

## Vertebral Column

13. Using the key choices, correctly identify the vertebral parts/areas described as follows. Enter the appropriate term(s) or letter(s) in the spaces provided.

### Key Choices

- |                            |                               |                       |
|----------------------------|-------------------------------|-----------------------|
| A. Body                    | C. Spinous process            | E. Transverse process |
| B. Intervertebral foramina | D. Superior articular process | F. Vertebral arch     |

- \_\_\_\_\_ 1. Structure that encloses the nerve cord
- \_\_\_\_\_ 2. Weight-bearing part of the vertebra
- \_\_\_\_\_ 3. Provide(s) levers for the muscles to pull against
- \_\_\_\_\_ 4. Provide(s) an articulation point for the ribs
- \_\_\_\_\_ 5. Openings allowing spinal nerves to pass

14. The following statements provide distinguishing characteristics of the vertebrae composing the vertebral column. Using the key choices, identify each described structure or region by inserting the appropriate term(s) or letter(s) in the spaces provided.

### Key Choices

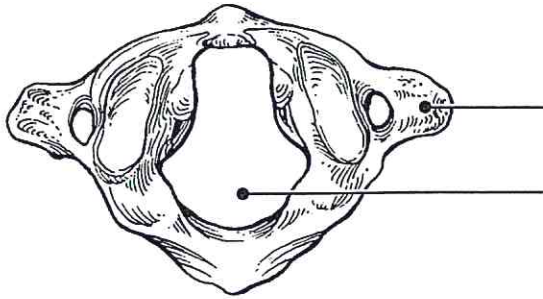
- |          |                    |                      |
|----------|--------------------|----------------------|
| A. Atlas | D. Coccyx          | F. Sacrum            |
| B. Axis  | E. Lumbar vertebra | G. Thoracic vertebra |
- C. Cervical vertebra—typical

- \_\_\_\_\_ 1. Type of vertebra(e) containing foramina in the transverse processes, through which the vertebral arteries ascend to reach the brain
- \_\_\_\_\_ 2. Its dens provides a pivot for rotation of the first cervical vertebra
- \_\_\_\_\_ 3. Transverse processes have facets for articulation with ribs; spinous process points sharply downward
- \_\_\_\_\_ 4. Composite bone; articulates with the hip bone laterally
- \_\_\_\_\_ 5. Massive vertebrae; weight-sustaining
- \_\_\_\_\_ 6. Tailbone; vestigial fused vertebrae
- \_\_\_\_\_ 7. Supports the head; allows the rocking motion of the occipital condyles
- \_\_\_\_\_ 8. Seven components; unfused
- \_\_\_\_\_ 9. Twelve components; unfused

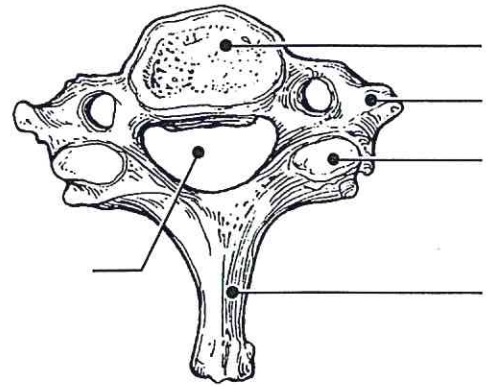
15. Complete the following statements by inserting your answers in the answer blanks.

- \_\_\_\_\_ 1. In describing abnormal curvatures, it could be said that (1) is an exaggerated thoracic curvature, and in (2) the vertebral column is displaced laterally.
- \_\_\_\_\_ 2. \_\_\_\_\_ 3. Intervertebral discs are made of (3) tissue. The discs provide (4) to the spinal column.
- \_\_\_\_\_ 4.

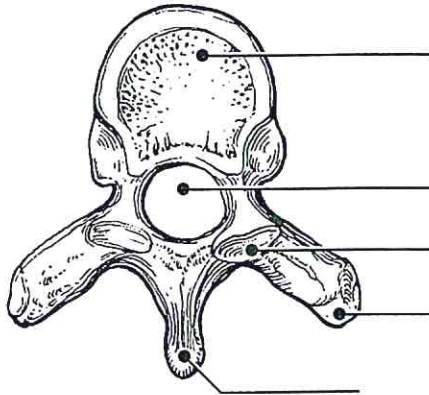
16. Figure 5-5, A-D shows superior views of four types of vertebrae. In the spaces provided below each vertebra, indicate in which region of the spinal column it would be found. In addition, specifically identify Figure 5-5A. Where indicated by leader lines, identify the vertebral body, spinous and transverse processes, superior articular processes, and vertebral foramen.



