1. Another name for the bones of the hand is
   A. phalanges.  C. tarsals.
   B. metacarpals.  D. carpals.

2. If you stand on tiptoes to reach something high, you are performing _____________ at the ankle.
   A. opposition  D. dorsiflexion
   B. eversion  E. abduction
   C. plantar flexion

3. Which ribs do NOT attach anteriorly to the sternum?
   A. False ribs  D. all of these
   B. Floating ribs  E. None of these
   C. True ribs

4. To which type of vertebrae are the ribs attached?
   A. Cervical  D. Sacrum
   B. Lumbar  E. None of these
   C. Thoracic

5. Bone remodeling may occur
   A. constantly during a person's lifetime.  D. as fractures heal.
   B. as bones adjust to stress.  E. as bones grow.
   C. All of these choices are correct.

6. When you walk up the stairs your hip and knee joints _____________ to lift your body weight.
   A. rotate  D. flex
   B. abduct  E. adduct
   C. extend

7. What is the site of longitudinal growth in long bones?
   A. epiphysis  D. endosteum
   B. Sharpey's fibers  E. epiphyseal plate
   C. medullary cavity

8. What do sutures, gomphoses, and syndesmoses have in common?
   A. these are bony joints
   B. these are joints found only in the appendicular skeleton
   C. these are joints found only in the axial skeleton
   D. these are cartilaginous joints
   E. these are fibrous joints
9. A __________ is a flattened or shallow surface on a bone.
   A. Foramen               D. Condyle
   B. Fossa                E. None of these
   C. Trochanter

10. The first cervical vertebra that "holds up the head" is the __________.
    A. atlas.              D. coccyx.
    B. mastoid.           E. none of these.
    C. axis.

11. The elbow is an example of a __________ joint.
    A. pivot              C. ball-and-socket
    B. hinge            D. gliding

12. What are the cells found within an osteon?
    A. Osteoblasts       C. Osteocytes
    B. Epiphysealcytes  D. Chondrocytes

13. Which tarsal articulates with the tibia and fibula for ankle movement?
    A. Talus              C. Navicular
    B. Cuneiform          D. Calcaneus

14. The shaft of a long bone is the __________.
    A. periosteum.       C. diaphysis.
    B. articular cartilage.  D. endosteum.

15. What are the bones storage depots for?
    A. Calcium and white blood cells
    B. Fat and vitamin C
    C. Calcium and vitamin D
    D. Calcium, fat, and phosphate

16. Osteocytes live in small spaces within the calcified bone called __________.
    A. the central canal.
    B. lamellae.
    C. canaliculi.
    D. lacunae.

17. The addition of new bone on top of existing bone to increase bone thickness is called __________.
    A. intramembranous ossification.
    B. appositional growth.
    C. osteoprogenesis.
    D. endochondral ossification.

18. The proper sequence of events in bone repair is __________.
    A. callus formation, hematoma formation, callus ossification, remodeling of bone.
    B. hematoma formation, callus formation, callus ossification, remodeling of bone.
    C. callus ossification, callus formation, remodeling of bone, hematoma formation.
    D. remodeling of bone, callus ossification, hematoma formation, callus formation.
    E. hematoma formation, callus ossification, callus formation, remodeling of bone.
19. What type of joint disease is described by the autoimmune inflammation of the synovial membrane?
   A. Gout                        C. Rheumatoid arthritis
   B. Osteoarthritis              D. Osteoporosis

20. What type of synovial joint movement will move a body part laterally, away from the body?
   A. Dorsiflexion                C. Adduction
   B. Extension                   D. Abduction

21. Shrugging the shoulders is an example of
   A. pronation
   B. elevation
   C. circumduction
   D. flexion.

22. The secondary curves of the vertebral column are the
   A. cervical and thoracic curvatures.
   B. thoracic and sacral curvatures.
   C. cervical and lumbar curvatures.
   D. lumbar and sacral curvatures.
   E. none of these.

23. An exaggerated lumbar curvature is called
   A. lordosis
   B. scoliosis
   C. hunchback
   D. kyphosis.
   E. none of these.

24. The joint between L2 and L3 is a
   A. synostosis
   B. symphysis
   C. syndesmosis
   D. synchondrosis.
   E. gomphosis.

