

Anatomy

Skeletal and Muscular Systems

Part 1: Directional terms, Planes, Body Cavities

Lab Materials:

male & female surface landmarks models various models, textbook

Lab Activities: Use models and charts to learn directional terms, planes and body cavities.

Part I: Anatomical Directions:

1. Be able to define and give examples of the following directional terms:

superior/inferior

anterior/posterior

medial/lateral

dorsal/ventral

proximal/distal

superficial/deep

prone/supine

unilateral/bilateral

2. Be able to define and give examples of each of the following planes:

Frontal Plane

Transverse Plane

Midsagittal Plane

Part II: Body Cavities and Organs

3. Identify the major body cavities and name the organs found in each

Posterior (dorsal)

1. Cranial

2. Spinal(vertebral)

Anterior (ventral)

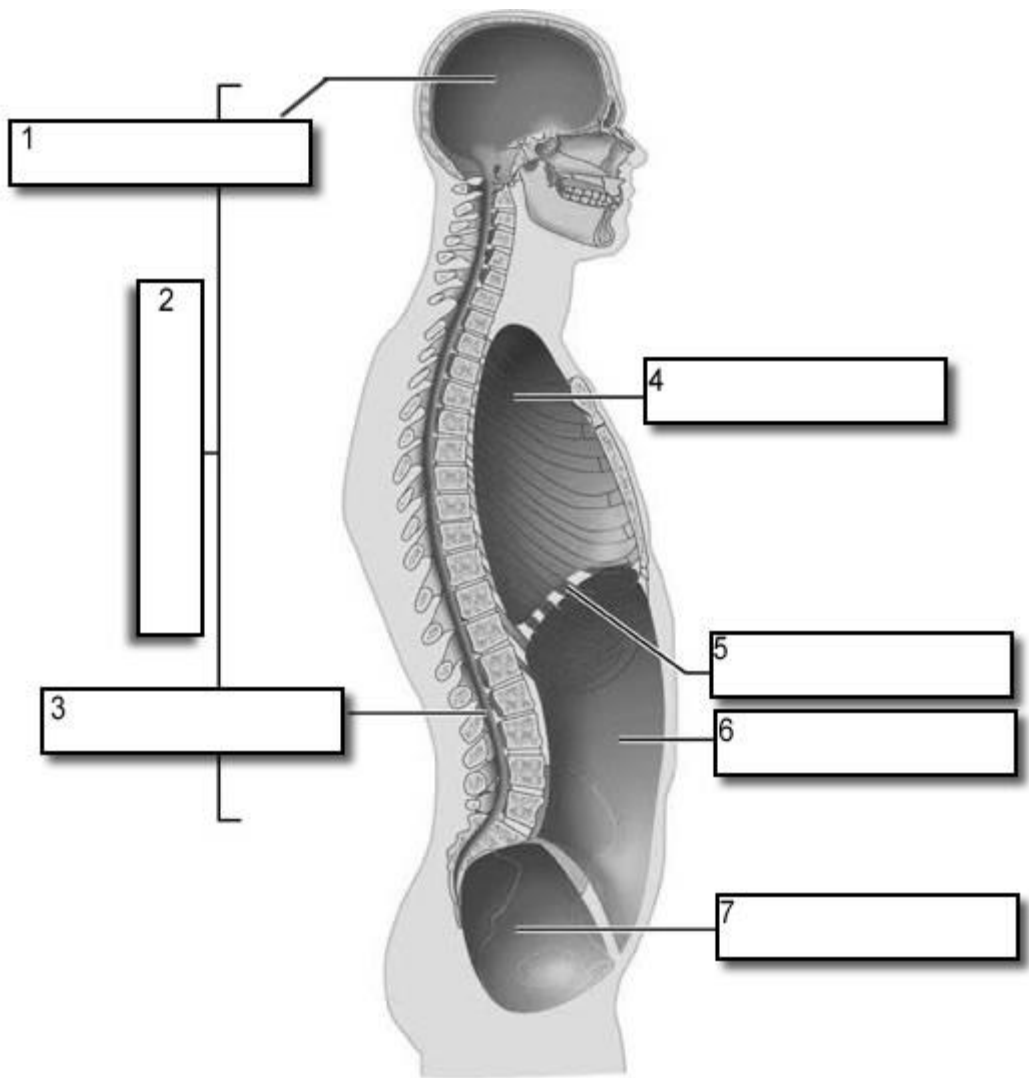
1. Thoracic

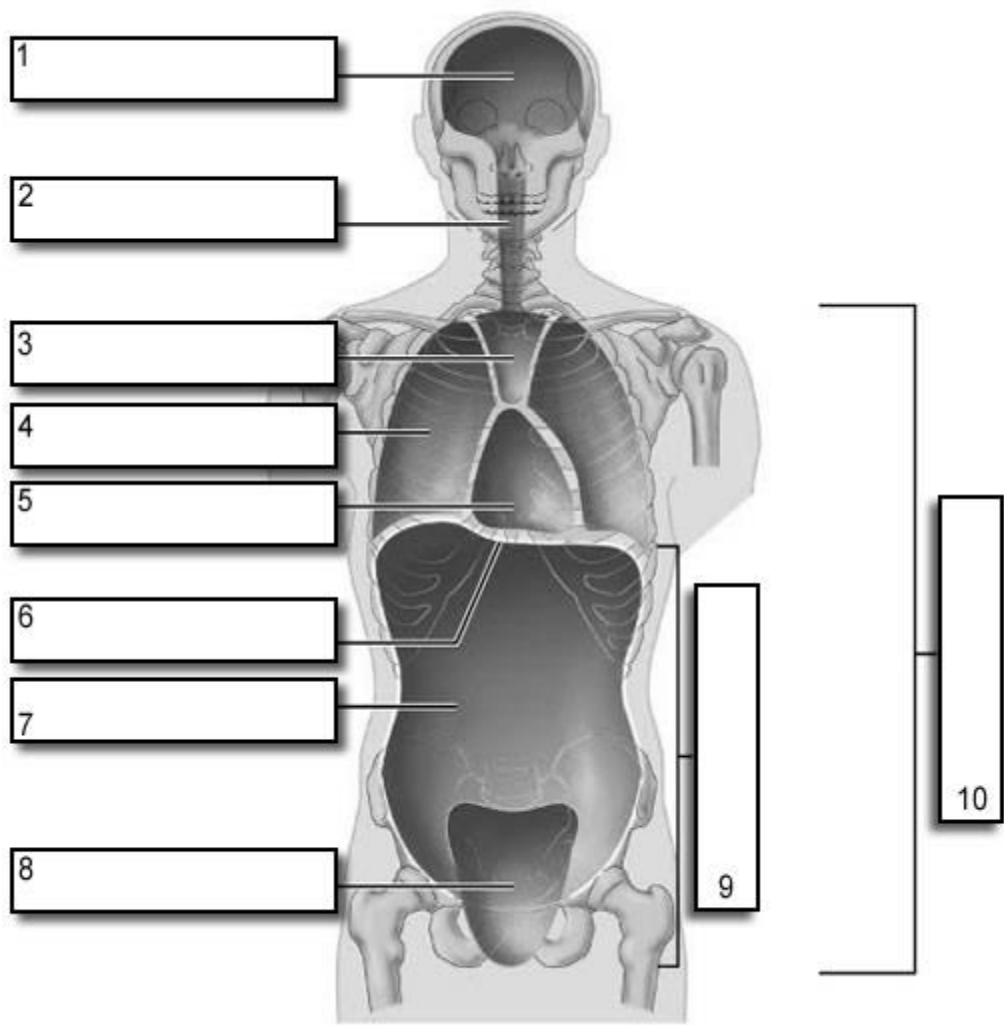
a. Pericardial

b. Pleural

2. Abdominal

3. Pelvic





Part III: Organ Systems Overview

Lab Materials:

Tables and Illustrations, Textbook, Torso Models

Lab Activities:

1. Use models and charts to learn the major systems and some of the major organs of *each* organ system listed below.

Terminology:

Integumentary System

-the skin can be considered a membrane, a single organ or an organ system

Skeletal System

- each individual bone is a separate organ of the skeletal system (eg. humerus, radius, femur, etc.)

Muscular System

- each individual muscle is a separate organ of the muscular system (eg. biceps, triceps, gastrocnemius. etc.)

Nervous System

-brain, spinal cord, each cranial nerve, each spinal nerve

Endocrine System

- anterior pituitary gland, posterior pituitary gland, thyroid gland, pancreas, adrenal cortex, adrenal medulla, ovaries, testes

Circulatory System

- heart, each individual artery and vein is a separate organ of the circulatory system (e.g. aorta, pulmonary artery, hepatic portal vein, etc.)

Lymphatic System

- right lymphatic duct, thoracic duct, tonsils, spleen, lymph nodes

Immune System

-Specific cells and chemicals in virtually every body organ help to protect the body from pathogens

