

LABORATORY EXERCISE 17

PELVIC GIRDLE AND LOWER LIMB

MATERIALS NEEDED

Textbook
Human skeleton, articulated
Human skeleton, disarticulated
Male and female pelvis

For Learning Extension:

Colored pencils

The pelvic girdle includes two coxae (hipbones) that articulate with each other anteriorly at the symphysis pubis and posteriorly with the sacrum. Together, the pelvic girdle, sacrum, and coccyx comprise the pelvis. The pelvis, in turn, provides support for the trunk of the body and provides attachments for the lower limbs.

The bones of the lower limb form the framework of the thigh, leg, and foot. Each limb includes a femur, a patella, a tibia, a fibula, seven tarsals, five metatarsals, and fourteen phalanges.

PURPOSE OF THE EXERCISE

To examine the bones of the pelvic girdle and lower limb and to identify the major features of these bones.

LEARNING OBJECTIVES

After completing this exercise, you should be able to

1. Locate and identify the bones of the pelvic girdle and their major features.
2. Locate and identify the bones of the lower limb and their major features.

PROCEDURE A—THE PELVIC GIRDLE

1. Review the section entitled "Pelvic Girdle" in chapter 7 of the textbook.

2. As a review activity, label figures 17.1 and 17.2.
3. Examine the bones of the pelvic girdle and locate the following:

coxa (hipbone; innominate)

acetabulum
ilium
iliac crest
sacroiliac joint
anterior superior iliac spine
ischium
ischial tuberosity
ischial spine
pubis
symphysis pubis
pubic arch
obturator foramen

4. Complete Part A of Laboratory Report 17.



Critical Thinking Application

Examine the male and female pelvis. Look for major differences between them. Note especially the flare of the iliac bones, the angle of the pubic arch, the distance between the ischial spines and ischial tuberosities, and the curve and width of the sacrum. In what ways are the differences you observed related to the function of the female pelvis as a birth canal?

Figure 17.1 Label the bones of the pelvis (posterior view).

