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 (shoulder 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 OUTCOMES

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.

EXPLORE

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
- medial (sternal) end
- lateral (acromial) end

scapula
- spine
- acromion process
- coracoid process
- glenoid cavity
- borders
  - superior border
  - medial (vertebral) border
  - lateral (axillary) border
- fossae
  - supraspinous fossa
  - infraspinous fossa

Critical Thinking Application

Why is the clavicle a bone that can easily fracture?

4. Complete Part A of Laboratory Report 16.

EXPLORE

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, 16.5, and 16.6.

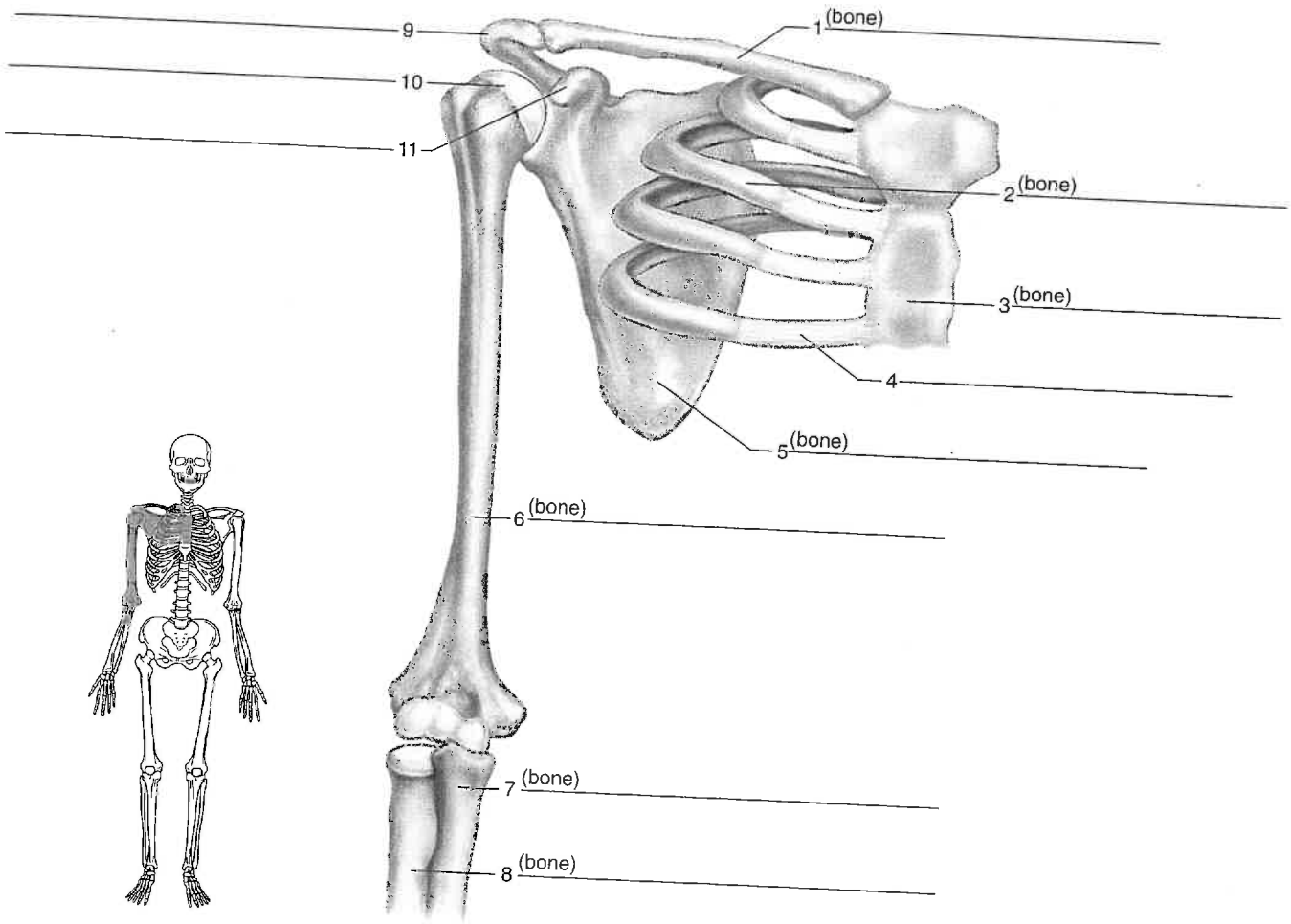

Figure 16.1 Label the bones and features of the right shoulder and upper limb (anterior view). 1 2

