LABORATORY EXERCISE 16

PECTORAL GIRDLE AND UPPER LIMB

MATERIALS NEEDED

Textbook
Human skeleton, articulated
Human skeleton, disarticulated

For Learning Extension:

Colored pencils

The pectoral girdle consists of two clavicles and two scapulae. These parts support the upper limbs and serve as attachments for various muscles that move these limbs.

Each upper limb includes a humerus, a radius, an ulna, eight carpals, five metacarpals, and fourteen phalanges. These bones form the framework of the arm, forearm, and hand. They also function as parts of levers when the limbs are moved.

PURPOSE OF THE EXERCISE

To examine the bones of the pectoral girdle and upper 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 pectoral girdle and their major features.
2. Locate and identify the bones of the upper limb and their major features.

PROCEDURE A—THE PECTORAL GIRDLE

1. Review the section entitled "Pectoral Girdle" in chapter 7 of the textbook.
2. As a review activity, label figures 16.1 and 16.2.
3. Examine the bones of the pectoral girdle and locate the following features. At the same time, locate as many of the corresponding surface bones and features of your own skeleton as possible.

clavicle

scapula

- spine
- acromion process
- coracoid process
- glenoid cavity (fossa)

Critical Thinking Application

Why is the clavicle a bone that can easily fracture?

4. Complete Part A of Laboratory Report 16.

Figure 16.1 Label the bones and features of the right shoulder and upper limb (anterior view).

