
  - Foramina of the mandible
    - **Mental foramina**:
      - for sensory nerves of lips and chin
    - **Mandibular foramen**:
      - entrance to the *mandibular canal*
      - for blood vessels and nerves of lower teeth

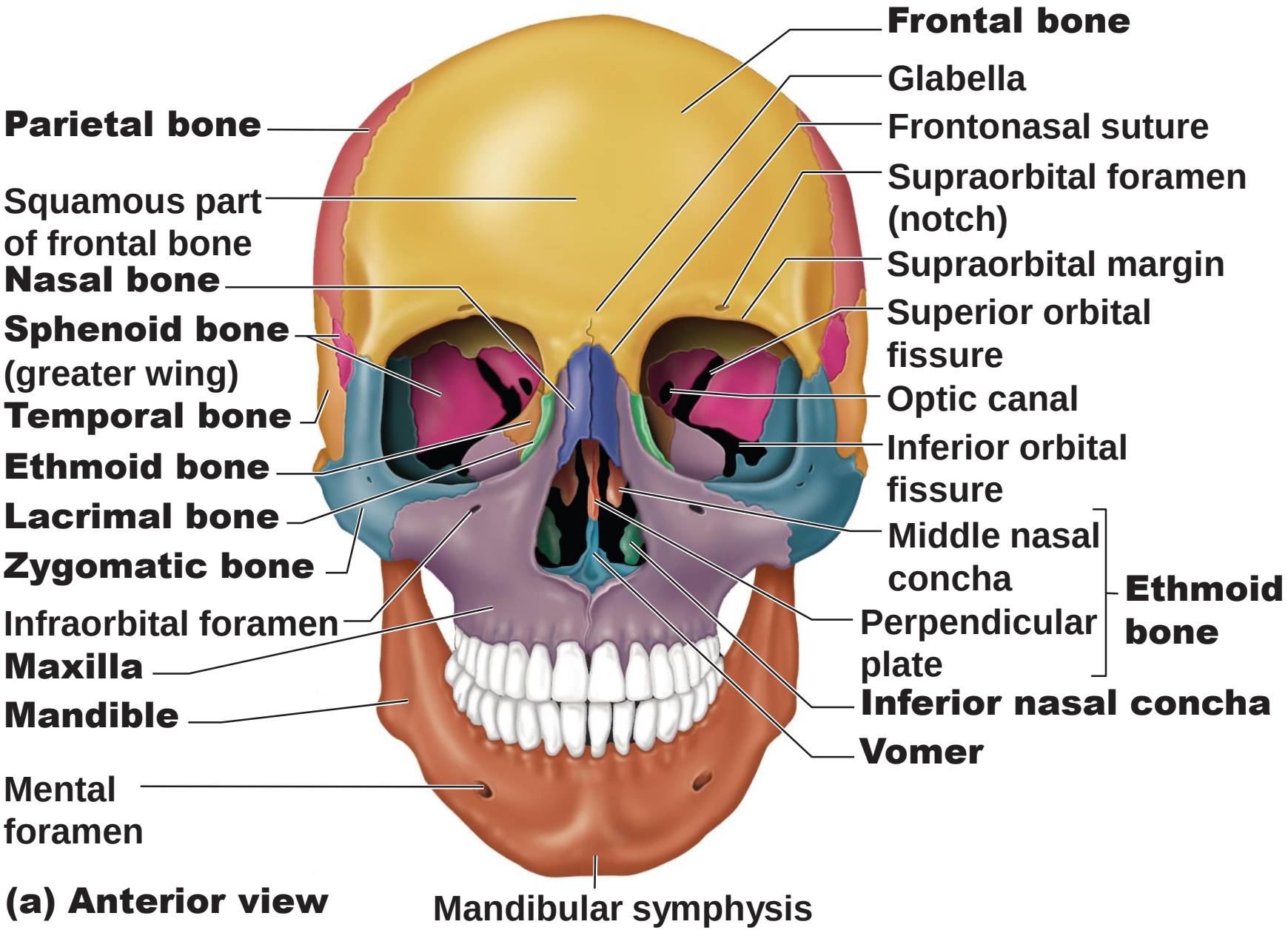
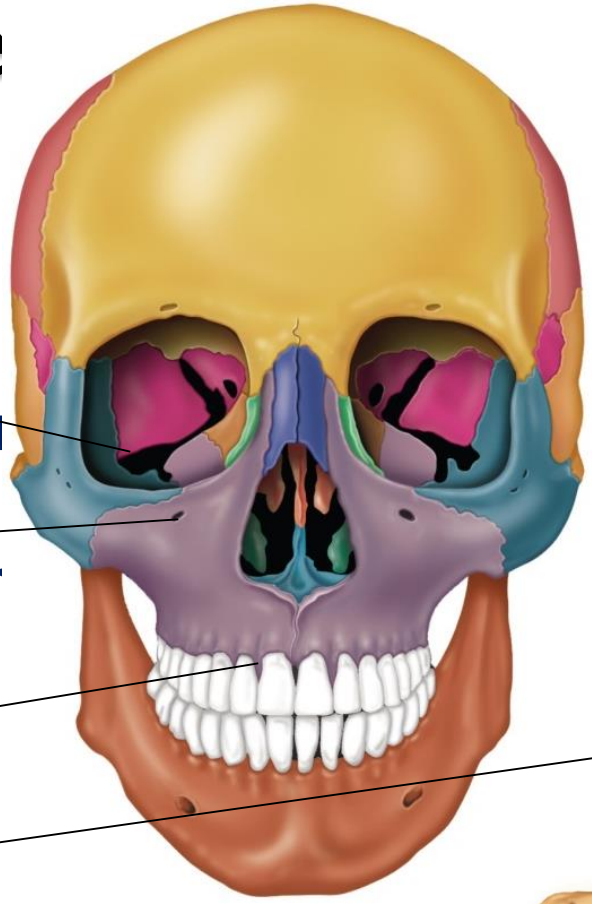


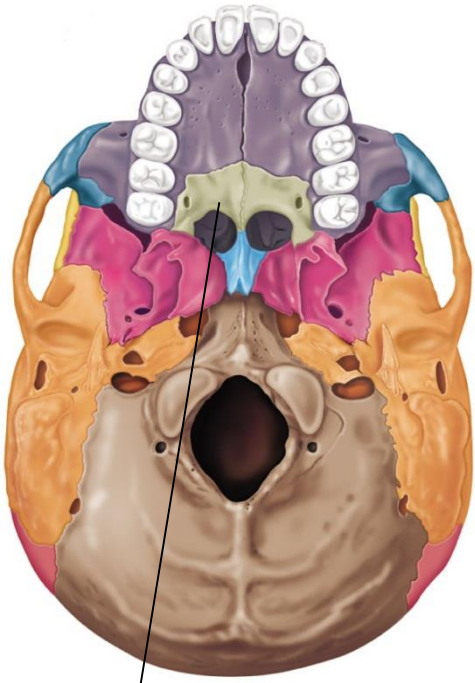
Figure 7.4a

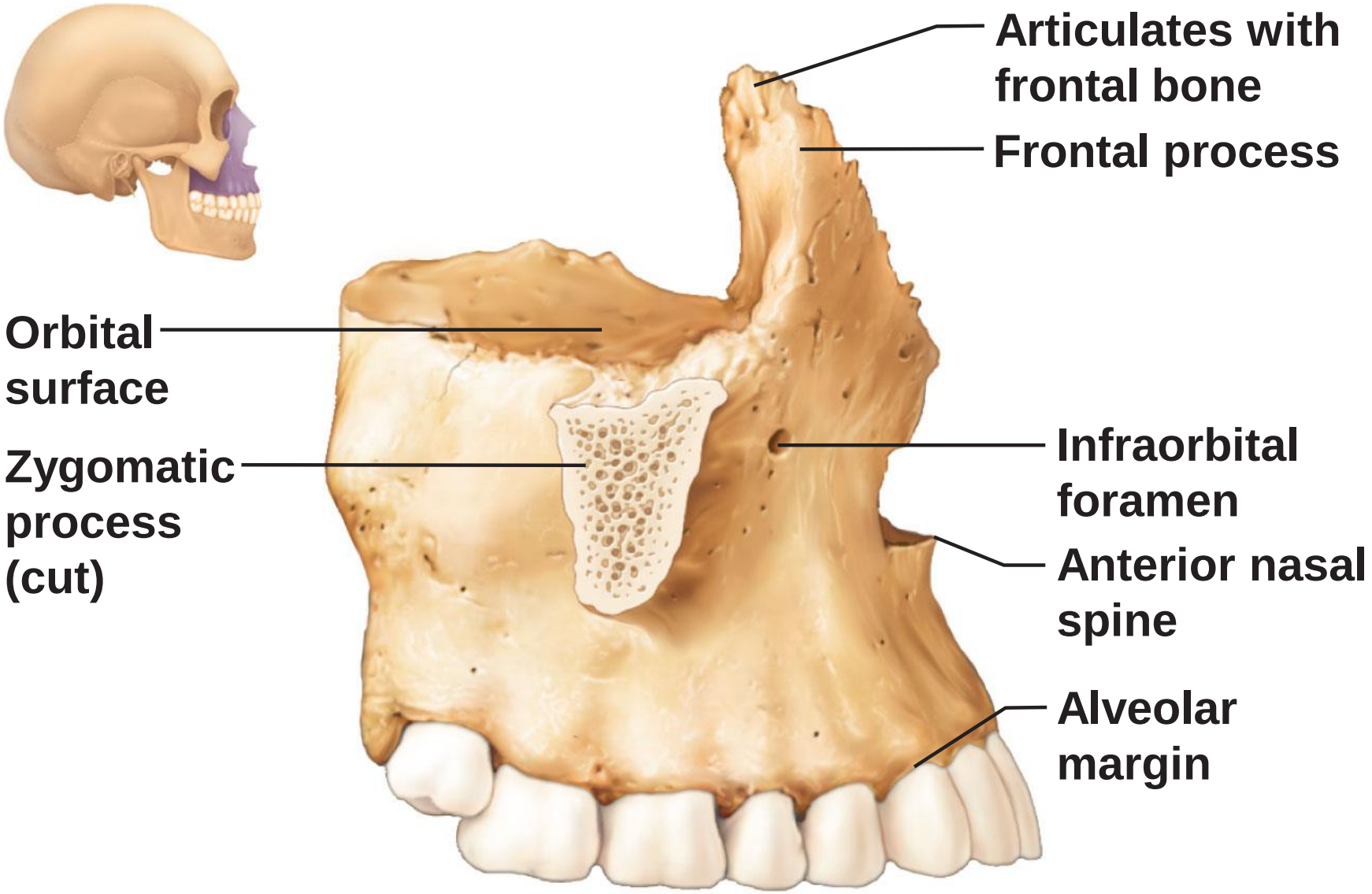
B. Maxillary Bone

- Medially fused =
- Keystone bones

- **Inferior Orbital Fissu**
- **Infraorbital Foramer**
- **Alveolar Process**
- **Palantine Process—**

