

Ruth Godoy
Human Anatomy and Physiology Lab
Professor Haque
Due November 9th, 2021

Review sheets 9 and 10

Review sheet 9 "The Axial Skeleton"

Instructors may assign a portion of the Review Sheet questions using Mastering A&P™

9 REVIEW SHEET EXERCISE The Axial Skeleton

Name Ruth M. Godoy Lab Time/Date 10/18/2021

The Skull

1. First, match the bone names in column B with the descriptions in column A (the items in column B may be used more than once). Then, circle the bones in column B that are cranial bones.

Column A

- frontal b. 1. forms the anterior cranium
- zygomatic o. 2. cheekbone
- Nasal h. 3. bridge of nose
- palatine j. 4. posterior bones of the hard palate
- parietal k. 5. much of the lateral and superior cranium
- lacrimal e. 6. single, irregular, bat-shaped bone forming part of the cranial base
- lacrimal? e. 7. tiny bones bearing tear ducts
- maxilla g. 8. anterior part of hard palate
- ethmoid a. 9. superior and middle nasal conchae form from its projections
- temporal m. 10. site of mastoid process
- occipital i. 11. has condyles that articulate with the atlas
- hyoid c. 12. small U-shaped bone in neck, where many tongue muscles attach
- temporal m. 13. organ of hearing found here
- ethmoid? a. 14. two bones that form the nasal septum
- palatine? j. 15. forms the most inferior turbinate

Column B

- a. ethmoid
- b. frontal
- c. hyoid
- d. inferior nasal concha
- e. lacrimal
- f. mandible
- g. maxilla
- h. nasal
- i. occipital
- j. palatine
- k. parietal
- l. sphenoid
- m. temporal
- n. vomer
- o. zygomatic

2. Using choices from the numbered key to the right, identify all bones and bone markings provided with various leader lines in the two following photographs. A colored dot at the end of a leader line indicates a bone. Leader lines without a colored dot indicate bone markings. Note that vomer, sphenoid bone, and zygomatic bone will each be labeled twice.

Anterior View Labels:

- Glabella (9)
- Nasal bone (22)
- Zygomatic bone (35)
- Lacrimal bone (15)
- Inferior nasal concha (11)
- maxilla (20)
- mandible (16)
- mental foramen (21)
- mandibular symphysis (18)

Anterior View Key:

- 8. Frontal bone
- 27. Parietal bone
- Supraorbital foramen
- Superior orbital fissure
- Ethmoid bone
- Inferior orbital fissure
- Infraorbital foramen
- Vomer
- Alveolar processes

Anterior View Key (Numbered):

- 1. alveolar processes
- 2. carotid canal
- 3. ethmoid bone (perpendicular plate)
- 4. external occipital protuberance
- 5. foramen lacerum
- 6. foramen magnum
- 7. foramen ovale
- 8. frontal bone
- 9. glabella
- 10. incisive fossa
- 11. inferior nasal concha
- 12. inferior orbital fissure
- 13. infraorbital foramen
- 14. jugular foramen
- 15. lacrimal bone
- 16. mandible
- 17. mandibular fossa
- 18. mandibular symphysis
- 19. mastoid process
- 20. maxilla
- 21. mental foramen
- 22. nasal bone
- 23. occipital bone
- 24. occipital condyle
- 25. palatine bone
- 26. palatine process of maxilla
- 27. parietal bone
- 28. sphenoid bone
- 29. styloid process
- 30. stylomastoid foramen
- 31. superior orbital fissure
- 32. supraorbital foramen
- 33. temporal bone
- 34. vomer
- 35. zygomatic bone
- 36. zygomatic process

Inferior View Labels:

- Palatine process of maxilla
- Palatine bone
- Vomer
- Zygomatic process
- Temporal bone
- foramen lacerum
- Stylomastoid foramen
- mastoid process
- Occipital bone
- external occipital protuberance
- Incisive fossa
- maxilla
- Sphenoid bone
- foramen ovale
- mandibular fossa
- Carotid canal
- Styloid process
- Jugular foramen
- occipital condyle
- Foramen magnum

Inferior View Key (Numbered):

