

SKELETAL SYSTEM REVIEW STATIONS

- 1. Rib cage labeling/questions**
- 2. Cranial/facial bones labeling**
- 3. Vertebral column labeling**
- 4. Long bone anatomy card sort**
- 5. Microscopic bone anatomy card sort**
- 6. Types of bones card sort**
- 7. Bone growth flow chart (width vs. length)**
- 8. Bone healing flow chart**
- 9. Bone remodeling homeostasis loops**
- 10. Synovial joint card sort**
- 11. Classification of joints concept map**
- 12. Med term**
- 13. Chemical Composition of Bone**
- 14. Route of Nutrients through Bone**

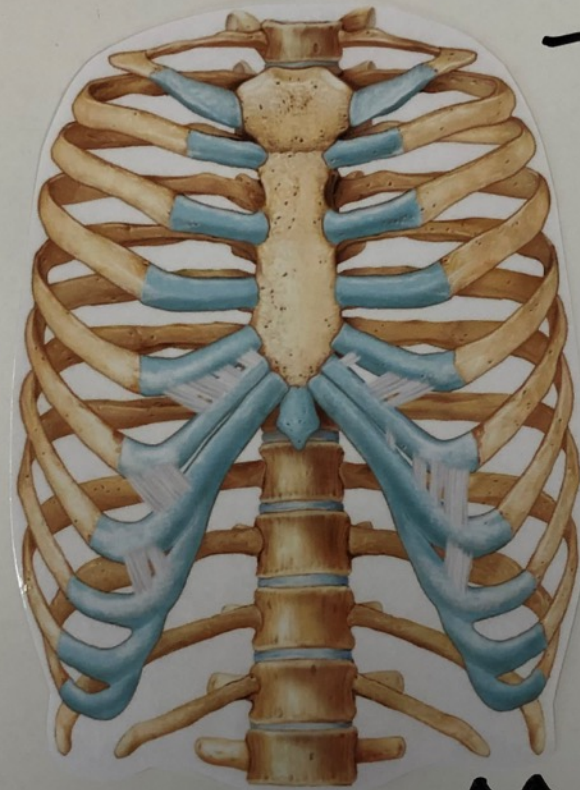
STATION 1

Identify the true ribs, false ribs, and floating ribs and the number of each.

Explain the difference between each type of ribs.

True Ribs
→ attach directly
to the sternum
by costal cartilage

False Ribs
→ attach indirectly
or not at all to the
sternum



True Ribs (7)
(direct)

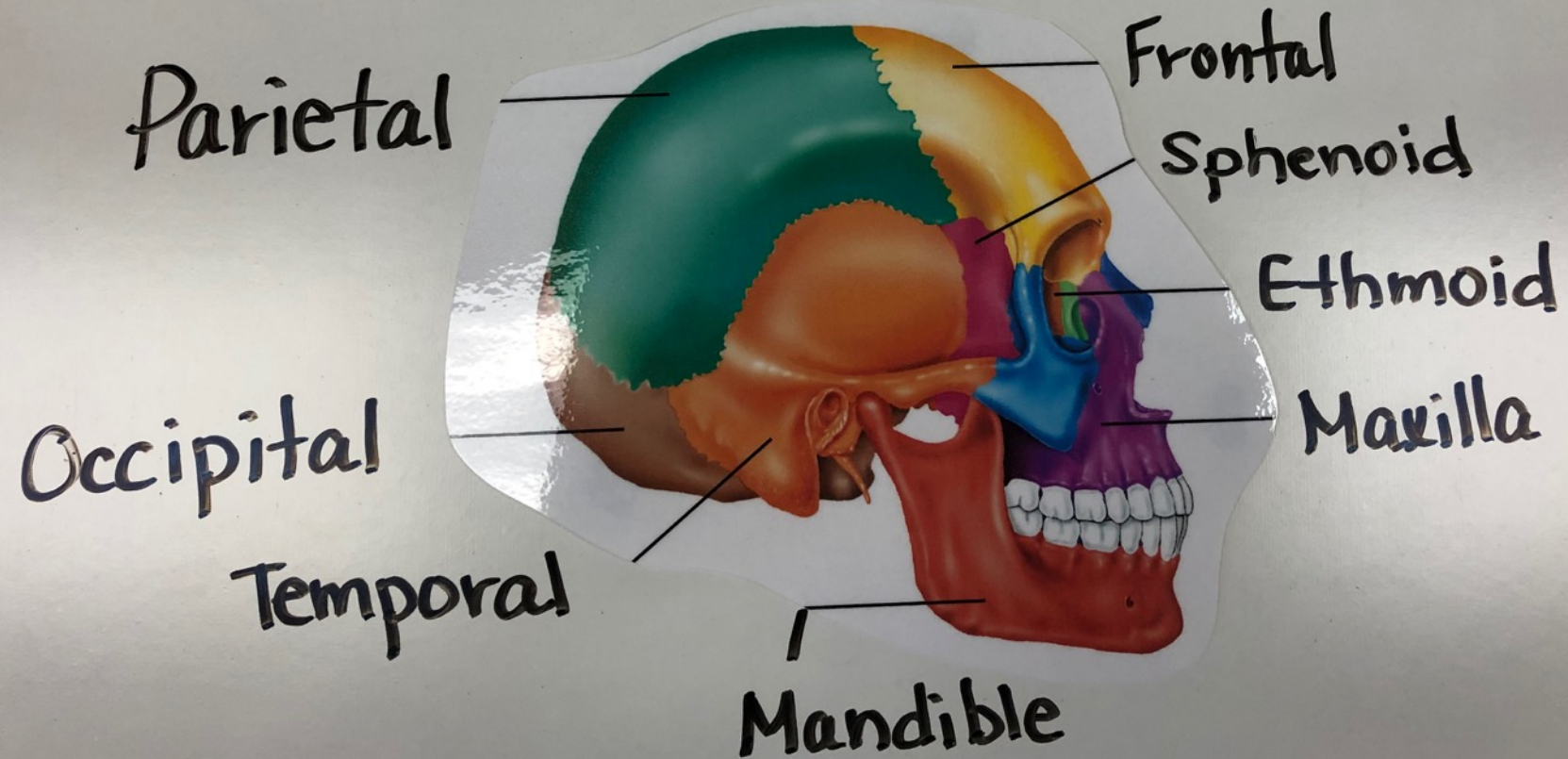
False Ribs (5)
(indirect)