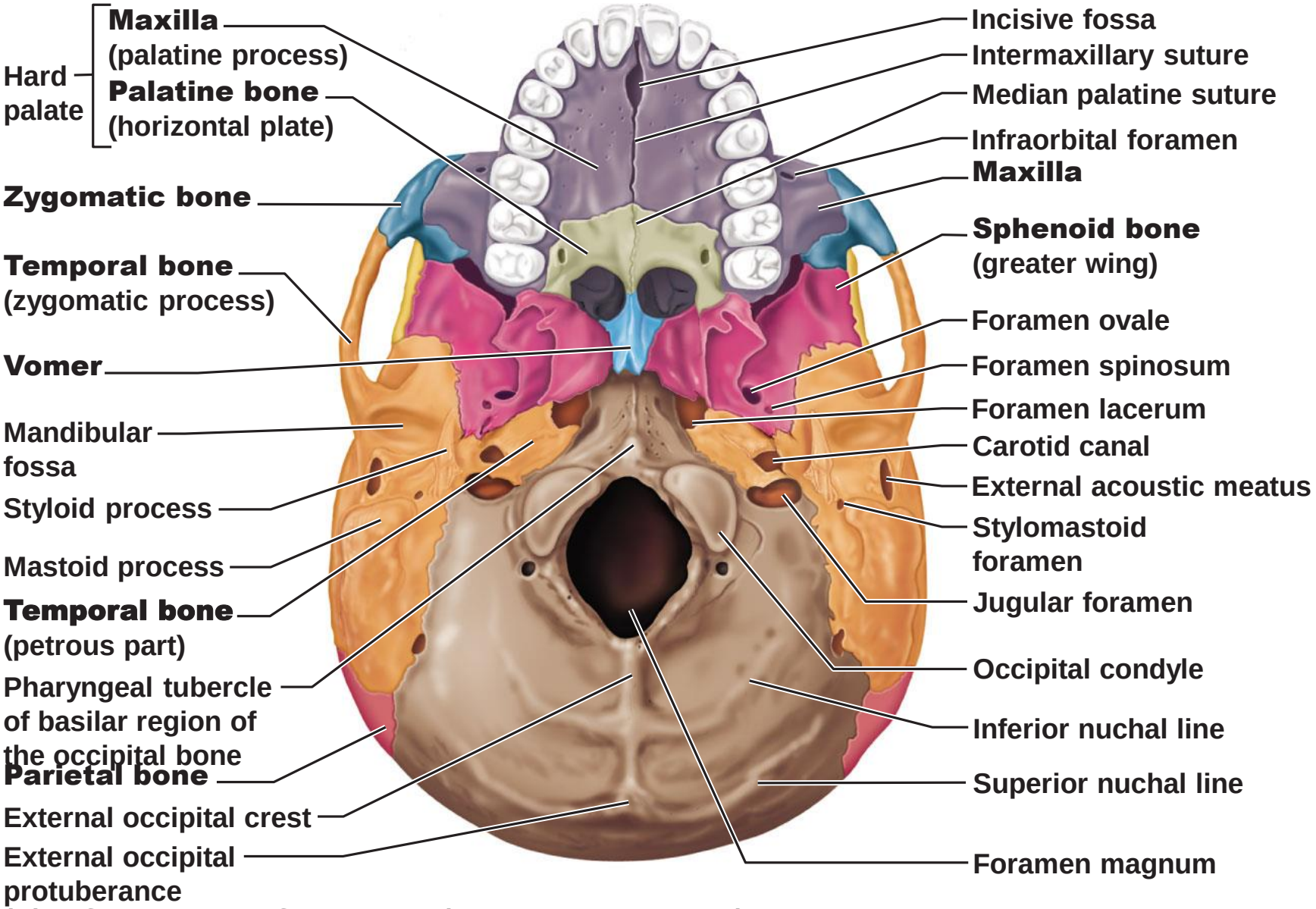






(b) Maxilla, right lateral view

Figure 7.11b

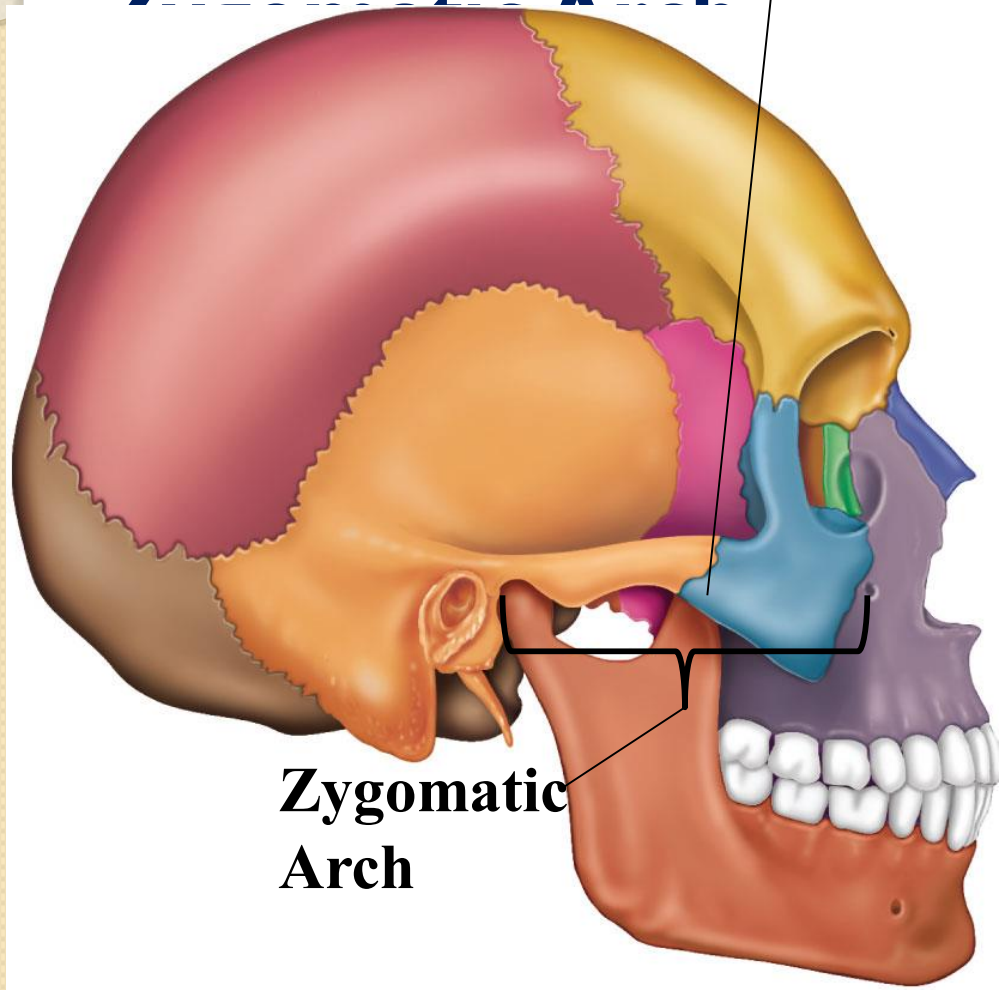


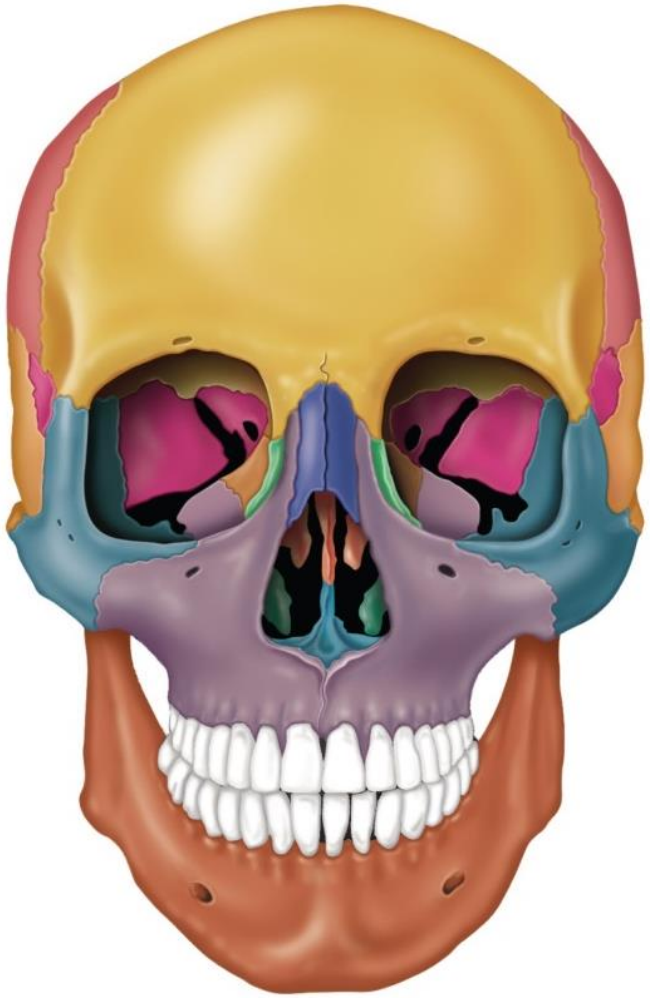
(a) Inferior view of the skull (mandible removed)

