LEARNING OBJECTIVES

- Describe the functions of the skeletal system
- Identify and describe the anatomy and physiology of bone
- Locate and describe the various bones within the body
- Differentiate between bone, cartilage, ligaments, and tendons
- Locate and describe the various joints and types of movement
ANSWERS TO TEST YOUR KNOWLEDGE

Test Your Knowledge 6–1 Answers, p. 121

1. Answer shown top to bottom:
   Proximal epiphysis (B)
   Spongy bone (D)
   Compact Bone (E)
   Medullary cavity (F)
   Periosteum (C)
   Diaphysis (A), this is on left side of figure
   Epiphyseal plate (G)
   Distal Epiphysis (B)
2. Red bone marrow is found in spongy bone and is responsible for red blood cell production (hemopoiesis).
3. There are several functions of bone in your body: support (as a framework for the body), mineral storage (calcium and phosphorus), blood cell production (red bone marrow), energy storage (yellow bone marrow), protection of internal organs (skull, ribs, vertebral column), and helping in body movements (muscle attachment and joints).
4. b
5. a
6. c

Test Your Knowledge 6–2 Answers, p. 124

1. a
2. d
3. b
4. c
5. d
6. a

Test Your Knowledge 6–3 Answers, p. 128

1. d
2. b
3. d
4. b
5. a
6. a

Test Your Knowledge 6–4 Answers, p. 138

1. d
2. c
3. c
4. d
5. b
6. b
ANSWERS TO CASE STUDY, P. 139

a. She appears to have osteoporosis.
b. There is decreased bone density, holes in the bones, and bone weakness.
c. She should stop smoking, drink less coffee, take a calcium supplement with vitamin D, and begin an exercise program if possible. There are also several osteoporosis drugs on the market. Perhaps one of them would help.

ANSWERS TO REVIEW QUESTIONS, P. 140

1. a
2. b
3. b
4. d
5. b
6. b

Fill in the Blank

1. There are many large appendicular bones: femur, pelvis, humerus, scapula, tibia, fibula, ulna, and radius.
2. Cartilage is found in many places in the body: ears, nose, thoracic cage, joints, between vertebrae, larynx, and trachea.
3. synovial fluid
4. osteoblasts
5. osteoclasts
6. touching or reduced or immobilized

Short Answer

1. Tendons attach muscle to bone. Ligaments attach bone to bone.
2. A cartilage model is first surrounded by a bone collar. This causes the deterioration of cartilage inside the bone. Periosteal bud invades, bringing blood vessels and cells. Medullary cavity forms, as does primary ossification center. Bone continues to replace cartilage. Secondary ossification center forms in epiphysis.
3. Joints can be classified functionally as immovable, slightly movable, or freely moving. Joints can be classified structurally as fibrous (united by connective tissue strands), cartilaginous (united by cartilage), or synovial (united by fluid filled joint cavity).
4. Flexion—decreasing the angle of joint; Extension—increasing angle of a joint; Plantar flexion—pointing toes down; Dorsiflexion—bending the foot up toward the body; Abduction—moving away from the body’s midline; Adduction—moving toward the midline of the body;
Inversion—turning the foot inward toward other foot; Eversion—turning the foot outward away from the opposing foot; Supination—turning the hand palm up; Pronation—turning the hand palm down; Circumduction—circular arm movement; Rotation—spinning on axis; Protraction—drawing part forward; Retraction—drawing part backward

5. Forensic pathologists can use many types of characteristics to tell age, sex, or health. The presence of an epiphyseal plate indicates the skeleton has not reached the end of puberty and is still growing. Male skeletons are “masculinized” with denser bones, more obvious surface features, and a narrower pelvis than female skeletons. Some disorders such as arthritis, osteoporosis, and tuberculosis, as well as nutritional status, cause changes in bone matrix or anatomy. Movement sculptures bone so experts can often tell the type of work done by a person.