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

EXERCISE 9

REVIEW SHEET

The Axial Skeleton

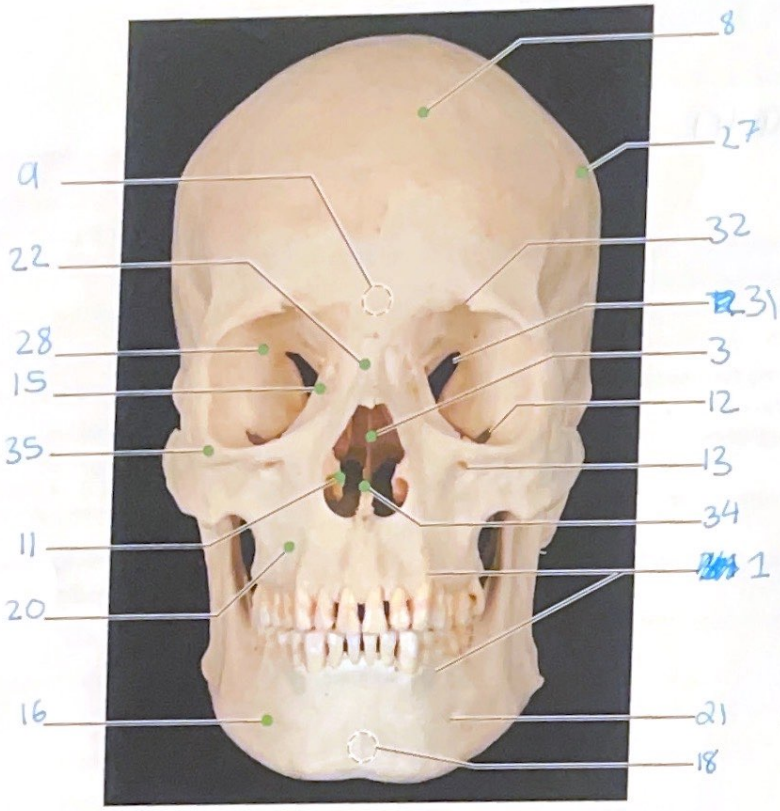
Name Ariana Mesbahjanin Lab Time/Date _____

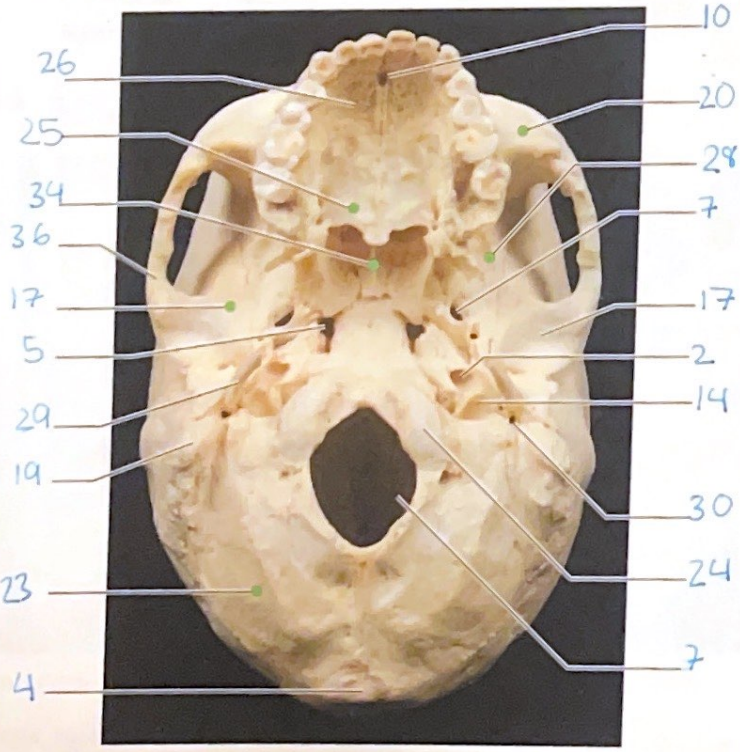
The Skull

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





Key:
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

a type of joint between the bones of the skull where

3. Define *suture*. the bones are held tightly together by fibrous tissue.

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

jaw bones, and temporal bones

5. What bones are connected by the lambdoid suture?

occipital bone with parietal bone,

What bones are connected by the squamous suture?

the parietal bones

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

frontal, right parietal, ethmoid, left temporal, left parietal, occipital, sphenoid, right temporal

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

functions: they lighten the facial bones and act as resonance chambers for speech.

maxilla, frontal, ethmoid, sphenoid.