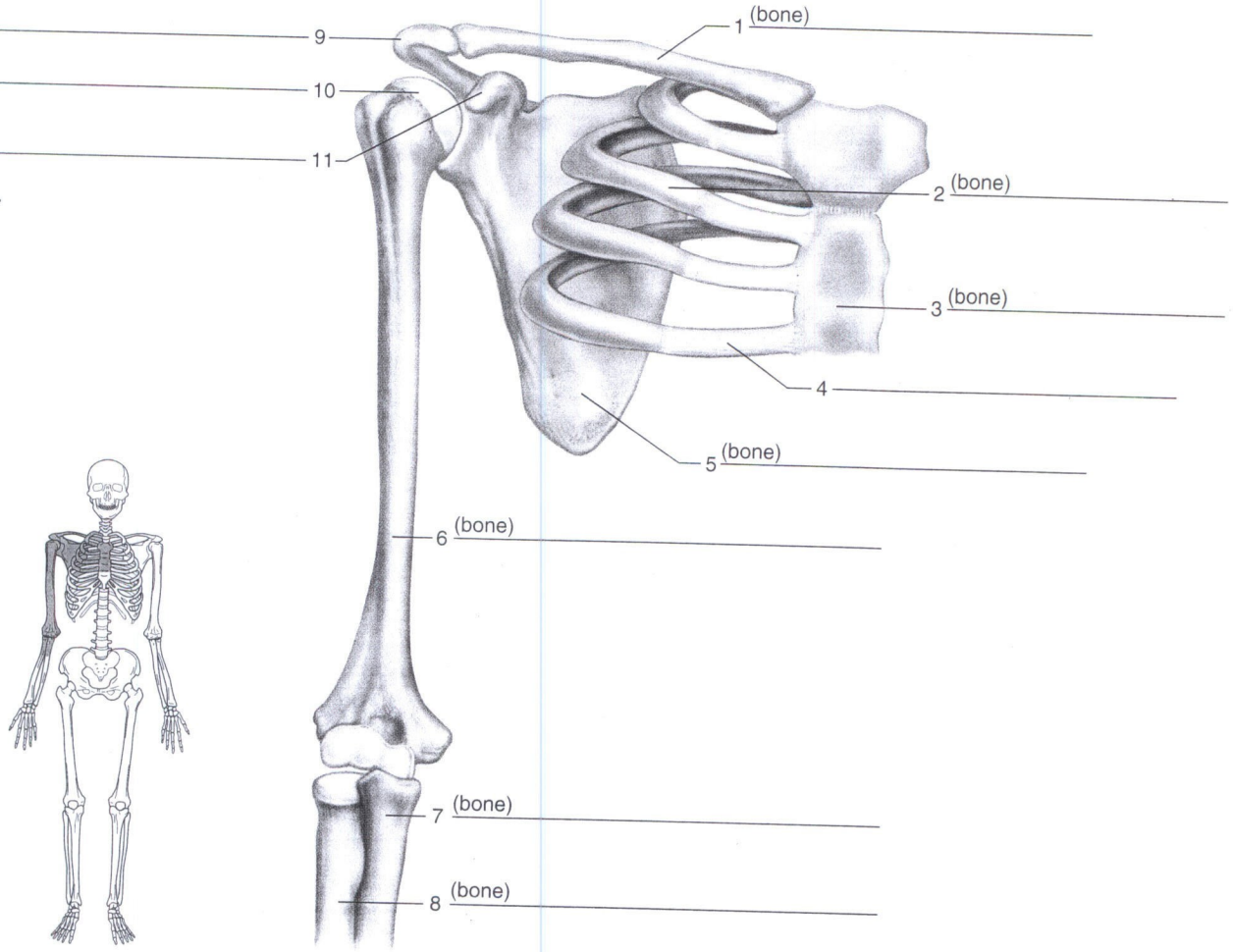
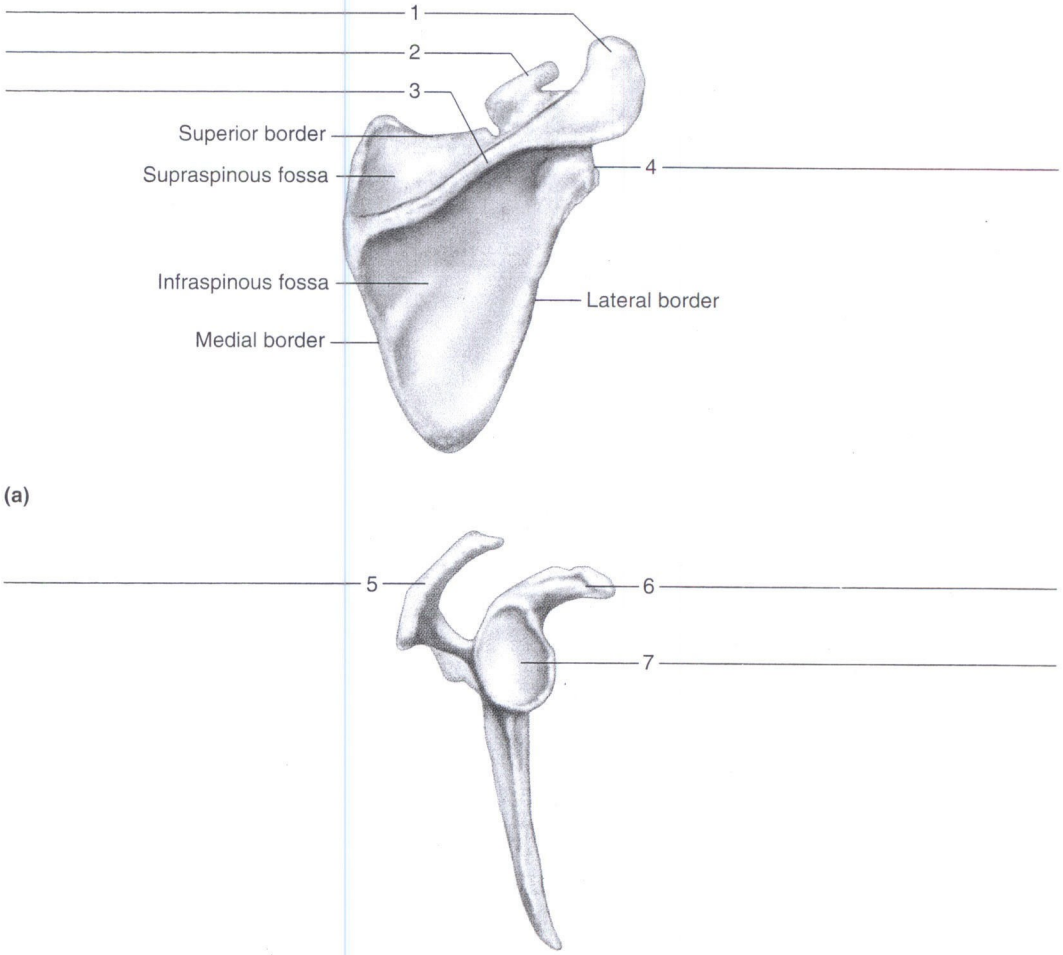


Figure 16.2 Label (*a*) the posterior surface of the right scapula and (*b*) the lateral aspect of the right scapula.