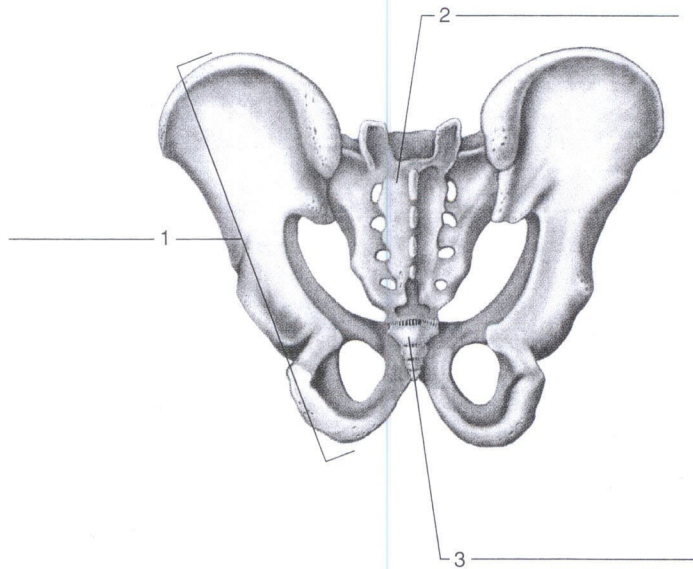
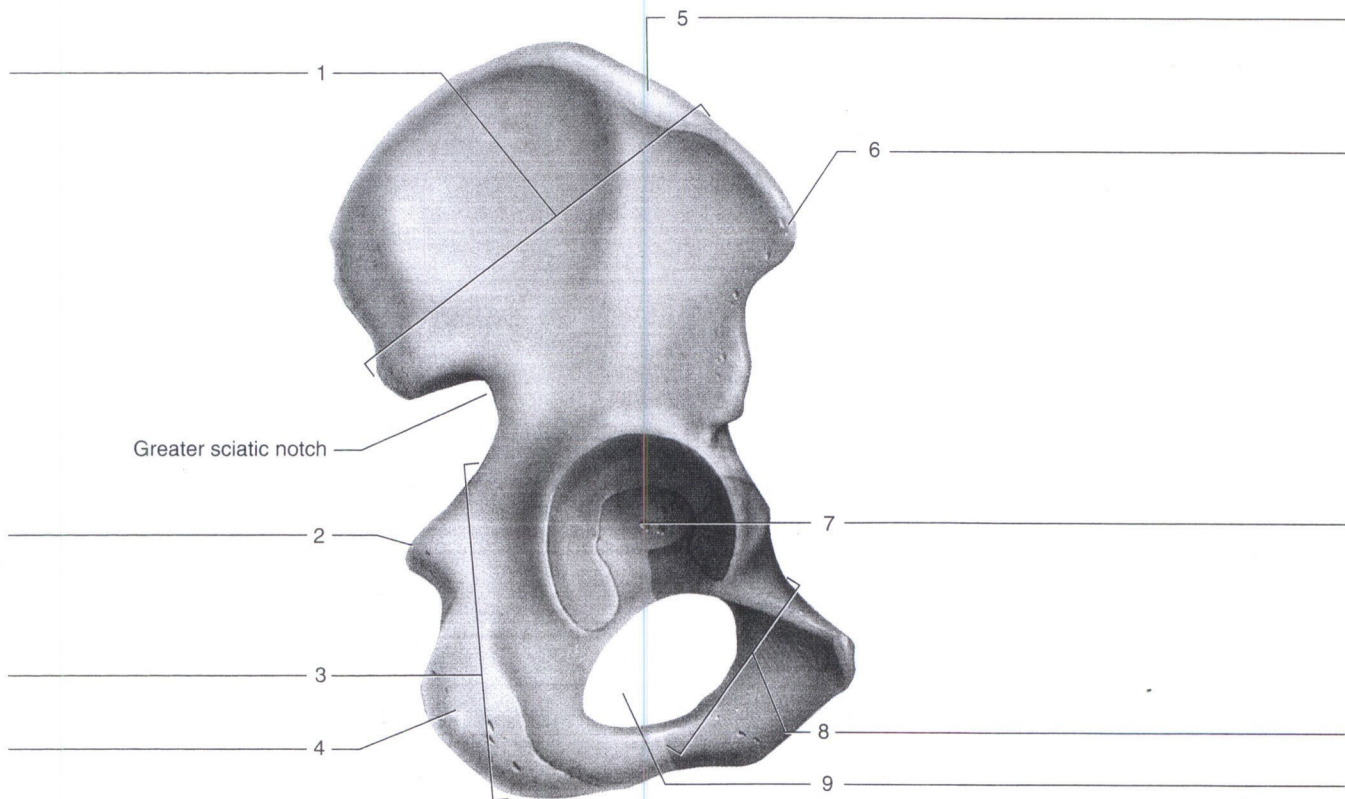


Figure 17.2 Label the lateral features of the right coxa.



PROCEDURE B—THE LOWER LIMB

1. Review the section entitled "Lower Limb" in chapter 7 of the textbook.
2. As a review activity, label figures 17.3, 17.4, and 17.5.
3. Examine the bones of the lower limb and locate each of the following:

femur

- head
- fovea capitis
- neck
- greater trochanter
- lesser trochanter

linea aspera

- lateral condyle
- medial condyle
- lateral epicondyle
- medial epicondyle

patella

tibia

- medial condyle
- lateral condyle
- tibial tuberosity
- anterior crest
- medial malleolus

fibula

- head
- lateral malleolus

tarsal bones

- talus
- calcaneus

navicular

- cuboid
- lateral cuneiform
- intermediate cuneiform
- medial cuneiform

metatarsal bones

phalanges

- proximal phalanx
- middle phalanx
- distal phalanx

Figure 17.3 Label the features of (a) the anterior surface and (b) the posterior surface of the right femur.