8. What is the bony orbit? bones that consistitute the margins of the orbit, that is the roof, medial and lateral walls and floor.

What bones contribute to the formation of the orbit?

sphenoid, frontal, zygomatic, ethmoid, lacrimal, maxilla, palatine

9. Why can the sphenoid bone be called the keystone bone of the cranium? because it is in contact with all the other 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

c 1. vertebra type containing foramina in the transverse processes, through which the vertebral arteries ascend to reach the brain

b 2. dens here provides a pivot for rotation of the first cervical vertebra (C_1)

g 3. transverse processes faceted for articulation with ribs; spinous process pointing sharply downward

f 4. composite bone, articulates with the hip bone laterally

e 5. massive vertebra; weight-sustaining

d 6. "tail bone" fused vertebrae

a 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

i 1. cavity enclosing the spinal cord

a 2. weight-bearing portion of the vertebra

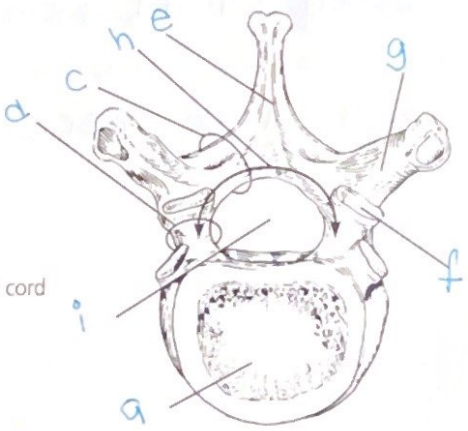
e, g 3. provide levers against which muscles pull

g, f 4. provide an articulation point for the ribs

b 5. openings providing for exit of spinal nerves

h, a 6. structures that form an enclosure for the spinal cord

d, c 7. structures that form the vertebral arch



12. Describe how a spinal nerve exits from the vertebral column. spinal nerve exit the vertebral column via the ventral root then the ventral horn. sensory nerves enter the spinal cord via the dorsal horn, synapse on the dorsal gangilia and enter the spinal cord.

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

discs and S-shaped of the vertebral column

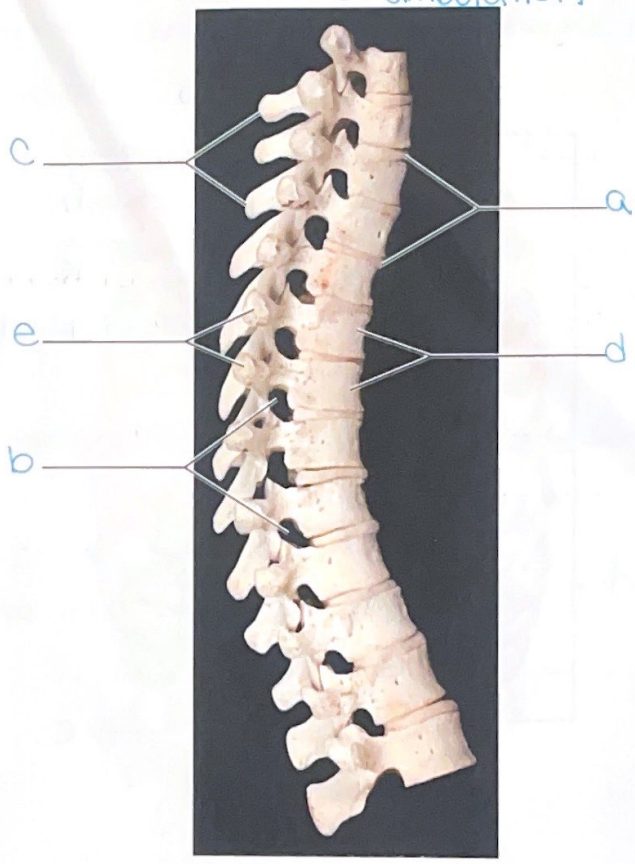
14. What kind of tissue makes up the intervertebral discs? fibrocartilage

