The Axial Skeleton

The Skull

1. The skull is one of the major components of the axial skeleton. Name the other two.
   
   The **vertebral column** and **thorax**
   
   What structures do each of these component areas protect? **skull - brain**
   **vertebral column - spinal cord**
   **thorax - heart + lungs**

2. Define **suture**.
   **Sealed interlocking joints of skull bones**

3. With one exception, the skull bones are joined by sutures. Name the exception.
   **mandible (lower jaw)**

4. What are the four major sutures of the skull, and what bones do they connect?
   
   **coronal - frontal bone to parietal bones**
   **sagittal - parietal bones to each other**
   **lambdoid - occipital bone to parietal bones**
   **squamous - parietal to temporal**

5. Name the eight bones composing the cranium.
   
   **left parietal, right parietal, left temporal, right temporal, occipital, frontal, sphenoid, ethmoid**

6. Give two possible functions of the sinuses.
   **Lighten bone they are in, act as resonating chambers**

7. What is the orbit?
   **Bones that make up the eye socket**

8. Why can the sphenoid bone be called the keystone of the cranial floor?
   **Because many of the cranial bones attach to it.**
9. Match the bone names in column B with the descriptions in column A. (Some choices may be used more than once.)

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRONTAL</td>
<td>ethmoid</td>
</tr>
<tr>
<td>ZYGOMATIC</td>
<td>frontal</td>
</tr>
<tr>
<td>MAXILLA</td>
<td>hyoid</td>
</tr>
<tr>
<td>NASAL</td>
<td>lacrimal</td>
</tr>
<tr>
<td>PALATINE</td>
<td>mandible</td>
</tr>
<tr>
<td>PARIETAL</td>
<td>maxilla</td>
</tr>
<tr>
<td>TEMPORAL</td>
<td>nasal</td>
</tr>
<tr>
<td>SPHENOID</td>
<td>occipital</td>
</tr>
<tr>
<td>LACRIMAL</td>
<td>palatine</td>
</tr>
<tr>
<td>MAXILLA</td>
<td>parietal</td>
</tr>
<tr>
<td>ETHMOID</td>
<td>sphenoid</td>
</tr>
<tr>
<td>TEMPORAL</td>
<td>temporal</td>
</tr>
<tr>
<td>SPHENOID</td>
<td>vomer</td>
</tr>
<tr>
<td>ETHMOID</td>
<td>zygomatic</td>
</tr>
<tr>
<td>MAXILLA</td>
<td></td>
</tr>
<tr>
<td>FRONTAL, ETHMOID, and SPHENOID</td>
<td>16. three cranial bones containing paranasal sinuses</td>
</tr>
<tr>
<td>ETHMOID</td>
<td>17. its oval-shaped protrusions articulate with the atlas</td>
</tr>
<tr>
<td>MAXILLA</td>
<td>18. spinal cord passes through a large opening in this bone</td>
</tr>
<tr>
<td>ETHMOID</td>
<td>19. not really a skull bone</td>
</tr>
<tr>
<td>SPHENOID</td>
<td>20. forms the chin</td>
</tr>
<tr>
<td>ETHMOID</td>
<td>21. inferior part of nasal septum</td>
</tr>
<tr>
<td>MANDIBLE</td>
<td>22. contain alveoli bearing teeth</td>
</tr>
<tr>
<td>MANDIBLE</td>
<td>23. bears an upward protrusion called the rooster's comb</td>
</tr>
</tbody>
</table>
10. Using choices from column B in question 9 and from the key to the right, identify all bones and bone markings provided with leader lines in the diagram below.

- alveolar margin
- coronal suture
- foramen magnum
- greater wing of sphenoid
- inferior nasal concha
- middle nasal concha of ethmoid
- sagittal suture
- squamous suture

The Fetal Skull

11. Are the same skull bones present in the adult also found in the fetal skull? **YES**

12. How does the size of the fetal face compare to its cranium? **THE FETAL FACE IS MUCH SMALLER THAN IT'S CRANIUM**

How does this compare to the adult skull? **FETAL SKULL IS LARGE COMPARED TO REST OF BODY; ADULT SKULL IS SMALL COMPARED TO REST OF BODY; FACE INCREASES IN SIZE AS GROWS**

13. What are the outward conical projections in some of the fetal cranial bones? **THEY ARE AREAS OF ACTIVE OSSIFICATION**

14. What is a fontanel? **A FIBROUS MEMBRANE NOT FULLY OSSIFIED WILL BECOME A CRANIAL SUTURE**

What is its fate? **TO ALLOW SOME COMPRESSION OF THE SKULL AS BARY MOVES THROUGH BIRTH CANAL**
The Vertebral Column

16. 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

1. cavity enclosing the nerve cord
2. weight-bearing portion of the vertebra
3. provide levers against which muscles pull
4. provide an articulation point for the ribs
5. opening providing for exit of spinal nerves
6. structures that form an enclosure for the spinal cord
17. The distinguishing characteristics of the vertebrae composing the vertebral column are noted below. Correctly identify each described structure or region by choosing a response from the key. (Some choices may be used more than once.)

Key: atlas axis cervical vertebra—typical coccxy lumbar vertebra sacrum thoracic vertebra

**CERVICAL VERTEBRA-TYPICAL**
1. vertebral type with a bifid (forked) spinous process
2. pivots on C2; lacks a body
3. bear facets for articulation with ribs; form part of bony thoracic cage
4. forms a joint with the hip bone
5. vertebra with blocklike body and short stout spinous process
6. “tailbone”
7. articulates with the occipital condyles
8. five components; unfused
9. twelve components; unfused
10. five components; fused

18. Identify as specifically as possible each of the vertebrae types shown in the diagrams below. Also identify and label the following markings on each: transverse processes, spinous process, body, superior articular processes, as well as the areas provided with leaders.

19. What kind of tissue makes up the intervertebral discs? **FIBROCARTILAGE**

20. What is a herniated disc? **BULGING OF DISC, MOVEMENT OUT OF POSITION**
   What problems might it cause? **PINCHING OF SPINAL NERVES, NUMBNESS, EXCRUCIATING PAIN**
21. On this illustration of an articulated vertebral column, identify each structure provided with a leader line by using the key terms.

**Key:**
- atlas
- axis
- a disc
- two thoracic vertebrae
- two lumbar vertebrae
- sacrum

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

23. What is the general shape of the thoracic cage? **Cone-shaped** or **barrel-like**
24. Using the terms at the right, identify the regions and landmarks of the bony thorax.

- a. body
- b. costal cartilage
- c. false ribs
- d. floating ribs
- e. manubrium
- f. sternum
- g. true ribs
- h. xiphoid process

25. Differentiate a true rib from a false rib. **TRUE RIBS ATTACH TO THE STERNUM VIA THEIR OWN INDIVIDUAL COSTAL CARTILAGE; FALSE RIB'S COSTAL CARTILAGE ATTACHES TO OTHER RIBS COSTAL CARTILAGES BEFORE ATTACHING TO THE STERNUM.**

26. What is a floating rib? **DO NOT ATTACH TO THE STERNUM AT ALL, HAVE NO COSTAL CARTILAGES.**