Figure 7.6a

C. Zygomatic Bones

- Cheekbones
- **Temporal Process–**



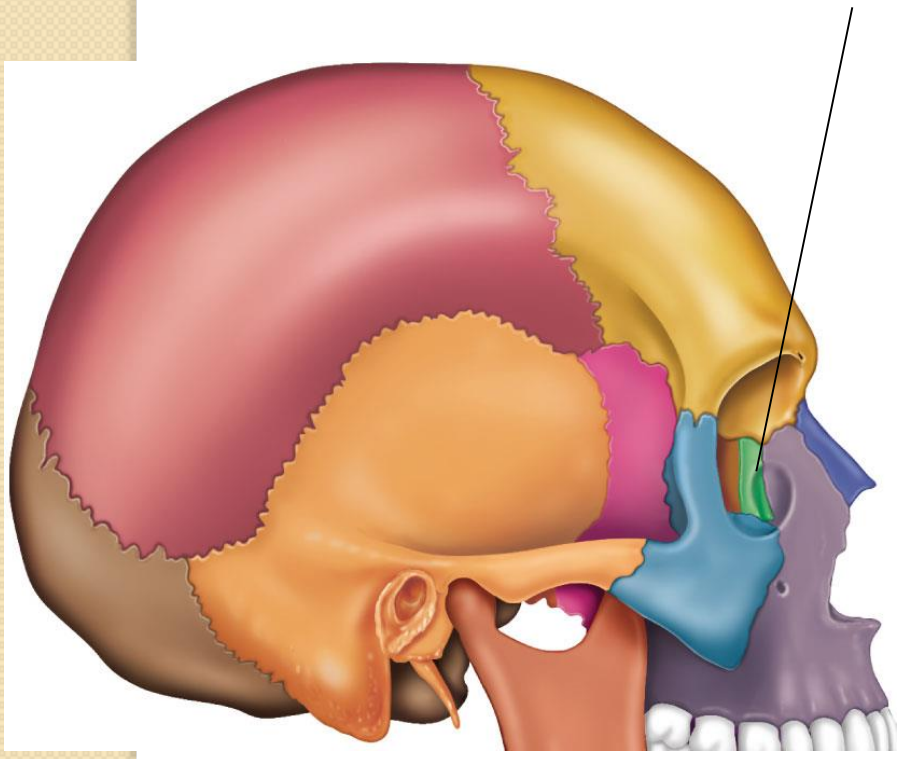


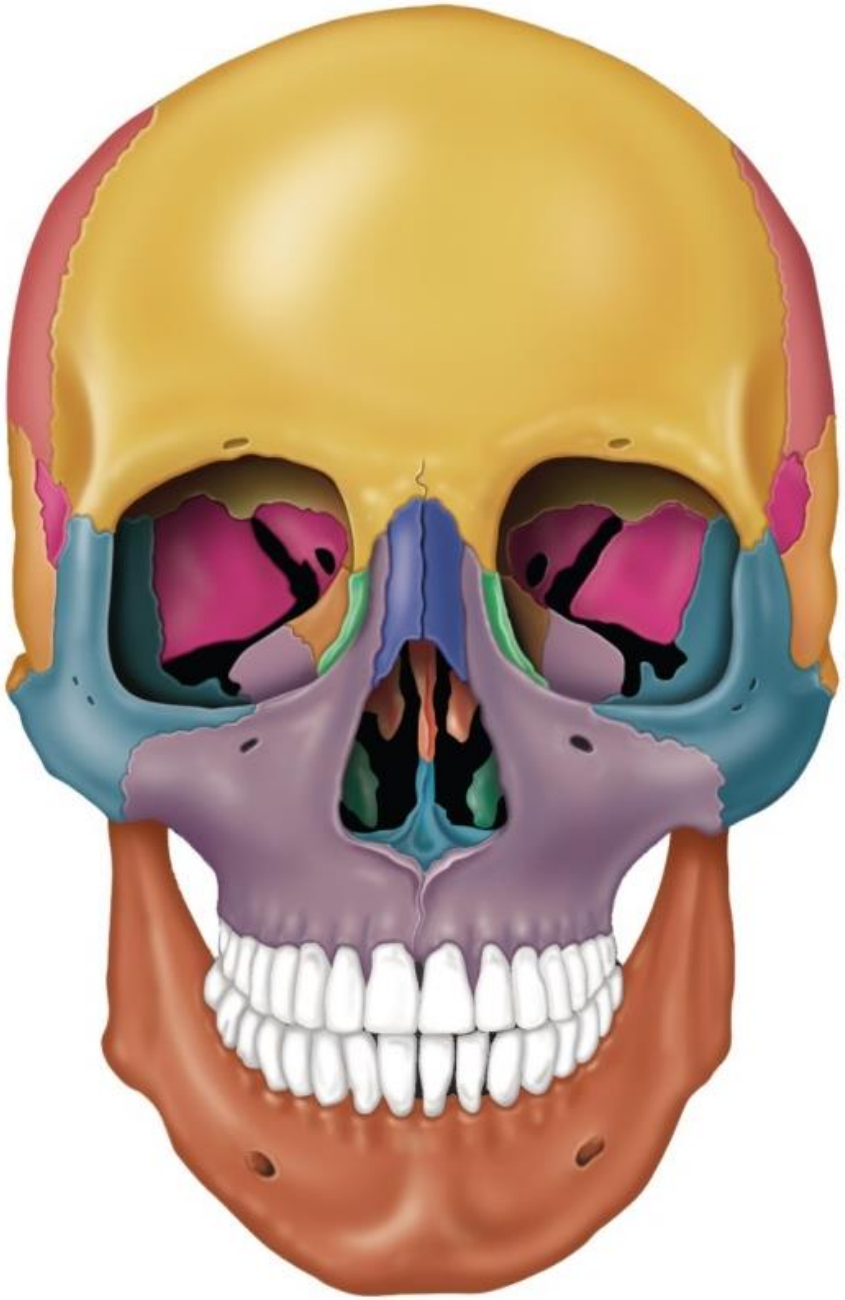
- Zygomaticofacial foramen
  - For sensory nerves of cheeks

D. Nasal Bones

E. Lacrimal Bones

- **Lacrimal fossa = Nasal-lacrimal Groove**:





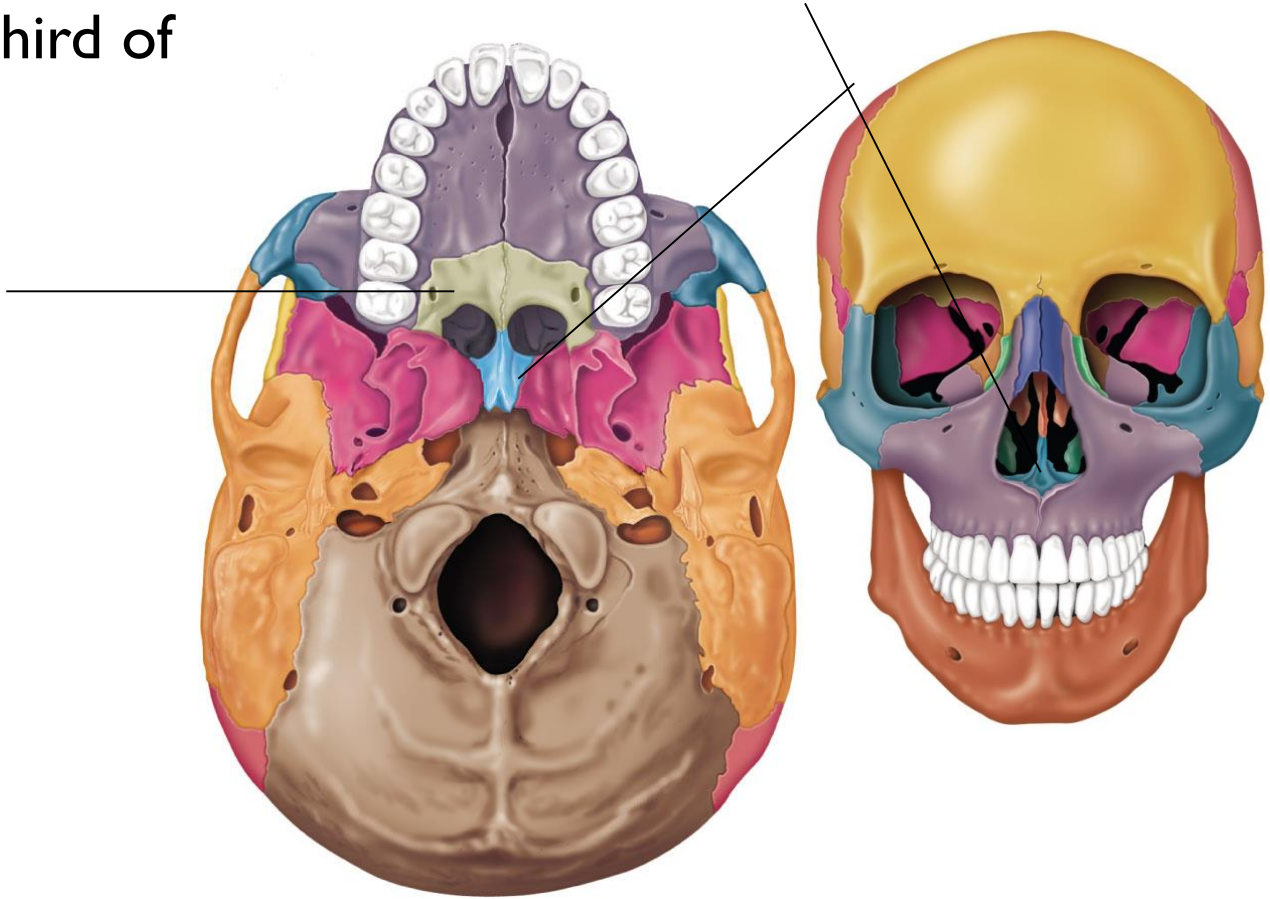
Palatine Bones and Vomer

F. Palatine bones

- Posterolateral walls of the nasal cavity
- Small part of the orbits
- Posterior one-third of hard palate via
  - **Horizontal P.**

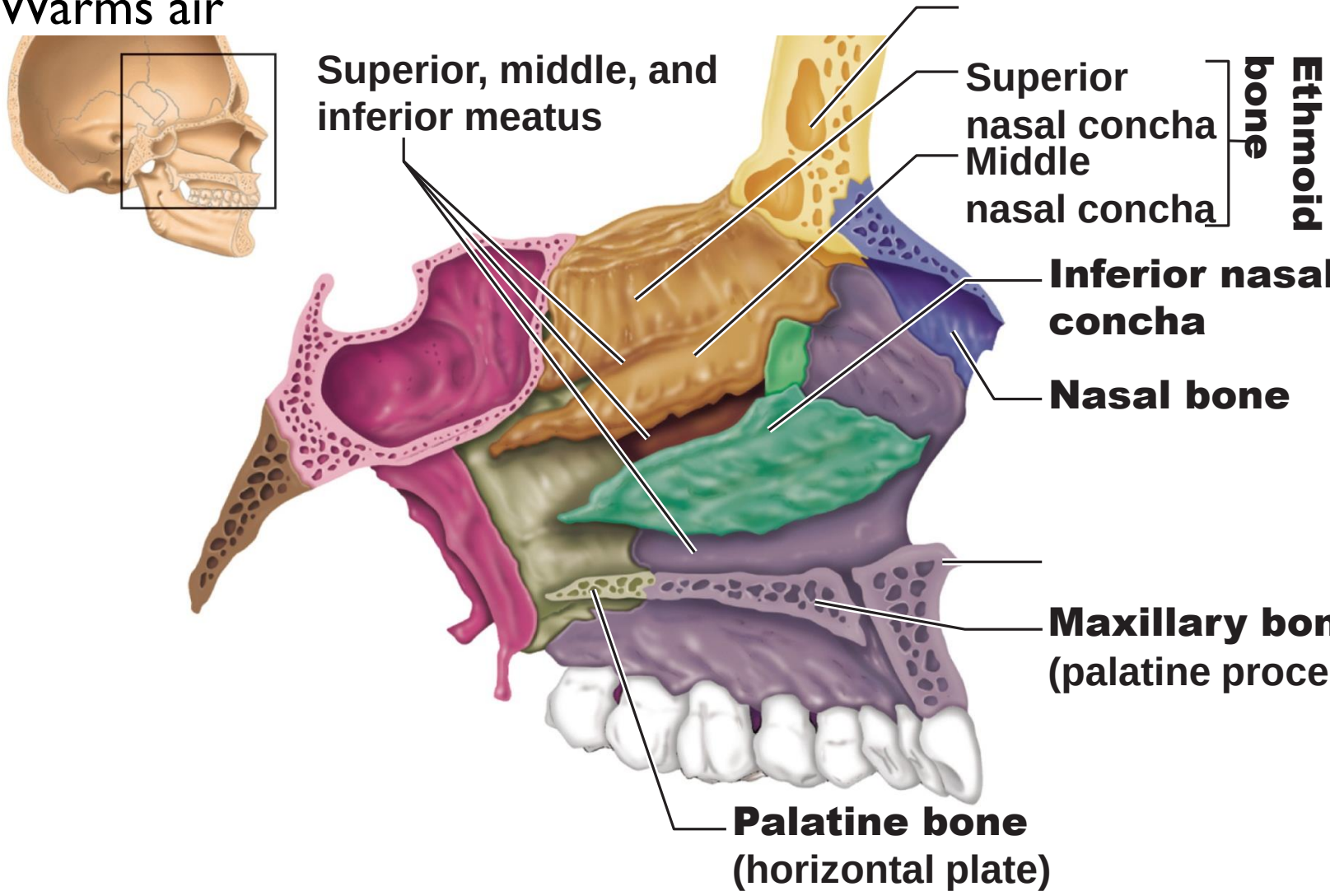
G. Vomer

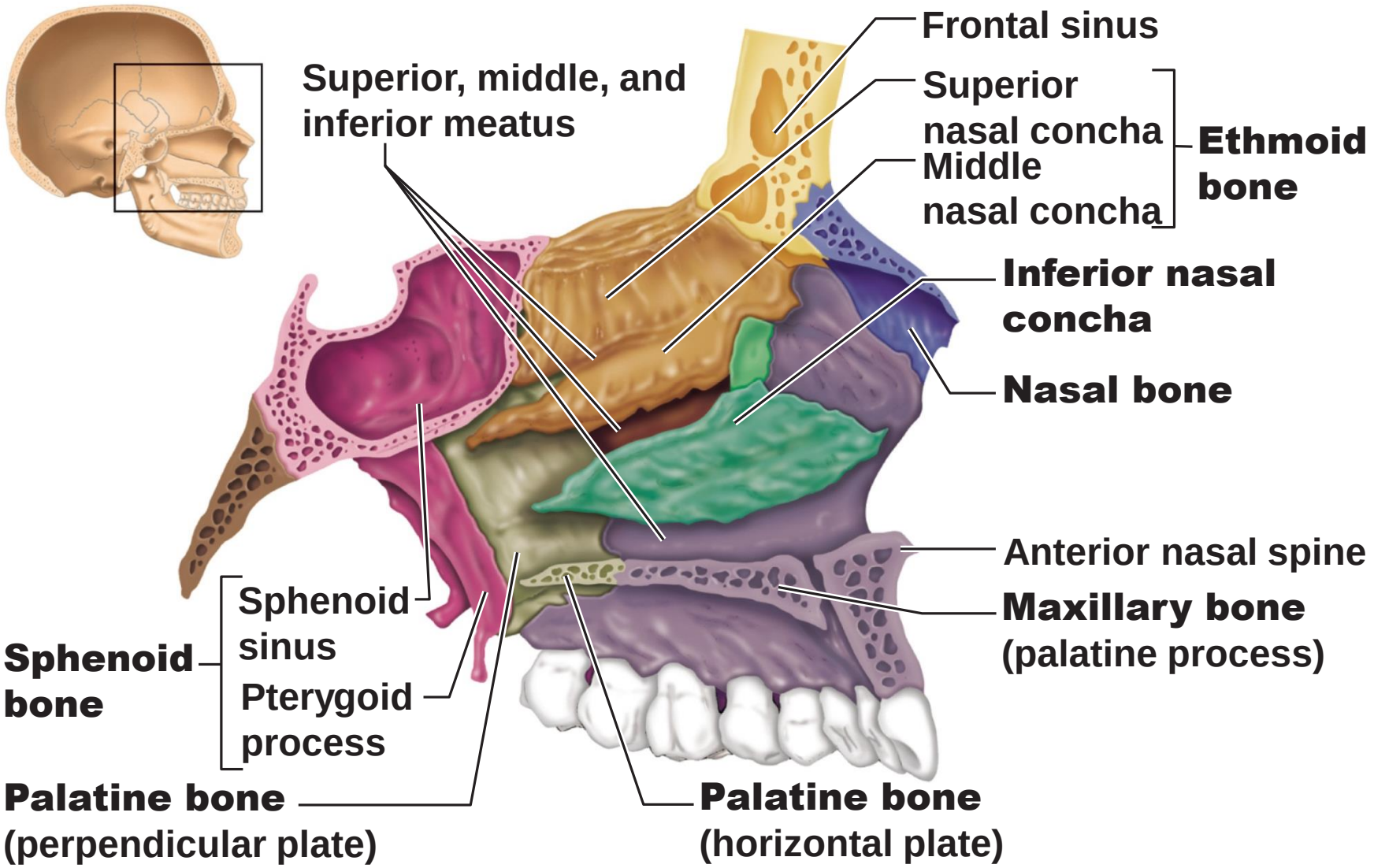
- Plow shaped
- Lower part of nasal septum



H. Inferior Nasal Conchae

- One of the 3 Nasal Conchae
- Form part of lateral walls of nasal cavity
- Warms air