↑↑
Floating Ribs
(no attachment)

STATION 2

Identify the following cranial and facial bones:

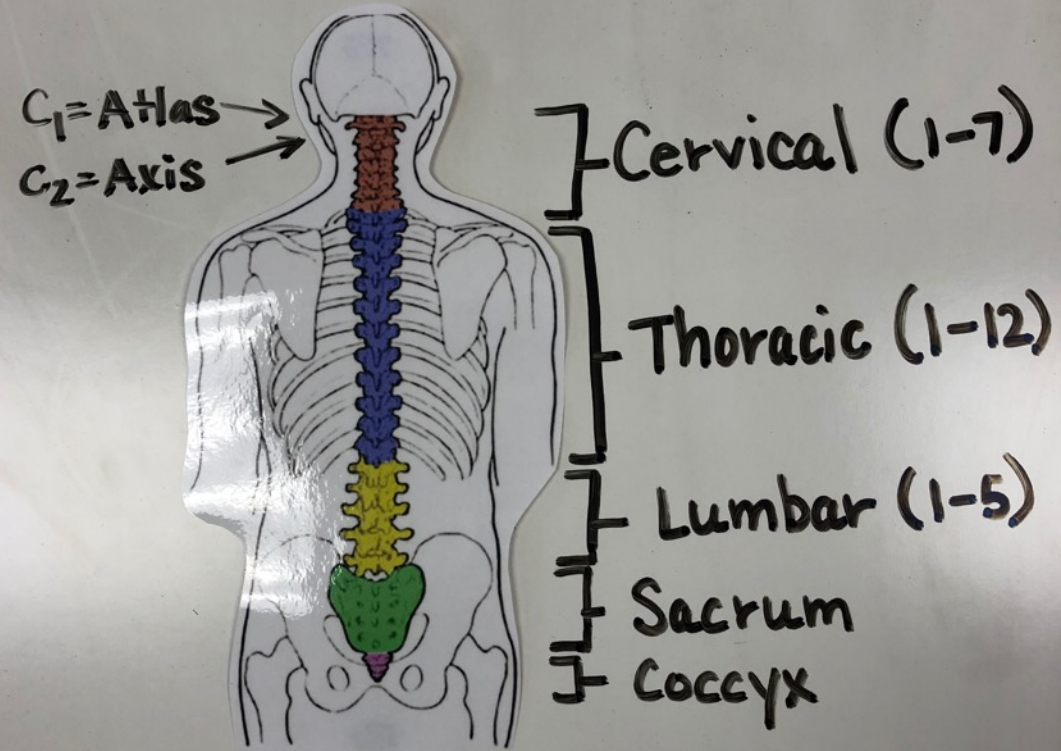
- Parietal
- Temporal
- Occipital
- Frontal
- Maxilla
- Mandible
- Sphenoid
- Ethmoid



STATION 3

Identify the cervical, thoracic, and lumbar vertebrae and the number of each. Identify the sacrum and coccyx.