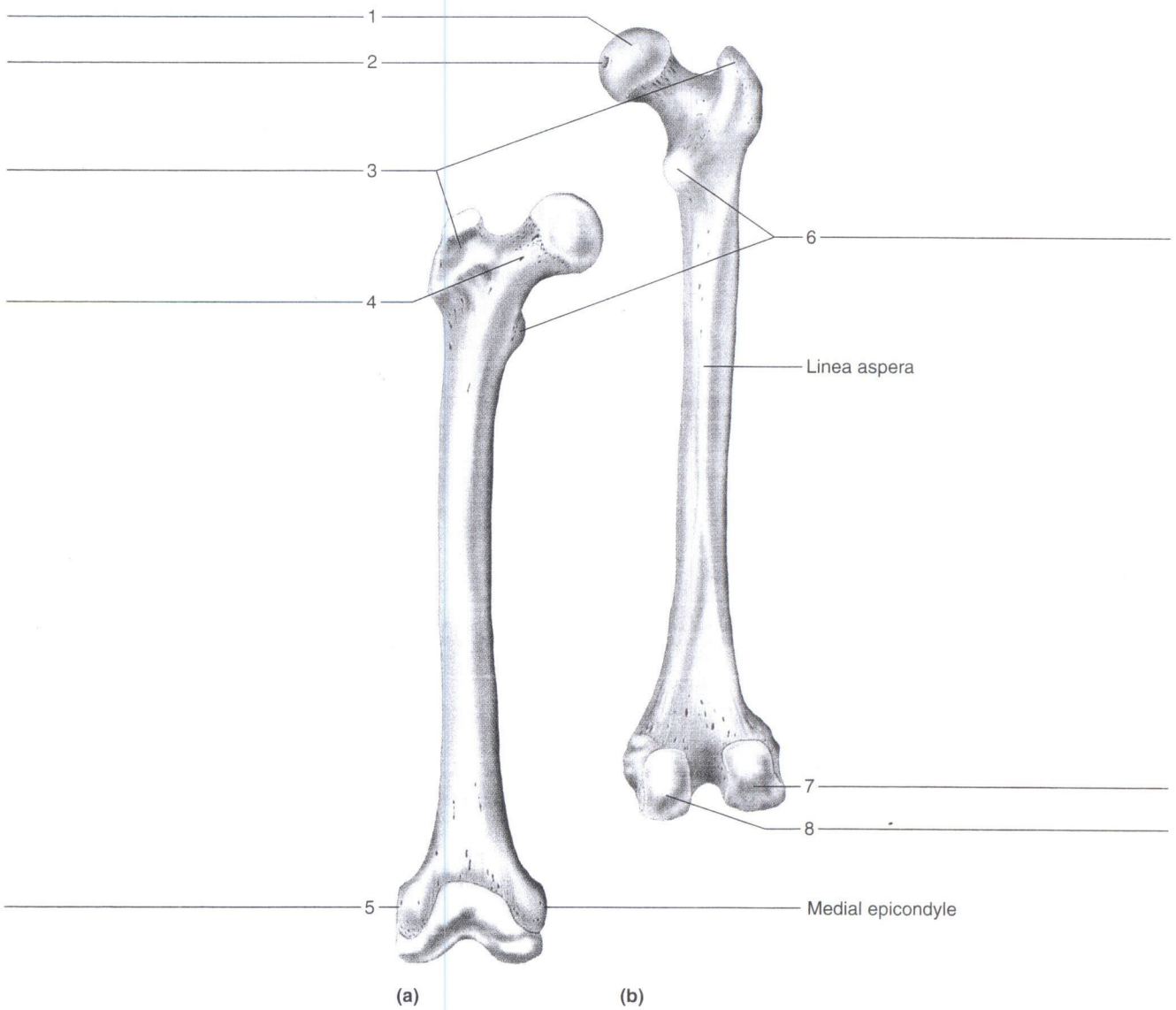