- 1. alveolar processes
- 2. carotid canal
- 3. ethmoid bone (perpendicular plate)
- 4. external occipital protuberance
- 5. foramen lacerum
- 6. foramen magnum
- 7. foramen ovale
- 8. frontal bone
- 9. glabella
- 10. incisive fossa
- 11. inferior nasal concha
- 12. inferior orbital fissure
- 13. infraorbital foramen
- 14. jugular foramen
- 15. lacrimal bone
- 16. mandible
- 17. mandibular fossa
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- 31. superior orbital fissure
- 32. supraorbital foramen
- 33. temporal bone
- 34. vomer
- 35. zygomatic bone
- 36. zygomatic process

3. Define suture. Sutures are a type of fibrous joint located between the bones of the skull.

4. With one exception, the skull bones are joined by sutures. Name the exception.

The exception is the jaw ~~bones~~ ^{mandible} connected to temporal bones.

5. What bones are connected by the lambdoid suture?

These bones are the occipital bone to parietal bones, that are connected by the lambdoid suture.

What bones are connected by the squamous suture?

These are Parietal bones to temporal bones, which are connected to the squamous suture.

6. Name the eight bones of the cranium. (Remember to include left and right).

Frontal Bone Occipital Bone Temporal Bone ^(left) Temporal Bone ^(right)
Parietal Bone ^(left) Parietal Bone ^(right) Sphenoid Bone Ethmoid Bone

7. List the bones that have sinuses, and give two possible functions of the sinuses.

The bones that have sinuses are frontal, maxillary, sphenoid & ethmoid bones.

1st function of the sinus is that it lightens the skull.

2nd function of the sinus is that it secretes mucus to trap microorganisms.

8. What is the bony orbit? The bony orbit is the cavity which hold the eyeballs.

What bones contribute to the formation of the orbit? These bones are the Sphenoid, ethmoid, palatine, zygomatic, maxillary, lacrimal, + Frontal bones.

9. Why can the sphenoid bone be called the keystone bone of the cranium? The Sphenoid bone can be called the keystone bone of the cranium because its close together with the other considered cranial bones.

The Vertebral Column

10. The distinguishing characteristics of the vertebrae composing the vertebral column are noted below. Correctly identify each described structure by choosing a response from the key.

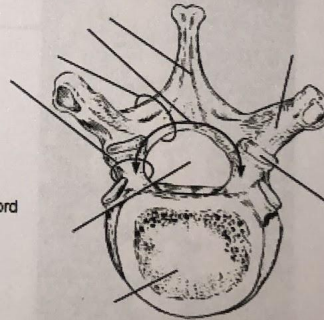
- Key:
 a. atlas ✓
 b. axis ✓
 c. cervical vertebra—typical ✓
 d. coccyx ✓
 e. lumbar vertebra ✓
 f. sacrum ✓
 g. thoracic vertebra ✓

- a. Atlas 1. vertebra type containing foramina in the transverse processes, through which the vertebral arteries ascend to reach the brain
- c. Cervical vertebra 2. dens here provides a pivot for rotation of the first cervical vertebra (C1)
- ~~a. Atlas~~ g. Thoracic vertebra 3. transverse processes faceted for articulation with ribs; spinous process pointing sharply downward
- f. Sacrum 4. composite bone; articulates with the hip bone laterally
- e. lumbar vertebra 5. massive vertebra; weight-sustaining
- d. coccyx 6. "tail bone" fused vertebrae
- b. Axis 7. supports the head; allows a rocking motion in conjunction with the occipital condyles

11. Using the key, correctly identify the vertebral parts/areas described below. (More than one choice may apply in some cases.) Also use the key letters to correctly identify the vertebral areas in the diagram.

- Key:
 a. body ✓
 b. intervertebral foramina ✓
 c. lamina ✓
 d. pedicle ✓
 e. spinous process ✓
 f. superior articular facet ✓
 g. transverse process ✓
 h. vertebral arch ✓
 i. vertebral foramen ✓

- h. vertebral arch 1. cavity enclosing the spinal cord
- a. Body 2. weight-bearing portion of the vertebra
- d. Pedicle 3. provide levers against which muscles pull
- g. transverse process 4. provide an articulation point for the ribs
- b. Intervertebral foramina 5. openings providing for exit of spinal nerves
- i. vertebral foramina 6. structures that form an enclosure for the spinal cord
- c. lamina 7. structures that form the vertebral arch



12. Describe how a spinal nerve exits from the vertebral column. A spinal nerve exits through an intervertebral foramen located between vertebrae.