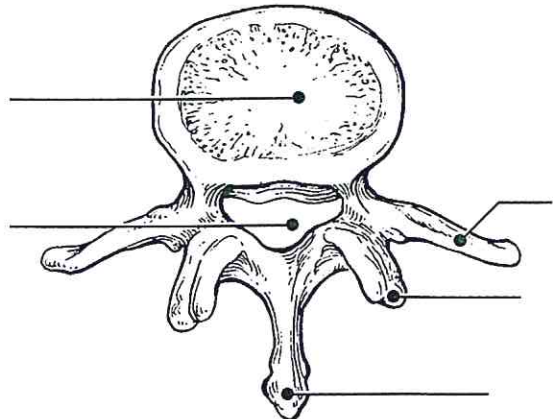
A \_\_\_\_\_



B \_\_\_\_\_



C \_\_\_\_\_

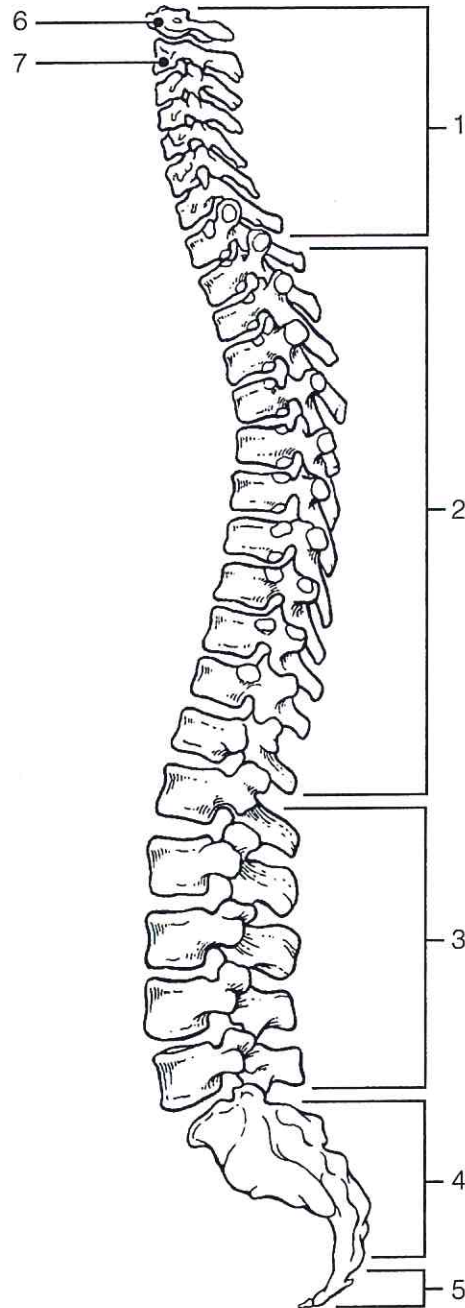


D \_\_\_\_\_

Figure 5-5

17. Figure 5-6 is a lateral view of the vertebral column. Identify each numbered region of the column by listing in the numbered answer blanks the region name first and then the specific vertebrae involved (for example, sacral region, S# to S#). Also identify the modified vertebrae indicated by numbers 6 and 7 in Figure 5-6. Select different colors for each vertebral region and use them to color the coding circles and the corresponding regions.

1. \_\_\_\_\_ ○
2. \_\_\_\_\_ ○
3. \_\_\_\_\_ ○
4. \_\_\_\_\_ ○
5. \_\_\_\_\_ ○
6. \_\_\_\_\_ ○
7. \_\_\_\_\_ ○



**Figure 5-6**

## Thoracic Cage

18. Complete the following statements referring to the thoracic cage by inserting your responses in the answer blanks.

- \_\_\_\_\_ 1. The organs protected by the thoracic cage include the (1) and the (2). Ribs 1 through 7 are called (3) ribs, whereas ribs 8 through 12 are called (4) ribs. Ribs 11 and 12 are also called (5) ribs. All ribs articulate posteriorly with the (6), and most connect anteriorly to the (7), either directly or indirectly.
- \_\_\_\_\_ 2.
- \_\_\_\_\_ 3.
- \_\_\_\_\_ 4.
- \_\_\_\_\_ 5. The general shape of the thoracic cage is (8).
- \_\_\_\_\_ 6.
- \_\_\_\_\_ 7.
- \_\_\_\_\_ 8.

19. Figure 5-7 is an anterior view of the thoracic cage. Select different colors to identify the structures below and color the coding circles and corresponding structures. Then label the subdivisions of the sternum indicated by leader lines.

- |   |                                      |
|---|--------------------------------------|
| <input type="radio"/> All true ribs     | <input type="radio"/> All false ribs |
| <input type="radio"/> Costal cartilages | <input type="radio"/> Sternum        |

