Instructors may assign a portion of the Review Sheet questions using Mastering A&P™

EXERCISE 9

REVIEW SHEET
The Axial Skeleton

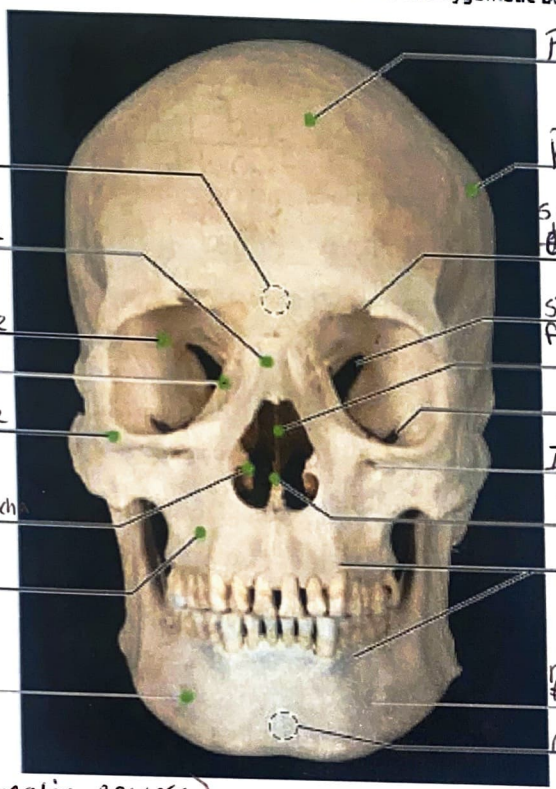
Name Zoren Richardson Lab Time/Date Wednesdays 6pm-8:30pm

The Skull

1. First, match the bone names in column B with the descriptions in column A (the items in column B may be used more than once). Then, circle the bones in column B that are cranial bones.

Column A		Column B
Frontal	1. forms the anterior cranium	a. ethmoid
Zygomatic	2. cheekbone	b. frontal
Nasal	3. bridge of nose	c. hyoid
Palatine	4. posterior bones of the hard palate	d. inferior nasal concha
Parietal	5. much of the lateral and superior cranium	e. lacrimal
Lacrimal	6. single, irregular, bat-shaped bone forming part of the cranial base	f. mandible
Lacrimal	7. tiny bones bearing tear ducts	g. maxilla
Maxilla	8. anterior part of hard palate	h. nasal
Ethmoid	9. superior and middle nasal conchae form from its projections	i. occipital
Temporal	10. site of mastoid process	j. palatine
Occipital	11. has condyles that articulate with the atlas	k. parietal
Hyoid	12. small U-shaped bone in neck, where many tongue muscles attach	l. sphenoid
Temporal	13. organ of hearing found here	m. temporal
Ethmoid	14. two bones that form the nasal septum	n. vomer
Palatine	15. forms the most inferior turbinate	o. zygomatic

2. Using choices from the numbered key to the right, identify all bones and bone markings provided with various leader lines in the two following photographs. A colored dot at the end of a leader line indicates a bone. Leader lines without a colored dot indicate bone markings. Note that vomer, sphenoid bone, and zygomatic bone will each be labeled twice.



Glabella
Nasal Bone
Sphenoid Bone
Lacrimal Bone
Zygomatic Bone
Inferior nasal concha
maxilla
mandible

Frontal Bone
Parietal Bone
supraorbital foramen
~~Occipital bone~~
superior orbital fissure
Ethmoid Bone
Inferior orbital fissure
Infraorbital Foramen
Vomer
Alveolar Processes
mental foramen
~~Mandibular Fossa~~
mandibular symphysis

(zygomatic process)

Palatine Process of maxilla
Palatine Bone
Vomer
Temporal Bone
Temporal Bone
Foramen Lacerum
Styloid process
mastoid process
Occipital ~~Orbital~~ Bone
External occipital protuberance

Incisive fossa
Foramen Ovale
~~Lacerum~~
mandibular fossa
carotid canal
Jugular Foramen
Stylomastoid Foramen
Occipital condyle
Foramen magnum