Where are the atlas and axis located?



STATION 4

Diaphysis

Epiphysis

Articular cartilage

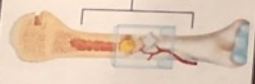
Medullary cavity

Shaft of a long bone, made of compact bone

Ends of a long bone

Thin layer of cartilage covering each epiphysis

Hollow area inside the diaphysis of a long bone



Epiphyseal line

Periosteum

Endosteum

Compact Bone

Spongy Bone

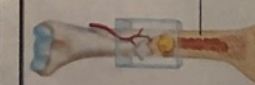
Remnant of epiphyseal plate, only seen in adult bones

Strong fibrous membrane covering a long bone everywhere except at joint surfaces



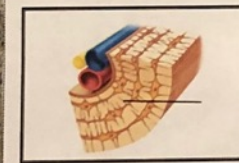
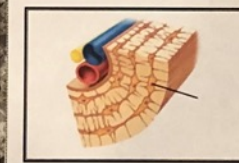
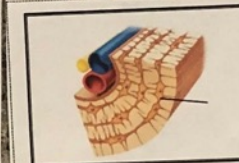


Thin membrane lining the medullary cavity

Dense, smooth, and homogenous bone

Small needlelike pieces of bone; Many open spaces



STATION 5

Osteon	Central (Haversian) canal	Canaliculi	Osteocytes	Lacunae	Perforating (Volkmann's) canal	Lamellae
Structural and functional unit of compact bone; contains central canal and matrix rings	Opening in center of osteon; runs lengthwise of bone; carries blood vessels and nerves	Tiny canals that radiate from central canal to lacunae; form transport system for nutrients	Mature bone cells residing in lacunae	Cavities in bone matrix	Canal perpendicular to central canal; carries blood vessels and nerves from periosteum to central canal	Concentric circles of lacunae situated around central (Haversian) canal
						

STATION 6

Short Bones



Carpals



Tarsals

Flat Bones



Cranium



Ribs



Sternum

Irregular Bones



Atlas



Axis



Cervical vertebrae



Thoracic vertebrae



Lumbar vertebrae

Long Bones



Humerus



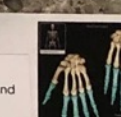
Ulna



Radius



Metacarpals



Phalanges of Hand



Femur



Tibia



Fibula



Metatarsals



Phalanges of Foot

STATION 7

Bone Lengthwise Growth

New cartilage is formed continuously on exterior (joint side) of epiphyseal plate

Old cartilage on interior (medullary cavity side) is broken down and replaced by bony matrix

Epiphyseal plate turns into the epiphyseal line

Controlled by growth hormones and sex hormones during puberty

Ends during adolescence

Bone Appositional Growth (width)

Osteoblasts in the periosteum add bone matrix to the outside of the diaphysis

Osteoclasts in the endosteum remove bone from the inner surface of the diaphysis

Bone remodeling phase occurs at the end of this type of growth

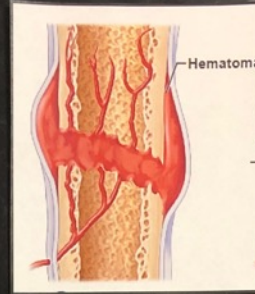
Controlled by activity levels and nutrition

Ends at approximately age 25

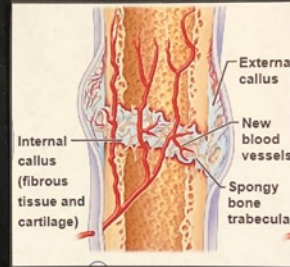
STATION 8

Bone Healing Process

Blood-filled swelling or bruise (hematoma) is formed



Fibrocartilage callus forms



Bony callus replaces the fibrocartilage callus



Bone remodeling occurs in response to mechanical stresses



STATION 9

Bone Remodeling Homeostasis

Calcium levels in blood are low

Parathyroid hormone is released

Osteoclasts are activated

Osteoclasts break down bone

Calcium ions are released into the blood

Calcium levels in blood are high

Calcitonin is released

Osteoblasts are activated

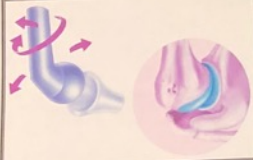
Osteoblasts take calcium out of the blood