3. Examine the following bones and features of the upper limb:

humerus
- proximal features
  - head
  - greater tubercle
  - lesser tubercle
  - anatomical neck
  - surgical neck
  - intertubercular groove (sulcus)
- shaft
  - deltoid tuberosity
- distal features
  - capitulum
  - trochlea
  - medial epicondyle
  - lateral epicondyle
  - coronoid fossa
  - olecranon fossa

radius
- head
- radial tuberosity
- styloid process
- ulnar notch

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

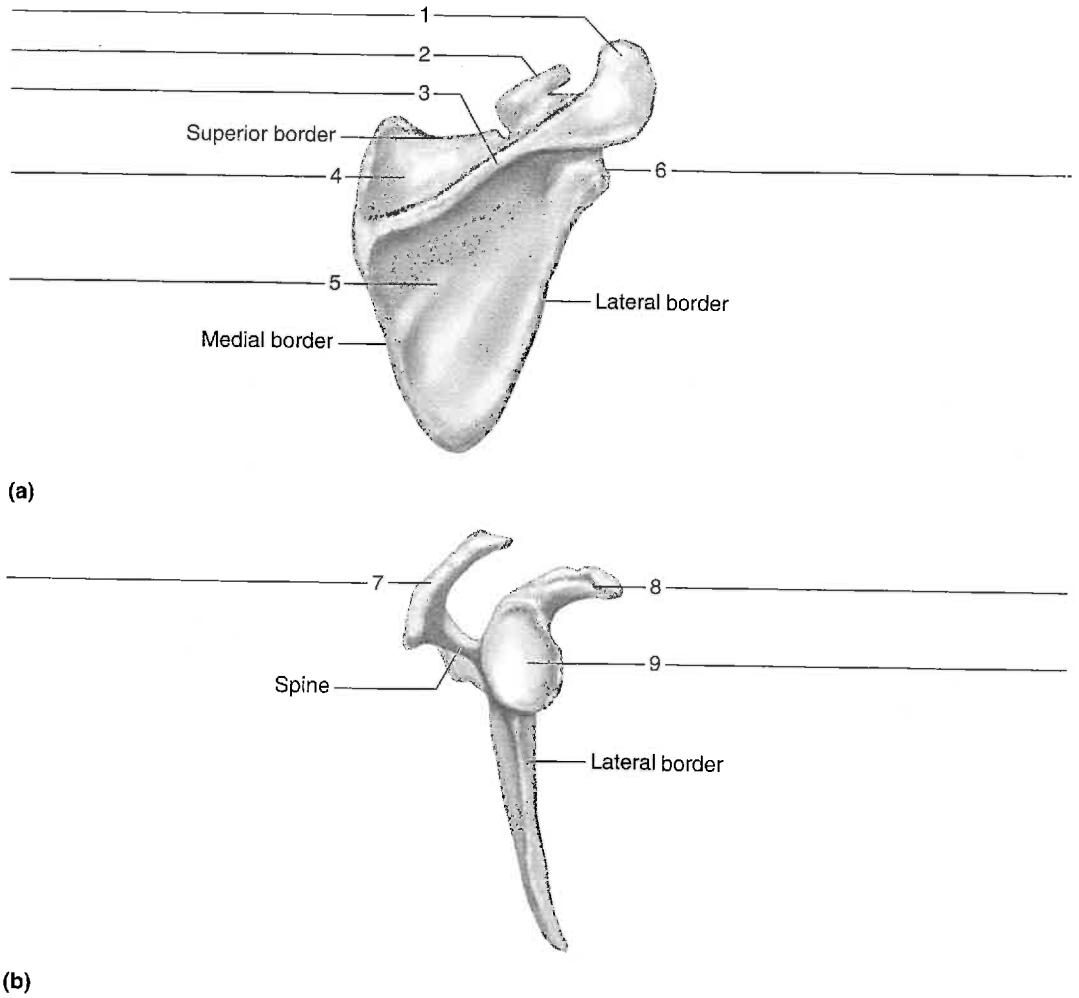

Figure 16.2 Label (*a*) the posterior surface of the right scapula and (*b*) the lateral aspect of the right scapula.

carpal bones
- proximal row (listed lateral to medial)
  - scaphoid
  - lunate
  - triquetrum
  - pisiform
- distal row (listed medial to lateral)
  - hamate
  - capitate
  - trapezoid
  - trapezium

metacarpal bones

phalanges
- proximal phalanx
- middle phalanx
- distal phalanx

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

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. 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 hand is in the anatomical position.