Respiratory System

-nose, pharynx, larynx, trachea, bronchi, lungs, diaphragm

Digestive System

-mouth, pharynx, esophagus, stomach, small intestine, large intestine, liver, gallbladder, pancreas, mesenteries, teeth, salivary glands

Urinary System kidneys, ureters, urinary bladder, urethra

Reproductive System

-male: penis, scrotum, testes, epididymis, vas deferens, ejaculatory duct, urethra, seminal vesicles, prostate gland, bulbourethral glands
-female: vulva, mammary glands, ovaries, oviducts, uterus, cervix, vagina

Part IV: The Skeletal System

Lab Materials:

Textbook, models and bones: articulated skeleton

Reminder: Do not use pencils and pens to point to bones and bone markings; use the blunt or pointed probe in your dissection kit

Lab Activities:

1. Use models, bones, illustrations study the general terminology for types of bones and be able to recognize examples of each.
2. Distinguish between bones of the axial and appendicular skeleton.
3. Identify the **major bones** of the axial skeleton
4. Identify the **major bones** of the appendicular

Types of bones:

Using general terminology for types of bones, identify some bones that represent each type:

Long

Short

Flat

Irregular

Label the types of bones below:



Terminology List for the Skeletal System:

1. Distinguish between axial and appendicular skeleton
2. Identify all the **major bones** of the axial skeleton listed.
3. Identify all the **major bones** of the appendicular listed.

Axial Skeleton

Skull (cranium)

Maxilla Bone

Nasal Bone

Mandible

Hard Palate

Zygomatic bone

Hyoid bone

Vertebral Column

Cervical Vertebrae

Thoracic Vertebrae (facets on body and transverse processes)

Lumbar Vertebrae (largest)

Sacral Vertebrae (5 fused vertebrae)

Coccyx (3 to 5 vestigial vertebrae, body only)

Bony Thorax

Ribs (12 pairs) (cartilage, floating ribs)

Sternum

Appendicular Skeleton

Upper Limb

Pectoral Girdle

Scapula

Clavicle

Upper Arm

Humerus

Forearm

Radius

Ulna

Hand

Carpals

Metacarpals

Phalanges

Lower Limb

Pelvic Girdle

Coxal (difference between male and female pelvis)

iliac crest (hip bones)

Pubis (pubic symphysis)

