1. Functions of the Skeletal System

List five functions of the skeletal system.

1) **Support**  
2) **Protection**  
3) **Blood cell production**  
4) **Mineral storage**  
5) **Attachment sites for skeletal muscles**

2. Bone Structure

a. Label the diagram by placing the number of each structure by the correct label.

   2. Articular cartilage  
   5. Bone, compact  
   3. Bone, spongy  
   10. Diaphysis  
   1. Epiphyseal disk  
   11. Epiphysis, distal  
   9. Epiphysis, proximal  
   4. Marrow, red, in spaces  
   7. Marrow, yellow  
   6. Medullary cavity  
   8. Periosteum

b. Match the terms with the statements.

   1) Periosteum       3) Marrow, red  
   2) Epiphyseal plate  4) Marrow, yellow

   3. Fills spaces in spongy bone.  
   2. Hyaline cartilage.  
   1. Covers surface of bone.  
   4. Fills medullary cavity.

3. Microscopic Structure

Match the terms with the statements.

1) Lacunae  4) Osteonic canals  
2) Lamellae  5) Periosteum  
3) Osteon  6) None of these

4. Channel for blood vessels and nerves.  
1. Spaces containing osteocytes.  
2. Concentric layers of compact bone.  
5. Source of osteoblasts.  
3. Structural unit of compact bone.  
6. Spaces containing red marrow.
4. Bone Formation

Write the answers to the statements in the spaces provided.

1) Cells that deposit bone matrix. ________________________________
2) Cells that remove bone matrix. ________________________________
3) Cells that occupy the lacunae. ________________________________
4) Site of growth in length of long bones. ________________________________
5) Type of ossification in most skull bones. ________________________________
6) Type of ossification in bones preformed in cartilage. ________________________________
7) Cells that hollow out the medullary cavity. ________________________________

5. Bones of the Skeleton

Write the names of the labeled bones in the spaces provided.

1) Skull ________________________________
2) Mandible ________________________________
3) Sternum ________________________________
4) Ribs ________________________________
5) Vertebral column ________________________________
6) Sacrum ________________________________
7) Clavicle ________________________________
8) Scapula ________________________________
9) Humerus ________________________________
10) Ulna ________________________________
11) Radius ________________________________
12) Carpals ________________________________
13) Metacarpals ________________________________
14) Phalanges ________________________________
15) Coxa ________________________________
16) Femur ________________________________
17) Patella ________________________________
18) Tibia ________________________________
19) Fibula ________________________________
20) Tarsals ________________________________
21) Metatarsals ________________________________
22) Phalanges ________________________________
6. The Axial Skeleton

a. Label the diagram of the skull, anterior view, by placing the number of each structure in the space by the correct label.

- 3  Coronal suture
- 5  Ethmoid (eye orbit)
- 9  Ethmoid, perpendicular plate
- 2  Frontal
- 4  Lacrimal
- 11  Mandible
- 17  Maxilla
- 12  Nasal

b. List the skull bones that contain sinuses. **Ethmoids, Frontal, Maxillae, Sphenoid**
c. Label the diagram of the skull, lateral view, by placing the number of each structure in the space by the correct label.

13  Coronal suture
12  Coronoid process
16  Ethmoid
 7  External auditory canal
14  Frontal
17  Lacrimal
 3  Lambdoidal suture
21  Mandible
10  Mandibular condyle
 8  Mastoid process
20  Maxilla

18  Nasal
 5  Occipital
 1  Parietal
15  Sphenoid
2  Squamosal suture
 9  Styloid process
 4  Temporal
11  Temporal, zygomatic process
19  Zygomatic
 6  Zygomatic, temporal process
d. Write the terms that match the statements in the spaces provided.
   1) Contains the foramen magnum.  ____________________________
   2) Forms anterior portion of hard palate.  ____________________________
   3) Contains external auditory canal.  ____________________________
   4) The seven vertebrae of the neck.  ____________________________
   5) Weight-bearing portion of a vertebra.  ____________________________
   6) Foramen through which spinal cord passes.  ____________________________
   7) Vertebrae-bearing ribs.  ____________________________
   8) Number of pairs of true ribs.  ____________________________
   9) Attaches true ribs to sternum.  ____________________________
   10) First cervical vertebra.  ____________________________
   11) Cartilaginous pads between vertebrae.  ____________________________
   12) Forms posterior wall of pelvic girdle.  ____________________________
   13) Vertebrae with heaviest bodies.  ____________________________
   14) The breastbone.  ____________________________

e. Name the group of bones that provides protection for the
   1) Brain  ____________________________
   2) Heart and lungs  ____________________________

f. Label the vertebra by placing the number of the structure in the space by the correct label.