13. Name two factors/structures that permit flexibility of the vertebral column.

Discs and S-shaped of vertebral column

14. What kind of tissue makes up the intervertebral discs? Fibrocartilage is what makes up the intervertebral discs.

15. What is a herniated disc? A herniated disc is a slipped, ruptured, or bulging disc between the spinal bones.

What problems might it cause? This can cause significant or chronic back pain (if

located there), it can cause sciatica, numbness, tingling, muscle weakness, & in
some grave cases, permanent weakness or paralysis.

16. Which two spinal curvatures are obvious at birth? lumbar curvatures and cervical curvatures.

Under what conditions do the secondary curvatures develop? The lumbar curvature develops when the

baby ~~starts to~~ ^{attempts} stand & walk around. The cervical curvatures develop

before hand when a baby begins to make an effort of raising & lifting its
own head by themselves.

17. Use the key to label the structures on the thoracic region of the vertebral column.

- Key:
- a. intervertebral discs
 - b. intervertebral foramina
 - c. spinous processes
 - d. thoracic vertebrae
 - e. transverse processes

c. Spinous processes

a. Intervertebral discs.

e. Transverse processes

d. Thoracic processes

b. Intervertebral Foramina



The Thoracic Cage

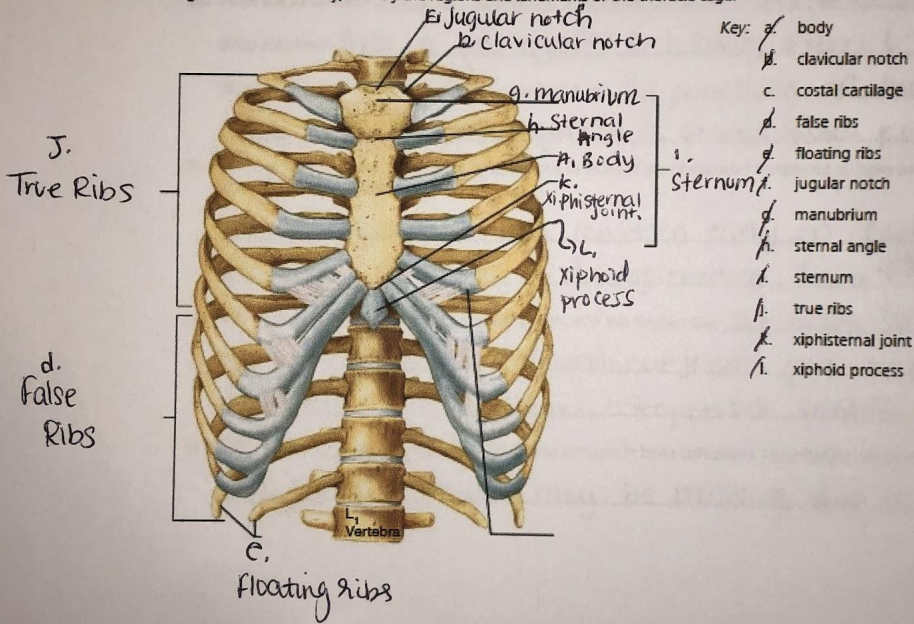
18. The major bony components of the thorax (excluding the vertebral column) are the ribs
and the sternum.

19. Differentiate between a true rib and a false rib. A true rib are the top seven pairs that are connected to the sternum. The false ribs are the bottom three pairs of ribs.

Is a floating rib a true or a false rib? A floating rib is neither true/false bec they're not (in)directly attached to the sternum.

20. What is the general shape of the thoracic cage? cone shape like.

21. Using the terms in the key, identify the regions and landmarks of the thoracic cage.



The Fetal Skull

22. Are the same skull bones seen in the adult also found in the fetal skull? Yes, the same skull bones seen in an adult are found in the fetal skull.

23. How does the size of the fetal face compare to its cranium? the size of the fetal face

compares to its cranium & shortened, & overshadowed by a larger cranium.

How does this compare to the adult skull? This compares to an adult skull in adults,

bones in the face are proportionally bigger & the skull bone is smaller (shorter).