Key:
1. alveolar processes ✓
2. carotid canal ✓
3. ethmoid bone (perpendicular plate) ✓
4. external occipital protuberance ✓
5. foramen lacerum ✓
6. foramen magnum ✓
7. foramen ovale ✓
8. frontal bone ✓
9. glabella ✓
10. incisive fossa ✓
11. inferior nasal concha ✓
12. inferior orbital fissure
13. infraorbital foramen ✓
14. jugular foramen ✓
15. lacrimal bone ✓
16. mandible ✓
17. mandibular fossa ✓
18. mandibular symphysis ✓
19. mastoid process ✓
20. maxilla ✓
21. mental foramen ✓
22. nasal bone ✓
23. occipital bone ✓
24. occipital condyle ✓
25. palatine bone ✓
26. palatine process of maxilla ✓
27. parietal bone ✓
28. sphenoid bone ✓
29. styloid process ✓
30. stylomastoid foramen ✓
31. superior orbital fissure ✓
32. supraorbital foramen ✓
33. temporal bone ✓
34. vomer ✓
35. zygomatic bone ✓
36. zygomatic process ✓

3. Define **suture**. A type of joint between the bones of the skull where the bones are held tightly together by fibrous tissue.
4. With one exception, the skull bones are joined by sutures. Name the exception.

The exception is the jaw joints

5. What bones are connected by the lambdoid suture?

The occipital bone and the parietal bones are connected by the lambdoid suture.

What bones are connected by the squamous suture?

The parietal bones and the temporal bones are connected by the squamos suture

6. Name the eight bones of the cranium. (Remember to include left and right.)

Frontal Bone, Occipital Bone, Temporal Bone (left), Temporal Bone (right), Left Parietal Bone, Right Parietal Bone, Shenoid Bone, Ethmoid Bone

7. List the bones that have sinuses, and give two possible functions of the sinuses.

Frontal, Maxillary, ethmoid, sphenoid. One function of the sinuses is to lighten the skull. Another function is to produce a mucus that moisturizes the inside of the nose.

8. What is the bony orbit? The bony orbit refers to the bones that constitute the margins of the orbits.

What bones contribute to the formation of the orbit? The sphenoid, frontal, zygomatic, ethmoid, lacrimal, maxilla, and palatine bones contribute to the formation of the orbit.

9. Why can the sphenoid bone be called the keystone bone of the cranium? The sphenoid bone can be called this because it is in contact with all of the other cranial bones.

The Vertebral Column

10. The distinguishing characteristics of the vertebrae composing the vertebral column are noted below. Correctly identify each described structure by choosing a response from the key.

Key: a. atlas
b. axis
c. cervical vertebra—typical
d. coccyx
e. lumbar vertebra
f. sacrum
g. thoracic vertebra

Atlas 1. vertebra type containing foramina in the transverse processes, through which the vertebral arteries ascend to reach the brain

Axis 2. dens here provides a pivot for rotation of the first cervical vertebra (C_1)

Thoracic Vertebra 3. transverse processes faceted for articulation with ribs; spinous process pointing sharply downward

Cervical vertebra- typical 4. composite bone; articulates with the hip bone laterally

Lumbar Vertebra 5. massive vertebra; weight-sustaining

Sacrum 6. "tail bone" fused vertebrae

Coccyx 7. supports the head; allows a rocking motion in conjunction with the occipital condyles

11. Using the key, correctly identify the vertebral parts/areas described below. (More than one choice may apply in some cases.) Also use the key letters to correctly identify the vertebral areas in the diagram.

Key: a. body
b. intervertebral foramina
c. lamina
d. pedicle
e. spinous process
f. superior articular facet
g. transverse process
h. vertebral arch
i. vertebral foramen

Vertebral Foramen 1. cavity enclosing the spinal cord

The body 2. weight-bearing portion of the vertebra

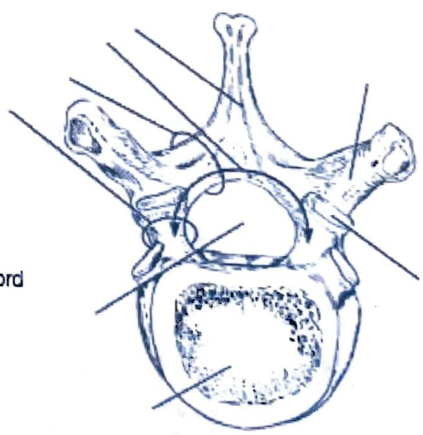
Spinous process Transverse process 3. provide levers against which muscles pull

