

Laboratory Exercise

14

Skull

Materials Needed

Textbook
Human skull, articulated
Human skull, disarticulated (Beauchene)
Human skull, sagittal section

For Learning Extension:

Colored pencils

For Demonstration:

Fetal skull

A human skull consists of twenty-two bones that, except for the lower jaw, are firmly interlocked along sutures. Eight of these immovable bones make up the braincase, or cranium, and thirteen more immovable bones and the mandible form the facial skeleton.

Purpose of the Exercise

To examine the structure of the human skull and to identify the bones and major features of the skull.

LEARNING OUTCOMES

After completing this exercise, you should be able to

- 1 Distinguish between the cranium and the facial skeleton.
- 2 Locate and label the bones of the skull and their major features.
- 3 Locate and label the major sutures of the cranium.
- 4 Locate and label the sinuses of the skull.

EXPLORE

Procedure—Skull

1. Review the section entitled “Skull” in chapter 7 of the textbook.
2. As a review activity, label figures 14.1, 14.2, 14.3, 14.4, and 14.5.

3. Examine the **cranial bones** of the articulated human skull and the sectioned skull. Also observe the corresponding disarticulated bones. Locate the following bones and features in the laboratory specimens and, at the same time, palpate as many of these bones and features in your skull as possible.

frontal bone (1)

supraorbital foramen
frontal sinus

parietal bone (2)

sagittal suture
coronal suture

occipital bone (1)

lambdoid suture
foramen magnum
occipital condyle

temporal bone (2)

squamous suture
external acoustic meatus
mandibular fossa
mastoid process
styloid process
carotid canal
jugular foramen
internal acoustic meatus
zygomatic process

sphenoid bone (1)

sella turcica
greater and lesser wings
sphenoidal sinus

ethmoid bone (1)

cribriform plate
perpendicular plate
superior nasal concha
middle nasal concha
ethmoidal sinus
crista galli

