Skeletal System
Study Guide, Chapter 6 – 9

Part I. Clinical Applications

1. Antonio is hit in the face with a football during practice. An X ray reveals multiple fractures of the bones around an orbit. Name the bones that form the orbit.

2. Mrs. Bruso, a woman in her 80s is brought to the clinic with a fractured hip. X rays reveal compression fractures in her lower vertebral column and extremely low bone density in her vertebrae, hip bones, and femurs. What are the condition, cause, and treatment?

3. Jack, a young man, is treated at the clinic for an accident in which he hit his forehead. When he returns for a checkup, he complains that he can't smell anything. An X ray of his head reveals a fracture. What part of which bone was fractured to cause his loss of smell?

4. A middle-aged woman comes to the clinic complaining of stiff, painful joints and increasing immobility of her finger joints. A glance at her hands reveals knobby, deformed knuckles. From what condition will she be tested?

5. Jerry is giving cardiopulmonary resuscitation to Ms. Jackson, an elderly woman who has just been rescued from the waters of Fort Bragg. What bone is he compressing?

6. How does the process of calcification differ from ossification?
7. The conditions of gigantism and pituitary dwarfism are extreme opposites. What effect does hormonal regulation of bone growth have on each condition?

8. A clinical diagnosis has been made that substantiates the presence of a herniated disc and a severe case of sciatica. What is the relationship between the two conditions?

9. Good nutrition and exercise are extremely important in bone development, growth, and maintenance. If you were an astronaut, what vitamin supplements and what type of exercise would you need to be sure that the skeletal system retained its integrity while in a weightless environment in space?

10. What is the association between the metabolic disorder known as gout, which affects the joints, and damage to the kidney?

11. How might a decision to wear pointed shoes contribute the formation of a bunion?
12. A high school football player notices swelling in the knee joint. He decides he’d better tell the coach who responds by telling him, “You have water on the knee”. As a student of anatomy, explain what the coach is talking about.

13. Greg is a pitcher on the high school baseball team. He spends many hours practicing to improve his pitching skills. Recently, he has been complaining about persistent pain beneath his right shoulder blade (scapula). What do you think is causing the pain? (Hint – it is not due to a torn rotator cuff).

14. Steve injured his right knee during a basketball game when he jumped to rebound the ball and landed off-balance on the right leg. He has been experiencing pain and limited mobility of the knee joint. What type of injury do you think Steve has? What techniques would be used to explore the extent of the damage?

15. Garrett was bodysurfing when he had a bad wipeout and felt his shoulder “pop”. When Garrett finally made it back to towel he was out of breath, in pain and his arm was hanging at an odd angle. What do you think happened?
Part II

Using the terms below, complete the following statements.

osteoclasts | bone markings | condyle
compound | osteocytes | osteon
minerals | remodeling | calcitriol
osseous tissue | support | epiphysis
ossification | irregular | comminuted
intramembranous | Wormian | endochondral
osteoblasts | yellow marrow |

1. The storage of lipids in bones occurs in the __________.
2. Of the six major functions of the skeleton, the two that depend on the dynamic nature of bone are storage and __________.
3. Cuboidal cells that synthesize the organic components of the bone matrix are __________.
4. In adults, the cells responsible for maintaining the matrix in osseous tissue are the __________.
5. The basic functional unit of compact bone is the __________.
6. The expanded region of a long bone consisting of spongy bone is called the __________.
7. When osteoblasts differentiate within a mesenchymal or fibrous connective tissue, the process is called __________ ossification.
8. The type of ossification that begins with the formation of a hyaline cartilage model is __________.
9. The process which refers specifically to the formation of bone is __________.
10. The major mineral associated with the development and mineralization of bone is __________.
11. The organic and mineral components of the bone matrix are continually being recycled and renewed through the process of __________.
12. During bone renewal, as one osteon forms through the activity of osteoblasts, another is destroyed by __________.
13. The ability of bone to adapt to new stresses results from the turnover and recycling of __________.
14. The hormone synthesized in the kidneys which is essential for normal calcium and phosphate ion absorption in the digestive tract is __________.
15. Fractures which shatter the affected area into a multitude of bony fragments are called __________ fractures.
16. Fractures which project through the skin are called __________ fractures.
17. Bones which have complex shapes with short, flat, notched, or ridged surfaces are termed __________.
18. Sutural bones, which are small, flat, odd-shaped bones found between the flat bones of the skull, are referred to as __________ bones.
19. The surface features of the skeletal system which yield an abundance of anatomical information are referred to as __________.
20. A smooth, rounded articular process that articulates with an adjacent bone is a __________.
When cartilage is produced at the epiphyseal side of the metaphysis at the same rate as bone is deposited on the opposite side, bones:

a. grow wider
b. become shorter
c. grow longer
d. become thicker

The major advantage(s) for bones to undergo continual remodeling is (are):

a. it may change the shape of a bone
b. it may change the internal structure of a bone
c. it may change the total amount of minerals deposited in the bones
d. a, b, and c are correct

The fibers of *tendons* intermingle with those of the periosteum, attaching:

a. skeletal muscles to bones
b. the end of one bone to another bone
c. the trabecular framework to the periosteum
d. articulations with the trabeculae

Giant cells, called *osteoclasts*, with 50 or more nuclei serve to:

a. synthesize the organic components of the bone matrix
b. form the trabecular framework which protects cells of the bone marrow
c. line the inner surfaces of the central canals
d. secrete acids which dissolve the bony matrix and release the stored minerals
Using the terms below, complete the following statements.

osteomalacia  osteopenia  epiphyseal plates  depressed
osteoblasts  endochondral  rickets  canaliculi
osteothesis  intramembranous

1. The communication pathways from the lacunae, which connect the osteocytes with one another and with the blood vessels of the Haversian canal, are ____________.

2. The condition in which an individual develops a bowlegged appearance as the leg bones bend under the weight of the body is ____________.

3. The type of cells responsible for the production of new bone are ____________.

4. Dermal bones, such as several bones of the skull, the lower jaw, and the collarbone, are a result of ____________ ossification.

5. Limb bone development is a good example of the process of ____________ ossification.

6. Long bone growth during childhood and adolescence is provided by persistence of the ____________.

7. The condition that can occur in adults whose diet contains inadequate levels of calcium or vitamin D is ____________.

8. Fragile limbs, a reduction in height, and the loss of teeth are a part of the aging process referred to as ____________.

**BODY TREK:**

Using the terms below, fill in the blanks to complete the trek through a long bone in the upper arm, the humerus.

- Red marrow
- Trabeculae
- Osteoclasts
- Compound
- Lamella
- Periosteum
- Endosteaum
- Canaliculi
- Blood vessels
- Osteon
- Yellow marrow
- Red blood cells
- Lacuna
- Volkmann’s canal
- Compact bone
- Osteocytes
- Haversian canal
- Cancellous or spongy

For this trek Robo will enter the interior of the humerus, the long bone in the upper part of the arm. The entry point is accessible due to a ____________ fracture in which the bone has projected through the skin at the distal end of the shaft. The robot proceeds to an area of the bone that is undisturbed by the trauma occurring in the damaged region. The micro-robot enters the medullary cavity which contains ____________, and moves proximally through a “sea” of fat to a region where it contacts the lining of the cavity, the ____________. After passing through the lining, Robo senses an area that projects images of an interlocking network of long plates or beams riddled with holes or spaces, which are characteristic of ____________ bone. The structural forms of this network are called ____________, which consist of a bony matrix, the ____________, with bone cells, the ____________, located between the layers. The bone cells communicate with other bone cells through small channels called ____________. The “holes” or spaces have a reddish glow and appear to be actively involved in producing disk-shaped cells or ____________, which establish the robot’s position in a cavity containing ____________. Robo’s extended arm grabs onto one of the “bony beams” and, after moving along the beam for a short distance, contact is made with a large canal located at a right angle to the bone’s shaft. This canal, called ____________, is the major communicating pathway between the bone’s interior and exterior surface, the ____________. Advancing through the canal, the robot’s sensors are signaling dense tissue surrounding the canal indicating that this is the region of ____________. Suddenly, Robo arrives at an intersection where the canal dead-ends; however, another large tube-like canal runs parallel to the long axis of the bone. This tube, the ____________, contains nerves, ____________, and lymphatic vessels. This canal, with its contents and associated concentric lamellae and osteocytes, is referred to as a(n) ____________. The robot’s visit to an osteocyte located in a(n) ____________ is accomplished by trekking from the large canal into smaller canaliculi which form a dense transportation network connecting all the living cells of the bony tissue to the nutrient supply. The giant osteocytes with dark nuclei completely fill the lumen at the bone cell sites located throughout the lamella. Around the bone sites specialized bone digesting cells, the ____________, are liquefying the matrix, making the area insensitive to the robot’s electronic devices, terminating the effectiveness of the signals transmitted to Mission Control. The exit program is relayed to the robot and the “reverse” trek begins through the bone’s canal “system” and a return to the fracture site for removal and preparation for the next trek.
27. *Foramina*, located on the bones of the skull, serve primarily as passageways for:

a. airways and ducts for secretions  
b. sound and sight  
c. nerves and blood vessels  
d. muscle fibers and nerve tissue

28. The lines, tubercles, crests, ridges, and other processes on the bones represent areas which are used primarily for:

a. attachment of muscles to bones  
b. attachment of bone to bone  
c. joint articulation  
d. increasing the surface area of the bone

29. The *sinuses* or internal chambers in the skull are found in:

a. sphenoid, ethmoid, vomer, lacrimal bones  
b. sphenoid, frontal, ethmoid, maxillary bones  
c. ethmoid, frontal, lacrimal, maxillary bones  
d. lacrimal, vomer, ethmoid, frontal bones

Using the terms below, complete the following statements.

<table>
<thead>
<tr>
<th>centrum</th>
<th>muscles</th>
<th>floating</th>
</tr>
</thead>
<tbody>
<tr>
<td>axial</td>
<td>costal</td>
<td>capitulum</td>
</tr>
<tr>
<td>fontanels</td>
<td>cranium</td>
<td>microcephaly</td>
</tr>
<tr>
<td>mucus</td>
<td>cervical</td>
<td>foramen magnum</td>
</tr>
<tr>
<td>compensation (secondary)</td>
<td>paranasal</td>
<td>inferior concha</td>
</tr>
</tbody>
</table>

30. The part of the skeletal system that forms the longitudinal axis of the body is the ____________ division.

31. The bones of the skeleton provide an extensive surface area for the attachment of ____________.

32. The part of the skull that provides protection for the brain is the ____________.

33. The opening that connects the cranial cavity with the canal enclosed by the spinal column is the ____________.

34. The paired scroll-like bones located on each side of the nasal septum are the ____________.

35. The airspaces connected to the nasal cavities are the ____________ sinuses.

36. Irritants are flushed off the walls of the nasal cavities because of the presence of ____________.

37. At birth, the cranial bones are connected by areas of fibrous connective tissues called ____________.

38. An undersized head caused by a cessation of brain enlargement and skull growth is called ____________.

39. The spinal curves that assist in allowing a child to walk and run are called ____________ curves.

40. The last two pairs of ribs that do not articulate with the sternum are called ____________ ribs.
Part IV

MATCHING:

Match the terms in column B with the terms in column A. Use letters for answers in the spaces provided.

<table>
<thead>
<tr>
<th>PART I</th>
<th>COLUMN A</th>
<th>COLUMN B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. hyoid bone</td>
<td>A. calvaria</td>
</tr>
<tr>
<td></td>
<td>2. respiratory movement</td>
<td>B. premature closure of fontanel</td>
</tr>
<tr>
<td></td>
<td>3. skullcap</td>
<td>C. infant skull</td>
</tr>
<tr>
<td></td>
<td>4. sphenoid bone</td>
<td>D. vomer</td>
</tr>
<tr>
<td></td>
<td>5. nasal septum</td>
<td>E. paranasal sinuses</td>
</tr>
<tr>
<td></td>
<td>6. air-filled chambers</td>
<td>F. sella turcica</td>
</tr>
<tr>
<td></td>
<td>7. fontanel</td>
<td>G. elevation of rib cage</td>
</tr>
<tr>
<td></td>
<td>8. craniostenosis</td>
<td>H. stylohyoid ligaments</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PART II</th>
<th>COLUMN A</th>
<th>COLUMN B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9. primary curves</td>
<td>I. lower back</td>
</tr>
<tr>
<td></td>
<td>10. cervical vertebrae</td>
<td>J. ribs 8–10</td>
</tr>
<tr>
<td></td>
<td>11. lumbar vertebrae</td>
<td>K. C1</td>
</tr>
<tr>
<td></td>
<td>12. atlas</td>
<td>L. C2</td>
</tr>
<tr>
<td></td>
<td>13. axis</td>
<td>M. ribs 1–7</td>
</tr>
<tr>
<td></td>
<td>14. vertebrosternal ribs</td>
<td>N. accommodation</td>
</tr>
<tr>
<td></td>
<td>15. vertebrochondral ribs</td>
<td>O. neck</td>
</tr>
</tbody>
</table>