Superior articular facet 4. provide an articulation point for the ribs

Intervertebral foramina 5. openings providing for exit of spinal nerves

Body arch Vertebral arch 6. structures that form an enclosure for the spinal cord

pedicle, lamina 7. structures that form the vertebral arch



12. Describe how a spinal nerve exits from the vertebral column. _____

_____

13. Name two factors/structures that permit flexibility of the vertebral column.

S-shaped construction of the vertebrae and Presence of intervertebral discs

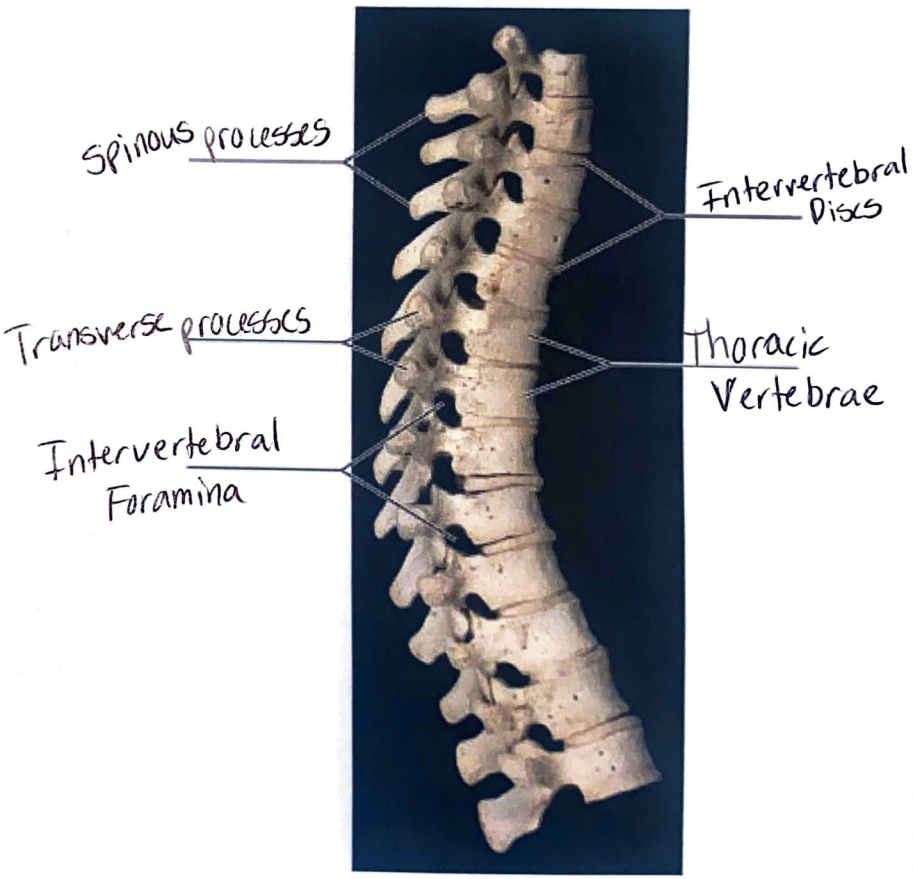
14. What kind of tissue makes up the intervertebral discs? Fibrocartilage makes up the intervertebral discs

15. What is a herniated disc? A condition which refers to a problem with a rubbery disc between the spinal bones.
What problems might it cause? A herniated disc can irritate a nearby nerve. It can also result in pain, numbness, or weakness in an arm or leg.

16. Which two spinal curvatures are obvious at birth? Cervical curvature and Lumbar curvature
Under what conditions do the secondary curvatures develop? The cervical curvature develops when the baby begins to raise its head independently. The lumbar curvature forms when the baby begins to walk or stand upright.