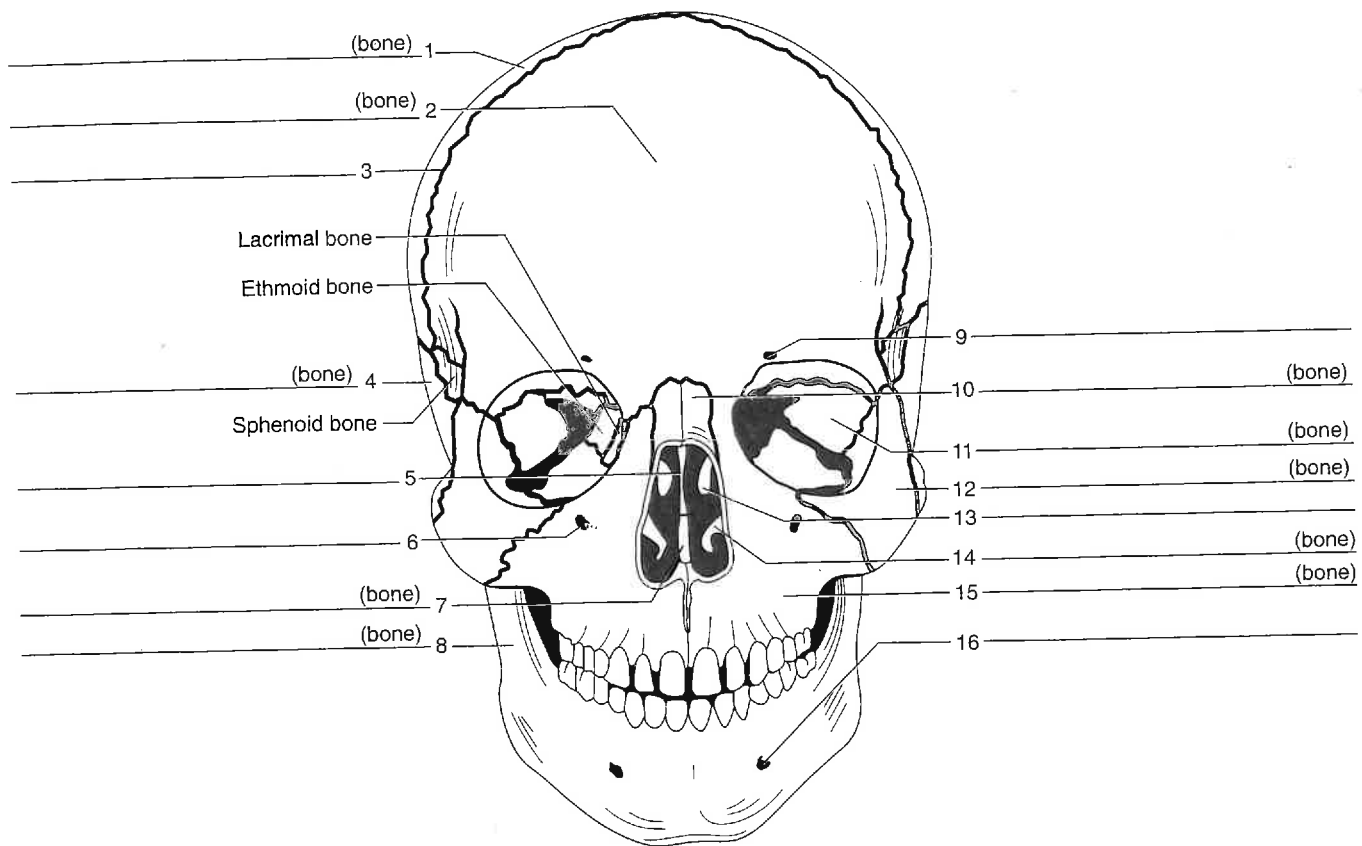


Figure 14.1 Label the anterior bones and features of the skull. (If the line lacks the word *bone*, label the particular feature of that bone.) 2