Using the terms below, complete the following statements.

- kyphosis
- mental foramina
- auditory ossicles
- lordosis
- metopic
- tears
- compensation (Secondary)
- pharyngotympanic (Eustachian Tube)
- alveolar processes
- scoliosis

16. The structure that ends inside the mass of the temporal bone which connects the airspace of the middle ear with the pharynx is the _______________ tube.

17. At birth the two frontal bones which have not completely fused are connected at the _______________ suture.

18. The lacrimal bones house the structures that are associated with the production and release of _______________.

19. The associated skull bones of the middle ear that conduct sound vibrations from the tympanum to the inner ear are the _______________.

20. The oral margins of the maxillae that provide the sockets for the teeth are the _______________.

21. Small openings which serve as nerve passageways on each side of the body of the mandible are the _______________.

22. The lumbar and cervical curves which appear several months after birth and help to position the body weight over the legs are known as _______________ curves.

23. A normal thoracic curvature which becomes exaggerated, producing a "roundback" appearance, is a _______________.

24. An exaggerated lumbar curvature or "swayback" appearance is a _______________.

25. An abnormal lateral curvature which usually appears in adolescence during periods of rapid growth is _______________.

26. Part of the loss in height that accompanies aging results from:
   a. degeneration of osseous tissue in the diaphysis of long bones
   b. degeneration of skeletal muscles attached to bones
   c. the decreasing size and resiliency of the intervertebral discs
   d. the reduction in the number of vertebrae due to aging
Using the terms below, complete the following statements.

synovial bursae scapulohumeral supination ellipsoidal
osteoaarthritis elbow anulus fibrosus suture flexion
hip synostosis knee accessory ligaments gliding

27. A synarthrotic joint found only between the bones of the skull is a ________.
28. A totally rigid immovable joint resulting from fusion of bones is a ________.
29. Localized thickenings of joint capsule are called ________.
30. Small, synovial-filled pockets that form where a tendon or ligament rubs against other tissues are called ________.
31. A movement that reduces the angle between the articulating elements is ________.
32. Movement in the wrist and hand in which the palm is turned forward is ________.
33. Diarthrotic joints that permit a wide range of motion are called ________ joints.
34. The type of joint that connects the fingers and toes with the metacarpals and metatarsals is an ________.
35. The joints between the superior and inferior articulations of adjacent vertebrae are ________.
36. The tough outer layer of fibrocartilage on intervertebral discs is the ________.
37. The joint that permits the greatest range of motion of any joint in the body is the ________ joint.
38. The extremely stable joint that is almost completely enclosed in a bony socket is the ________ joint.
39. The condition resulting from cumulative wear and tear at joint surfaces or from genetic factors affecting collagen formation is ________.

Anterior View of a Flexed Knee

40. ________
41. ________
42. ________
43. ________
44. ________
45. ________
46. ________
47. ________
48. ________
49. ________
50. ________
51. ________
52. ________
53. ________
COMPLETION:

Using the terms below, complete the following statements.