In fetals, they ~~are~~ are yet to be fused together.

24. What are the outward conical projections on some of the fetal cranial bones? Growth Centers.

25. What is a fontanelle? this is a space between 2 or more bones in the place of suture.

What is its fate? fate is put together in a baby from 6-18 months of age.

What is the function of the fontanelles in the fetal skull? The functions of the fontanelles in the fetal

skull is that it grows quickly to provide space for its main function.

26. **+** Craniosynostosis is a condition in which one or more of the fontanelles is replaced by bone prematurely. Discuss the ramifications of this early closure.

The ramifications of this condition early on can cause moderate to major problems w/ development of brain & ^{their} skull growth in general.

27. **+** As we age, we often become shorter. Explain why this might occur. We often become shorter because

the cartilage found between our joints gets worn out & flatten,

& muscles start to weaken; osteoporosis makes the spinal column to shrink.

28. **+** The xiphoid process is often missing from the sternum in bone collections. Hypothesize why it might be missing. _____

I hypothesize that it may be missing due to its size.

10

EXERCISE

REVIEW SHEET

The Appendicular Skeleton

Instructors may assign a portion of the Review Sheet questions using Mastering A&P™

Name Ruth M. Goskey Lab Time/Date 10/18/21 Wednesdays 6-8:30pm

Bones of the Pectoral Girdle and Upper Limb

1. Fill in the blank to complete the statements below:

- The bones that form the pectoral girdle are the Clavicle and Scapula.
- The upper limb is formed by the arm bone, the humerus, and the two bones of the forearm, the radius and ulna.
- The carpus are the wrist bones. List the proximal row of wrist bones from lateral to medial: Scaphoid, lunate, triquetrum, + pisiform.
List the distal row of wrist bones from lateral to medial: Trapezium, trapezoid, capitate, + hamate
- The metacarpals form the palm of the hand, and the heads of these bones form the knuckles.
- A single finger bone is called a phalanx. Each hand has 14 finger bones, called phalanges.

2. Match the bone markings in column B with the descriptions in column A.

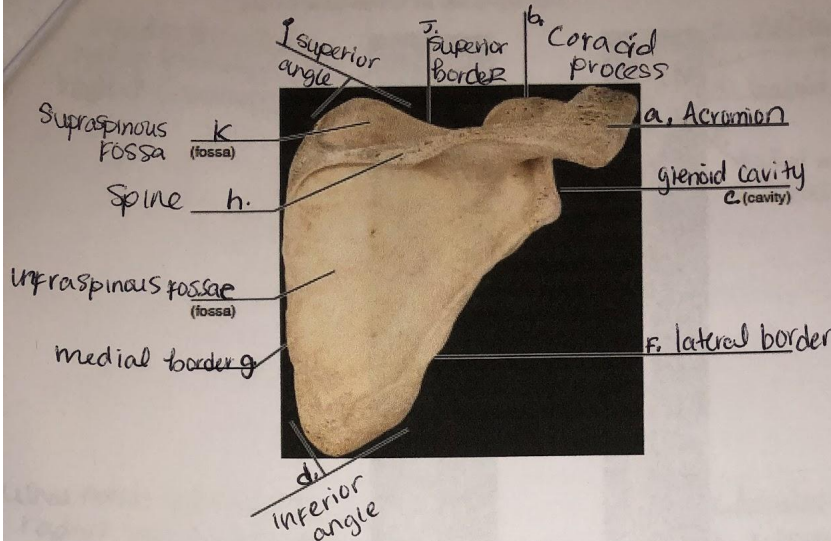
Column A

- F 1. depression in the scapula that articulates with the humerus
- K 2. surface on the radius that receives the head of the ulna
- B 3. lateral rounded knob on the distal humerus
- H 4. posterior depression on the distal humerus
- E 5. a roughened area on the lateral humerus: deltoid attachment site
- C 6. hooklike process; biceps brachii attachment site
- I 7. surface on the ulna that receives the head of the radius
- J 8. medial condyle of the humerus that articulates with the ulna
- A 9. lateral end of the spine of the scapula; clavicle articulation site
- G 10. small bump on the humerus, often called the "funny bone"
- D 11. anterior depression, superior to the trochlea, that receives part of the ulna when bending at the elbow