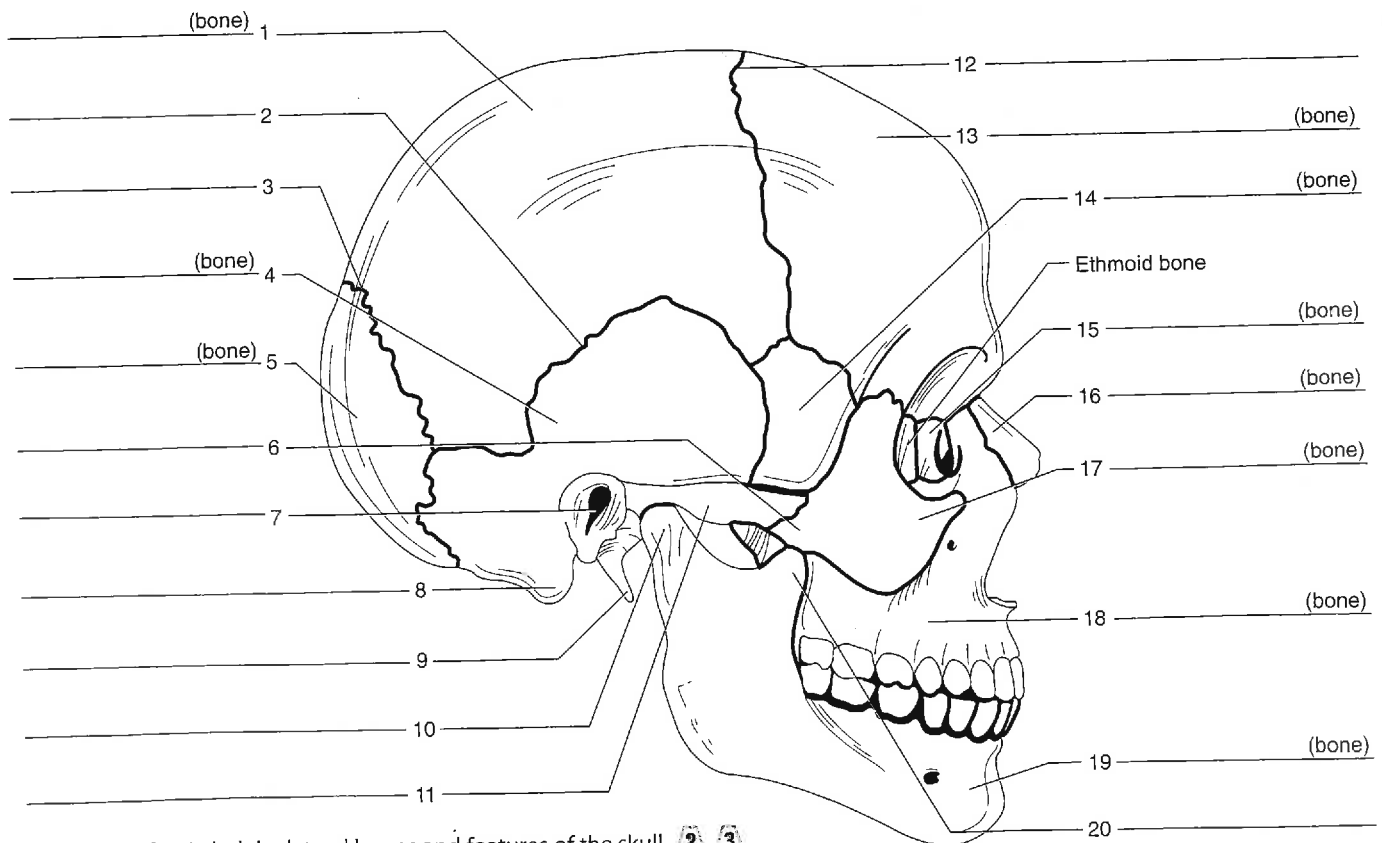


Figure 14.2 Label the lateral bones and features of the skull. 2 3