- gomphosis
- synchondrosis
- arthritis
- hyperextension
- fat pads
- articular cartilage
- menisci
- akylosis
- syndesmosis
- tendons
- luxation
- rheumatism

1. An abnormal fusion between articulating bones in response to trauma and friction is referred to as an ________.
2. Rheumatic diseases that affect synovial joints result in the development of ________.
3. The synarthrosis that binds each tooth to the surrounding bony socket is a ________.
4. A rigid cartilaginous connection such as an epiphyseal plate is called a ________.
5. The amphiarthrotic distal articulation between the tibia and fibula is a ________.
6. The joint accessory structures which may subdivide a synovial cavity are ________.
7. The accessory structures which provide protection for the articular cartilages are the ________.
8. Arthritis always involves damage to the ________.
9. A movement that allows you to gaze at the ceiling is ________.
10. A general term that indicates pain and stiffness affecting the skeletal and/or muscular systems is ________.
11. The structures that pass across or around a joint that may limit the range of motion and provide mechanical support are ________.
12. When articulating surfaces are forced out of position, the displacement is called a ________.

Group each of the following bones into one of the four major bone categories. Use L for long bone, S for short bone, F for flat bone, and I for irregular bone. Enter the appropriate letter in the space provided.


. Figure 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 vertebra 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.
Complete the following statements concerning fetal and infant skeletal development. Insert the missing words in the answer blanks.

1. “Soft spots,” or membranous joints called ______ in the fetal skull, allow the skull to be ______ during birth passage. They also allow for continued brain ______ during the later months of fetal development and early infancy. Eventually these soft spots are replaced by immovable joints called ______.

2. The two spinal curvatures well developed at birth are the ______ and ______ curvatures. Because they are present at birth, they are called ______ curvatures. The secondary curvatures develop as the baby matures. The ______ curvature develops as the baby begins to lift his or her head. The ______ curvature matures when the baby begins to walk or assume the upright posture.

Using the key choices, identify the fracture (fx) types shown in Figure 5–14 and the fracture types and treatments described below. Enter the appropriate key letter or term in each answer blank.

**Key Choices**

- Closed reduction
- Depressed fracture
- Simple fracture
- Compression fracture
- Greenstick fracture
- Spiral fracture
- Compound fracture
- Open reduction

38. Bone is broken cleanly; the ends do not penetrate the skin

39. Non-surgical realignment of broken bone ends and splinting of bone

40. A break common in children; bone splinters, but break is incomplete

41. A fracture in which the bone is crushed; common in the vertebral column

42. A fracture in which the bone ends penetrate through the skin surface

43. Surgical realignment of broken bone ends

44. A result of twisting forces

45. Which of the following are part of the sphenoid?
   A. Crista galli  
   B. Sella turcica  
   C. Petrous portion  
   D. Pterygoid process  
   E. Lesser wings

46. Women suffering from osteoporosis are frequent victims of ______ fractures of the vertebrae.
   A. compound  
   B. spiral  
   C. comminuted  
   D. compression  
   E. depression
Part II

For each of the following statements that is true, enter $T$ in the answer blank. For each false statement, correct the underlined words by writing the correct words in the answer blank.

1. In a sprain, the ligaments reinforcing a joint are excessively stretched or torn.

2. Age-related erosion of articular cartilages and formation of painful bony spurs are characteristic of gouty arthritis.

3. Acute Chronic arthritis usually results from bacterial invasion.

4. Healing of a partially torn ligament is slow because its hundreds of fibrous strands are poorly aligned.

5. Rheumatoid arthritis is an autoimmune disease.

6. High levels of uric acid in the blood may lead to rheumatoid arthritis.

7. A “soft” bone condition in children, usually caused by a lack of calcium or vitamin D in the diet, is called osteomyelitis.

8. Atrophy and thinning of bone owing to hormonal changes or inactivity (generally in the elderly) is called osteoporosis.

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.

9. The pectoral girdle is formed by the articulation of the hip bones and the sacrum.

10. Bones present in both the hand and the foot are carpals.

11. The tough, fibrous connective tissue covering of a bone is the periosteum.

12. The point of fusion of the three bones forming a coxal bone is the glenoid cavity.

13. The large nerve that must be avoided when giving injections into the buttock muscles is the femoral nerve.

14. The long bones of a fetus are constructed of hyaline cartilage.

15. Bones that provide the most protection to the abdominal viscera are the ribs.

16. The largest foramen in the skull is the foramen magnum.

17. The intercondylar fossa, greater trochanter, and tibial tuberosity are all bone markings of the humerus.

18. The first major event of fracture healing is hematoma formation.
List the six functions of bone.

19. ____________________________________________

20. ____________________________________________

21. ____________________________________________

22. ____________________________________________

23. ____________________________________________

24. ____________________________________________

Answer the questions below using the terms in the box.