Thigh

Femur

Patella

Lower Leg

Tibia

Fibula

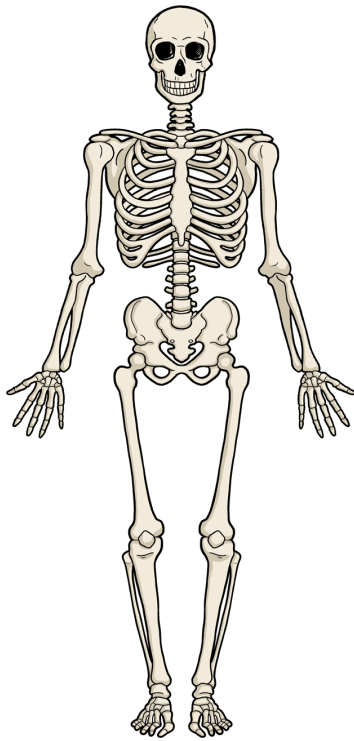
Foot

Tarsals

Metatarsals

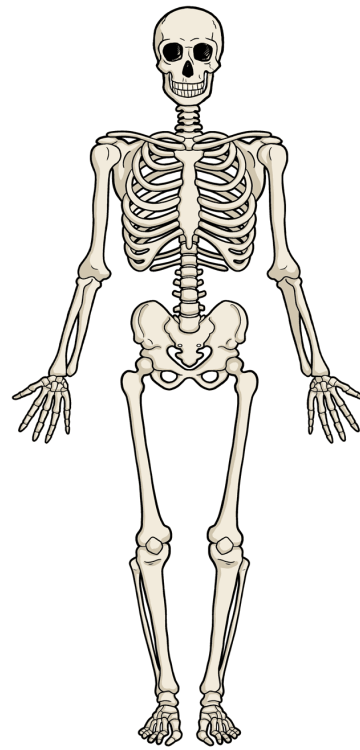
Phalanges

1. Color or shade in the appropriate bone components that are part of the axial skeleton.
2. Color or shade in the appropriate bone components that are part of the appendicular skeleton.
3. Identify, and label, the bones making up the axial and appendicular skeleton



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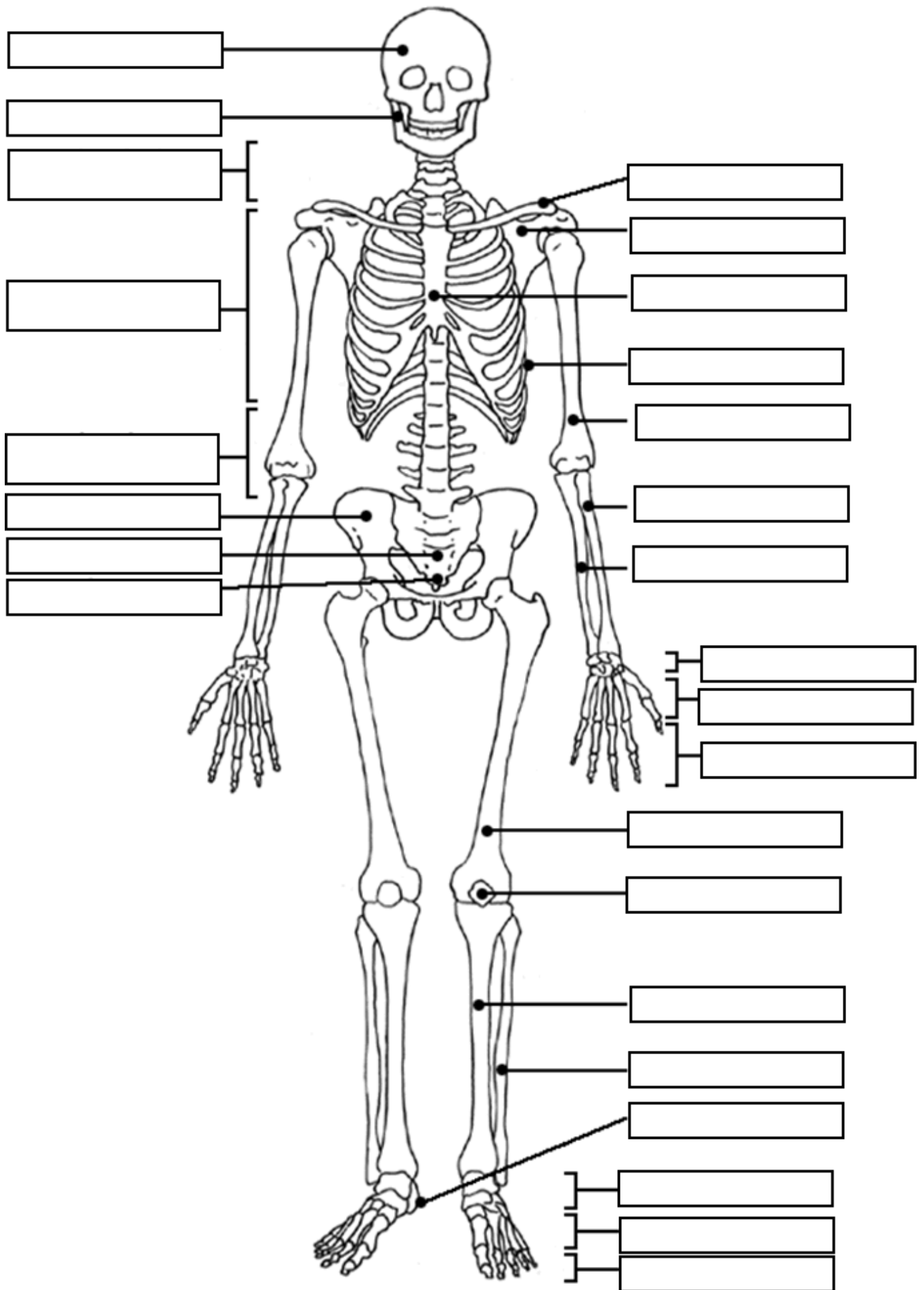
AXIAL SKELETON