25. In which bone would the external acoustic meatus be found?
   A. Parietal bone
   B. Zygomatic bone
   C. Temporal bone
   D. Maxilla

26. What structure forms the "point" of the elbow?
   A. Coronoid process
   B. Head of the radius
   C. Head of the ulna
   D. Olecranon process

27. The medullary cavity contains
   A. the periosteum
   B. spongy bone
   C. yellow marrow
   D. red marrow.
28. ____________ provide(s) hardness to bones, whereas ____________ provide(s) some degree of flexibility.
   A. Hydroxyapatite and other minerals; proteins
   B. Collagen and elastic fibers; minerals
   C. Calcium carbonate; calcium phosphate
   D. Proteins; collagen
   E. Glycoproteins; proteoglycans

29. Which type of joint is correctly matched with the amount of movement they allow?
   A. Diarthrosis - freely movable
   B. Synarthrosis - slight movement
   C. Amphiarthrosis - immovable

30. What bone contains the cribriform plate that has tiny holes for olfactory nerves?
   A. Sphenoid bone
   B. Ethmoid bone
   C. Palatine bone
   D. Maxilla

31. Which of the following is NOT a cartilaginous joint?
   A. Between the ribs and the sternum
   B. Between the two pelvic bones
   C. Between the bodies of the vertebra
   D. Between each tooth and its socket

32. What are the intervertebral disks that are shock-absorbers composed of?
   A. Elastic cartilage
   B. Fibrocartilage
   C. Hyaline cartilage
   D. Reticular cartilage

33. The most superior part of the sternum is the
   A. styloid process.
   B. xiphoid process.
   C. manubrium.
   D. None apply.

34. The membrane soft spots of a newborn's skull
   A. become foramina.
   B. are synovial in nature.
   C. are called fontanels.
   D. occur only as a result of illness.

35. During endochondral ossification
   A. osteoblasts break down bone.
   B. hyaline cartilage is replaced by bone.
   C. simple fractures are more common.
   D. hyaline cartilage changes to adipose tissue.

36. What structures allow osteocytes to access nutrients and oxygen?
   A. Canaliculi
   B. Lamella
   C. Articular cartilage
   D. Trabeculae
   E. None of these
37. The sequence of events that produces growth at the epiphyseal plate is
   A. proliferation, hypertrophy, cell death, calcification, ossification, and remodeling.
   B. calcification, hypertrophy, proliferation, ossification, cell death, and remodeling.
   C. hypertrophy, calcification, proliferation, cell death, ossification, and remodeling.
   D. proliferation, hypertrophy, calcification, cell death, ossification, and remodeling.
   E. hypertrophy, proliferation, calcification, ossification, and remodeling.

38. The end of a long bone is the
   A. epiphysis.
   B. diaphysis.
   C. shaft.
   D. periosteum.

39. Which of the following statements concerning sutures is false?
   A. They may become completely immovable in adults.
   B. The periosteum of adjacent bones is continuous over the joint.
   C. Membranes, called fontanels, are present in some sutures at birth.
   D. The tissue between the bones is hyaline cartilage.
   E. The opposing bones in the joint interdigitate for stability.

40. Red marrow
   A. produces blood cells and is located in spongy bone.
   B. produces blood cells.
   C. is located in the epiphyseal plate.
   D. is located in spongy bone.

41. A _________ is a rounded opening through a bone.
   A. fossa
   B. condyle
   C. trochanter
   D. foramen
   E. none of these

42. The atlas and axis are examples of a _________ joint.
   A. ball-and-socket
   B. pivot
   C. hinge
   D. gliding

43. What is the function of a tubercle on a bone?
   A. None apply.
   B. For muscle attachment
   C. An opening for blood vessels
   D. Articulation with another bone

44. The canal by which the spinal cord passes through the vertebrae is the
   A. vertebral foramen.
   B. external acoustic meatus.
   C. foramen magnum.
   D. nutrient foramen.
45. Which of the following is NOT a difference between the male and female pelvises?
   A. The female hips are broader.
   B. The female bones are lighter.
   C. The female pubic arch resembles an inverted U.
   D. The female pelvic cavity is more funnel-shaped.

46. Which of the following is NOT a bone of the cranium?
   A. Ethmoid
   B. Sphenoid
   C. Maxilla
   D. Parietal

47. The sacroiliac joint is between the
   A. two pubic bones.
   B. alveolar process and tooth.
   C. two parietal bones.
   D. sacrum and coxa.
   E. atlas and axis.

48. Which of the following is the correct order of events in bone repair of a fracture?
   A. Remodeling, bony callus, fibrocartilage callus, hematoma
   B. Bony callus, hematoma, fibrocartilage callus, remodeling
   C. Hematoma, bony callus, remodeling, fibrocartilage callus
   D. Hematoma, fibrocartilage callus, bony callus, remodeling

49. The radioulnar joint is a
   A. suture.
   B. synchondrosis.
   C. symphysis.
   D. syndesmosis.
   E. gomphosis.

50. Sutures occur mainly in the
   A. wrist.
   B. pelvic girdle.
   C. tarsals.
   D. cranium.

51. What structure is the site of bone growth in length?
   A. Primary ossification center
   B. Epiphyseal plates
   C. Periosteum
   D. None apply.