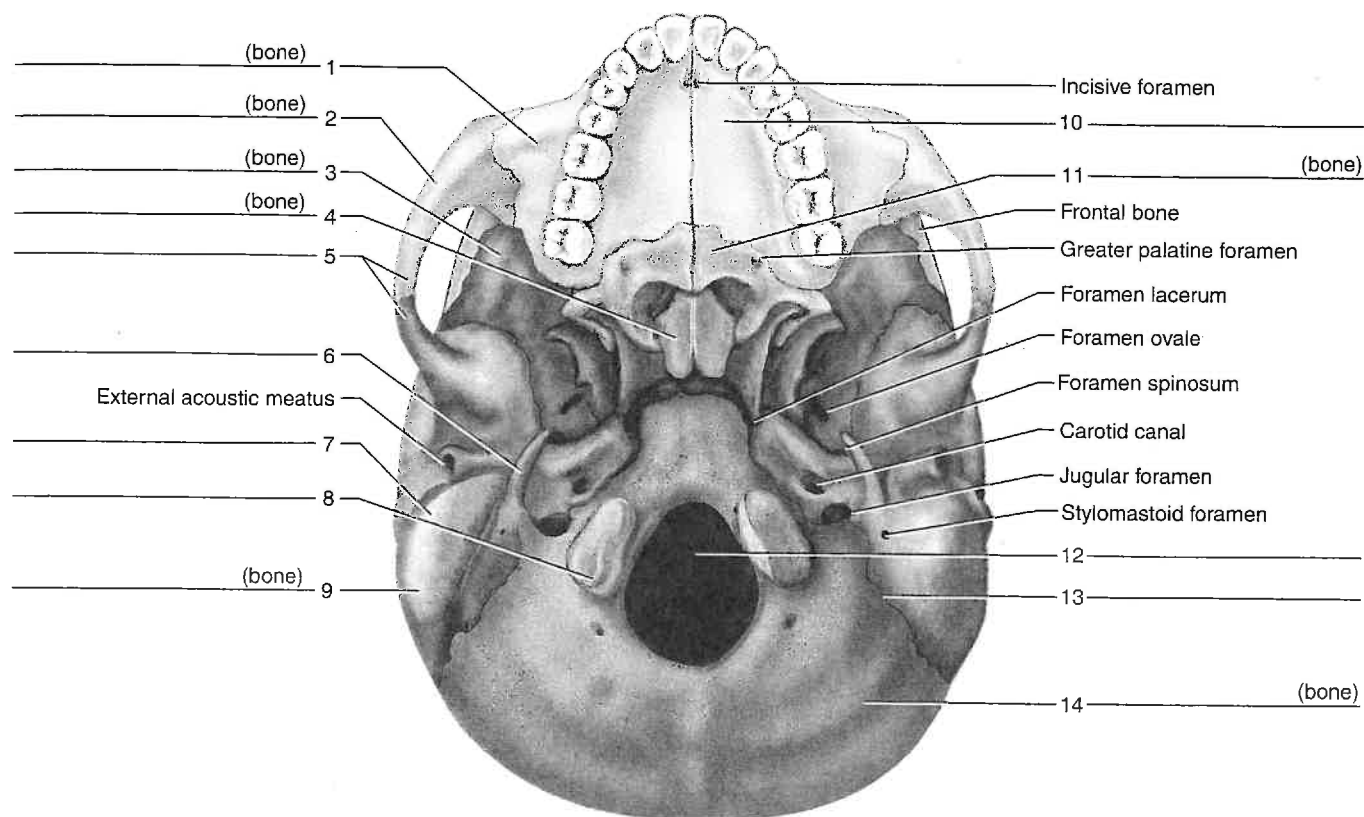


Figure 14.3 Label the inferior bones and features of the skull. **2**

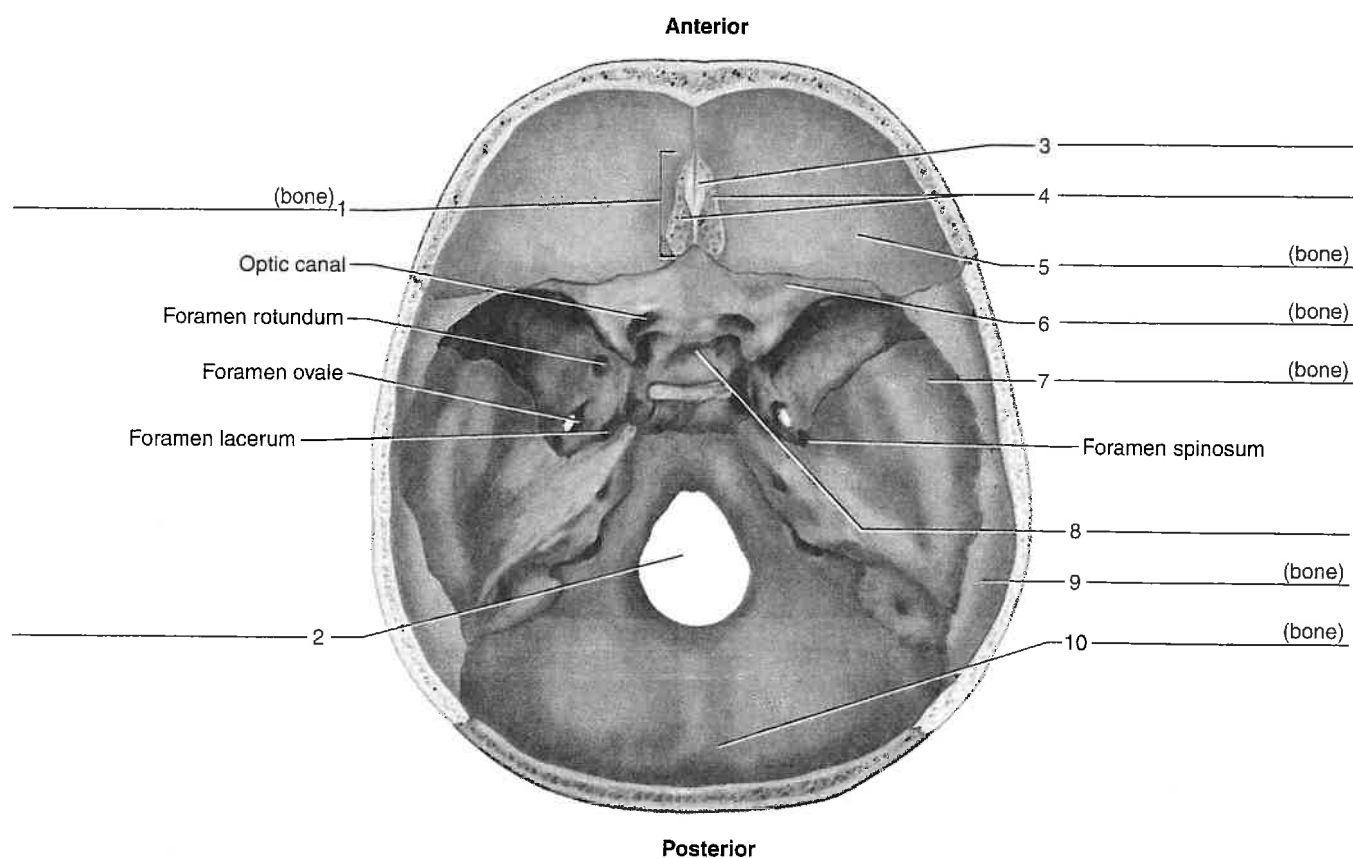


Figure 14.4 Label the bones and features of the floor of the cranial cavity as viewed from above. **2**