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APPENDICULAR SKELETON

Label the skeleton



Part V: Bone Structure

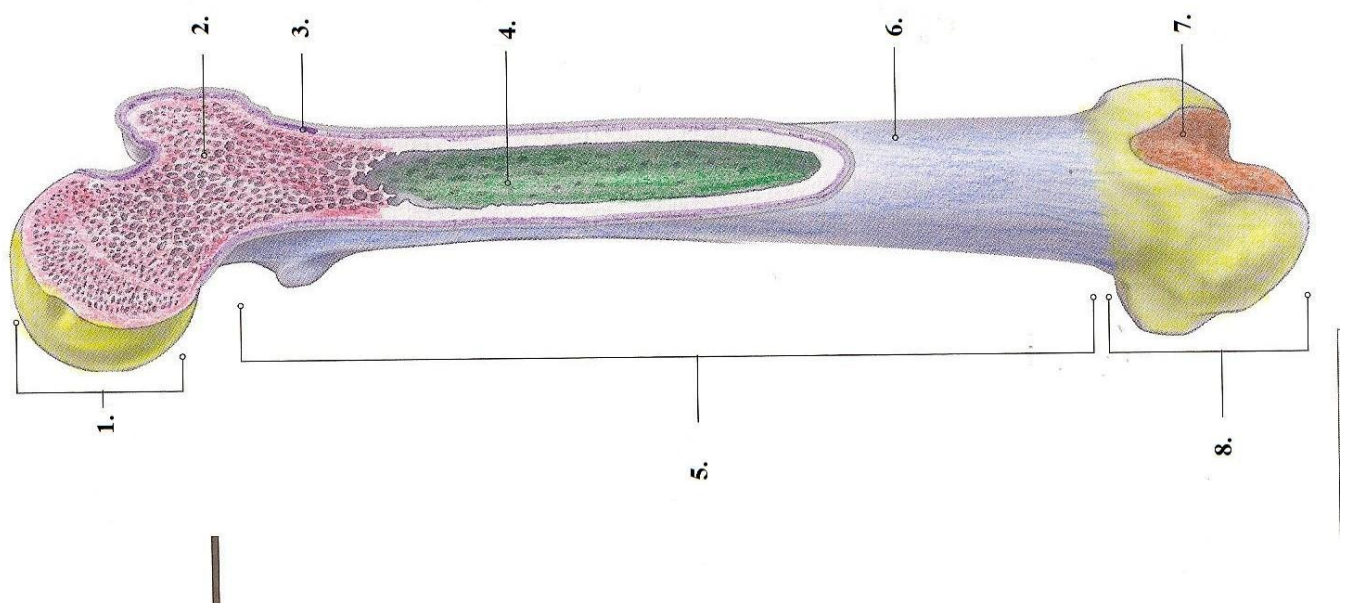
1. Identify the structures of function of the four layers of bone
2. Identify and label the parts of the bone below.

Periosteum

Compact Bone

Spongy Bone

Bone Marrow



Part VI: The Muscular System

Lab Materials:

models: Muscle cell model
mini and half size human models
sagittal heads
muscular arms & legs
male and female pelvis
other models showing specific voluntary muscles

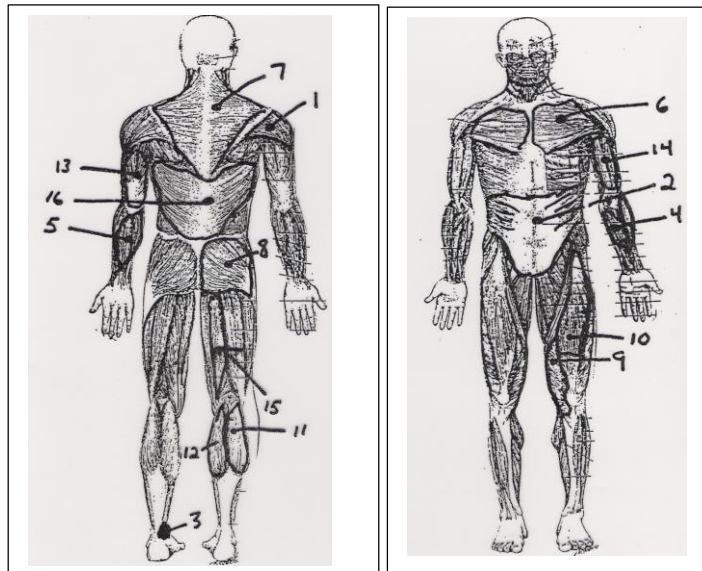
Lab Directions:

Using the models and illustrations, identify each of the major muscles listed.

1. Identify the major muscles listed below. Know their location and function.

Human Muscular System Diagram

Deltoid
Trapezius Muscle
Latissimus Dorsi Muscle
Bicep & Tricep
Gluteals
Hamstring
Sartorius
Calf Muscles
Gastrocnemius &
Soleus Muscle
Achilles Tendon
Extensor Muscles
Flexor Muscles
Pectoralis major
Abdominal Muscles
Quadriceps
Anterior Tibialis
External obliques
adductors