PROCEDURE B—THE UPPER LIMB

1. Review the section entitled "Upper Limb" in chapter 7 of the textbook.
2. As a review activity, label figures 16.3, 16.4, and 16.5.
3. Examine the following bones and features of the upper limb:

humerus
- head
- greater tubercle
- lesser tubercle
- intertubercular groove
- anatomical neck
- surgical neck
- deltoid tuberosity
- capitulum
- trochlea
- medial epicondyle
- lateral epicondyle
- coronoid fossa
- olecranon fossa

radius
- head
- radial tuberosity
- styloid process

ulna
- trochlear notch (semilunar notch)
- olecranon process
- coronoid process
- styloid process
- head

Figure 16.3 Label the (*a*) anterior surface and (*b*) posterior surface of the right humerus.

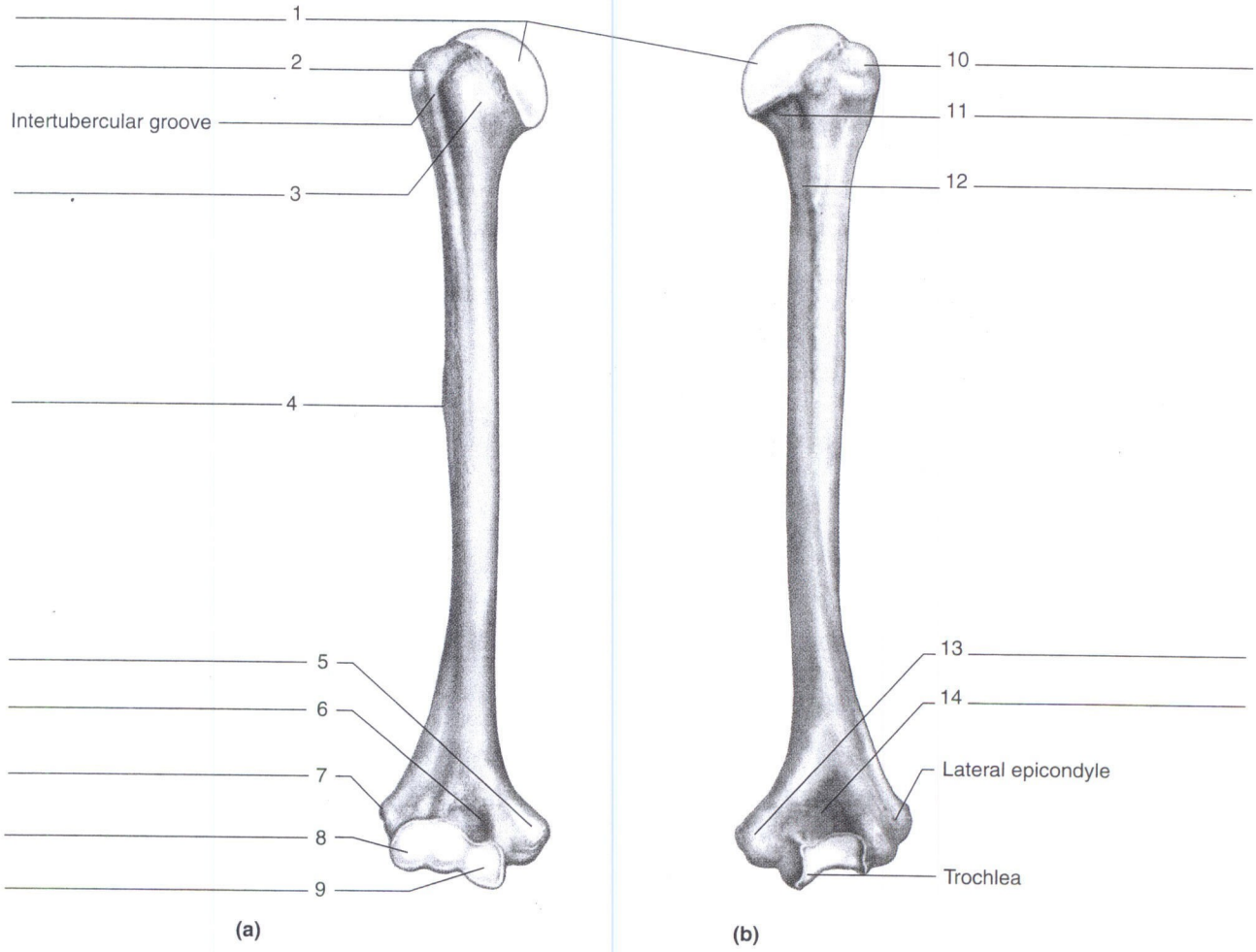


Figure 16.4 Label the major anterior features of the right radius and ulna (anterior view).