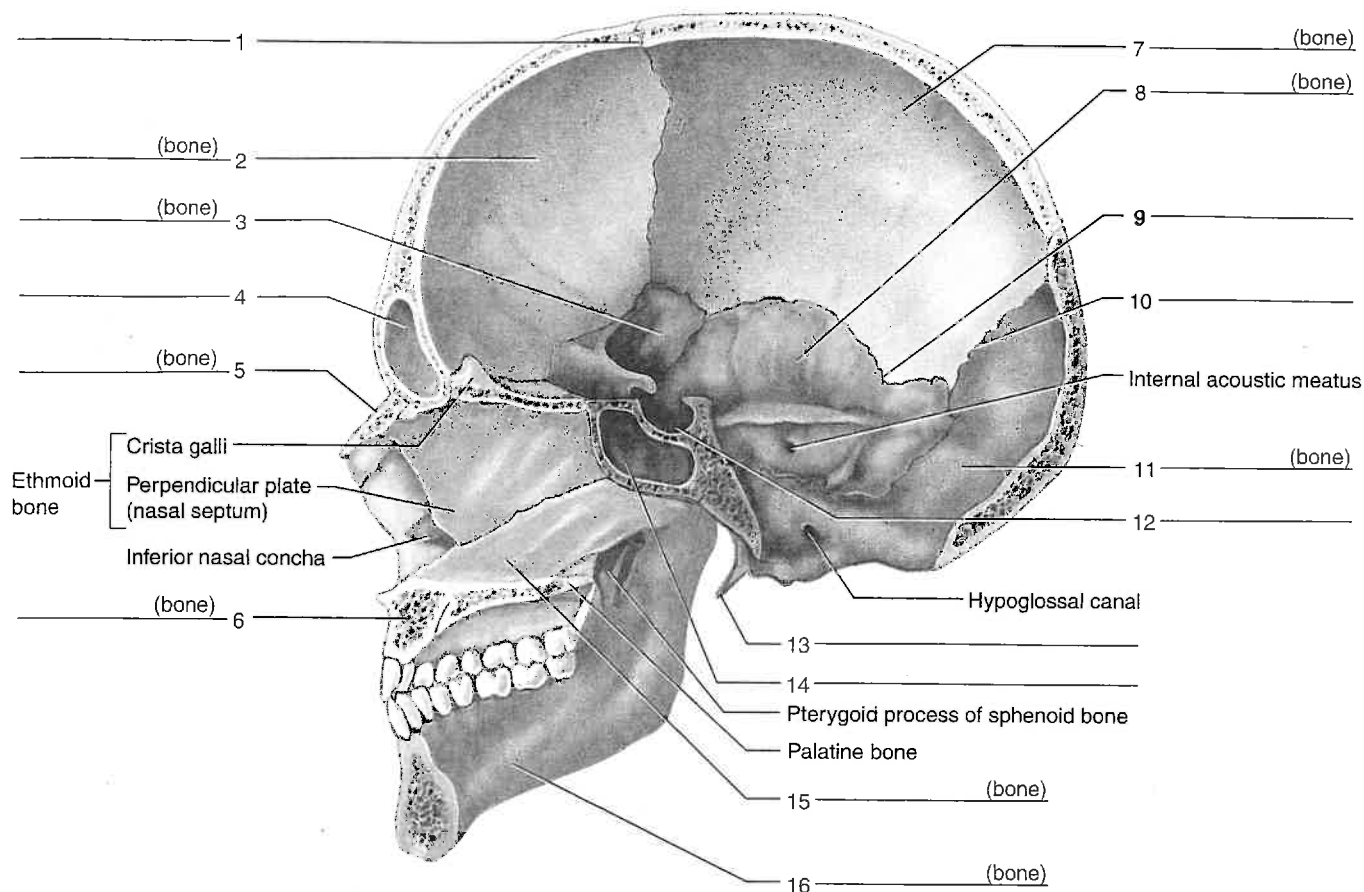


Figure 14.5 Label the bones and features of the sagittal section of the skull. **2 3 4**

4. Complete Parts A and B of Laboratory Report 14.
5. Examine the **facial bones** of the articulated and sectioned skulls and the corresponding disarticulated bones. Locate the following:

maxilla (2)

maxillary sinus
palatine process
alveolar process
alveolar arch

palatine bone (2)

zygomatic bone (2)

temporal process
zygomatic arch

lacrimal bone (2)

nasal bone (2)

vomer bone (1)

inferior nasal concha (2)

mandible (1)

ramus
mandibular condyle
coronoid process

alveolar border
mandibular foramen
mental foramen

6. Complete Part C of the laboratory report.



Learning Extension

Use colored pencils to differentiate the bones illustrated in figures 14.1 and 14.2. Select a different color for each bone in the series. This activity should help you locate various bones shown in different views in the figures. You can check your work by referring to the corresponding figures in the textbook, presented in full color.

7. Study table 7.8 of chapter 7 in the textbook. Locate the following features of the human skull:

carotid canal
foramen lacerum
foramen magnum
foramen ovale
foramen rotundum

foramen spinosum
 greater palatine foramen
 hypoglossal canal
 incisive foramen
 inferior orbital fissure
 infraorbital foramen
 internal acoustic meatus
 jugular foramen
 mandibular foramen
 mental foramen
 optic canal
 stylomastoid foramen
 superior orbital fissure
 supraorbital foramen

8. Complete Parts D and E of the laboratory report.



Critical Thinking Application

Examine the inside of the cranium on a sectioned skull. What area appears to be the weakest area? Explain your answer.