Human Muscles and their Functions

**Functions of required muscles

Other Human Muscles

a. Muscles on the Head and Neck

frontalis	→ raises eyebrows
orbicularis oris	→ closes mouth; pucker up
orbicularis oculi	→ closes eyes; squint
extrinsic eye muscles	→ all eye movements
masseter	→ closes jaw
temporalis	→ closes jaw
sternocleidomastoid	→ flexes and/or rotates head

b. Breathing Muscles

diaphragm	→ inspiration
external intercostals	→ raise ribcage; forced inspiration
internal intercostals	→ lower ribcage; forced expiration

c. Muscles of the Abdominal Wall

**external oblique	→ supports body wall
internal oblique	→ supports body wall
transverse abdominis	→ compresses abdomen
rectus abdominis	→ flexes vertebral column → "6-pack"

d. Muscles that Move Pectoral Girdle

**trapezius	→ levation and depression of scapula
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e. Muscles that Move Upper Arm

**pectoralis major	→ flexes humerus → main muscle of "pecs"
**deltoid	→ abducts upper arm
**trapezius	→ extends head; allows several movements of scapula
**latissimus dorsi	→ adducts & extends humerus → "lats"

f. Muscles that Move Forearm

**biceps brachii	→ flexes forearm → "biceps"
brachialis	→ flexes forearm
**triceps brachii	→ extends forearm → "triceps"

g. Muscles that Move Hand and Fingers

flexors of hand	→ flexes phalanges
brachioradialis	→ flexes lower arm
extensors of hand	→ extends phalanges

h. Muscles that Move Thigh

**gluteus maximus	→ extends thigh → most of "glutes"
**adductor longus	→ adducts thigh
gracilis	→ adducts thigh; flexes lower leg
**sartorius	→ flexes thigh
tensor fascia latae	→ abducts thigh

i. Muscles that Move Lower Leg

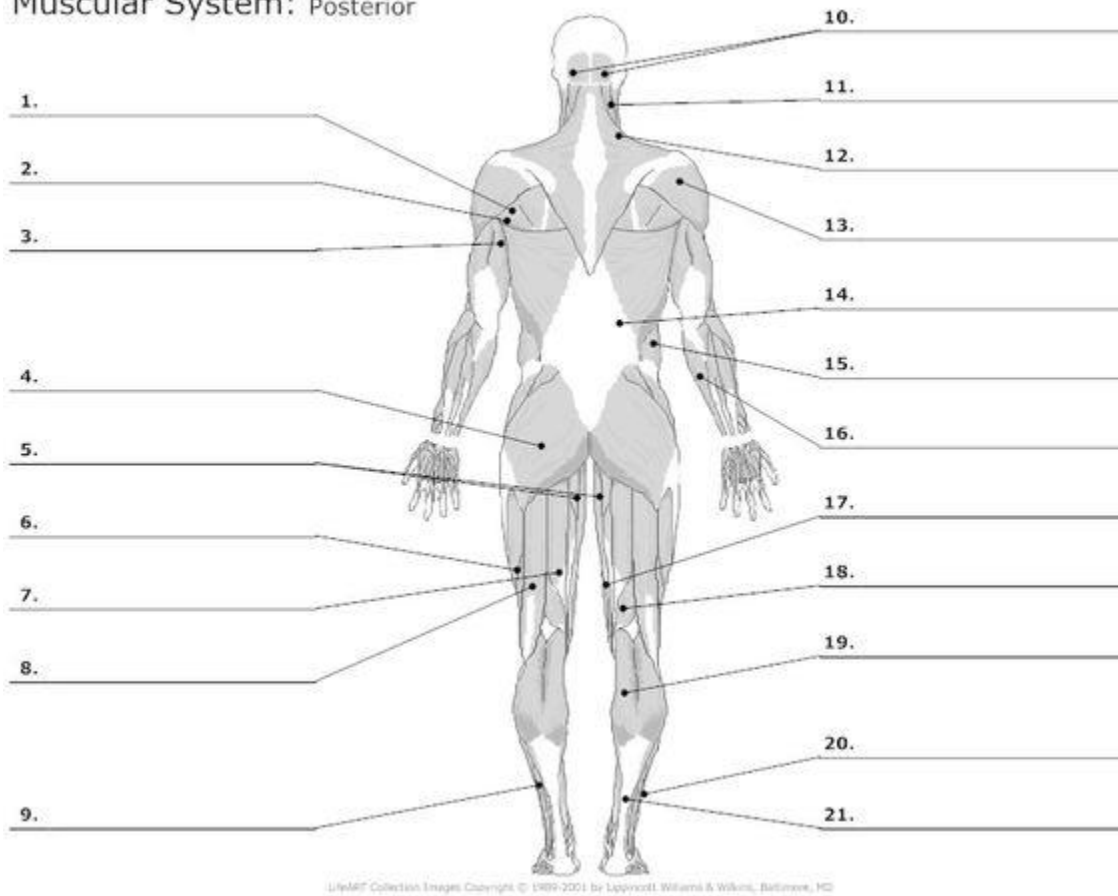
biceps femoris	→ extends thigh; flexes lower leg
semimembranosus	→ extends thigh; flexes lower leg
semitendinosus	→ extends thigh; flexes lower leg
rectus femoris	→ extends lower leg
vastus lateralis	→ extends lower leg
vastus medialis	→ extends lower leg