Column B

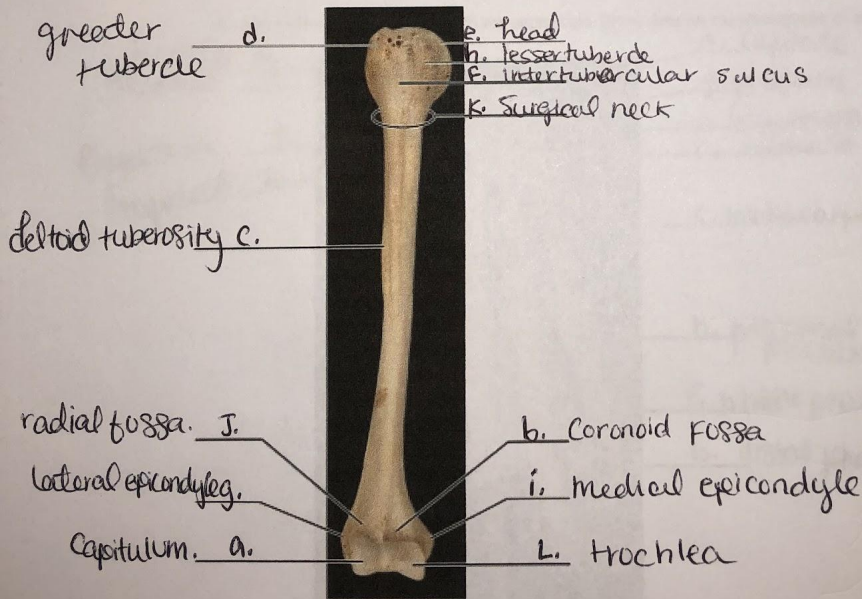
- a. acromion
- b. capitulum
- c. coracoid process
- d. coronoid fossa
- e. deltoid tuberosity
- f. glenoid cavity
- g. medial epicondyle
- h. olecranon fossa
- i. radial notch
- j. trochlea
- k. ulnar notch

3. Using items from the list at the right, identify the anatomical landmarks and regions of the scapula.



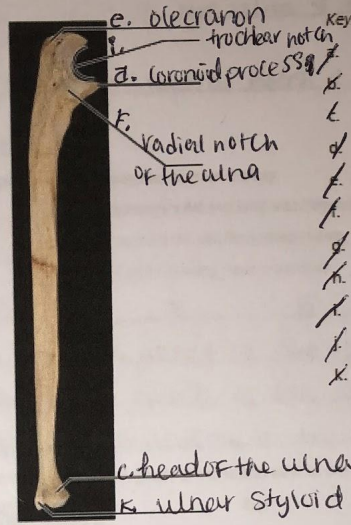
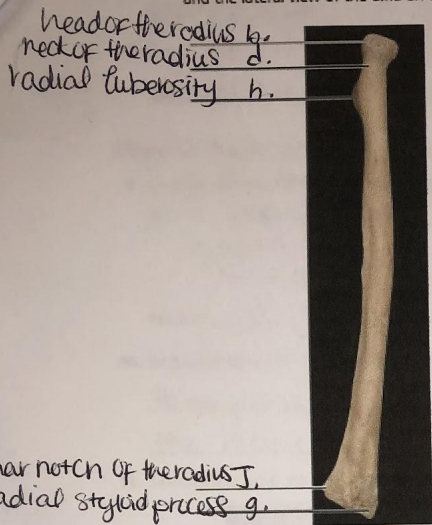
- Key:
- acromion
 - coracoid process
 - glenoid cavity
 - inferior angle
 - infraspinous fossa
 - lateral border
 - medial border
 - spine
 - superior angle
 - superior border
 - supraspinous fossa