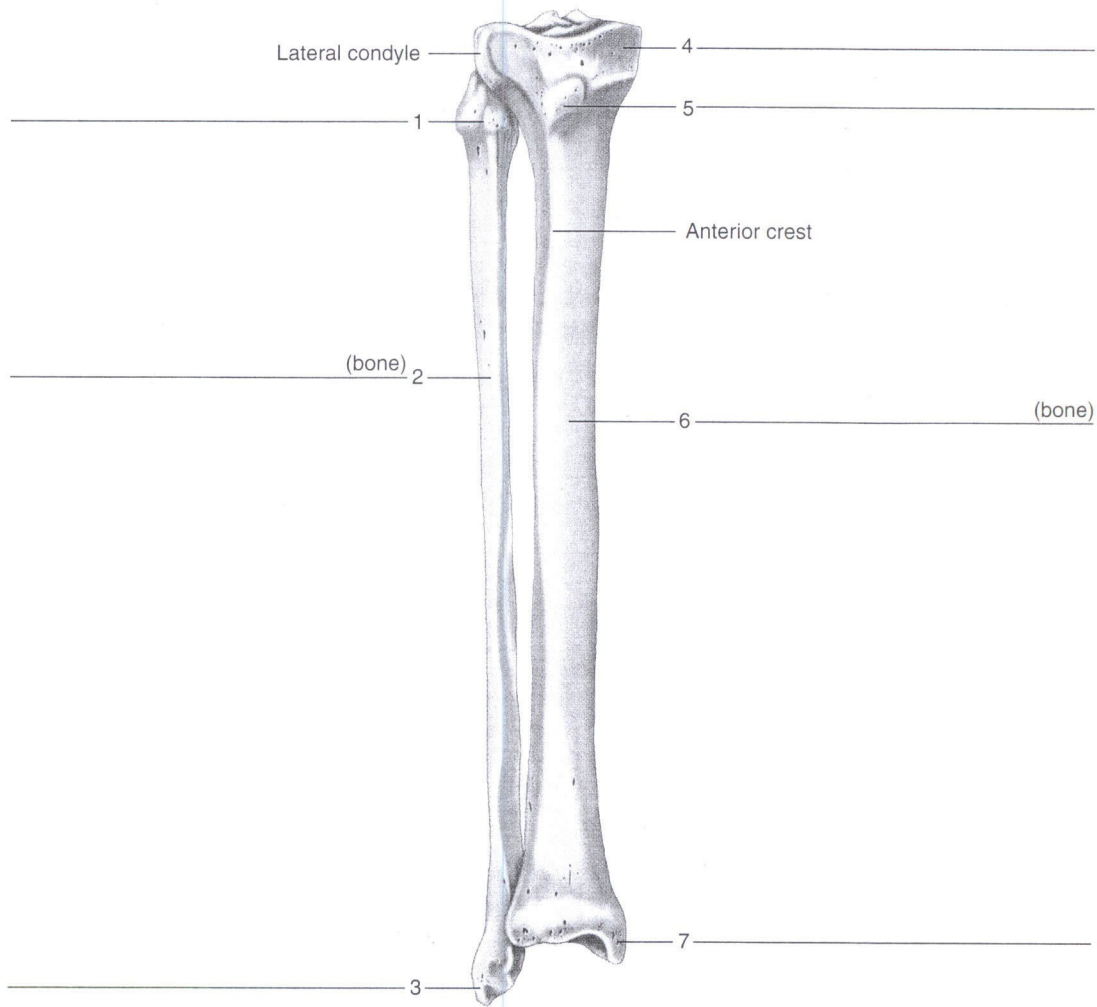