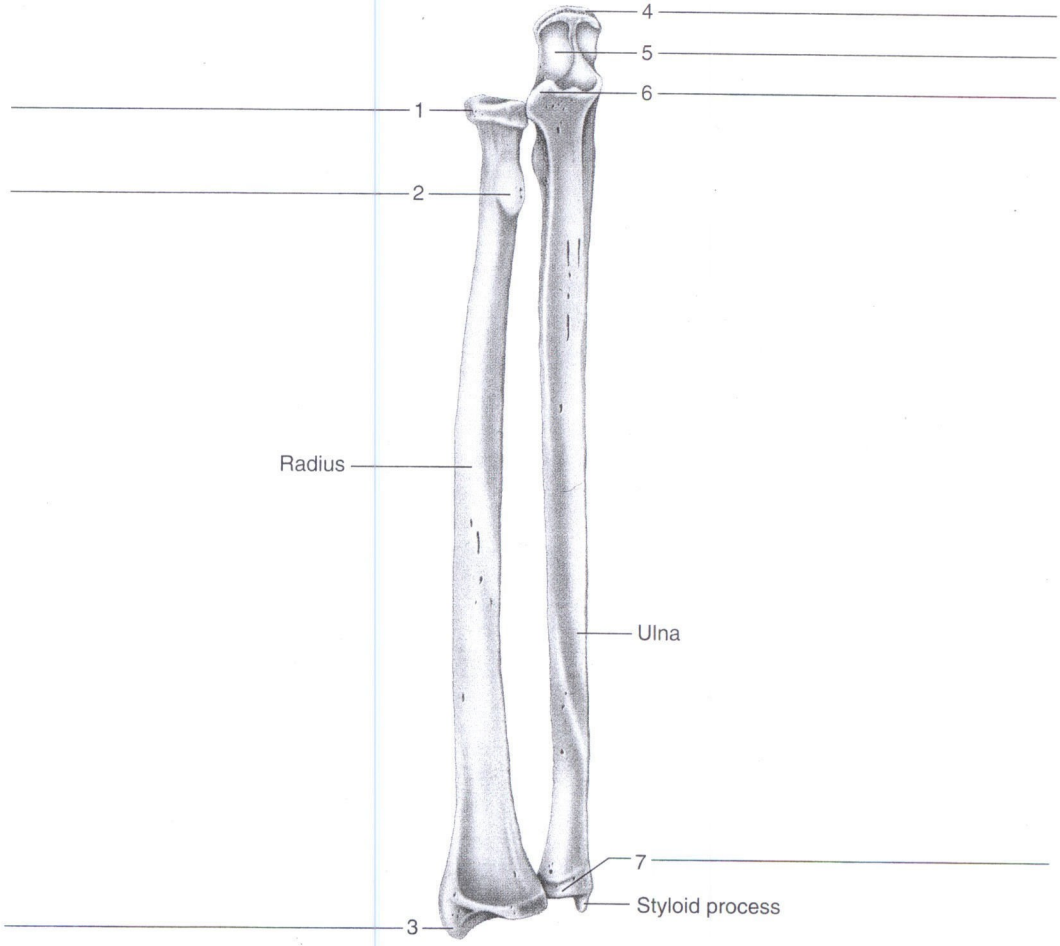
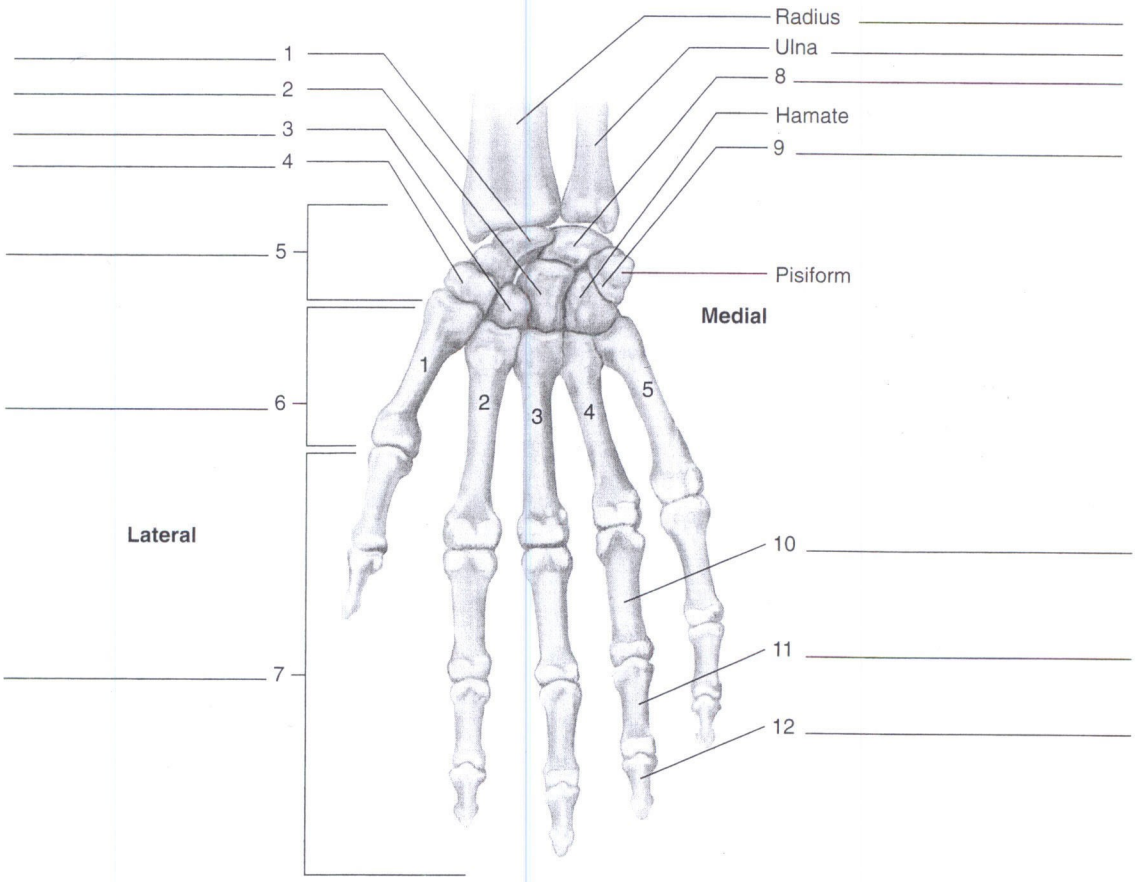


Figure 16.5 Label the bones and groups of bones in this anterior view of the right hand.



carpal bones

proximal row (listed lateral to medial)

scaphoid

lunate

triquetrum

pisiform

distal row (listed medial to lateral)

hamate

capitate

trapezoid

trapezium

The following mnemonic device will help you learn the eight carpals:

So **L**ong **T**op **P**art
Here **C**omes **T**he **T**humb

The first letter of each word corresponds to the first letter of a carpal. Notice that this device arranges the carpals in order for the proximal, transverse row of four bones from lateral to medial, followed by the distal, transverse row from medial to lateral, which ends nearest the thumb. This arrangement assumes the anatomical position of the hand.

metacarpal bones

phalanges

proximal phalanx

middle phalanx

distal phalanx

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

LEARNING EXTENSION

Use different colored pencils to distinguish the individual bones in figure 16.5.