<table>
<thead>
<tr>
<th>calcified matrix</th>
<th>proliferating cartilage</th>
</tr>
</thead>
<tbody>
<tr>
<td>epiphyseal line</td>
<td>resting cartilage</td>
</tr>
<tr>
<td>hypertrophic cartilage</td>
<td></td>
</tr>
</tbody>
</table>

25. The appearance of the ____________________________ indicates that bone growth in length has stopped.

26. The zone of ____________________________ consists of slightly larger chondrocytes arranged like stacks of coins.

27. The lengthwise expansion of the epiphyseal plate is the result of cell divisions at the zone of ____________________________ maturation of cells in the zone of ____________________________.

28. The zone of ____________________________ is only a few cells thick and consists mostly of dead cells.

29. The cells that act to anchor the epiphyseal plate to the bone of the epiphysis are in the zone of ____________________________.

Using the six terms below, match the description to the bone type (you may use an answer more than once).

<table>
<thead>
<tr>
<th>flat bones</th>
<th>sesamoid bones</th>
<th>wormian</th>
</tr>
</thead>
<tbody>
<tr>
<td>irregular bones</td>
<td>short bones</td>
<td>sutural bones</td>
</tr>
<tr>
<td>long bones</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

30. Small bones located between the joints of certain cranial bones.

31. Have a greater length than width, and consist of a diaphysis and a variable number of extremities.

32. Composed of two nearly parallel plates of compact bone enclosing a layer of spongy bone.

33. Somewhat cube-shaped and nearly equal in length and width.

34. Have complex shapes; include the vertebrae and certain facial bones.

35. These are small bones in tendons where considerable pressure develops.

36. Bones of the thighs, legs, toes, arms, forearms, and fingers are examples of this type of bone.

37. Cranial bones, sternum, ribs, and scapulae are classified as this type of bone.

38. The patella (kneecap) would be classified this way.
Part III

Divisions of the Skeletal System

1. There are _____ bones in the axial division and _____ bones in the appendicular division.

2. The bones called _____ connect the limbs to the axial skeleton.

Fill in the blanks.

3. Blood cell formation, known as ________________, occurs in the red bone marrow.

4. Yellow bone marrow is composed primarily of ________________ cells.

5. Mineral salts compose about _____% of the weight of bone.

6. ________________ bone tissue makes up most of the bone tissue of short, flat, and irregularly shaped bones and most of the epiphyses of long bones.

Match the cranial bone to the feature associated with it (you may use the answers more than once).

<table>
<thead>
<tr>
<th></th>
<th>Ethmoid bone</th>
<th>Parietal bone</th>
<th>Sphenoid bone</th>
<th>Temporal bone</th>
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<tbody>
<tr>
<td>E</td>
<td></td>
<td>P</td>
<td>S</td>
<td>T</td>
</tr>
<tr>
<td>F</td>
<td>Frontal bone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>Occipital bone</td>
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</table>

7. _____ sella turcica
8. _____ foramen magnum
9. _____ foramen ovale
10. _____ petrous portion
11. _____ supraorbital foramen
12. _____ mastoid process
13. _____ greater wings
14. _____ hypoglossal arch
15. _____ jugular foramen
16. _____ superior nasal conchae
17. _____ external auditory meatus
18. _____ optic foramen
19. _____ mandibular fossa
20. _____ zygomatic process
21. _____ cribriform plate
22. _____ superior nuchal line
23. _____ lateral masses
24. _____ carotid foramen
25. _____ metopic suture
26. _____ perpendicular plate
27. _____ lesser wing
28. _____ pterygoid processes
29. _____ olfactory foramina
30. _____ crista galli
31. _____ styloid process

Classify the joints listed below (you may use the answers more than once).