17. Use the key to label the structures on the thoracic region of the vertebral column.

Key:
a. intervertebral discs ✓
b. intervertebral foramina ✓
c. spinous prosesses ✓
d. thoracic vertebrae ✓
e. transverse processes ✓



The Thoracic Cage

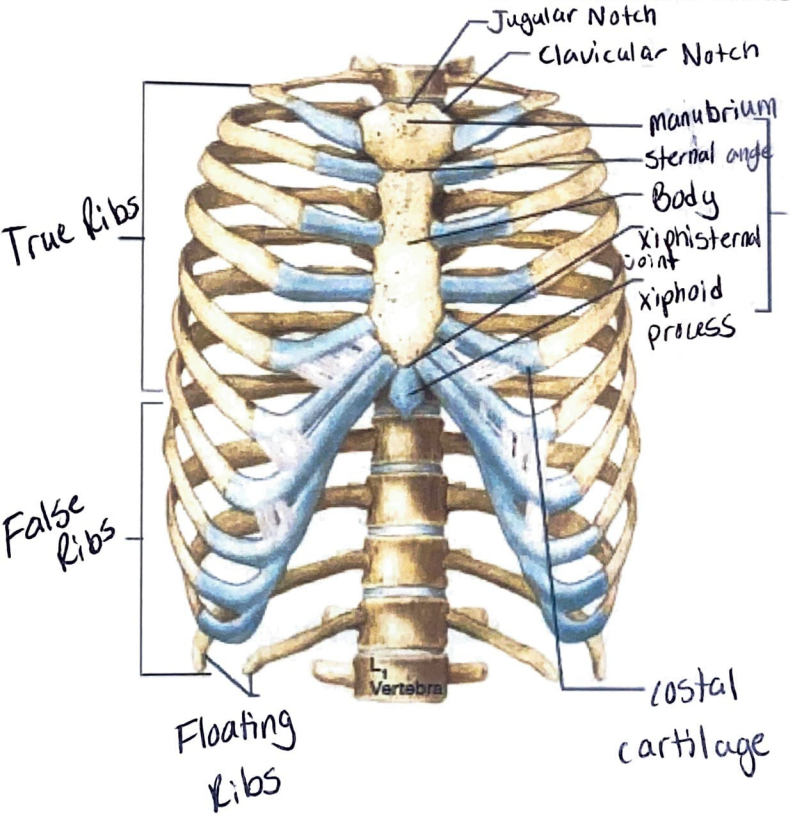
18. The major bony components of the thorax (excluding the vertebral column) are the Sternum and the ribs

19. Differentiate between a true rib and a false rib. Only the top seven pairs of ribs connect to your sternum. These are true ribs, and the next three pairs of ribs are known as false ribs.

Is a floating rib a true or a false rib? It's neither a true or a false rib because they're neither directly or indirectly attached to the sternum.

20. What is the general shape of the thoracic cage? The general shape of the thoracic cage is conical in shape.

21. Using the terms in the key, identify the regions and landmarks of the thoracic cage.



Key:
a. body ✓
b. clavicular notch ✓
c. costal cartilage ✓
d. false ribs ✓
e. floating ribs ✓
f. jugular notch ✓
g. manubrium ✓
h. sternal angle ✓
i. sternum ✓
j. true ribs ✓
k. xiphisternal joint ✓
l. xiphoid process ✓

The Fetal Skull

22. Are the same skull bones seen in the adult also found in the fetal skull? Yes, the same skull bones are found.

23. How does the size of the fetal face compare to its cranium? The face is foreshortened, overshadowed by the large cranium. The skull is, on average, about half of the fetuses body length.
How does this compare to the adult skull? In adults, the cranium is proportionately smaller and facial bones are proportionately larger and more prominent.

24. What are the outward conical projections on some of the fetal cranial bones? These are growth centers.

25. What is a fontanelle? A fontanelle is a membrane-covered opening in bone or between bones.
What is its fate? They ossify, and in time become sutures.

What is the function of the fontanelles in the fetal skull? The function of the fontanelles in the fetal skull is to allow for molding of the fetal head during passage through the birth canal.

26. ✚ Craniosynostosis is a condition in which one or more of the fontanelles is replaced by bone prematurely. Discuss the ramifications of this early closure.

Craniosynostosis causes problems with normal brain and skull growth.

27. ✚ As we age, we often become shorter. Explain why this might occur. This might occur because the cartilage between joints gets worn out as we get older. Also, osteoporosis causes the spinal column to become shorter, in the end making us shorter.

28. ✚ The xiphoid process is often missing from the sternum in bone collections. Hypothesize why it might be missing. I hypothesize that it could be missing because of its size in comparison to the other bones.