Figure 17.4 Label the bones and features of the right tibia and fibula in this anterior view.



4. Complete Parts B, C, and D of the laboratory report.

LEARNING EXTENSION

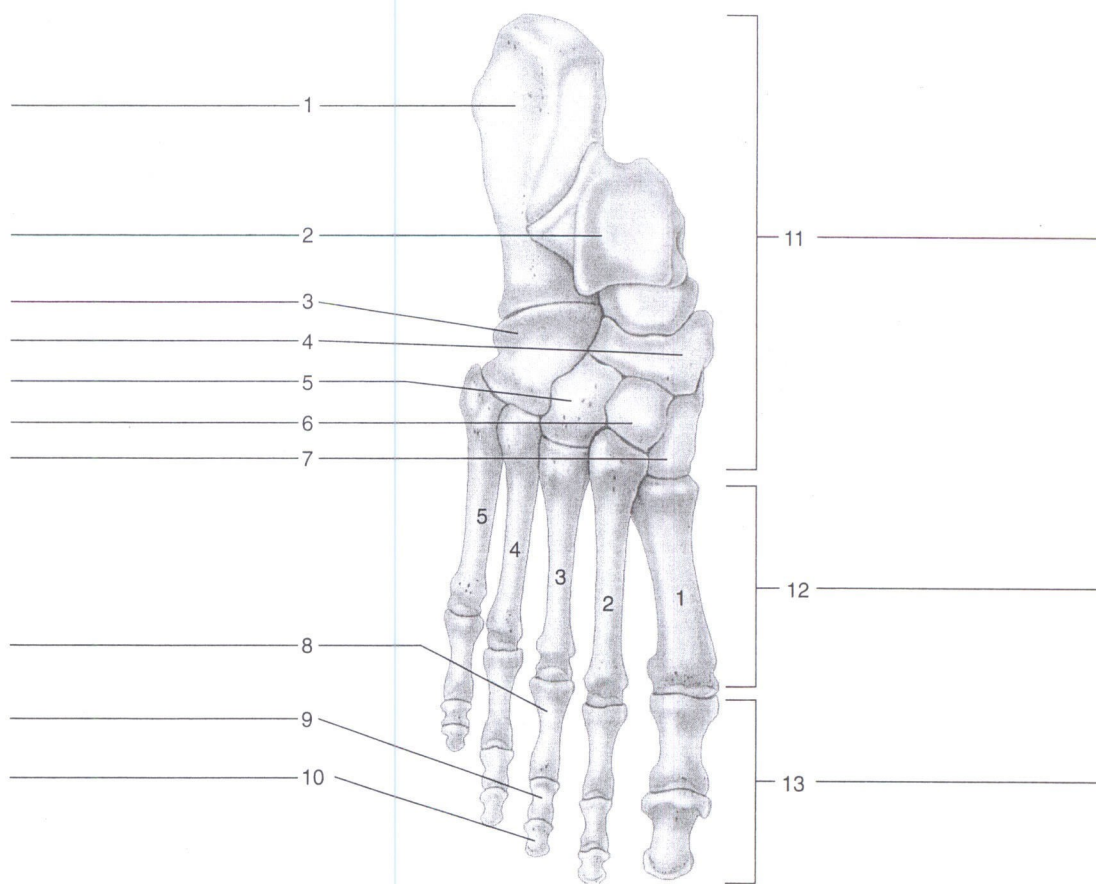
Use different colored pencils to distinguish the individual bones in figure 17.5.



Web Quest

What are the functions of individual bones and features? Search these and review the anatomy of the skeleton at www.mhhe.com/shieress9

Figure 17.5 Label the bones of the superior surface of the right foot.



PELVIC GIRDLE AND LOWER LIMB

PART A

Complete the following statements:

1. The pelvic girdle consists of two _____.
2. The head of the femur articulates with the _____ of the coxa.
3. The _____ is the largest portion of the coxa.
4. The pubic bones come together anteriorly to form the joint called the _____.
5. The _____ is the portion of the ilium that causes the prominence of the hip.
6. When a person sits, the _____ of the ischium supports the weight of the body.
7. The angle formed by the pubic bones below the symphysis pubis is called the _____.
8. The _____ is the largest foramen in the skeleton.
9. The ilium joins the sacrum at the _____ joint.

PART B

Match the bones in column A with the features in column B. Place the letter of your choice in the space provided.

Column A	Column B
a. Femur	_____ 1. Middle phalanx
b. Fibula	_____ 2. Lesser trochanter
c. Metatarsals	_____ 3. Medial malleolus
d. Patella	_____ 4. Fovea capitis
e. Phalanges	_____ 5. Calcaneus
f. Tarsals	_____ 6. Lateral cuneiform
g. Tibia	_____ 7. Tibial tuberosity
	_____ 8. Talus
	_____ 9. Cuboid
	_____ 10. Lateral malleolus
	_____ 11. Located in a tendon over the knee
	_____ 12. Five bones that form the instep

PART C

Identify the bones and features indicated in the radiographs (X rays) of figures 17.6, 17.7, and 17.8.

Figure 17.6 Identify the bones and features indicated on this radiograph of the pelvic region, using the terms provided.