52. The seven ankle bones are called the
   A. metatarsals.
   B. tarsals.
   C. metacarpals.
   D. carpals.

53. If a thyroid tumor secreted an excessive amount of calcitonin, we would expect
   A. a reduced rate of endochondral ossification.
   B. an elevated level of osteoblast activity.
   C. a rise in blood calcium concentration.
   D. an elevated level of osteoclast activity.
   E. increasingly brittle bones.
54. Which of the following is part of the appendicular skeleton?
   A. Sternum  
   B. Ribs  
   C. Coxa  
   D. Sacrum

55. Which lower leg bone is thicker and medial?
   A. femur  
   B. tibia  
   C. humerus  
   D. fibula

56. Which of the following are the bone-eating (resorbing) cells?
   A. Osteoprogenitor cells  
   B. Osteoblasts  
   C. Osteocytes  
   D. Osteosorbers  
   E. None of these

57. On which vertebra is the odontoid process found?
   A. Atlas  
   B. Coccyx  
   C. Thoracic  
   D. Axis

58. What type of synovial joint movement is the movement of a body part around its own axis?
   A. Rotation  
   B. Pronation  
   C. Flexion  
   D. Supination

59. The sella turcica is a feature of the
   A. occipital bone.  
   B. ethmoid bone.  
   C. sphenoid bone.  
   D. vomer.

60. Which of the following is a function of the skeleton?
   A. Produces blood cells  
   B. Provides sites for muscle attachment  
   C. Protects internal organs  
   D. All apply.

61. What material is found within the joint cavity of a synovial joint?
   A. Fibrocartilage  
   B. Ligaments  
   C. Synovial fluid  
   D. Fibrous connective tissue

62. Blood Ca\(^{2+}\) deficiency stimulates __________ secretion, which leads to ___________.
   A. parathyroid hormone; increased osteoclast activity  
   B. growth hormone; increased osteoblast activity  
   C. thyroid hormone; less urinary calcium excretion  
   D. calcitriol; more urinary phosphate excretion  
   E. calcitonin; more urinary phosphate reabsorption
63. During intramembranous ossification
   A. bone develops between sheets of fibrous connective tissue.
   B. new bone is added on top of existing bone.
   C. osteoclasts break down bone.
   D. hyaline cartilage is replaced by bone.

64. What type of cells secrete the matrix of bone?
   A. Osteoprogenitor cells
   B. Osteoblasts
   C. Osteocytes
   D. Osteoclasts

65. A compound fracture
   A. completely breaks the bone in more than one place.
   B. incompletely breaks the bone in more than one place.
   C. is caused by a disease.
   D. exposes the broken bone to the outside.

66. Which one of the following bone cells would have the greatest number of lysosomes?
   A. osteoclasts
   B. osteocytes
   C. stem cells
   D. osteoblasts
   E. osteogenic cells

67. Which of the following statements regarding calcium homeostasis is true?
   A. Parathyroid hormone inhibits osteoclast activity.
   B. Calcitonin elevates blood calcium levels.
   C. Parathyroid hormone increases calcium loss from the kidney.
   D. When blood calcium levels are too low, osteoclast activity increases.
   E. Increased osteoblast activity increases blood calcium levels.

68. What type of tissue covers the ends of long bones?
   A. cancellous bone
   B. elastic cartilage
   C. fibrocartilage
   D. periosteum
   E. articular cartilage

69. What type of synovial joint is found between the carpal and metacarpal of the thumb?
   A. Pivot
   B. Condyloid
   C. Hinge
   D. Saddle

70. Which of the following is mismatched?
   A. elbow joint - radial collateral ligaments
   B. shoulder joint - coracohumeral ligament
   C. knee joint - patellar ligaments
   D. hip joint - cruciate ligaments
   E. ankle - calcaneofibular ligament
71. Which of the following would be classified as an irregular bone?
   A. Humerus          C. Coxal bone
   B. Carpal          D. Parietal bone

72. Bursae are
   A. tendons.          D. cartilage pads.
   B. types of joints.  E. none of these.
   C. fluid-filled sacs.

73. The socket on the coxal bone that articulates with the head of the femur is the
   A. acetabulum.          C. obturator foramen.
   B. greater sciatic notch.  D. pelvic aperture.

74. Which of the following is part of the axial skeleton?
   A. Scapula          C. Skull
   B. Metacarpals      D. Femur

75. An abnormal lateral curvature of the spine is called
   A. lordosis.          C. kyphosis.
   B. hunchback.        D. scoliosis.

76. What structure in the knee prevents hyperextension?
   A. the anterior cruciate ligament (ACL)
   B. the lateral meniscus
   C. the medial meniscus
   D. the posterior cruciate ligament (PCL)
   E. the fibular (lateral) collateral ligament

77. Rotating the arms so that the palms are forward is an example of
   A. abduction.          C. elevation.
78. Referring to the x-ray... what bone is fractured?
   A. Hamate
   B. 1st metacarpal
   C. 5th Proximal phalanx
   D. All of these
   E. None of these

79. Referring to the x-ray... what term describes the likely amount of soft tissue involvement (assume it did not damage muscle, or break the skin)?
   A. Simple
   B. Open
   C. Complicated
   D. Comminuted
   E. None of these

80. Referring to the x-ray... what term best describes the fracture type?
   A. Complete, oblique
   B. Complete, avulsion
   C. Complete, green stick
   D. Complete, depression
   E. None of these