} most of "hamstring"
 } most of "quads" **

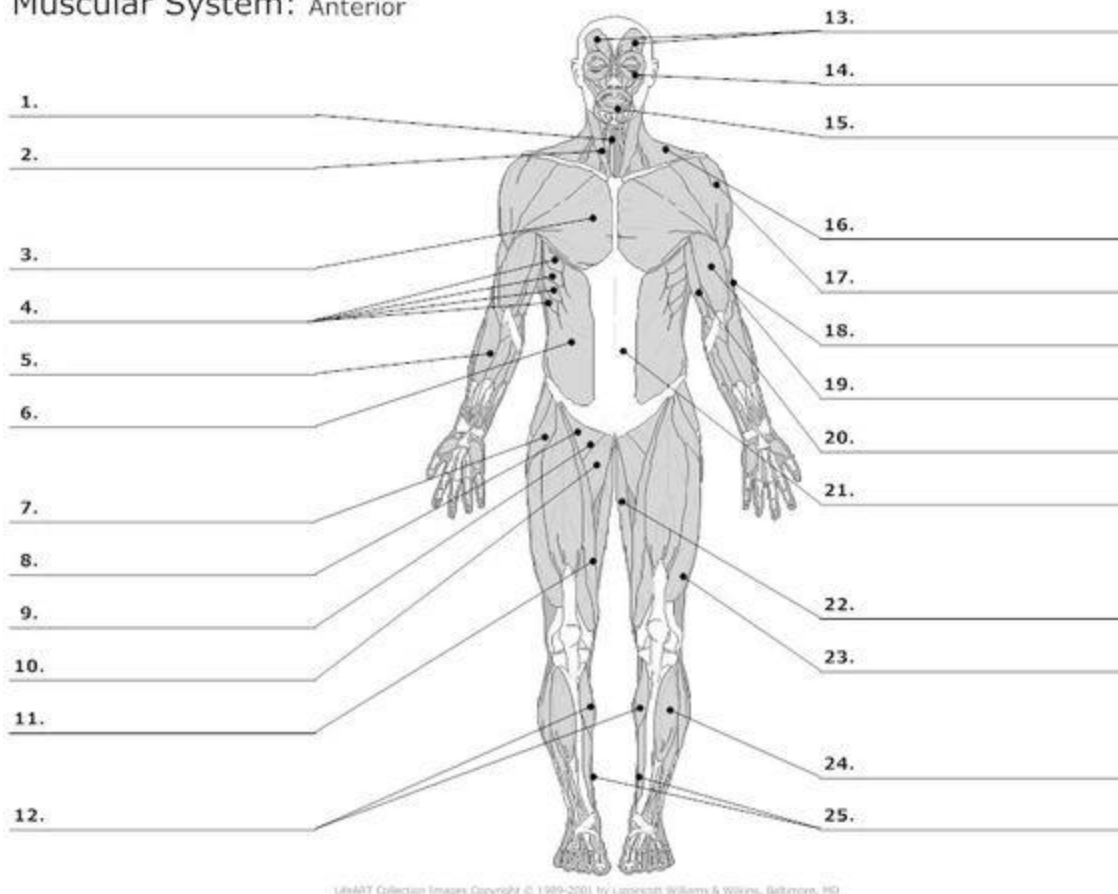
j. Muscles that moves Foot

** achilles tendon	→ plantarflexion of foot
** soleus	→ plantarflexion of foot
** tibialis anterior	→ dorsiflexion of foot

Muscular System: Posterior



Muscular System: Anterior



Part VII: Anatomical movements

1. Be able to define and give examples of Anatomical Movements:
2. Label the diagrams below with anatomical body movements shown.