Terms:

- Head of femur
- Ilium
- Obturator foramen
- Pubis
- Sacrum
- Symphysis pubis

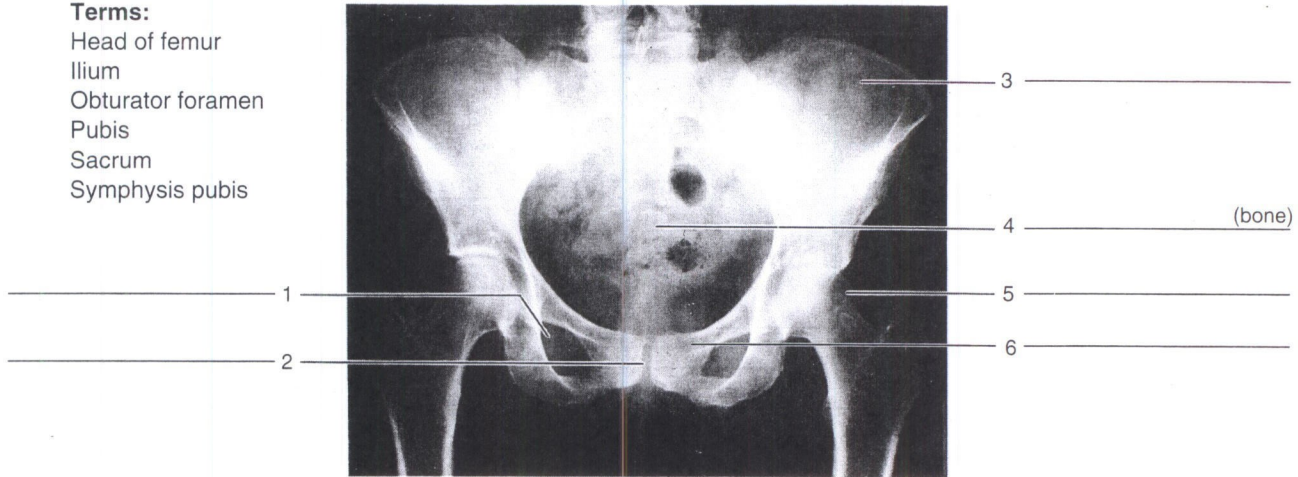


Figure 17.7 Identify the bones and features indicated on this radiograph of the knee, using the terms provided.

Terms:

- Femur
- Fibula
- Head of fibula
- Lateral condyle
- Lateral epicondyle
- Tibia

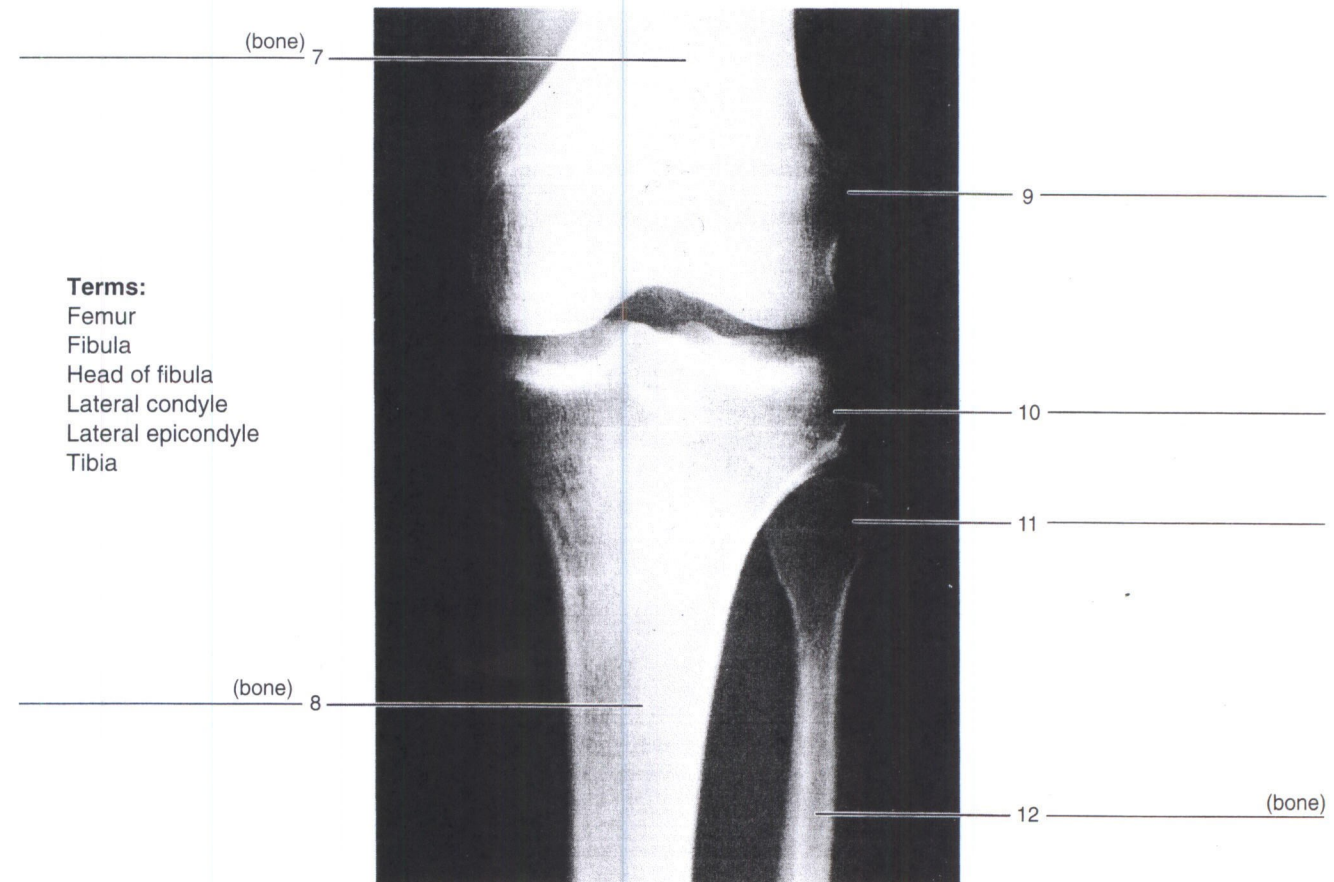
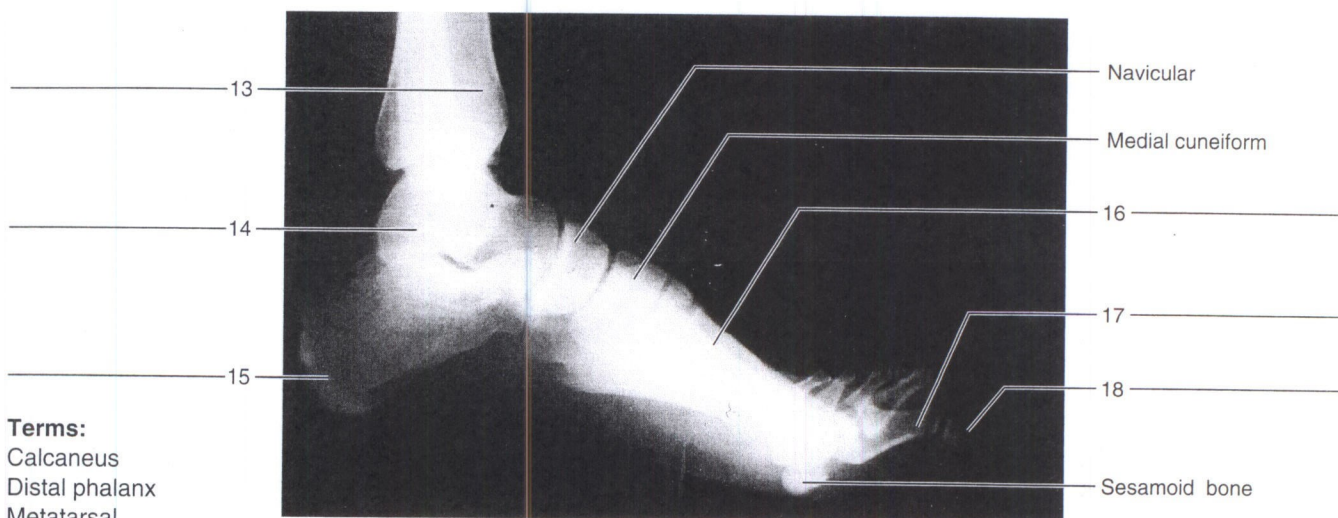


Figure 17.8 Identify the bones indicated on this radiograph of the left foot, using the terms provided.