   3  5  6  4  1

   1) ____________________________
   2) ____________________________
   3) ____________________________
   4) ____________________________
   5) ____________________________
   6) ____________________________

7. The Appendicular Skeleton

a. Write the missing words in the spaces at the right.
   The pectoral girdle is formed of two ___1___ and two ___2___. Its function is to support
   the upper ___3____. Each ___4___ articulates with the scapula at one end and the ___5___
   at the other. The scapulae are attached to the axial skeleton by ___6___ instead of liga-
   ments.
b. Label these diagrams by placing the number of each structure in the space by the correct label.

18. Acromion process
4. Capitulum
19. Coracoid process
10. Coronoid process
17. Glenoid cavity
1. Greater tubercle
5. Head of humerus
11. Head of radius
15. Head of ulna
3. Lateral epicondyle
7. Medial epicondyle
2. Olecranon fossa
14. Olecranon process
12. Radial tuberosity
20. Scapular spine
13. Styloid process, radius
16. Styloid process, ulna
6. Surgical neck
8. Trochlea
9. Trochlear notch
c. Label the diagrams by placing the number of each structure in the space by the correct label.

- 10 Acetabulum
- 9 Coccyx
- 1 Greater trochanter
- 2 Head of femur
- 7 Iliac crest
- 14 Ilium
- 16 Ischium
- 5 Lateral condyle
- 4 Lesser trochanter
- 6 Medial condyle
- 3 Neck of femur
- 15 Obturator foramen
- 17 Pubic arch
- 12 Pubis
- 13 Sacroiliac joint
- 8 Sacrum
- 11 Symphysis pubis

d. Indicate whether each statement is associated with the fibula (F) or tibia (T).

- **F** Lateral malleolus
- **T** Lateral condyle
- **T** Articulates with femur
- **T** Medial malleolus
- **T** Medial condyle
- **T, F** Articulates with talus
8. Articulations

a. Match the type of joint with the articulation formed by the bones.

- 1) Immovable
- 2) Slightly movable
- 3) Hinge
- 4) Saddle
- 5) Pivot
- 6) Gliding
- 7) Ball-and-socket
- 8) Condyloid
- 9) Humerus—scapula
- 10) Femur—tibia
- 11) Frontal—parietal
- 12) Vertebral—vertebra
- 13) Axis—vertebra
- 14) Trapezium—metacarpal
- 15) Coxa—femur
- 16) Maxilla—zygomatic
- 17) Metacarpal—phalanx

b. Match the terms with the correct definitions.

- 1) Articular cartilage
- 2) Bursa
- 3) Cartilage pads
- 4) Joint capsule
- 5) Sesamoid bone
- 6) Lubricates joints.
- 7) Protects articular surfaces of bones.
- 8) Sacs of synovial fluid.
- 9) Bone embedded in a tendon.
- 10) Formed of ligaments.

9. Disorders of the Skeletal System

Write the name of each disorder described in the space provided.

1) Displacement of bones forming a joint. **Dislocation**
2) A lateral curvature of vertebral column. **Scoliosis**
3) Protrusion of intervertebral disk. **Herniated disk**
4) Bone broken into several pieces. **Comminuted fracture**
5) Broken bone pierces through skin. **Compound fracture**
6) Arthritis with invasion of fibrous tissue that calcifies, making joint immovable. **Rheumatoid arthritis**
7) Tearing of ligaments of joint capsule. **Sprain**
8) Severe loss of calcium salts from bones. **Osteoporosis**

10. Clinical Applications

a. A member of the soccer team is diagnosed with a torn knee cartilage. Would you expect rapid or slow recovery? Explain your answer. **No. Cartilage lacks blood vessels. The reduced supply of nutrients slows the repair process.**

b. Specifically, what is a broken hip? **The femur breaks at the neck.**

Why is it more common among older persons? **Their bones are more brittle and are often weakened by osteoporosis.**