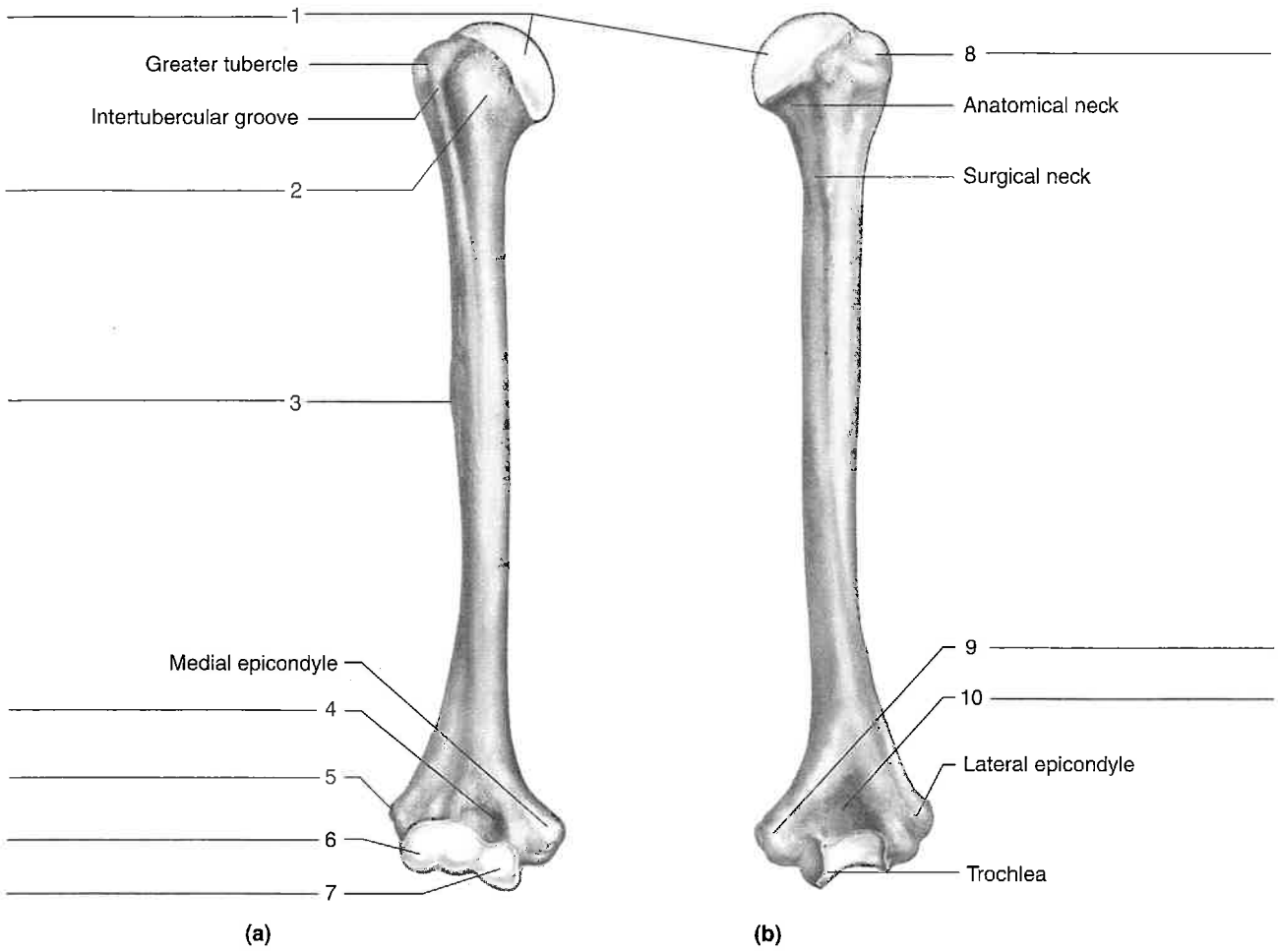

Figure 16.3 Label the (*a*) anterior surface and (*b*) posterior surface of the right humerus.