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

Laboratory Report 16

Name _____

Date _____

Section _____

Pectoral Girdle and Upper Limb

PART A

Complete the following statements:

1. The pectoral girdle is an incomplete ring because it is open in the back between the _____ .
2. The medial ends of the clavicles articulate with the _____ of the sternum.
3. The lateral ends of the clavicles articulate with the _____ of the scapula.
4. The _____ divides the posterior side of the scapula into unequal portions.
5. The tip of the shoulder is due to the _____ of the scapula.
6. At the lateral end of the scapula, the _____ curves anteriorly and inferiorly from the clavicle.
7. The glenoid cavity of the scapula articulates with the _____ of the humerus.

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

a. Carpals
b. Humerus
c. Metacarpals
d. Phalanges
e. Radius
f. Ulna

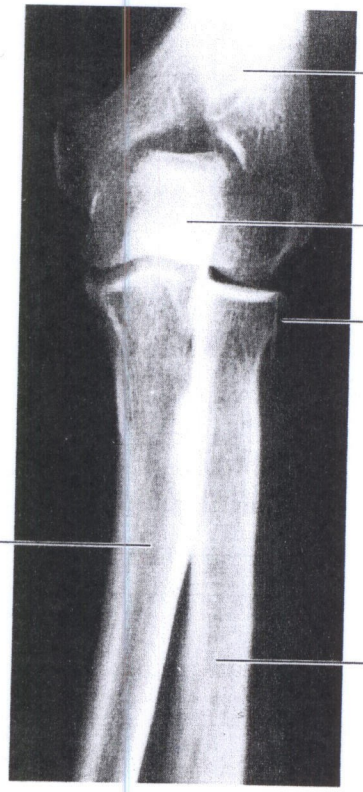
Column B

_____ 1. Capitate
_____ 2. Coronoid fossa
_____ 3. Deltoid tuberosity
_____ 4. Greater tubercle
_____ 5. Intertubercular groove
_____ 6. Lunate
_____ 7. Olecranon fossa
_____ 8. Five palmar bones
_____ 9. Radial tuberosity
_____ 10. Trapezium
_____ 11. Trochlear notch
_____ 12. Fourteen bones in digits

PART C

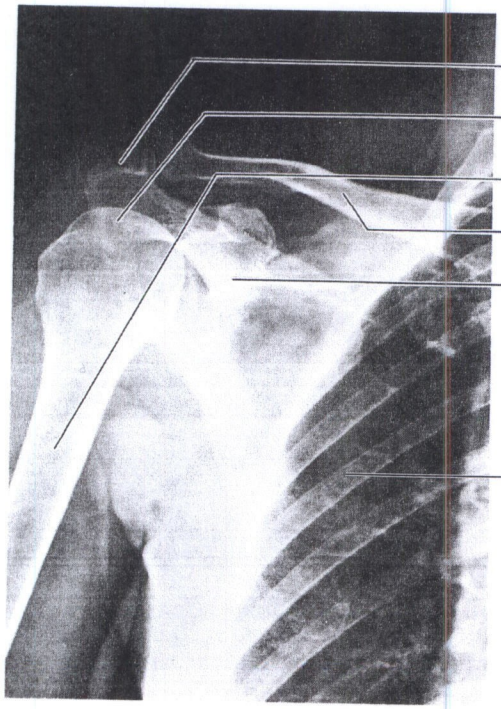
Identify the bones and features indicated in the radiographs (X rays) of figures 16.6, 16.7, and 16.8.

Figure 16.6 Identify the bones and features indicated on this radiograph of the elbow, using the terms provided.