15. What is a herniated disc? a disc in which the nucleus pulposus herniates through the annulus
What problems might it cause? the nucleus pulposus compresses on the spinal cord leading to pain/possible paralysis

16. Which two spinal curvatures are obvious at birth? ~~concave forward~~ and thoracic and sacral spine
Under what conditions do the secondary curvatures develop? occurs with normal development. Cervical curvature. which develops first with infant head lifting and the lumbar curvature. which develops next sitting up. these prepare for the ~~spine~~ spin for ambulation

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 prosesses
d. thoracic vertebrae
e. transverse processes



The Thoracic Cage

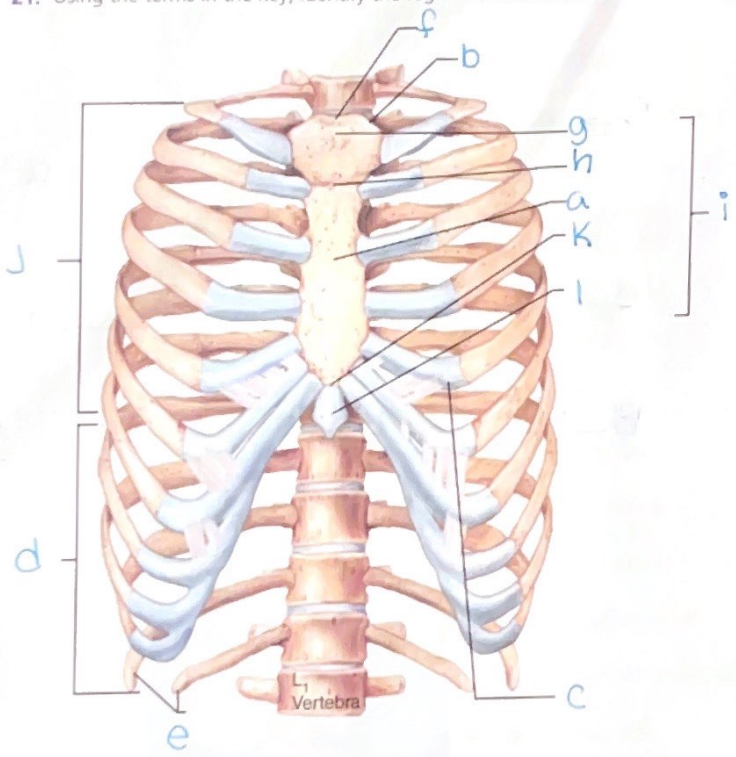
18. The major bony components of the thorax (excluding the vertebral column) are the ribs and the sternum

19. Differentiate between a true rib and a false rib. the top seven pairs of ribs are connected to your sternum by strips of cartilage which are considered true ribs. the last three pairs of ribs are known as false ribs.

Is a floating rib a true or a false rib? false ribs

20. What is the general shape of the thoracic cage? conical shape

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



Key:
- a body
- b clavicular notch
- c costal cartilage
- d false ribs
- e floating ribs
- f jugular notch
- g manubrium
- h sternal angle
- i sternum
- j true ribs
- k xiphisternal joint
- l xiphoid process

The Fetal Skull

22. Are the same skull bones seen in the adult also found in the fetal skull? no, some areas are still remained to be converted to bone.

23. How does the size of the fetal face compare to its cranium? face is foreshortened, overshadowed by the large cranium. maxilla and mandible are very tiny.

How does this compare to the adult skull? the cranium is proportionately smaller and the facial bones are proportionately larger and more prominent.

24. What are the outward conical projections on some of the fetal cranial bones? these are ossification (growth) centers.

25. What is a fontanelle? spaces between the developing cranial bones that allow bones to overlap during birth and also allow for growth of the brain.

What is its fate? soft spot/ membranous area of unfused cranial bones; ossify completed by the age of 2.

What is the function of the fontanelles in the fetal skull? allows the head to mold to fit through the birth canal and allow for brain growth.

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.

it can complicate brain development.

27. As we age, we often become shorter. Explain why this might occur. because the intervertebral discs flaten.

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

they can break apart.