Flexion/extension

Adduction/abduction

Pronation/supination

Retraction/protraction

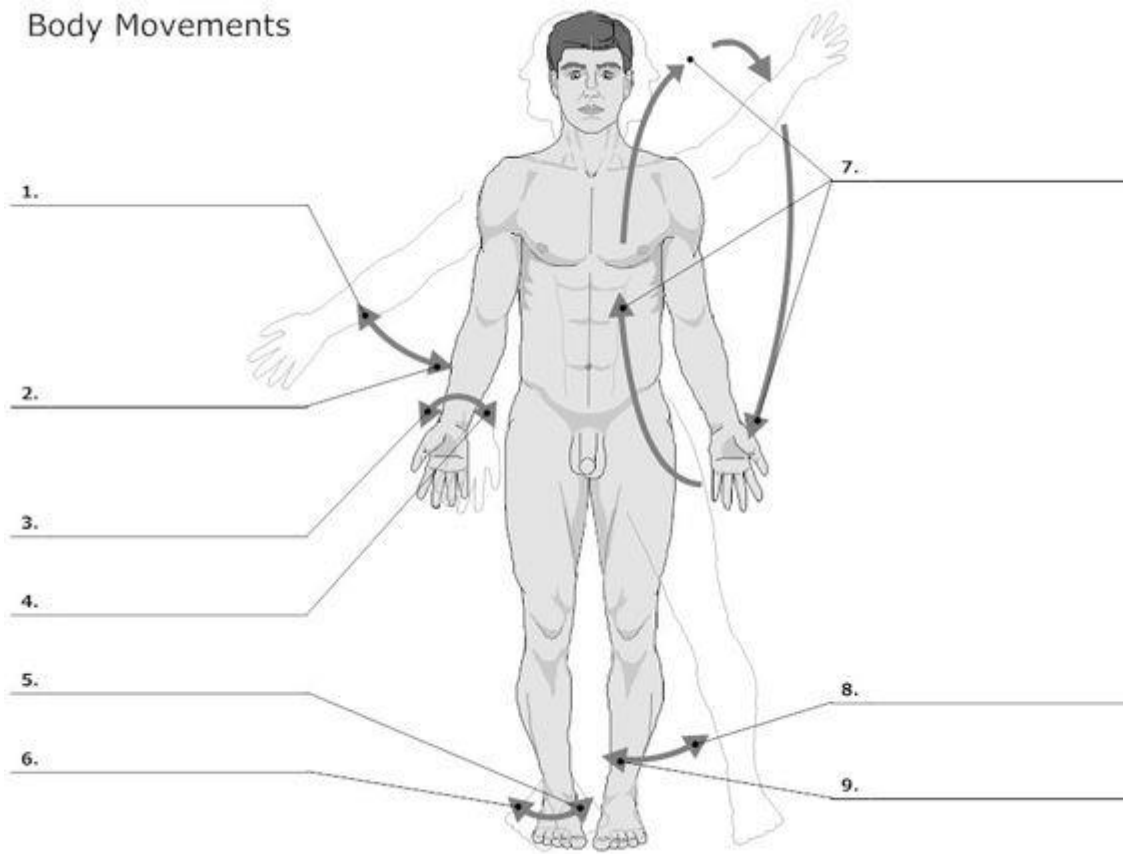
Elevation/depression

Rotation/circumduction

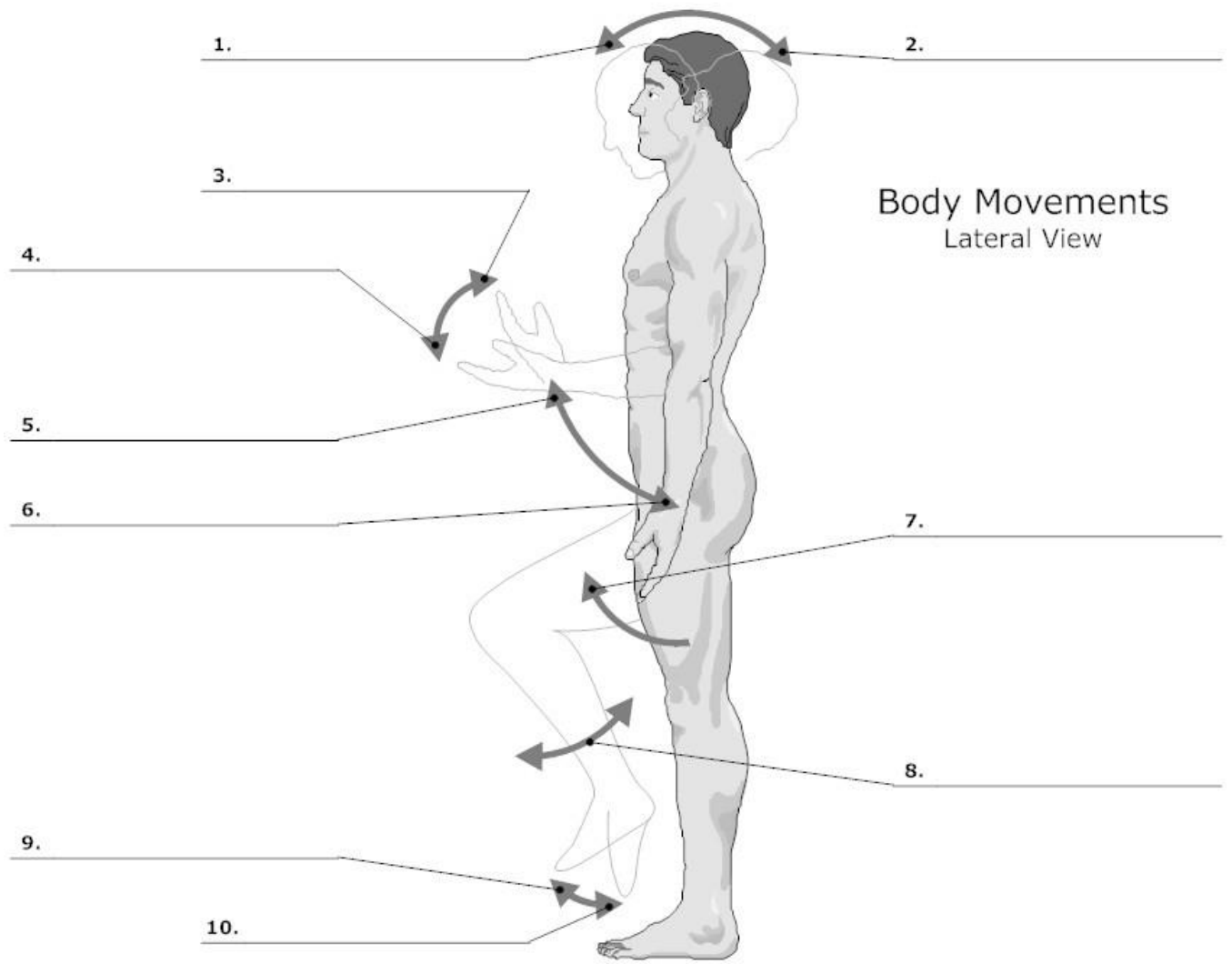
External rotation/internal rotation

Inversion/Eversion

Body Movements



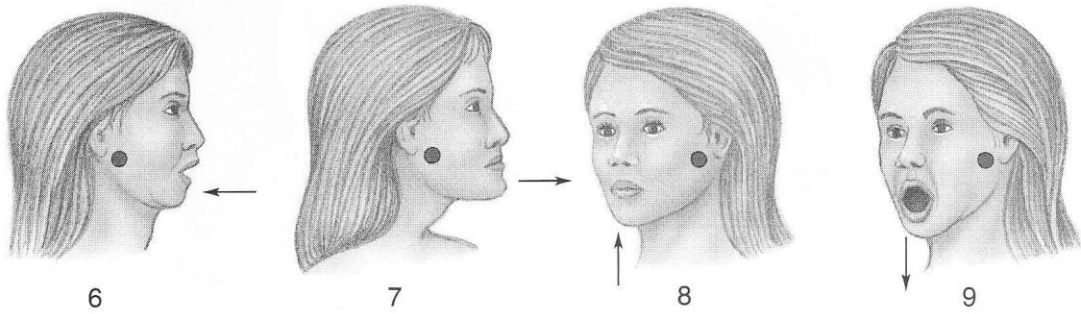
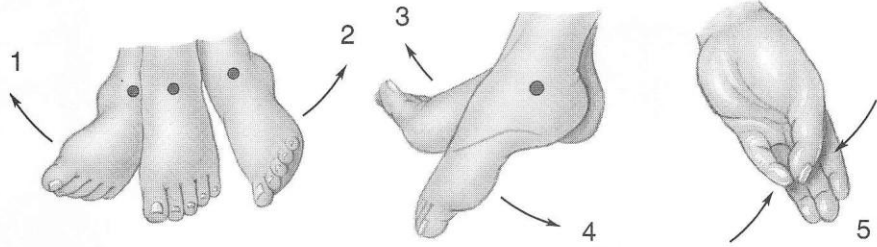
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Body Movements
Lateral View

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Identify the special movements in the following illustrations. Place your answers in the spaces provided below the drawings.