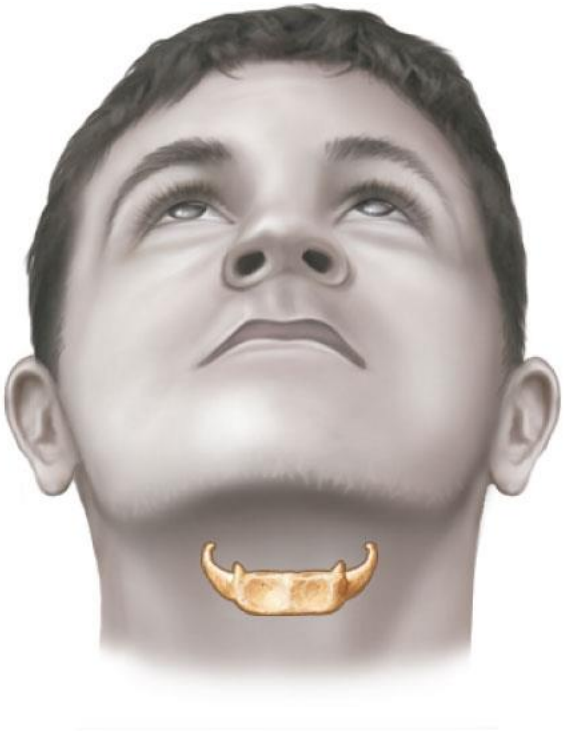




(a) Bones forming the left lateral wall of the nasal cavity (nasal septum removed)

Figure 7.14a

IV. Hyoid Bone—Students do



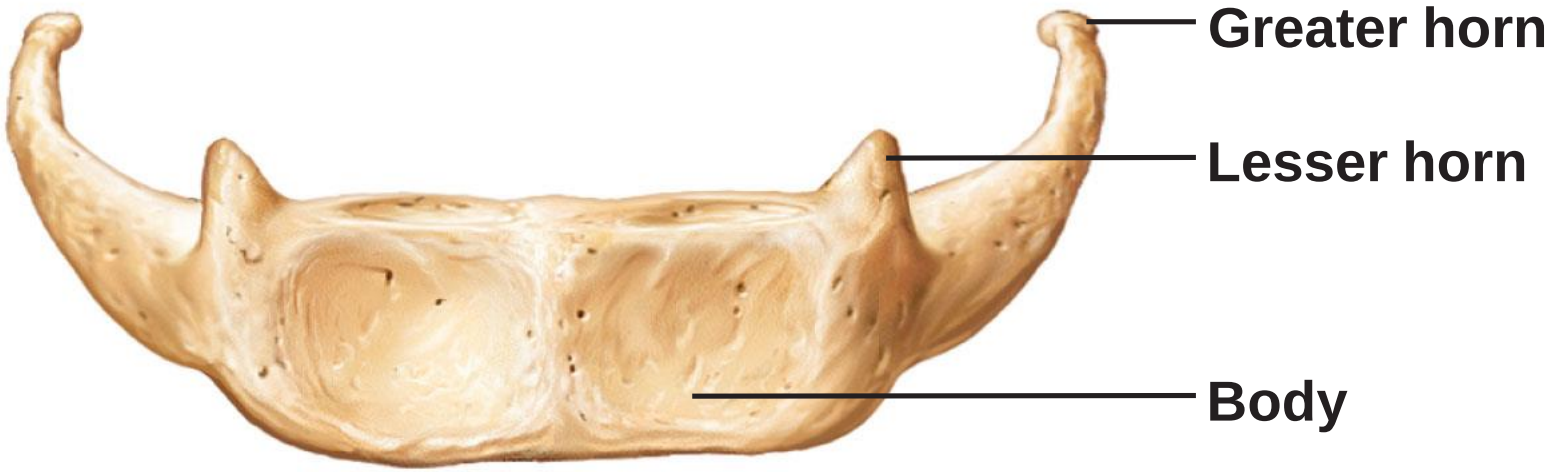
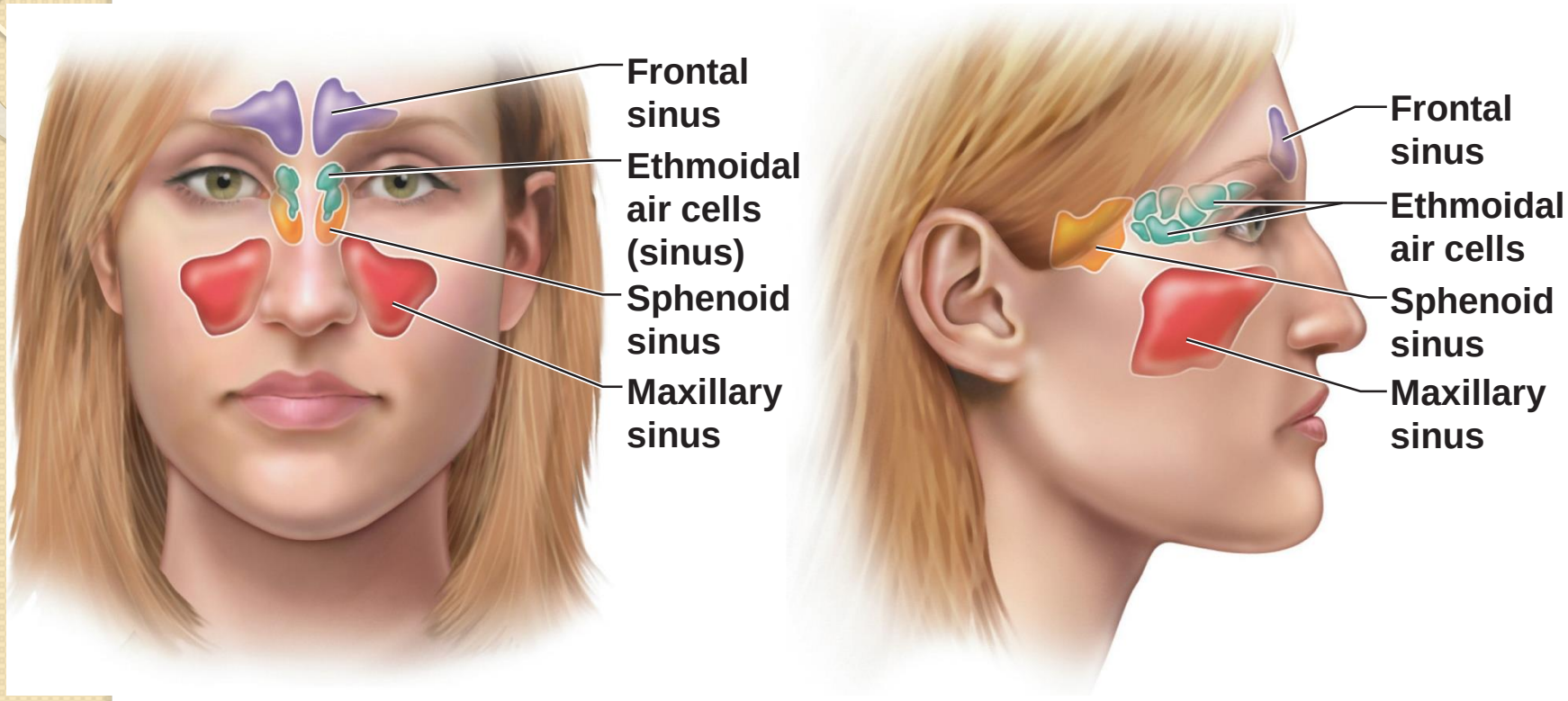