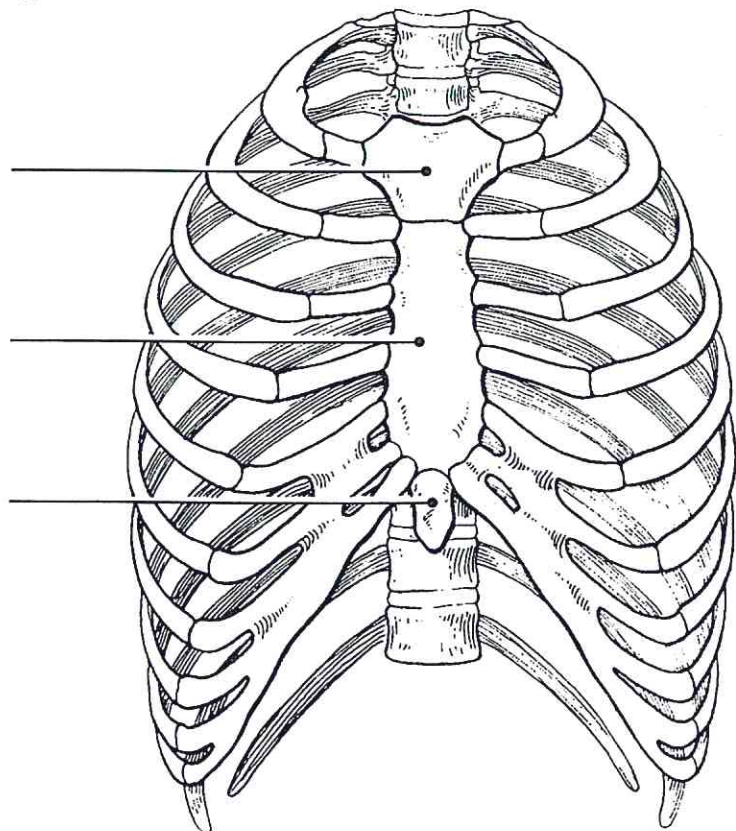


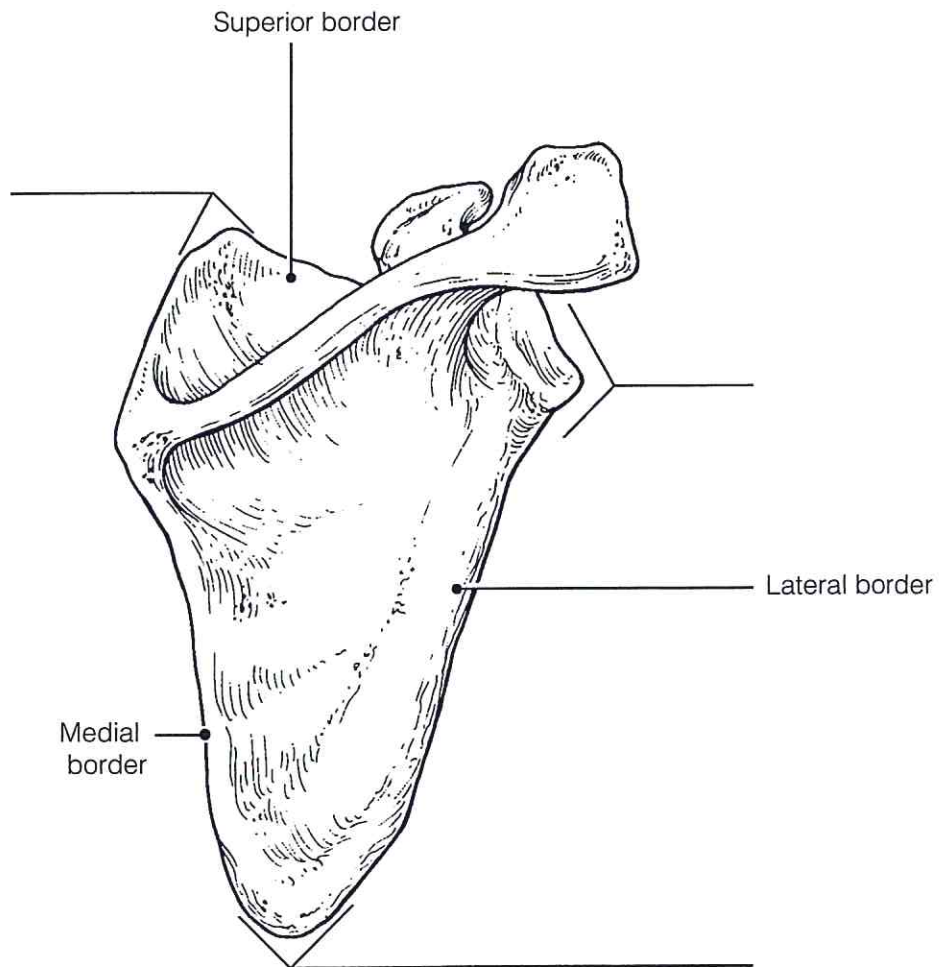
Figure 5-7

## APPENDICULAR SKELETON

Several bones forming part of the upper limb and/or shoulder girdle are shown in Figures 5–8 to 5–11. Follow the specific directions for each figure.

20. Identify the bone in Figure 5–8. Insert your answer in the blank below the illustration. Select different colors for each structure listed below and use them to color the coding circles and the corresponding structures in the diagram. Then, label the angles indicated by leader lines.

Spine       Glenoid cavity       Coracoid process       Acromion



**Figure 5–8**

21. Identify the bones in Figure 5-9 by labeling the leader lines identified as A, B, and C. Color the bones different colors. Using the following terms, complete the illustration by labeling all bone markings provided with leader lines.