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EXERCISE 10

REVIEW SHEET
The Appendicular Skeleton

Name ariana medunjanin Lab Time/Date _____

Bones of the Pectoral Girdle and Upper Limb

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

a. The bones that form the pectoral girdle are the ~~clavicle~~ clavicle and scapula.

b. The upper limb is formed by the arm bone, the humerus, and the two bones of the forearm, the radius and ulna.

c. The carpal bones are the wrist bones. List the proximal row of wrist bones from lateral to medial: Scaphoid, Lunate, Triquetrun, & Pisiform

List the distal row of wrist bones from lateral to medial: Trapezium, Trapezoid, Capitate, & Hamate

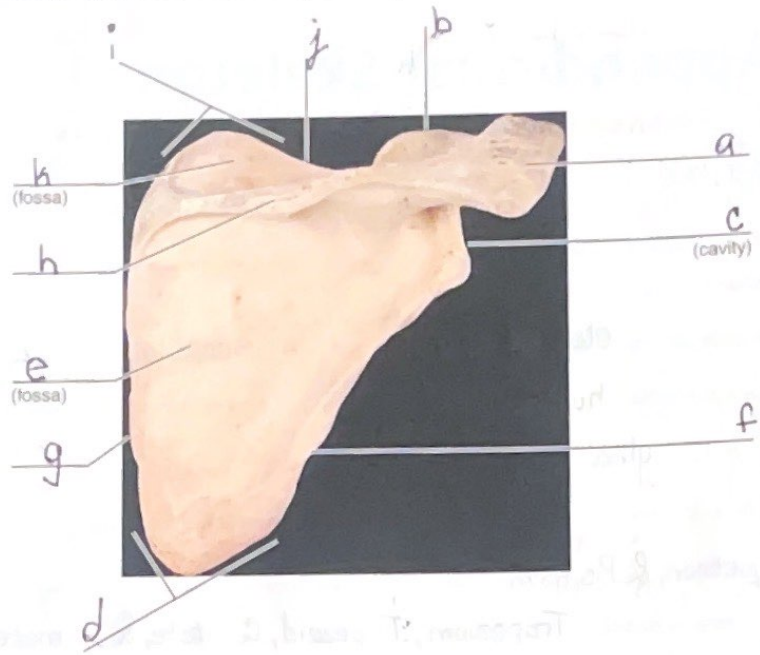
d. The metacarpal bones form the palm of the hand, and the heads of these bones form the knuckles.

e. A single finger bone is called a phalanx. Each hand has ~~28~~ 14 finger bones, called phalanges.

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

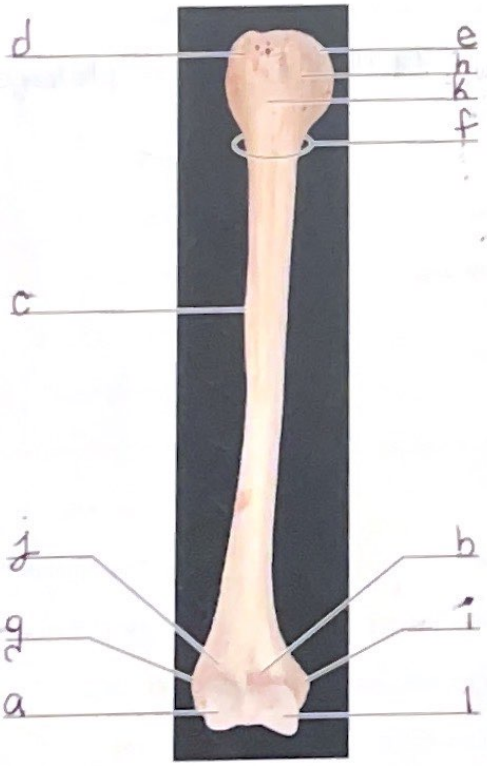
Column A		Column B
f	1. depression in the scapula that articulates with the humerus	~~a~~. acromion
k	2. surface on the radius that receives the head of the ulna	~~b~~. capitulum
b	3. lateral rounded knob on the distal humerus	~~c~~. coracoid process
h	4. posterior depression on the distal humerus	~~d~~. coronoid fossa
e	5. a roughened area on the lateral humerus: deltoid attachment site	~~e~~. deltoid tuberosity
c	6. hooklike process; biceps brachii attachment site	~~f~~. glenoid cavity
i	7. surface on the ulna that receives the head of the radius	~~g~~. medial epicondyle
j	8. medial condyle of the humerus that articulates with the ulna	~~h~~. olecranon fossa
a a	9. lateral end of the spine of the scapula, clavicle articulation site	~~i~~. radial notch
g	10. small bump on the humerus, often called the "funny bone"	~~j~~. trochlea
d	11. anterior depression, superior to the trochlea, that receives part of the ulna when bending at the elbow	~~k~~. ulnar notch