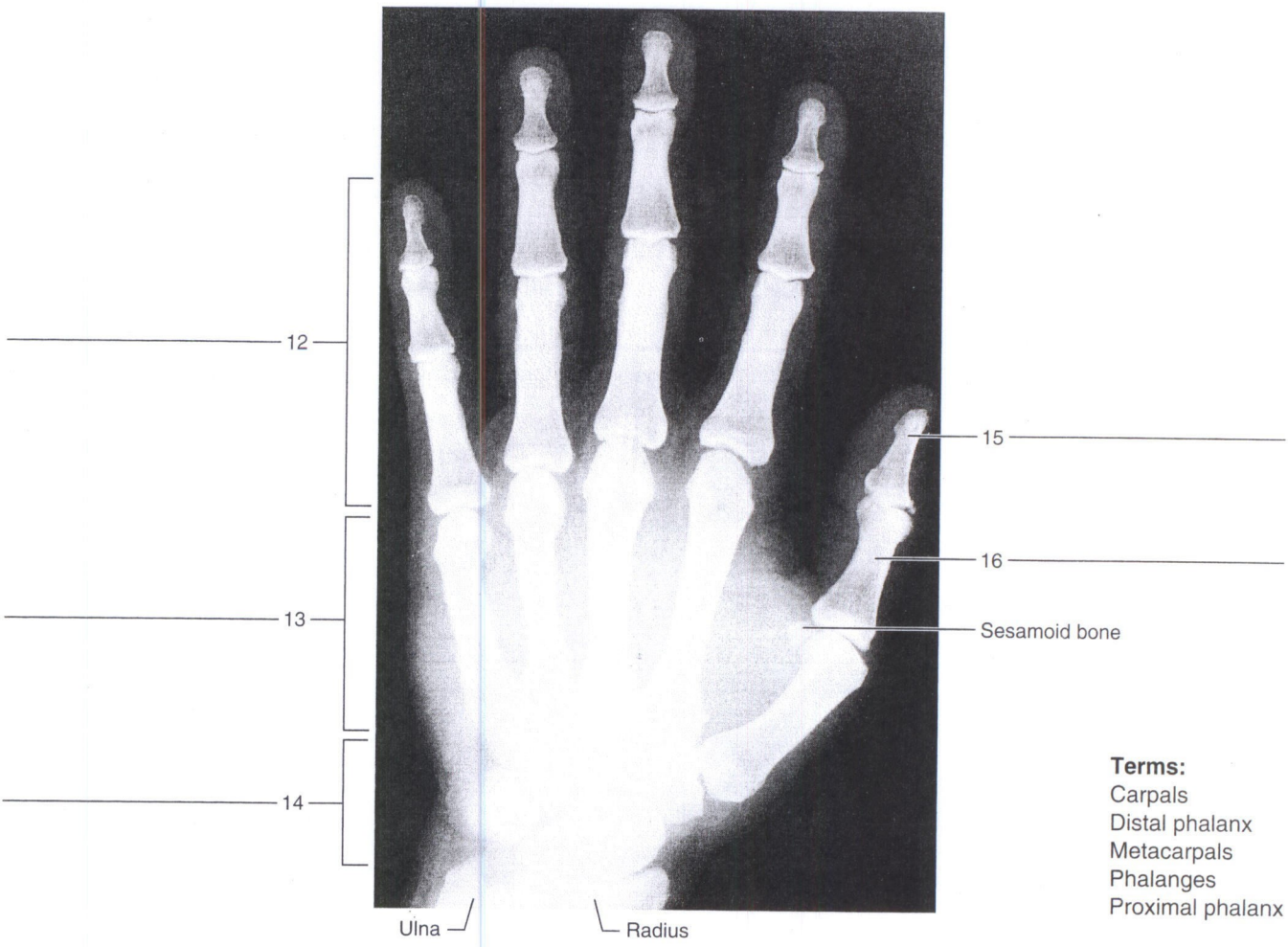
Terms:
Head of radius
Humerus
Olecranon process
Radius
Ulna

Figure 16.7 Identify the bones and features indicated on this radiograph of the shoulder, using the terms provided.



Terms:
Acromion process
Clavicle
Head of humerus
Humerus
Rib
Scapula

Figure 16.8 Identify the bones indicated on this radiograph of the left hand, using the terms provided.



Terms:
Carpals
Distal phalanx
Metacarpals
Phalanges
Proximal phalanx

PART D

Identify the bones of the hand in figure 16.9.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____

Figure 16.9 Identify the bones that are numbered on this anterior view of the right hand, using the terms provided.

Terms:
Capitate
Distal phalanges
Hamate
Lunate
Metacarpals
Middle phalanges
Pisiform
Proximal phalanges
Scaphoid
Trapezium
Trapezoid
Triquetrum