- |                   |                    |                   |
|-------------------|--------------------|-------------------|
| Trochlear notch   | Capitulum          | Coronoid process  |
| Trochlea          | Deltoid tuberosity | Olecranon process |
| Radial tuberosity | Head (three)       | Greater tubercle  |
|                   | Styloid process    | Lesser tubercle   |

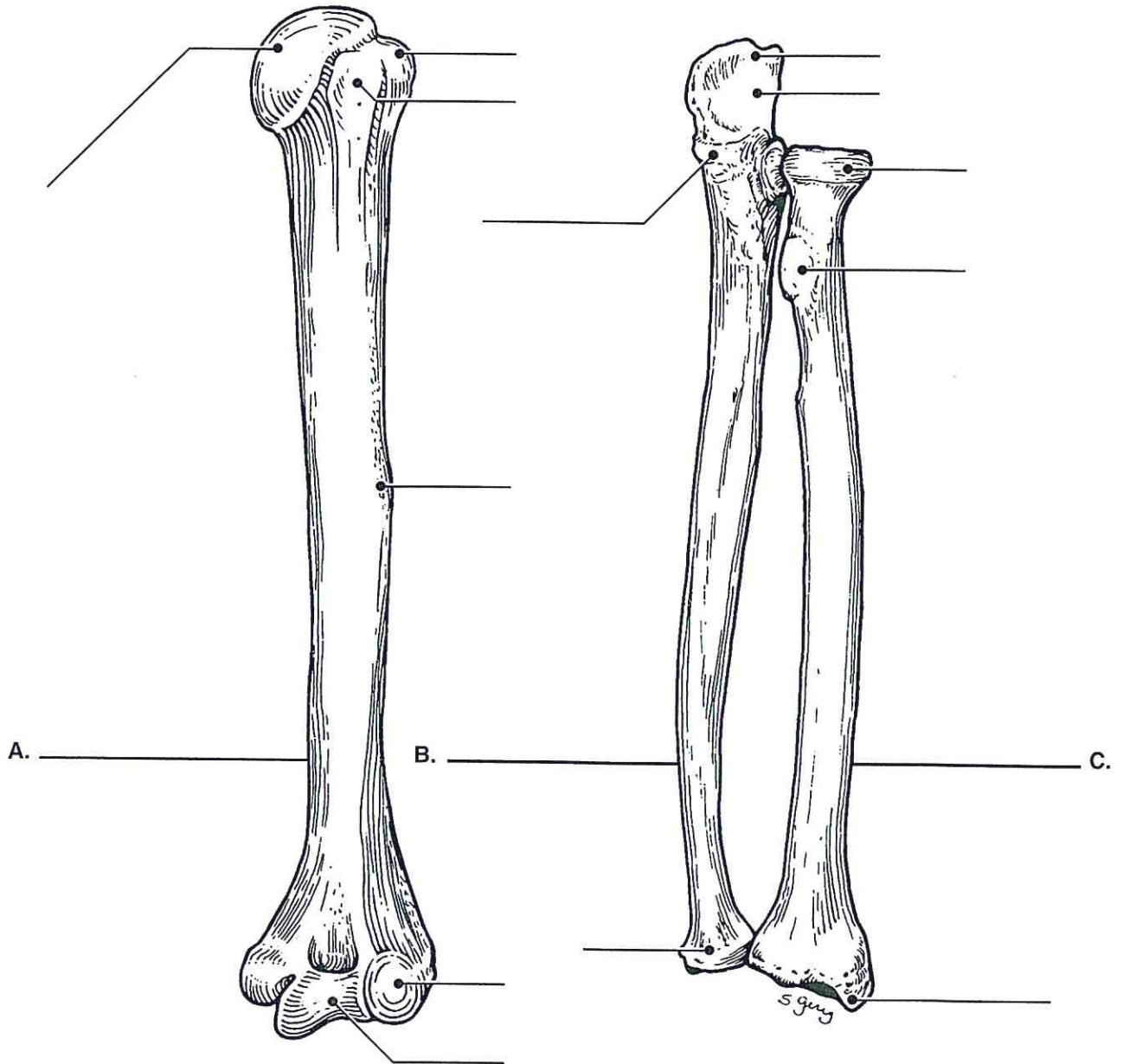
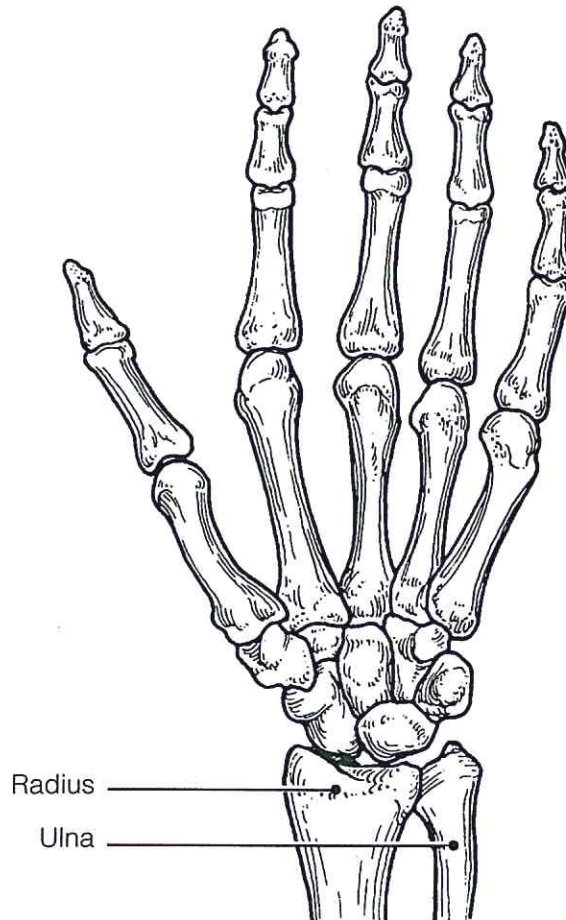