4. Match the terms in the key with the appropriate leader lines on the photograph of the humerus.



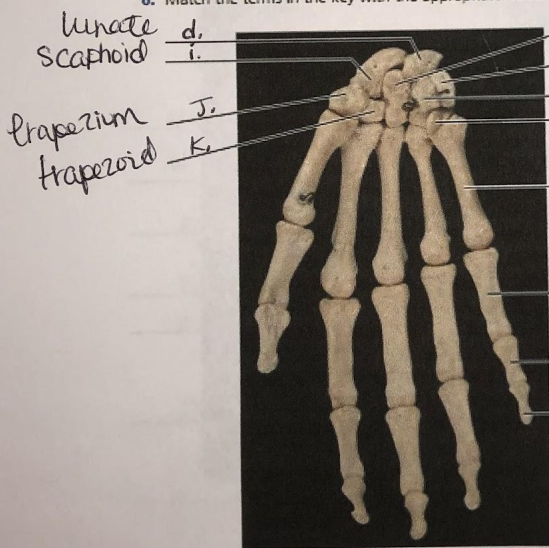
- Key:
- a. capitulum
 - b. coronoid fossa
 - c. deltoid tuberosity
 - d. greater tubercle
 - e. head
 - f. intertubercular sulcus
 - g. lateral epicondyle
 - h. lesser tubercle
 - i. medial epicondyle
 - j. radial fossa
 - k. surgical neck
 - l. trochlea

5. Match the terms in the key with the appropriate leader lines on the photographs of the posterior view of the radius on the left and the lateral view of the ulna on the right.



- Key:
- coronoid process ✓
 - head of the radius ✓
 - head of the ulna ✓
 - neck of the radius ✓
 - olecranon ✓
 - radial notch of the ulna ✓
 - radial styloid process ✓
 - radial tuberosity ✓
 - trochlear notch ✓
 - ulnar notch of the radius ✓
 - ulnar styloid process ✓

6. Match the terms in the key with the appropriate leader lines on the photograph of the anterior view of the hand.



- Key:
- capitate ✓
 - distal phalanx ✓
 - hamate ✓
 - lunate ✓
 - metacarpal ✓
 - middle phalanx ✓
 - pisiform ✓
 - proximal phalanx ✓
 - scaphoid ✓
 - trapezium ✓
 - trapezoid ✓
 - triquetrum ✓

7. Name the two bone markings that form the proximal radioulnar joint.

The (2) bones are the radial notch of the ulna + the head of radius.

8. Name the two bone markings that form the distal radioulnar joint.

The (2) bone markings are the ulnar radial notch + the annular ligament.

Bones of the Pelvic Girdle and Lower Limb

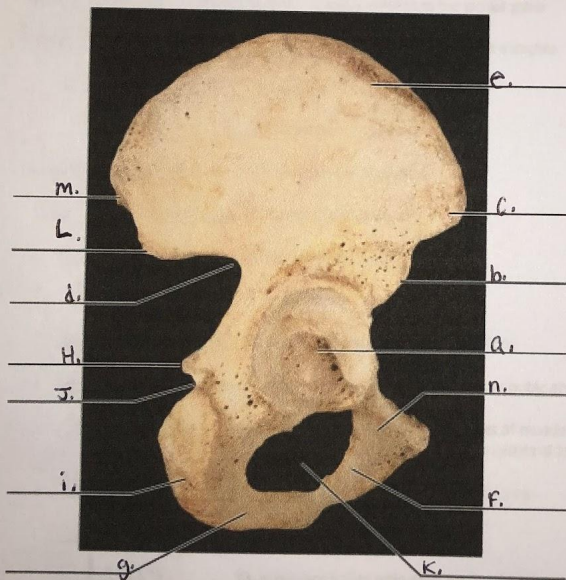
9. Compare the pectoral and pelvic girdles by choosing appropriate descriptive terms from the key.

- Key: a. flexibility most important d. insecure axial and limb attachments
 b. massive e. secure axial and limb attachments
 c. lightweight f. weight-bearing most important

Pectoral: A C D Pelvic: B E F

10. Distinguish between the true pelvis and the false pelvis. The true pelvis is the space inferior to the pelvic brim while the false pelvis is the space between the iliac crests + its inferior boundary is the pelvic brim.