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



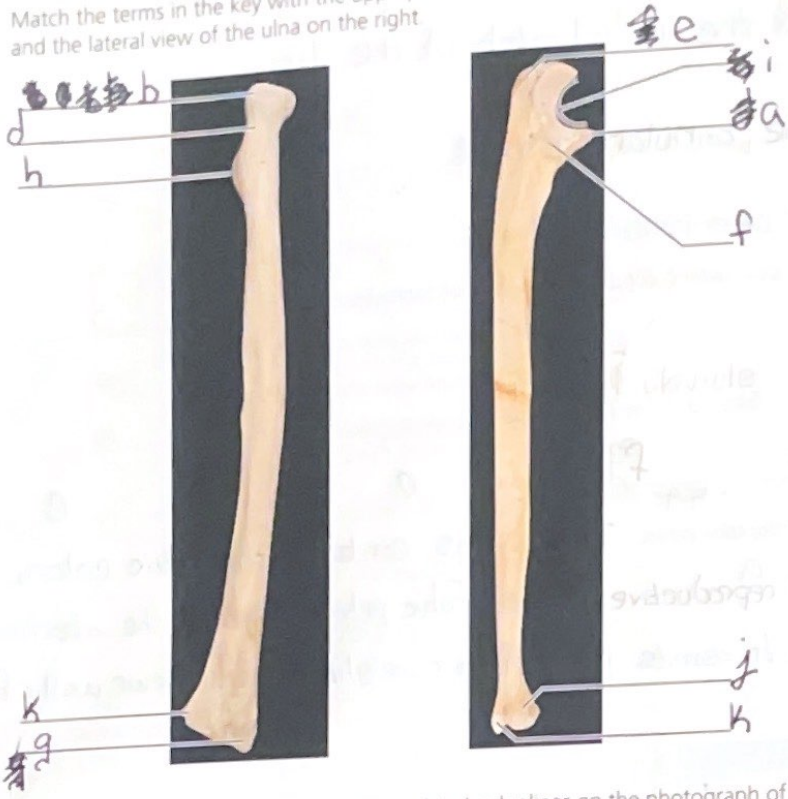
Key
- acromion
- coracoid process
- glenoid cavity
- inferior angle
- infraspinous fossa
- lateral border
- medial border
- spine
- superior angle
- superior border
- supraspinous fossa

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



Key
- capitulum
- coronoid fossa
- deltoid tuberosity
- greater tubercle
- head
- intertubercular sulcus
- lateral epicondyle
- lesser tubercle
- medial epicondyle
- radial fossa
- surgical neck
- trochlea

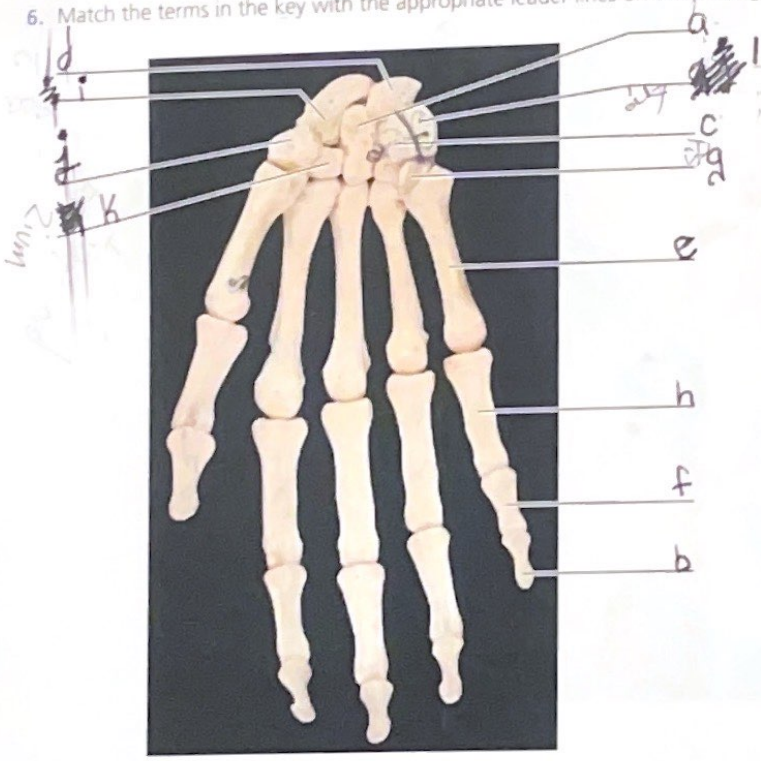
5. Match the terms in the key with the appropriate leader lines on the photographs of the posterior view of the radius on the left and the lateral view of the ulna on the right.