Figure 5-9

22. Figure 5–10 is a diagram of the hand. Select different colors for the following structures, and use them to color the coding circles and the corresponding structures in the diagram.

Carpals       Metacarpals       Phalanges



**Figure 5–10**

23. Compare the pectoral and pelvic girdles by choosing descriptive terms from the key choices. Insert the appropriate key letters in the answer blanks.

*Key Choices*

- |                |  |
|----------------|--|
| A. Flexibility | D. Shallow socket for limb attachment      |
| B. Massive     | E. Deep, secure socket for limb attachment |
| C. Lightweight | F. Weight-bearing                          |

Pectoral: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_      Pelvic: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

24. Using the key choices, identify the bone names or markings according to the descriptions that follow. Insert the appropriate term or letter in the answer blanks.

*Key Choices*

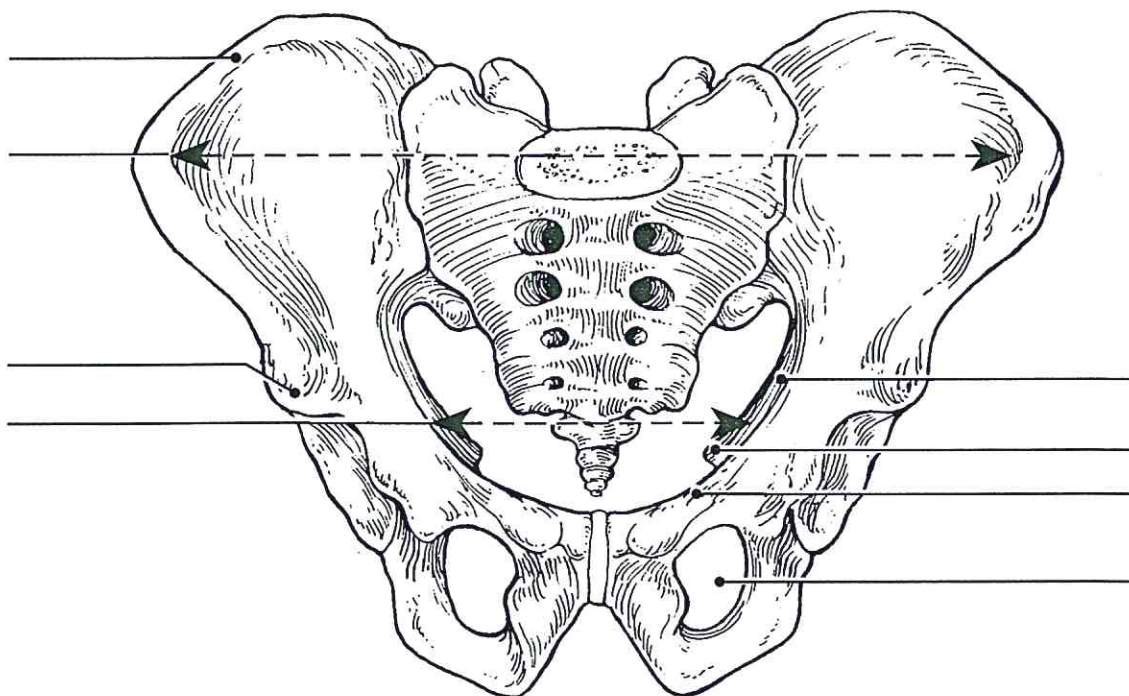
- |                     |                       |                      |                    |
|---------------------|-----------------------|----------------------|--------------------|
| A. Acromion         | F. Coronoid fossa     | K. Olecranon fossa   | P. Scapula         |
| B. Capitulum        | G. Deltoid tuberosity | L. Olecranon process | Q. Sternum         |
| C. Carpals          | H. Glenoid cavity     | M. Phalanges         | R. Styloid process |
| D. Clavicle         | I. Humerus            | N. Radial tuberosity | S. Trochlea        |
| E. Coracoid process | J. Metacarpals        | O. Radius            | T. Ulna            |