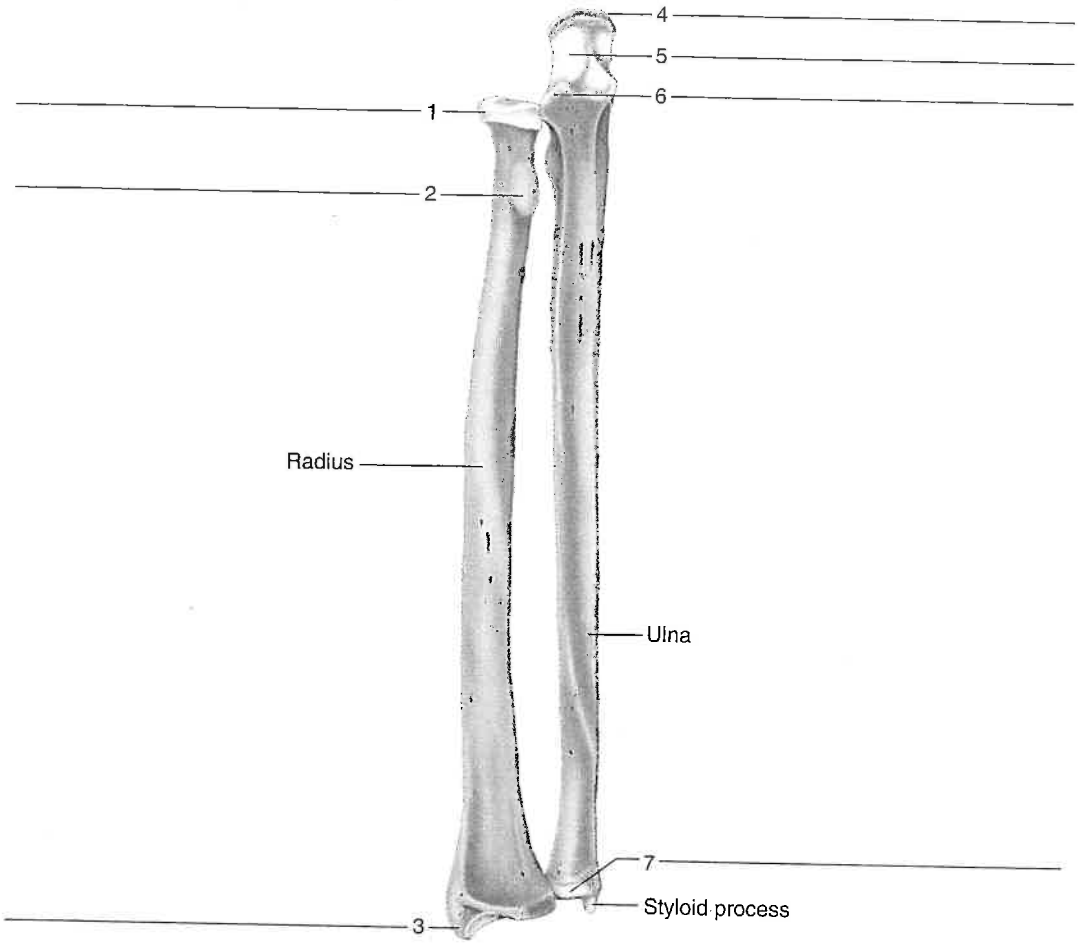

Figure 16.4 Label the major anterior features of the right radius and ulna (anterior view). 2

