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

EXERCISE 9

REVIEW SHEET
The Axial Skeleton

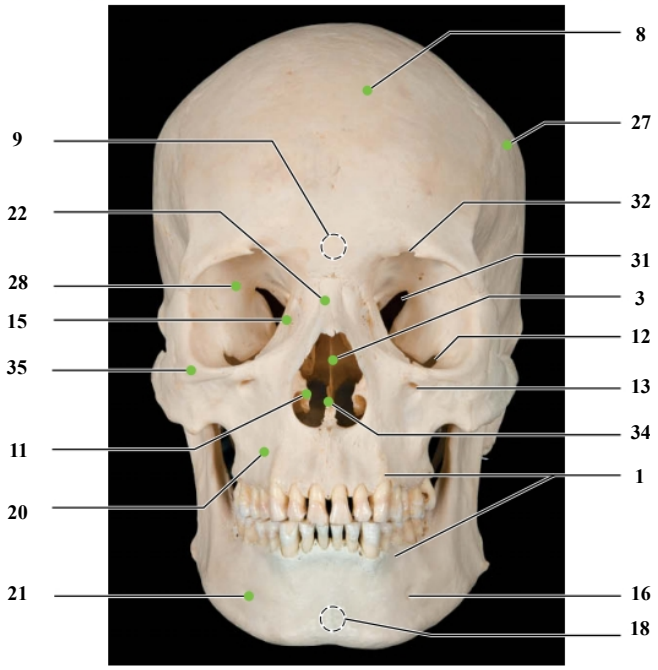
Name Trevor Wright Lab Time/Date _____

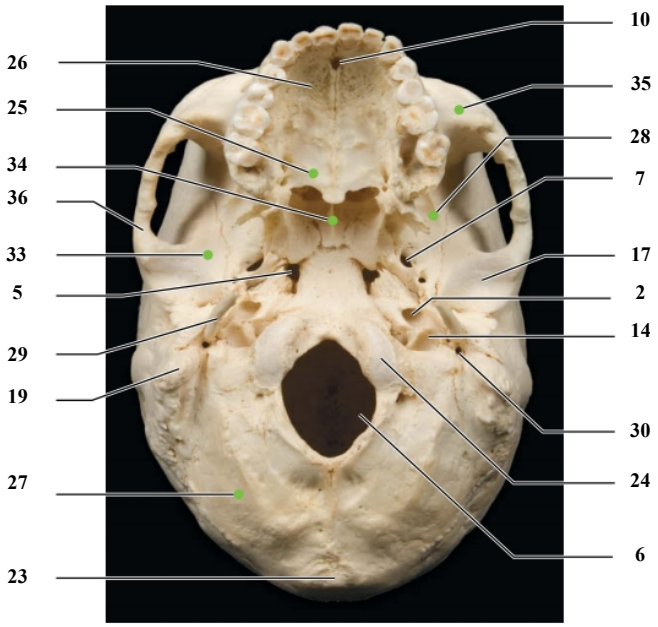
The Skull

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





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 fibrous joint between skull bones.

4. With one exception, the skull bones are joined by sutures. Name the exception.

Joint(s) between the mandible and temporal bones.

5. What bones are connected by the lambdoid suture?

occipital and parietal

What bones are connected by the squamous suture?

temporal and parietal

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

frontal	occipital	right parietal	left parietal
sphenoid	ethmoid	right temporal	left temporal

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

The frontal bone, the maxilla, the sphenoid and ethmoid bones

The sinuses lighten the skull and are resonance chambers for speech.

8. What is the bony orbit? A bony socket for the eye

What bones contribute to the formation of the orbit?

Ethmoid, lacrimal, frontal, sphenoid, zygomatic, maxillary.

9. Why can the sphenoid bone be called the keystone bone of the cranium?

It articulates 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

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

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

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

f 4. composite bone; articulates with the hip bone laterally

e 5. massive vertebra; weight-sustaining

d 6. "tail bone" fused vertebrae

b 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

i 1. cavity enclosing the spinal cord

a 2. weight-bearing portion of the vertebra

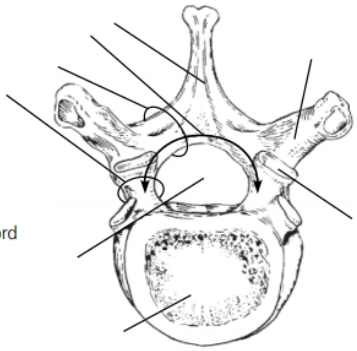
e, g 3. provide levers against which muscles pull

a, g 4. provide an articulation point for the ribs

b 5. openings providing for exit of spinal nerves

a, h 6. structures that form an enclosure for the spinal cord

c, d 7. structures that form the vertebral arch



12. Describe how a spinal nerve exits from the vertebral column. **It exits through the inverteble foramina found between the pedicles of adjacent vertebrae.**