- \_\_\_\_\_ 1. Raised area on lateral surface of humerus to which deltoid muscle attaches
- \_\_\_\_\_ 2. Arm bone
- \_\_\_\_\_ 3. \_\_\_\_\_ 4. Bones composing the shoulder girdle
- \_\_\_\_\_ 5. \_\_\_\_\_ 6. Forearm bones
- \_\_\_\_\_ 7. Point where scapula and clavicle connect
- \_\_\_\_\_ 8. Shoulder girdle bone that has no attachment to the axial skeleton
- \_\_\_\_\_ 9. Shoulder girdle bone that articulates anteriorly with the sternum
- \_\_\_\_\_ 10. Socket in the scapula for the arm bone
- \_\_\_\_\_ 11. Process above the glenoid cavity that permits muscle attachment
- \_\_\_\_\_ 12. Commonly called the collarbone
- \_\_\_\_\_ 13. Distal medial process of the humerus; joins the ulna
- \_\_\_\_\_ 14. Medial bone of the forearm in anatomical position
- \_\_\_\_\_ 15. Rounded knob on the humerus that articulates with the radius
- \_\_\_\_\_ 16. Anterior depression; superior to the trochlea; receives part of the ulna when the forearm is flexed
- \_\_\_\_\_ 17. Forearm bone involved in formation of elbow joint
- \_\_\_\_\_ 18. \_\_\_\_\_ 19. Bones that articulate with the clavicle
- \_\_\_\_\_ 20. Bones of the wrist
- \_\_\_\_\_ 21. Bones of the fingers
- \_\_\_\_\_ 22. Heads of these bones form the knuckles



25. Figure 5-11 is a diagram of the articulated pelvis. Identify the bones and bone markings indicated by leader lines on the figure. Select different colors for the structures listed below and use them to color the coding circles and the corresponding structures in the figure. Also, label the dashed line showing the dimensions of the true pelvis and that showing the diameter of the false pelvis. Complete the illustration by labeling the following bone markings: obturator foramen, iliac crest, anterior superior iliac spine, ischial spine, pubic ramus, and pelvic brim. Last, list three ways in which the female pelvis differs from the male pelvis and insert your answers in the answer blanks.

- Coxal bone                       Pubic symphysis
- Sacrum                               Acetabulum



**Figure 5-11**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

26. Circle the term that does not belong in each of the following groupings.

1. Tibia                      Ulna                      Fibula                      Femur
2. Skull                      Rib cage                      Vertebral column                      Pelvis
3. Ischium                      Scapula                      Ilium                      Pubis
4. Mandible                      Frontal bone                      Temporal bone                      Occipital bone
5. Calcaneus                      Tarsals                      Carpals                      Talus

27. Using the key choices, identify the bone names and markings, according to the descriptions that follow. Insert the appropriate key term(s) or letter(s) in the answer blanks.

*Key Choices*

- |                                   |                         |                      |
|-----------------------------------|-------------------------|----------------------|
| A. Acetabulum                     | I. Ilium                | Q. Patella           |
| B. Calcaneus                      | J. Ischial tuberosity   | R. Pubic symphysis   |
| C. Femur                          | K. Ischium              | S. Pubis             |
| D. Fibula                         | L. Lateral malleolus    | T. Sacroiliac joint  |
| E. Gluteal tuberosity             | M. Lesser sciatic notch | U. Talus             |
| F. Greater sciatic notch          | N. Medial malleolus     | V. Tarsals           |
| G. Greater and lesser trochanters | O. Metatarsals          | W. Tibia             |
| H. Iliac crest                    | P. Obturator foramen    | X. Tibial tuberosity |

- \_\_\_\_\_ 1. Fuse to form the coxal bone (hip bone)
- \_\_\_\_\_ 2. Receives the weight of the body when sitting
- \_\_\_\_\_ 3. Point where the coxal bones join anteriorly
- \_\_\_\_\_ 4. Upper margin of iliac bones
- \_\_\_\_\_ 5. Deep socket in the hip bone that receives the head of the thigh bone
- \_\_\_\_\_ 6. Point where the axial skeleton attaches to the pelvic girdle
- \_\_\_\_\_ 7. Longest bone in body; articulates with the coxal bone
- \_\_\_\_\_ 8. Lateral bone of the leg
- \_\_\_\_\_ 9. Medial bone of the leg
- \_\_\_\_\_ 10. Bones forming the knee joint
- \_\_\_\_\_ 11. Point where the patellar ligament attaches
- \_\_\_\_\_ 12. Kneecap
- \_\_\_\_\_ 13. Shinbone
- \_\_\_\_\_ 14. Distal process on medial tibial surface
- \_\_\_\_\_ 15. Process forming the outer ankle
- \_\_\_\_\_ 16. Heel bone