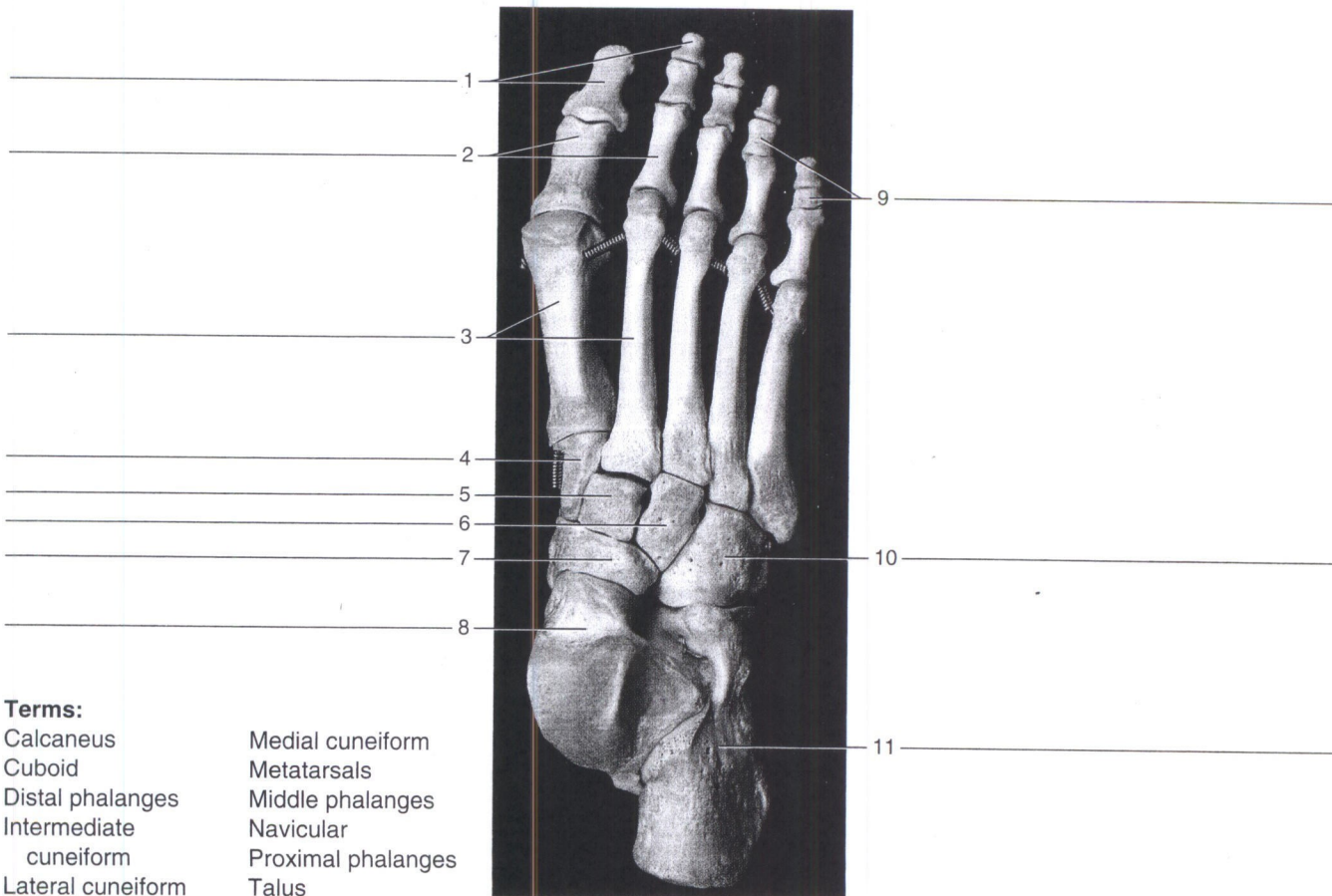
Terms:

- Calcaneus
- Distal phalanx
- Metatarsal
- Proximal phalanx
- Talus
- Tibia

PART D

Identify the bones of the foot in figure 17.9.

Figure 17.9 Identify the bones indicated on this superior view of the right foot, using the terms provided.



Terms:

- | | |
|------------------------|--------------------|
| Calcaneus | Medial cuneiform |
| Cuboid | Metatarsals |
| Distal phalanges | Middle phalanges |
| Intermediate cuneiform | Navicular |
| Lateral cuneiform | Proximal phalanges |
| | Talus |