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.

head of the radius & the radial notch of the ulna

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

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
- b massive
- c lightweight
- d insecure axial and limb attachments
- e secure axial and limb attachments
- f weight-bearing most important

Pectoral: b, e, f Pelvic: a, d, c

10. Distinguish between the true pelvis and the false pelvis. True pelvis contains the pelvic colon, rectum, bladder, & some reproductive organs. False pelvis supports the intestines, (ileum, & sigmoid, colon), & transmits part of their weight to the anterior wall of the abdomen.

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

i, k and

s 1. fuse to form the hip bone

j 2. rough projection that supports body weight when sitting

r 3. point where the hip bones join anteriorly

h 4. superiormost margin of the hip bone

a 5. deep socket in the hip bone that receives the head of the thigh bone

t 6. joint between axial skeleton and pelvic girdle

c 7. longest, strongest bone in body

d 8. thin, lateral leg bone

g 9. permits passage of the sciatic nerve

m 10. notch located inferior to the ischial spine

x 11. point where the patellar ligament attaches

q 12. kneecap

w 13. shinbone

n 14. medial ankle projection

l 15. lateral ankle projection

b 16. largest tarsal bone

v 17. ankle bones

o 18. bones forming the instep of the foot

p 19. opening in hip bone formed by the pubic and ischial rami

e and trochanters 20. sites of muscle attachment on the proximal femur

u 21. tarsal bone that "sits" on the calcaneus

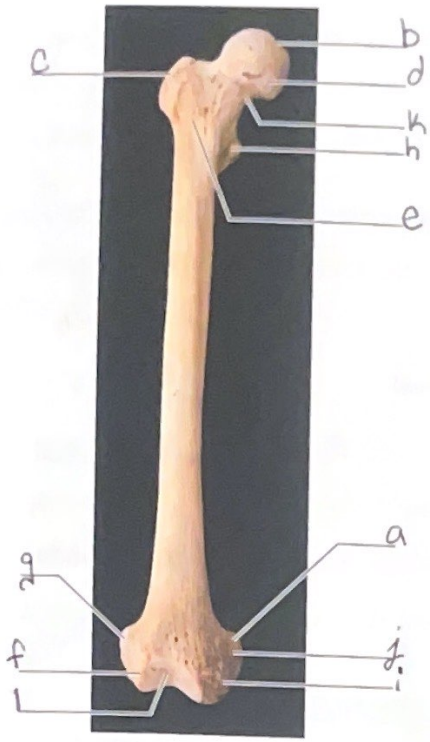
w 22. weight-bearing bone of the leg

u 23. tarsal bone that articulates with the tibia

Column B

a. acetabulum
b. calcaneus
c. femur
d. fibula
e. gluteal tuberosity
f. greater and lesser trochanters
g. greater sciatic notch
h. iliac crest
i. ilium
j. ischial tuberosity
k. ischium
l. lateral malleolus
m. lesser sciatic notch
n. medial malleolus
o. metatarsals
p. obturator foramen
q. patella
r. pubic symphysis
s. pubis
t. sacroiliac joint
u. talus
v. tarsals
w. tibia
x. tibial tuberosity