11. Match the terms in the key with the appropriate leader lines on the photograph of the lateral view of the hip bone.



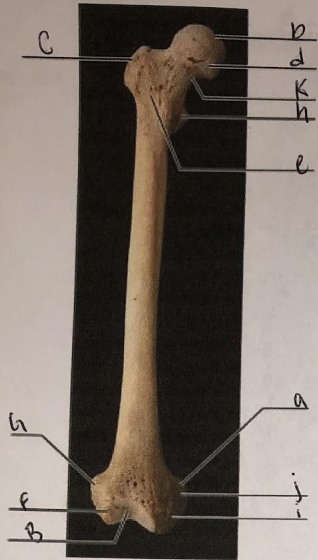
Key:

- a. acetabulum ✓
- b. anterior inferior iliac spine ✓
- c. anterior superior iliac spine ✓
- d. greater sciatic notch ✓
- e. iliac crest ✓
- f. inferior pubic ramus ✓
- g. ischial ramus ✓
- h. ischial spine ✓
- i. ischial tuberosity ✓
- j. lesser sciatic notch ✓
- k. obturator foramen ✓
- l. posterior inferior iliac spine ✓
- m. posterior superior iliac spine ✓
- n. superior pubic ramus ✓

12. Match the bone names and markings in column B with the descriptions in column A. The items in column B may be used more than once.

Column A		Column B
<u>Ilium</u> _____	and	a. acetabulum
<u>pubis</u> _____	1. fuse to form the hip bone	b. calcaneus
<u>Ischial tuberosity</u> _____	2. rough projection that supports body weight when sitting	c. femur
<u>pubic symphysis</u> _____	3. point where the hip bones join anteriorly	d. fibula
<u>Iliac crest</u> _____	4. superiormost margin of the hip bone	e. gluteal tuberosity
<u>Acetabulum</u> _____	5. deep socket in the hip bone that receives the head of the thigh bone	f. <u>greater and lesser trochanters</u>
<u>Sacroiliac joint</u> _____	6. joint between axial skeleton and pelvic girdle	g. greater sciatic notch
<u>Femur</u> _____	7. longest, strongest bone in body	h. iliac crest
<u>Fibula</u> _____	8. thin, lateral leg bone	i. ilium
<u>greater sciatic notch</u> _____	9. permits passage of the sciatic nerve	j. ischial tuberosity
<u>lesser sciatic notch</u> _____	10. notch located inferior to the ischial spine	k. <u>ischium</u>
<u>tibial tuberosity</u> _____	11. point where the patellar ligament attaches	l. lateral malleolus
<u>patella</u> _____	12. kneecap	m. lesser sciatic notch
<u>tibia</u> _____	13. shinbone	n. medial malleolus
<u>medial malleolus</u> _____	14. medial ankle projection	o. metatarsals
<u>lateral malleolus</u> _____	15. lateral ankle projection	p. obturator foramen
<u>Calcaneus</u> _____	16. largest tarsal bone	q. patella
<u>tarsals</u> _____	17. ankle bones	r. pubic symphysis
<u>metatarsals</u> _____	18. bones forming the instep of the foot	s. <u>pubis</u>
<u>obturator foramen</u> _____	opening in hip bone formed by the pubic and ischial rami	t. sacroiliac joint
<u>gluteal tuberosity</u> _____	and <u>greater + lesser trochanters</u>	u. talus
	20. sites of muscle attachment on the proximal femur	v. tarsals
<u>talus</u> _____	21. tarsal bone that "sits" on the calcaneus	w. tibia
<u>tibia</u> _____	22. weight-bearing bone of the leg	x. tibial tuberosity
<u>talus</u> _____	23. tarsal bone that articulates with the tibia	

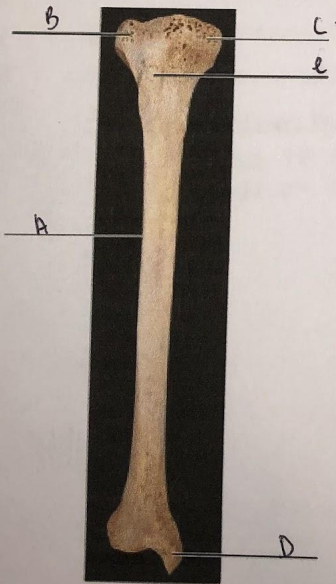
13. Match the terms in the key with the appropriate leader lines on the photograph of the anterior view of the femur.