- \_\_\_\_\_ 17. Bones of the ankle
- \_\_\_\_\_ 18. Bones forming the instep of the foot
- \_\_\_\_\_ 19. Opening in a coxal bone formed by the pubic and ischial rami
- \_\_\_\_\_ 20. Sites of muscle attachment on the proximal end of the femur
- \_\_\_\_\_ 21. Tarsal bone that articulates with the tibia
- 28.** For each of the following statements that is true, insert *T* in the answer blank. If any of the statements are false, correct the underlined term by inserting the correct term in the answer blank.
- \_\_\_\_\_ 1. The pectoral girdle is formed by the articulation of the hip bones and the sacrum.
- \_\_\_\_\_ 2. Bones present in both the hand and the foot are carpals.
- \_\_\_\_\_ 3. The tough, fibrous connective tissue covering of a bone is the periosteum.
- \_\_\_\_\_ 4. The point of fusion of the three bones forming a coxal bone is the glenoid cavity.
- \_\_\_\_\_ 5. The large nerve that must be avoided when giving injections into the buttock muscles is the femoral nerve.
- \_\_\_\_\_ 6. The long bones of a fetus are constructed of hyaline cartilage.
- \_\_\_\_\_ 7. Bones that provide the most protection to the abdominal viscera are the ribs.
- \_\_\_\_\_ 8. The largest foramen in the skull is the foramen magnum.
- \_\_\_\_\_ 9. The intercondylar fossa, greater trochanter, and tibial tuberosity are all bone markings of the humerus.
- \_\_\_\_\_ 10. The first major event of fracture healing is hematoma formation.
- \_\_\_\_\_ 11. An exaggerated thoracic curvature known as “dowager’s hump” is an abnormal condition called scoliosis.

29. The bones of the thigh and the leg are shown in Figure 5–12. Identify each and put your answers in the blanks labeled A, B, and C. Select different colors for the lower limb bones listed below and use them to color in the coding circles and corresponding bones on the diagram. Complete the illustration by inserting the terms indicating bone markings at the ends of the appropriate leader lines in the figure.