1. _____
2. _____
3. _____
4. _____
5. _____

6. _____
7. _____
8. _____
9. _____

VIII: Joints

1. Identify the main joints in the body and where these joints are found in the body.

Ball and Socket Joint

Hinge Joint

Pivot Joint

Fixed Immovable

Gliding Joint

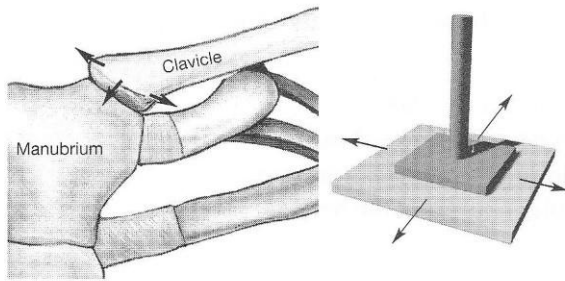
1. Using the joint types listed below, label each of the joints in the spaces below

hinge joint
saddle joint

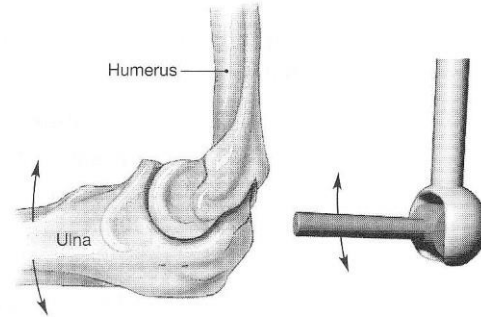
ball-and-socket joint
ellipsoidal joint

pivot joint
gliding joint

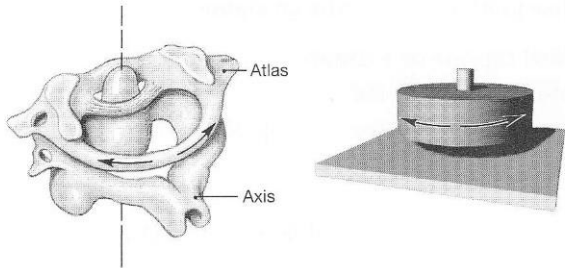
FIGURE 6-19 Types of Synovial Joints



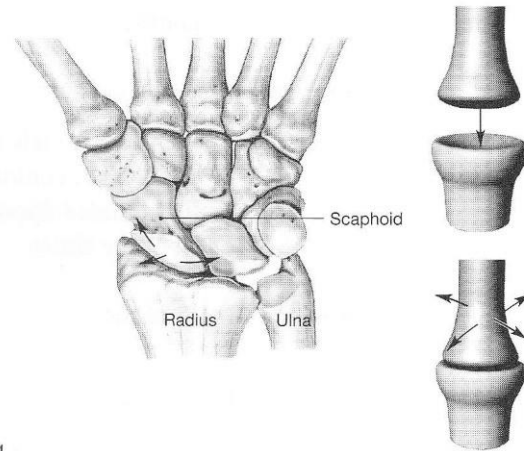
1. _____



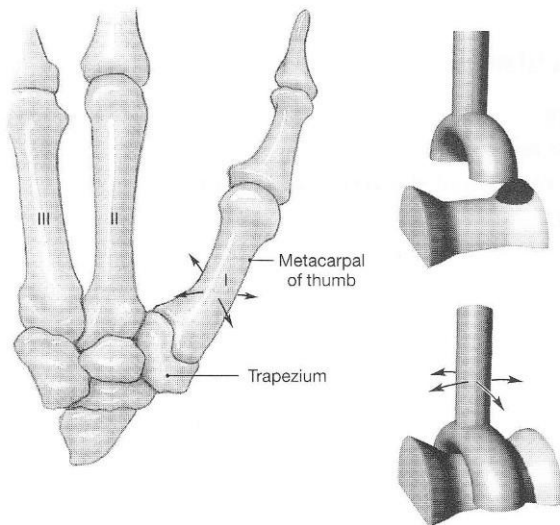
2. _____



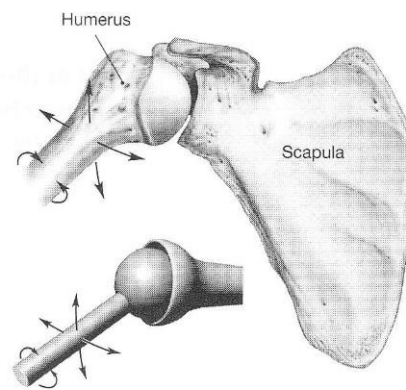
3. _____



4. _____



5. _____



6. _____

Part VIII: Practice, Practice, Practice

Need study ideas???? ☺

1. Go to the following website and practice skeleton and muscles
www.anatomyarcade.com Whack-a-bone and Poke-a-muscle.
2. Take online Joint quiz and see how you are doing.
3. Watch podcasts on skeleton and muscular system, anatomical movements...
4. Review the powerpoint
5. Review the notes given to you