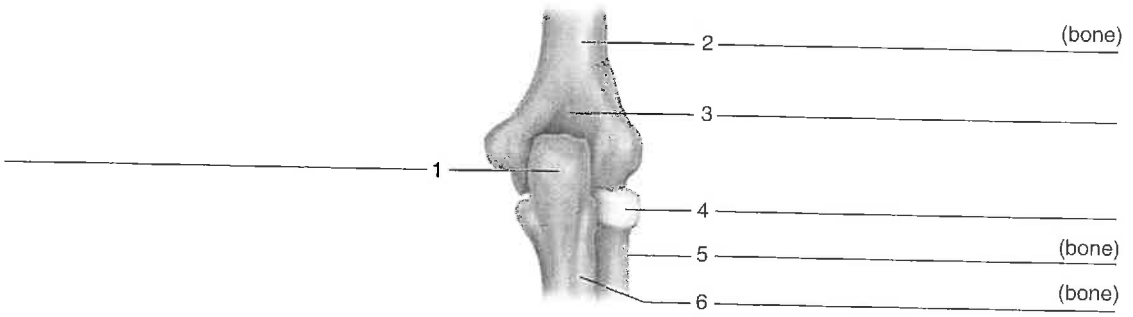

Figure 16.5 Label the bones and features of the right elbow, posterior view. 2

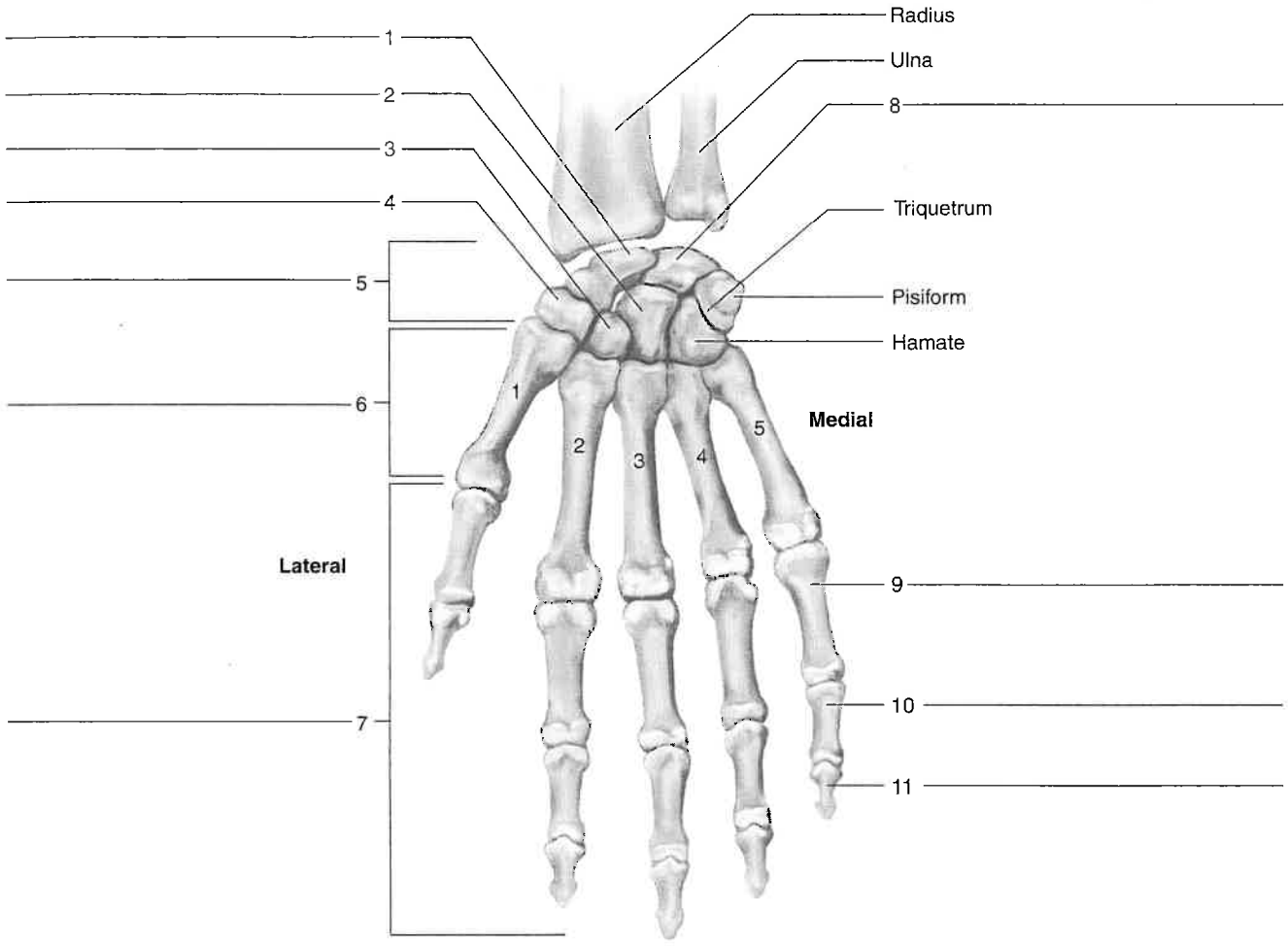

Figure 16.6 Label the bones and groups of bones in this anterior view of the right hand. 2

Learning Extension

Use different colored pencils to distinguish the individual bones in figure 16.6.