Demonstration

Examine the fetal skull and skeleton (figs. 14.6 and 14.7). The skull is incompletely developed and the cranial bones are separated by fibrous membranes. These membranous areas are called fontanel, or "soft spots." The fontanel close as the cranial bones grow together. The posterior and lateral fontanel usually close during the first year after birth, whereas the anterior fontanel may not close until the middle or end of the second year. What other features characterize the fetal skull?

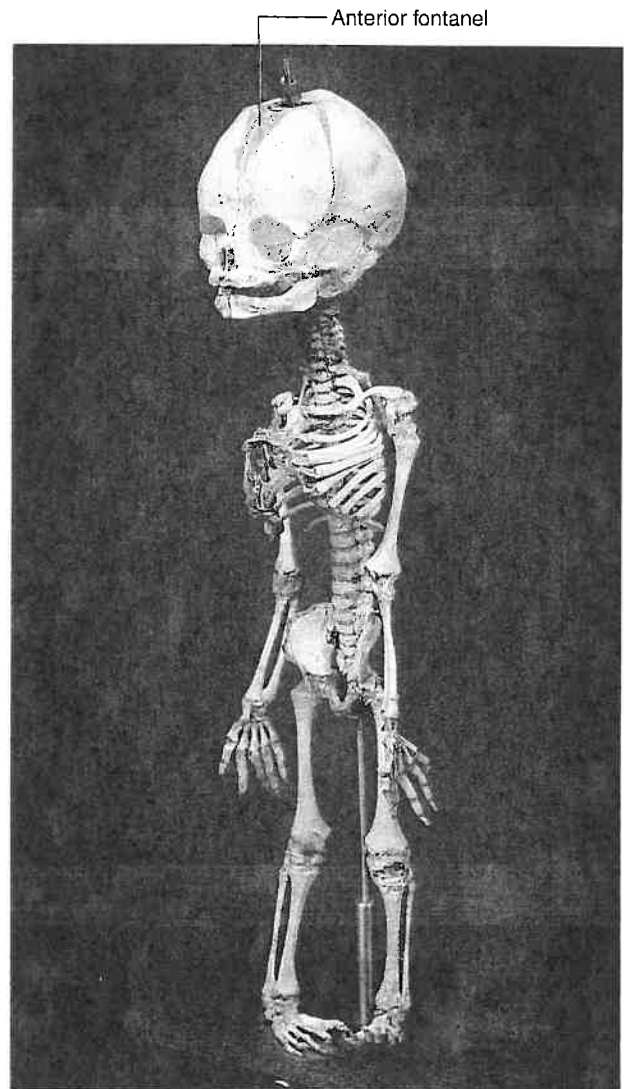


Figure 14.6 Human fetal skeleton. The gestational age of this skeleton is 7–8 months.

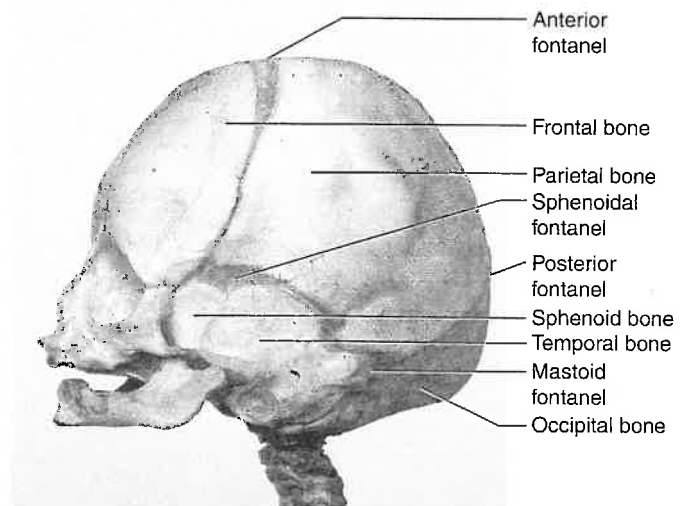


Figure 14.7 Lateral view of fetal skull.