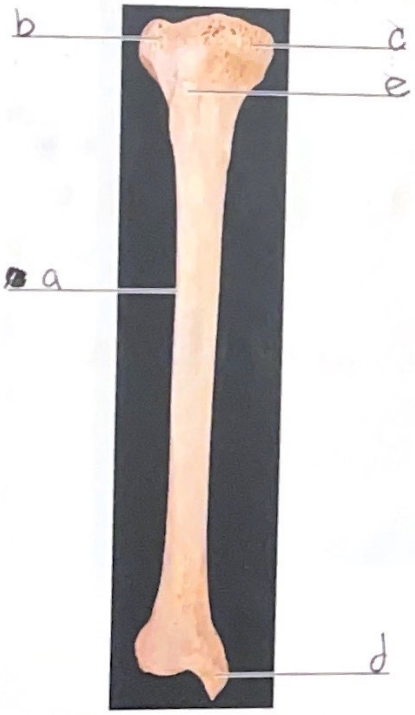
13. Match the terms in the key with the appropriate leader lines on the photograph of the anterior view of the femur.



Key:

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

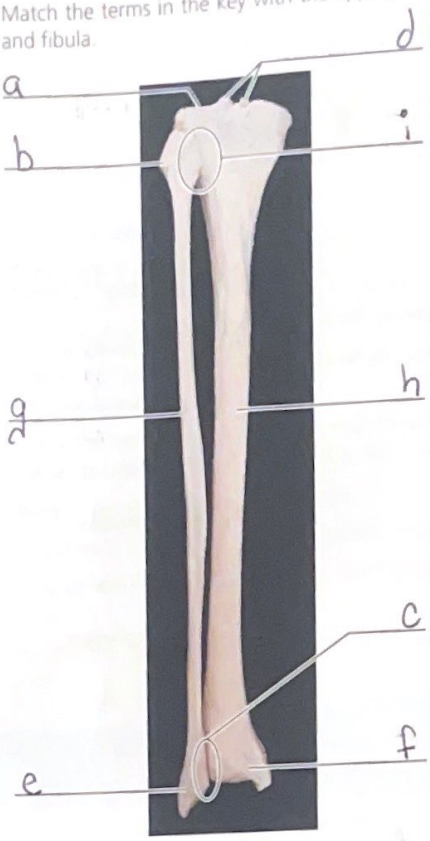
14. Match the terms in the key with the appropriate leader lines on the photograph of the anterior view of the tibia.



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.



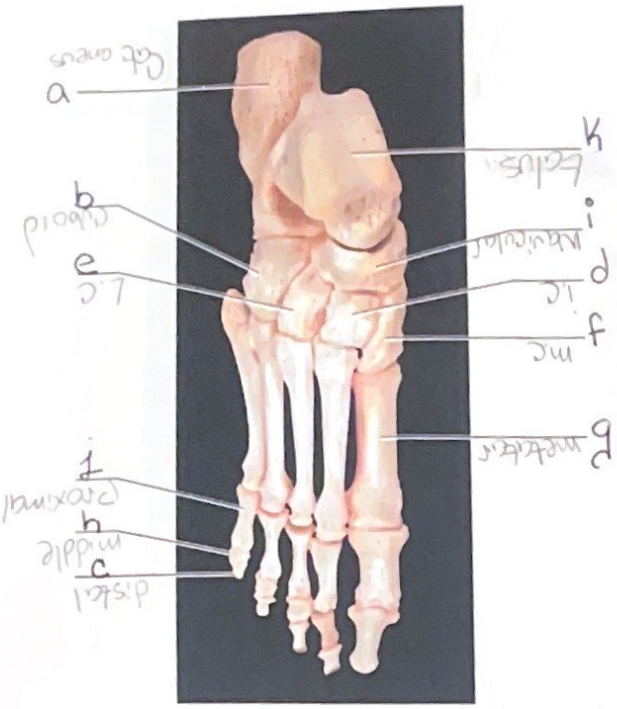
Key:

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? Right leg

Explain how you can tell which side of the body they are from. the tibia is on the right side of the fibula

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 **F**all **o**n **O**ut**s**tretched **H**and. Discuss possible fractures and dislocations that might occur with an injury of this type.

Breaking the hamate / pisform carpal bones of the wrist are most likely to get dislocated.

19. Describe some of the features of the female pelvis that provide for compatibility with vaginal birth. Adapted for birth, Cavity of the true pelvis is broad, shallow, & has a much greater capacity to allow passage of a child through the pelvic outlet, lightweight

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. The fibula provides lateral support & stability for the tibia but it does not bear much weight like the tibia does.