Figure 7.12

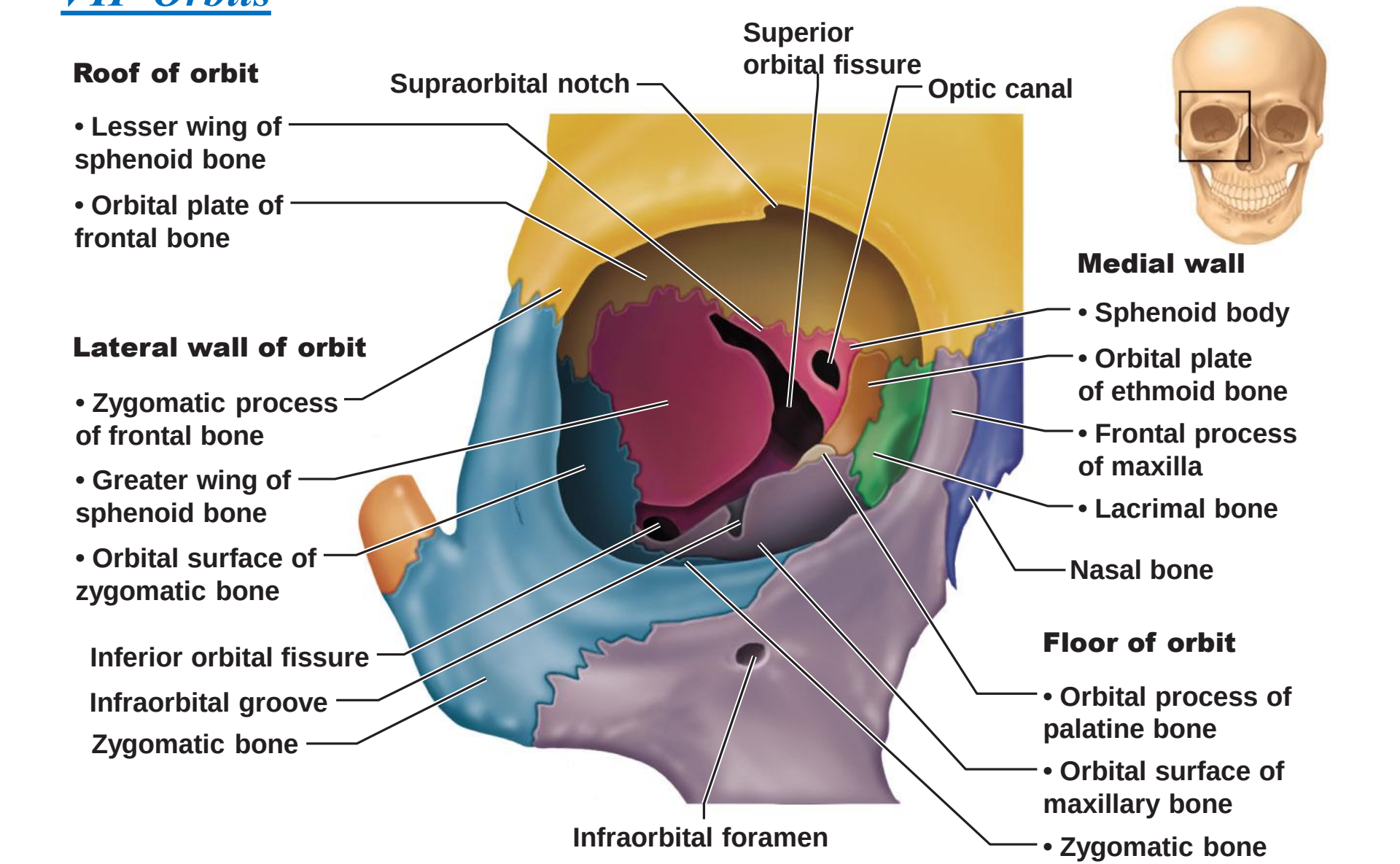
V. Paranasal Sinuses– Students do



(a) Anterior aspect

(b) Medial aspect

VII Orbits



(b) Contribution of each of the seven bones forming the right orbit

Figure 7.13a

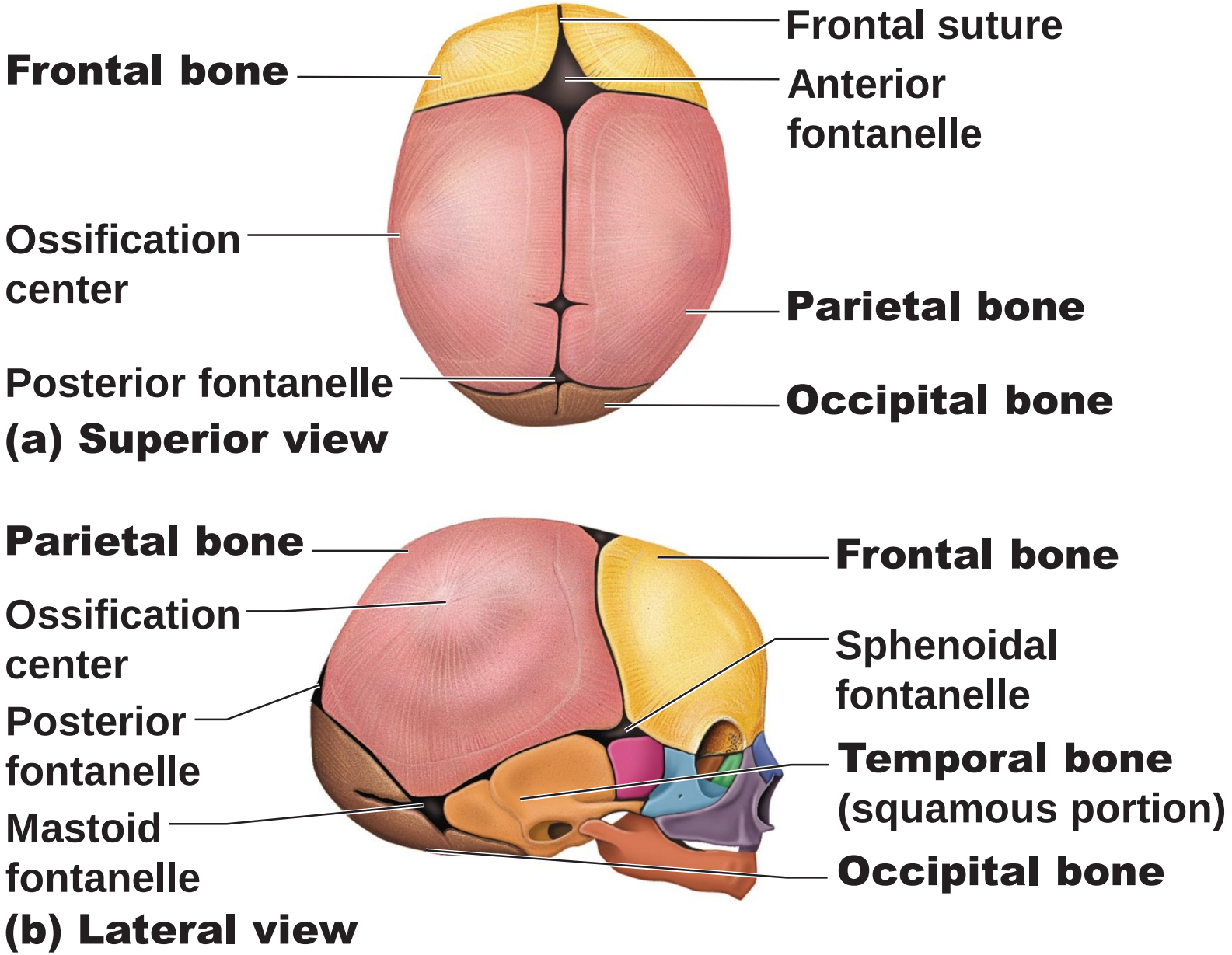
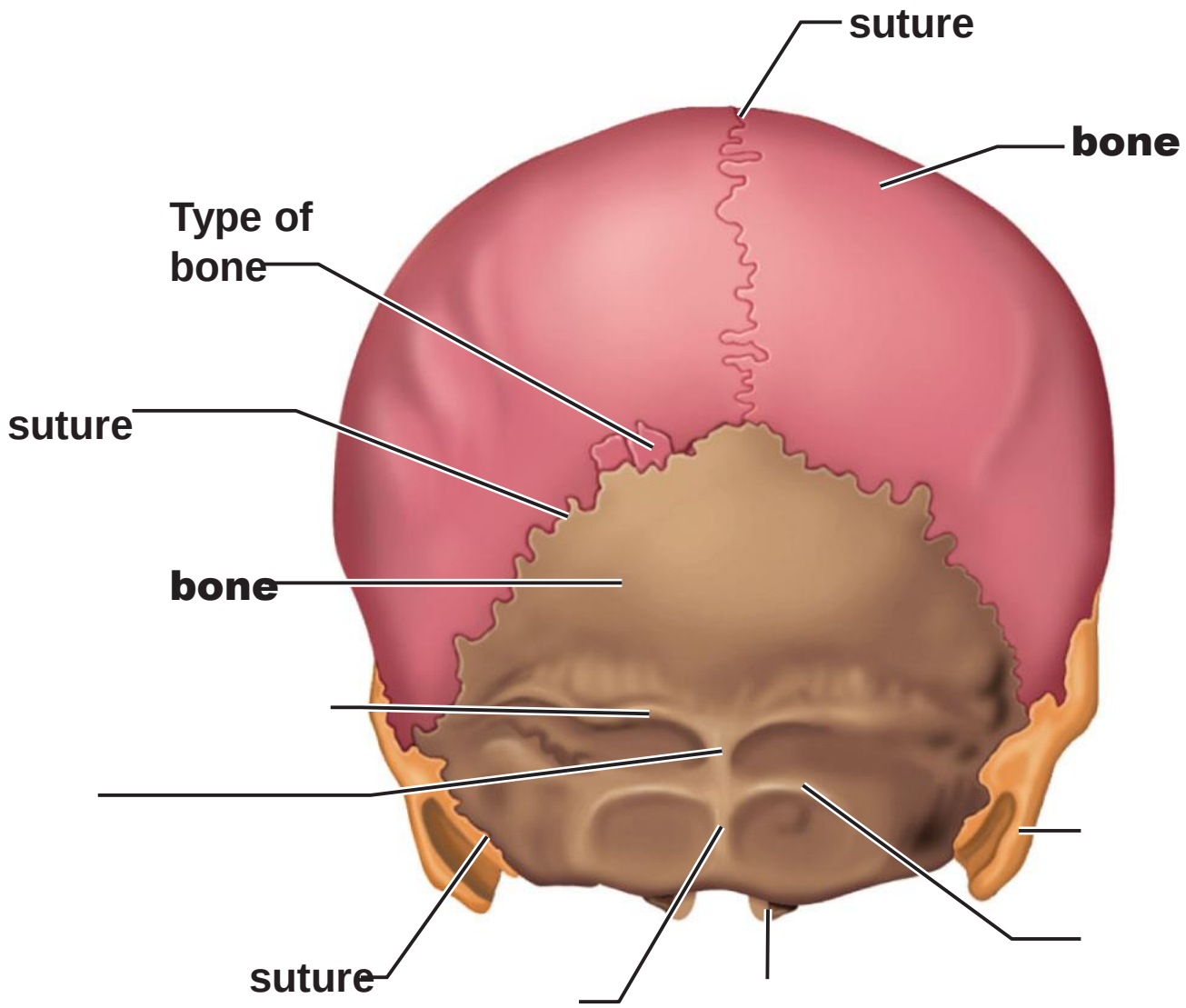