Femur

Tibia

Fibula

Head of femur

Anterior border of tibia

Head of fibula

Intercondylar eminence

Lesser trochanter

Medial malleolus

Tibial tuberosity

Greater trochanter

Lateral malleolus

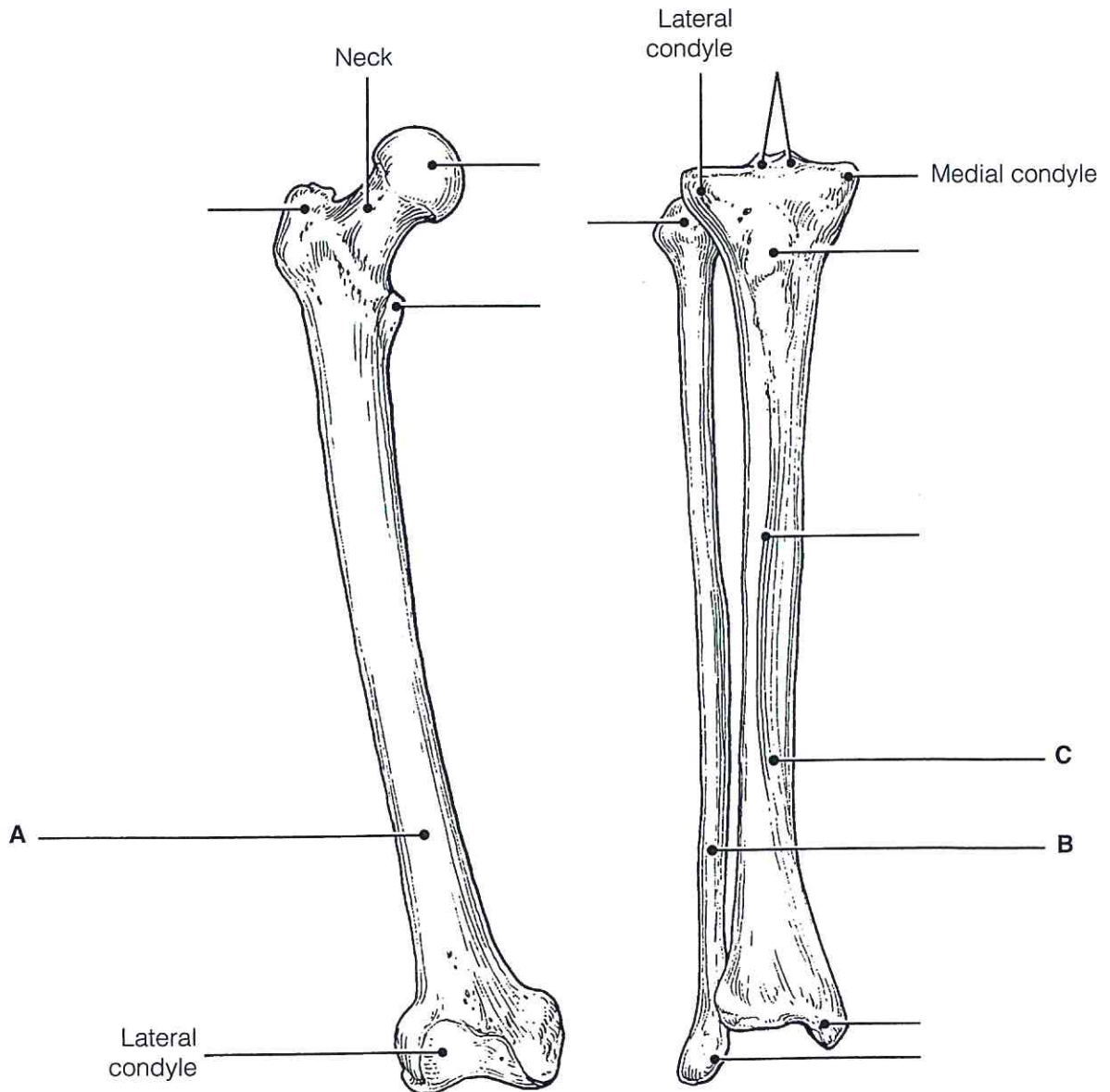


Figure 5–12

30. Figure 5-13 is a diagram of the articulated skeleton. Identify all bones or groups of bones by writing the correct labels at the end of the leader lines. Then, select two different colors for the bones of the axial and appendicular skeletons and use them to color in the coding circles and corresponding structures in the diagram.

- Axial skeleton
- Appendicular skeleton

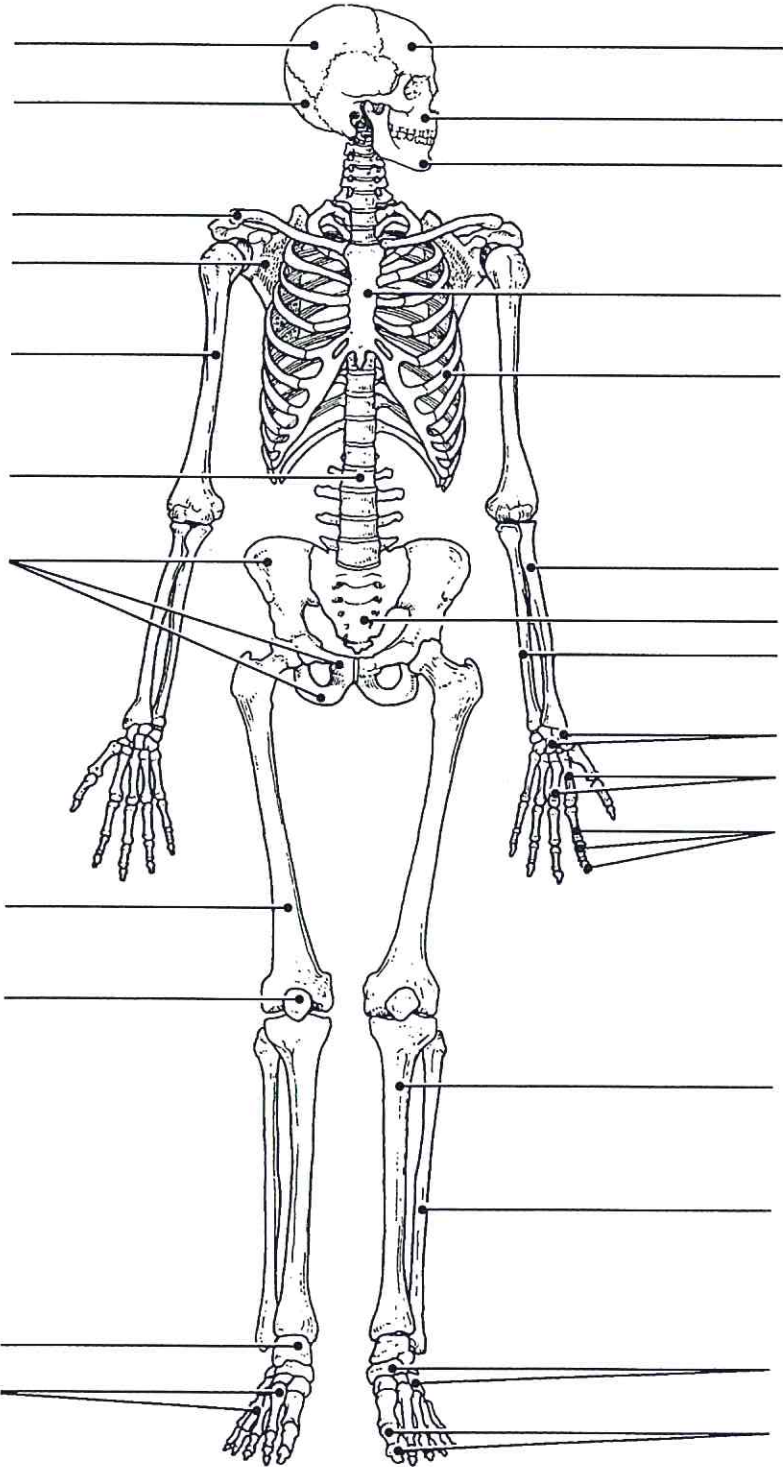


Figure 5-13