Key:

- a. adductor tubercle
- b. fovea capitis
- c. greater trochanter
- d. head
- e. intertrochanteric line
- f. lateral condyle
- g. lateral epicondyle
- h. lesser trochanter
- i. medial condyle
- j. medial epicondyle
- k. neck
- l. patellar surface

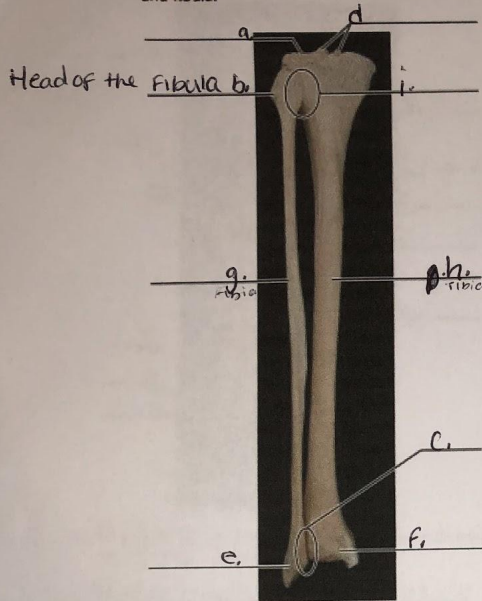
14. Match the terms in the key with the appropriate leader lines on the photograph of the anterior view of the tibia.



Key:

- a. anterior border
- b. lateral condyle
- c. medial condyle
- d. medial malleolus
- e. tibial tuberosity

15. Match the terms in the key with the appropriate leader lines on the photograph of the posterior view of the articulated tibia and fibula.



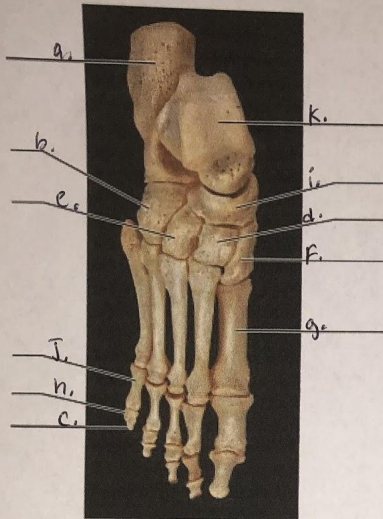
Key:

- ~~a.~~ articular surface of the lateral condyle
- ~~b.~~ head of the fibula
- ~~c.~~ inferior tibiofibular joint
- ~~d.~~ intercondylar eminence
- ~~e.~~ lateral malleolus
- ~~f.~~ medial malleolus
- ~~g.~~ shaft of the fibula
- ~~h.~~ shaft of the tibia
- ~~i.~~ superior tibiofibular joint

16. Are the bones of the leg shown above from the left or from the right leg? It's from the left leg.

Explain how you can tell which side of the body they are from. I know it's from the left leg because in the photo above, the fibula's shaft is shown on the right side & the medial malleolus is close to the tibia, and the lateral malleolus part is further from the midline of the bone.

17. Match the terms in the key with the appropriate leader lines on the photograph of the superior view of the articulated foot.



Key:

- a. calcaneus ✓
- b. cuboid ✓
- c. distal phalanx ✓
- d. intermediate cuneiform ✓
- e. lateral cuneiform ✓
- f. medial cuneiform ✓
- g. metatarsal ✓
- h. middle phalanx ✓
- i. navicular ✓
- j. proximal phalanx ✓
- k. talus ✓

18. **+** FOOSH is an acronym that stands for Fall on Outstretched Hand. Discuss possible fractures and dislocations that might occur with an injury of this type.

Possible fractures can include Colles fracture (fracture of the distal end of the radius at the junction), Scaphoid fracture (known as the most common carpal bone), Monteggia fracture dislocation & the Galeazzi fracture dislocation.

19. **+** Describe some of the features of the female pelvis that provide for compatibility with vaginal birth. Some features of the female pelvis is that it's wider, thinner & less dense than the male, which gives less difficulty during childbirth. It's also made more flexible for vaginal birth.

20. **+** Your X-ray exam reveals that you have fractured your fibula. Your physician remarks, "Well, it's better than breaking your

tibia." Explain why a fracture of the tibia would be worse than a fracture of the fibula. A fracture of the tibia would be far worse than your fibula because your tibia is much "stronger," thicker that holds all your body weight because of its location which is the lower part of the leg. On the other side, your fibula is more on the thinner side. Therefore, fracturing your tibia would equvalate to a much broader healing process because its the bone that holds all the weight.