Figure 7.35



(b) Posterior view

Figure 7.4b

Bone =

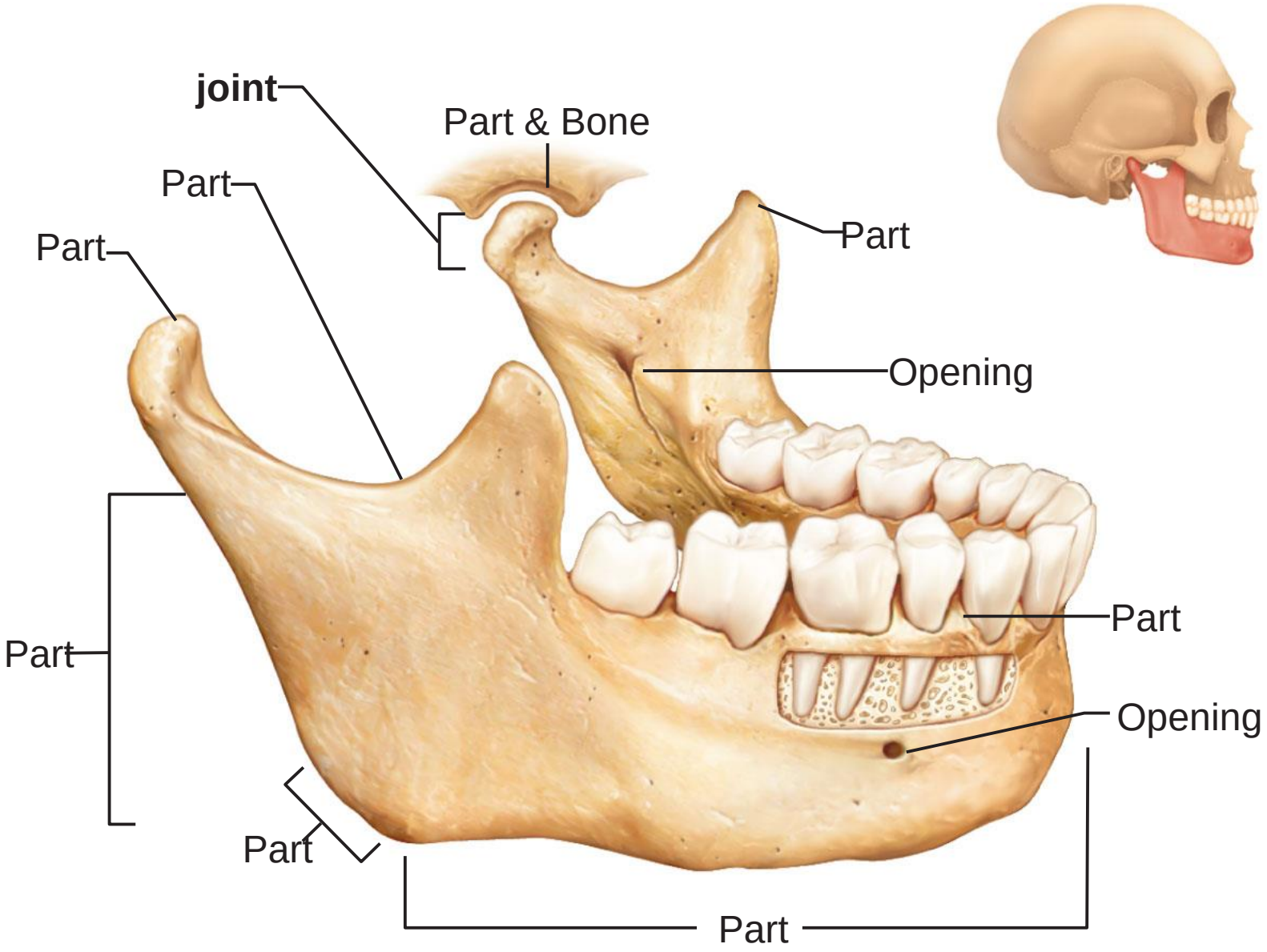
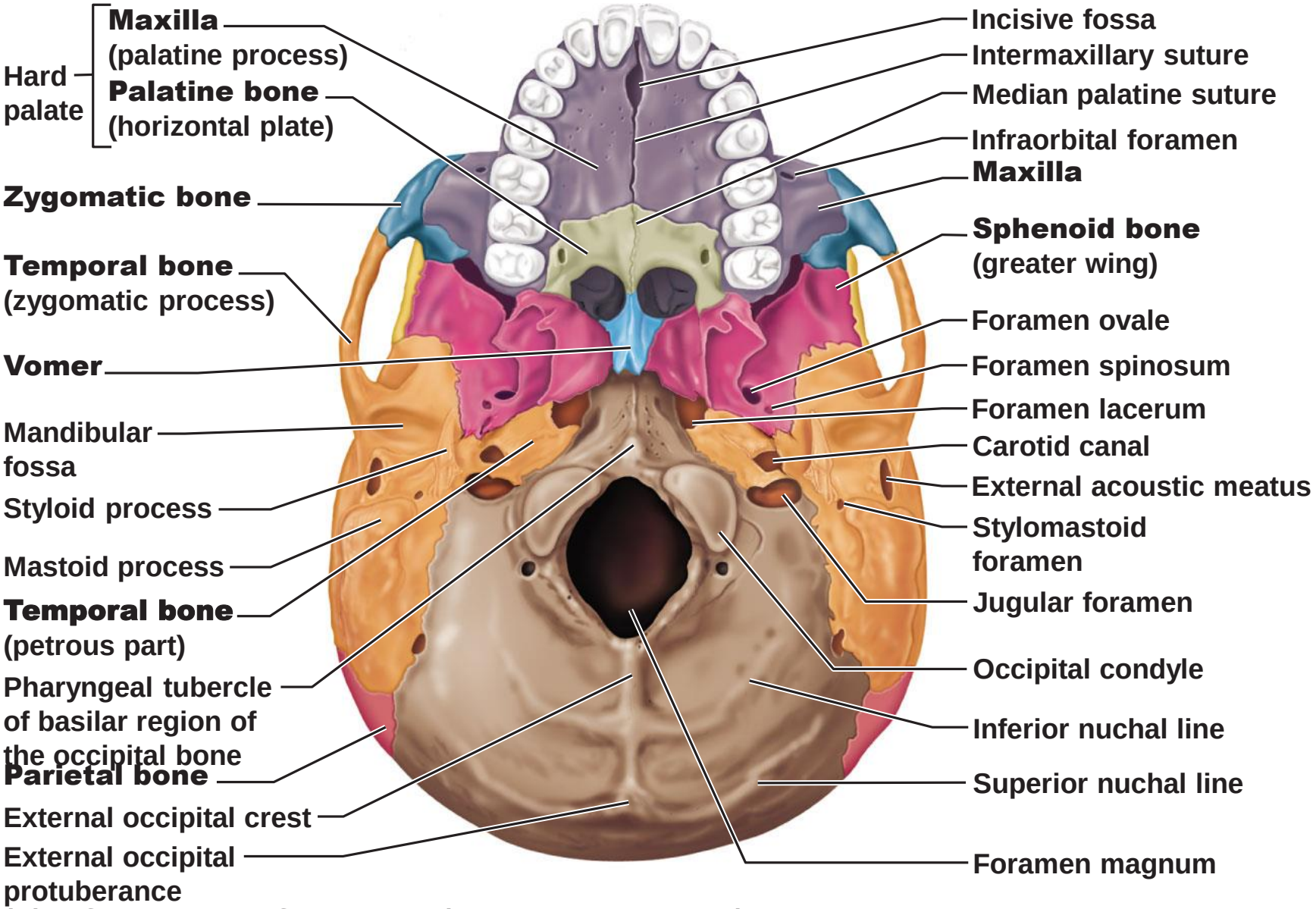