<table>
<thead>
<tr>
<th>G</th>
<th>Gomphosis</th>
<th>SUT</th>
<th>Sutures</th>
<th>SYN</th>
<th>Syndesmoses</th>
</tr>
</thead>
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</tbody>
</table>

32. _____ Joint in which a cone-shaped peg fits into a socket.
33. _____ Found between the bones of the skull.
34. _____ An example is the distal articulation of the tibia and fibula.
35. _____ The articulations of the roots of the teeth with the alveoli of the maxillae and mandible.
36. _____ Has considerably more fibrous connective tissue than a suture.
37. _____ When completely fused, they are called synostoses.
Answer the following questions relating to Lyme disease, bursitis, dislocations, sprains, and strains.

38. Lyme disease is caused by a bacterium, ________________, transmitted to humans by ________________. Within a few weeks of the bite, a typical rash resembling a “______________” develops.

39. A ________________ is the forcible wrenching or twisting of a joint with stretching or tearing of a ligament without dislocation, while a ________________ is a stretched or partially torn muscle.

40. A partial or incomplete dislocation is called a ________________.

41. A dislocation or ________________ is the displacement of a bone from a ________________, with tearing of ligaments, tendons, and ________________ capsules.

42. Bursitis may be caused by ________________, by an ________________ or ________________ infection, or by ________________

______________ are often associated with friction bursitis over the head of the first metatarsal.

Check your knowledge of the skull by filling in the blanks for the questions below.

43. The skull contains ______ bones.

44. The ________________ bones enclose and ________________ the brain.

45. There are ______ facial bones in the skull.

46. A ________________ is an immovable joint found only between skull bones.

At birth, membrane-filled spaces called ________________ are found between cranial bones.

47. The primary organic constituent of bone tissue is
   A. tricalcium phosphate   D. calcium phosphate
   B. collagen             E. sodium phosphate
   C. keratin

48. The zone of ________________ consists of slightly larger chondrocytes arranged like stacks of coins.
   A. calcified matrix
   B. hypertrophic cartilage
   C. proliferating cartilage
   D. resting cartilage
   E. epiphyseal plate

49. Ossification begins around the ________________ week of embryonic life.
   A. fifth to sixth week
   B. sixth to seventh week
   C. seventh to eighth week
   D. eighth to ninth week
   E. tenth to eleventh week

50. Osteomyelitis is
   A. an inflammation of a bone
   B. a type of bone cancer
   C. a malignant tumor composed of bone tissue
   D. often caused by Staphylococcus aureus
   E. both A and D
1. These fontanels are located on each side of the skull at the junction of the frontal, parietal, temporal, and sphenoid bones.

2. The suture between the parietal bones and occipital bone.

3. This fontanel is situated between the two parietal bones and the occipital bones.

4. The suture located between the frontal bone and the parietal bones.

5. This suture is located between the two parietal bones.

6. The fontanel located between the angles of the two parietal bones and the two segments of the frontal bones.

7. The suture between the parietal bones and temporal bones.

8. These fontanels are situated at the junction of the parietal, occipital, and temporal bones.

Match the special movement with the correct definition.

9. ______ inversion
10. ______ eversion
11. ______ dorsiflexion
12. ______ plantar flexion
13. ______ protraction
14. ______ retraction
15. ______ supination
16. ______ pronation
17. ______ elevation
18. ______ depression

19. Which of the following is/are true regarding synovial fluid?
   A. It is secreted by the synovial membrane.
   B. It functions to lubricate and nourish the articular cartilage.
   C. It has the consistency of uncooked egg whites.
   D. All of the above statements are correct.
   E. None of the above statements are correct.

20. The intervertebral joints in the spinal column are known as
   A. sutures
   B. diarthroses
   C. symphyses
   D. synchondroses
   E. gomphoses

21. Slightly movable joints are referred to as
   A. amphiarthritic
   B. diarthritic
   C. synovial
   D. gliding
   E. none of the above are correct

22. The special movement that turns the sole of the foot medially is called
   A. pronation
   B. eversion
   C. supination
   D. inversion
   E. rotation

23. Lifting your arm laterally away from your body is
   A. adduction
   B. circumduction
   C. flexion
   D. extension
   E. abduction