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

Curvatures and **Intervertebral discs**

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

15. What is a herniated disc? A rupture disc in which a position of the disc protrudes outward.

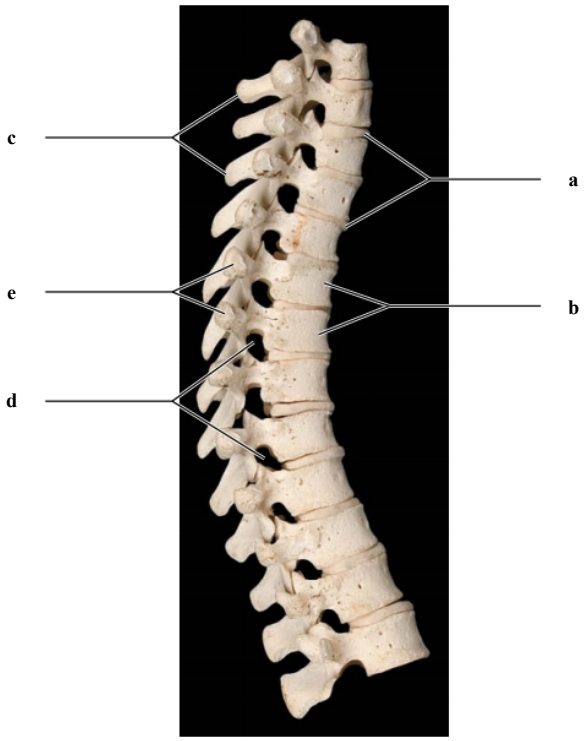
What problems might it cause? It might compress a nerve, leading to pain and possibly paralysis.

16. Which two spinal curvatures are obvious at birth? Sacral and Thoratic

Under what conditions do the secondary curvatures develop? The cervical curvature develops when the body begins to raise its head independently. The lumbar curvature forms hen the baby begins to walk (assumes upright posture).

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

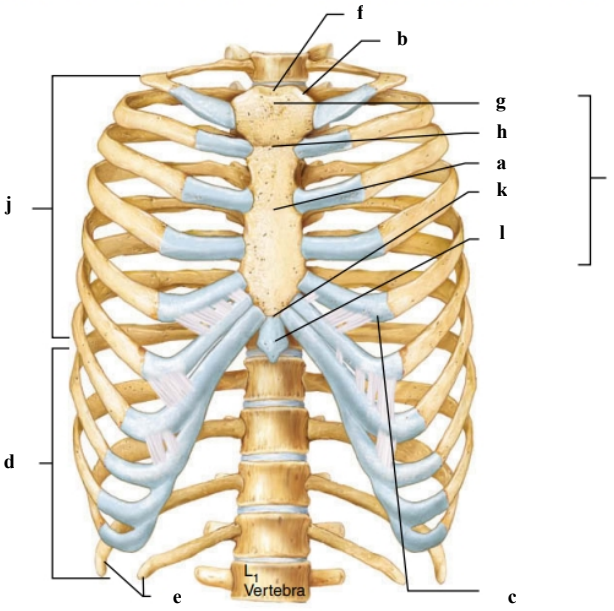
18. The major bony components of the thorax (excluding the vertebral column) are the ribs and the sternum

19. Differentiate between a true rib and a false rib. False Ribs attach to the sternum indirectly or not at all. A true rib has its own costal cartilage attachment to the sternum.

Is a floating rib a true or a false rib? False.

20. What is the general shape of the thoracic cage? An inverted cone 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? **No**

23. How does the size of the fetal face compare to its cranium? **The face is foreshadowed and overshadowed by the large cranium.**

How does this compare to the adult skull? **In the adult the cranium is proportionately smaller and the facial bones are proportionately larger and more prominent.**

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

25. What is a fontanelle? **It is an anatomical feature of the infant human skull comprising any of the soft membranous gaps (sutures) between the cranial bones that make up the calvaria of a fetus or an infant.**

What is its fate? **It ossifies completely by age 2.**

What is the function of the fontanelles in the fetal skull? **Fontanelles allow the bones of the skull to move so the baby's head can change shape during delivery. The birth canal is narrow, and the movement of the bones helps the baby's head to get through.**

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.

27. As we age, we often become shorter. Explain why this might occur.

28. The xiphoid process is often missing from the sternum in bone collections. Hypothesize why it might be missing.