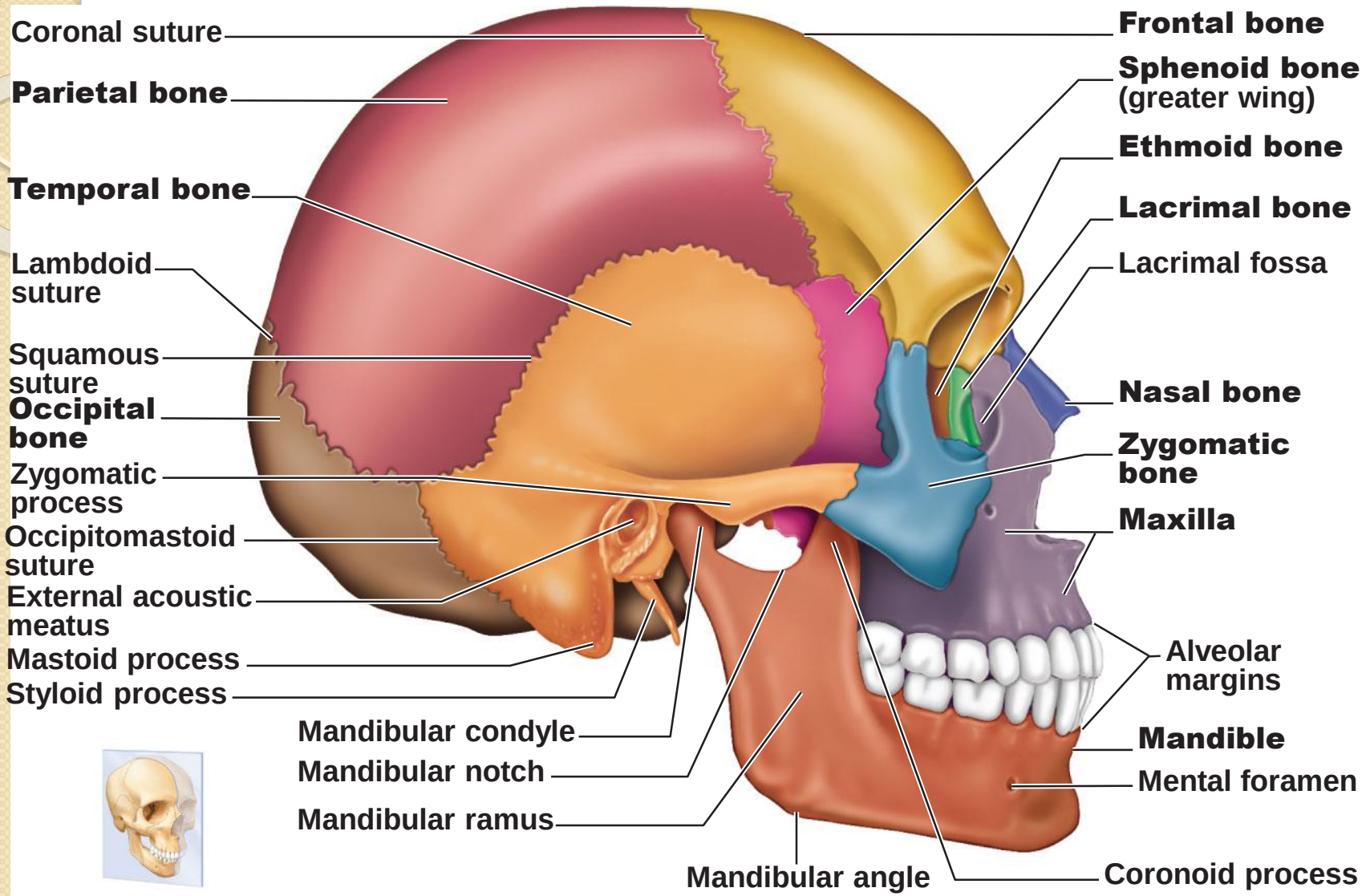
Figure 7.11a



(a) Inferior view of the skull (mandible removed)

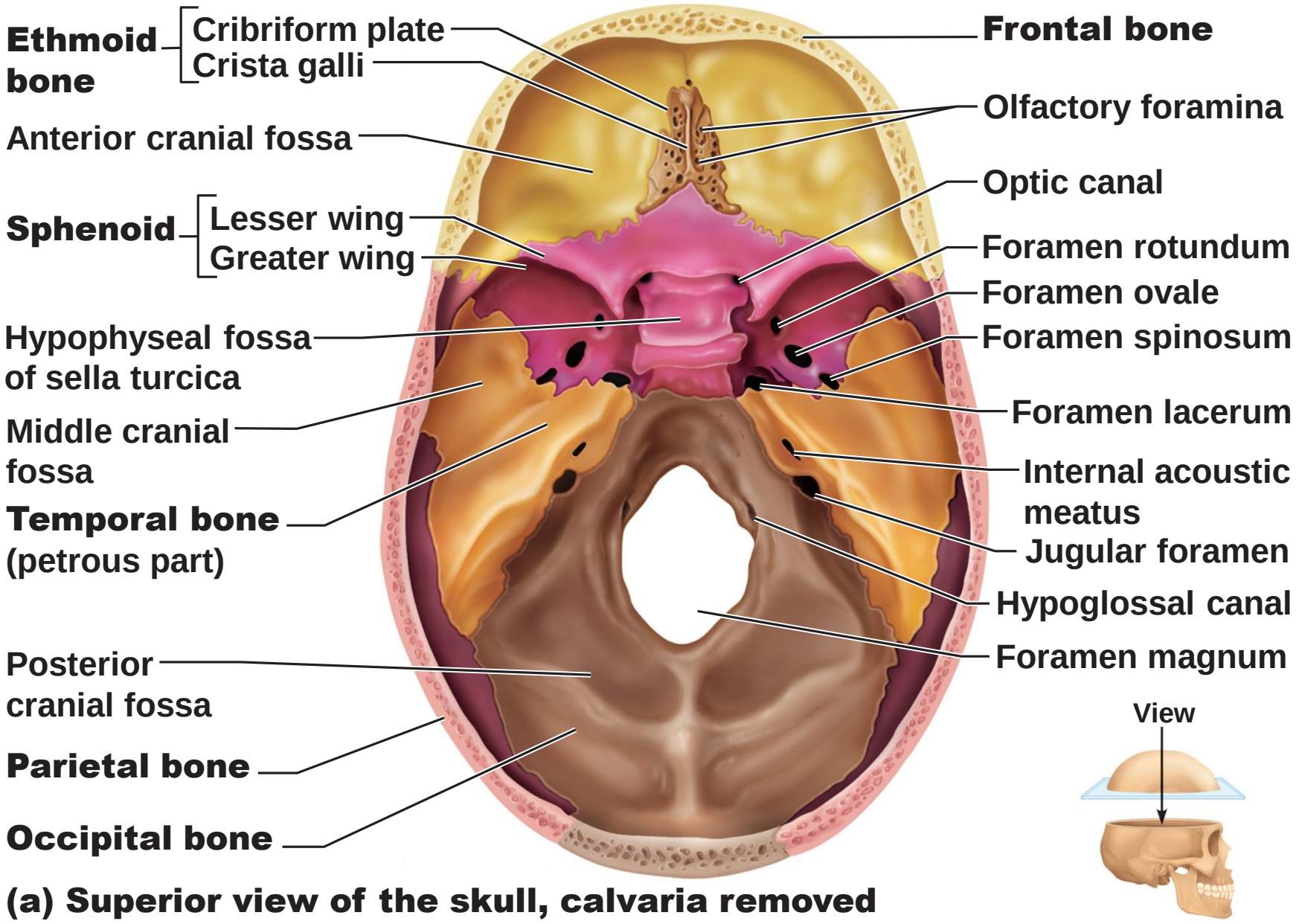
Figure 7.6a

Temporal Bone



(a) External anatomy of the right side of the skull

Figure 7.5a



(a) Superior view of the skull, calvaria removed

Figure 7.7a

TABLE 7–1 A Key to the Foramina and Fissures of the Skull

Bone	Major Structures Using Passageway		
	Foramen/Fissure	**Neural Tissue***	**Vessels and Other Structures**
OCCIPITAL BONE	Foramen magnum	Medulla oblongata (most caudal portion of brain) and accessory nerve (N XI), which provides motor control over several neck and back muscles	Vertebral arteries to brain; supporting membranes around central nervous system
	Hypoglossal canal	Hypoglossal nerve (N XII) provides motor control to muscles of the tongue	
With temporal bone	Jugular foramen	Glossopharyngeal nerve (N IX), vagus nerve (N X), accessory nerve (N XI). N IX provides taste sensation; N X is important for visceral functions; N XI innervates important muscles of the back and neck	Internal jugular vein; important vein returning blood from brain to heart
FRONTAL BONE	Supra-orbital foramen (or notch)	Supra-orbital nerve, sensory branch of ophthalmic nerve, innervating the eyebrow, eyelid, and frontal sinus	Supra-orbital artery delivers blood to same region
LACRIMAL BONE	Lacrimal sulcus, nasolacrimal canal (with maxilla)		Lacrimal sac and tear duct; drains into nasal cavity

*Twelve pairs of cranial nerves, numbered N I–XII, exist. Their functions and distribution are detailed in Chapter 14.

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Bone	Major Structures Using Passageway		
	Foramen/Fissure	**Neural Tissue***	**Vessels and Other Structures**
TEMPORAL BONE	Stylomastoid foramen	Facial nerve (N VII) provides motor control of facial muscles	
	Carotid canal		Internal carotid artery supplies blood to brain
	External acoustic meatus		Air in meatus conducts sound to eardrum
	Internal acoustic meatus	Vestibulocochlear nerve (N VIII) from sense organs for hearing and balance. Facial nerve (N VII) enters here, exits at stylomastoid foramen	Internal acoustic artery supplies blood to inner ear
SPHENOID	Optic canal	Optic nerve (N II) brings information from the eye to the brain	Ophthalmic artery brings blood into orbit
	Superior orbital fissure	Oculomotor nerve (N III), trochlear nerve (N IV), ophthalmic branch of trigeminal nerve (N V), abducens nerve (N VI). Ophthalmic nerve provides sensory information about eye and orbit; other nerves control muscles that move the eye	Ophthalmic vein returns blood from orbit
	Foramen rotundum	Maxillary branch of trigeminal nerve (N V) provides sensation from the face	
	Foramen ovale	Mandibular branch of trigeminal nerve (N V) controls the muscles that move the lower jaw and provides sensory information from that area	
	Foramen spinosum		Vessels to membranes around central nervous system
With temporal and occipital bones	Foramen lacerum		Internal carotid artery after leaving carotid canal; auditory tube; small vessels; hyaline cartilage
With maxilla	Inferior orbital fissure	Maxillary branch of trigeminal nerve (N V); See *Foramen rotundum*	

*Twelve pairs of cranial nerves, numbered N I–XII, exist. Their functions and distribution are detailed in Chapter 14.

TABLE 7–1 A Key to the Foramina and Fissures of the Skull

	Major Structures Using Passageway		
Bone	**Foramen/Fissure**	**Neural Tissue***	**Vessels and Other Structures**
ETHMOID	Olfactory foramina	Olfactory nerve (N I) provides sense of smell	
MAXILLA	Infra-orbital foramen	Infra-orbital nerve, maxillary branch of trigeminal nerve (N V) from the inferior orbital fissure to face	Infra-orbital artery with same distribution
MANDIBLE	Mental foramen	Mental nerve, sensory branch of the mandibular nerve, provides sensation from the chin and lips	Mental vessels to chin and lips
	Mandibular foramen	Inferior alveolar nerve, sensory branch of mandibular nerve, provides sensation from the gums, teeth	Inferior alveolar vessels supply same region
ZYGOMATIC BONE	Zygomaticofacial foramen	Zygomaticofacial nerve, sensory branch of maxillary nerve to cheek	

*Twelve pairs of cranial nerves, numbered N I–XII, exist. Their functions and distribution are detailed in Chapter 14.