Calcium is stored in bone matrix that is formed

STATION 10

Ball-and-Socket

allows movement
in all axes,
including rotation



Saddle

surface of each bone has
both convex and concave
surfaces (like saddle for a
horse); bone moves from
side to side,
back-and-forth



Plane

allows only
gliding
movement



Pivot

rotating bone
turns around its
long axis



Hinge

angular movement
allowed in one
plane

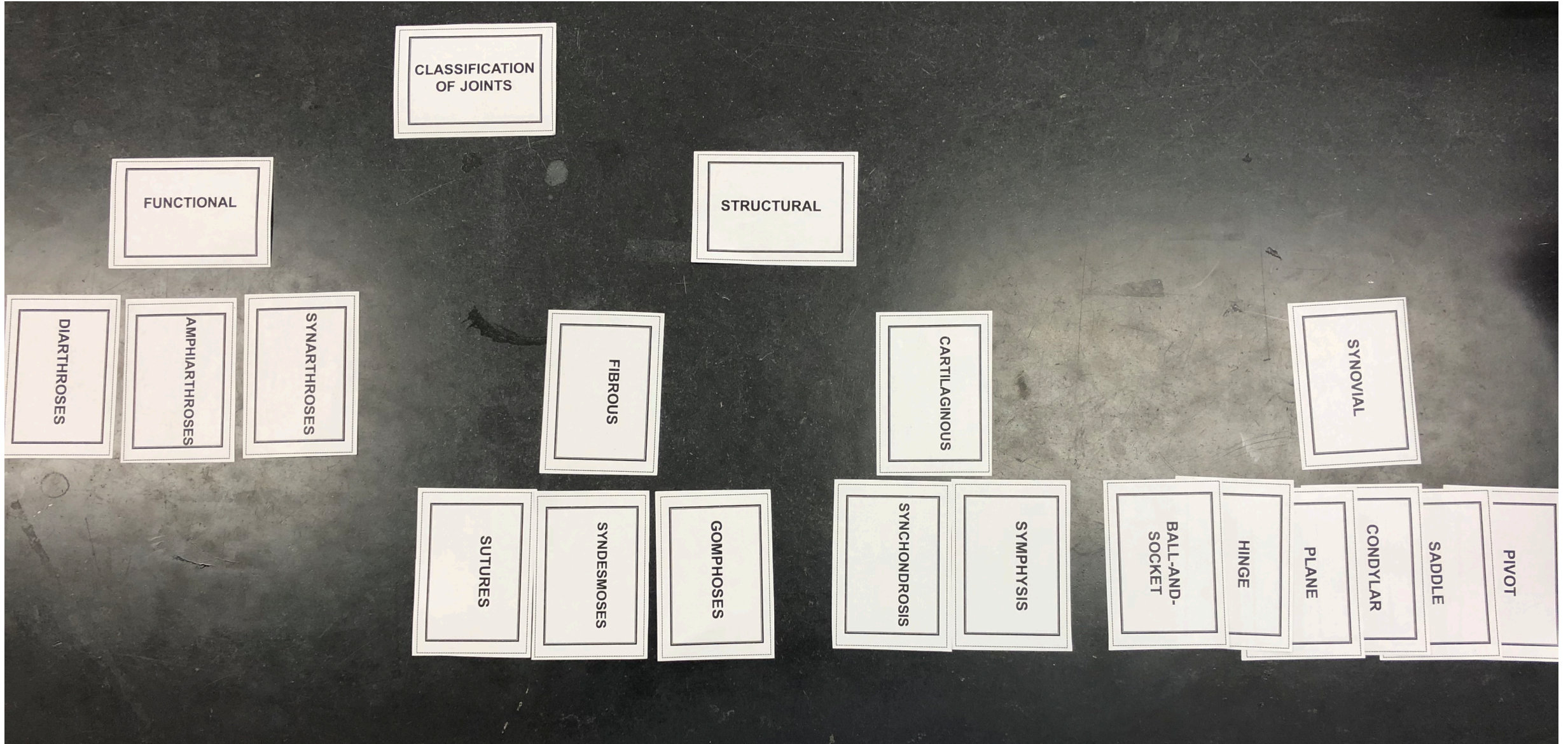


Condylar

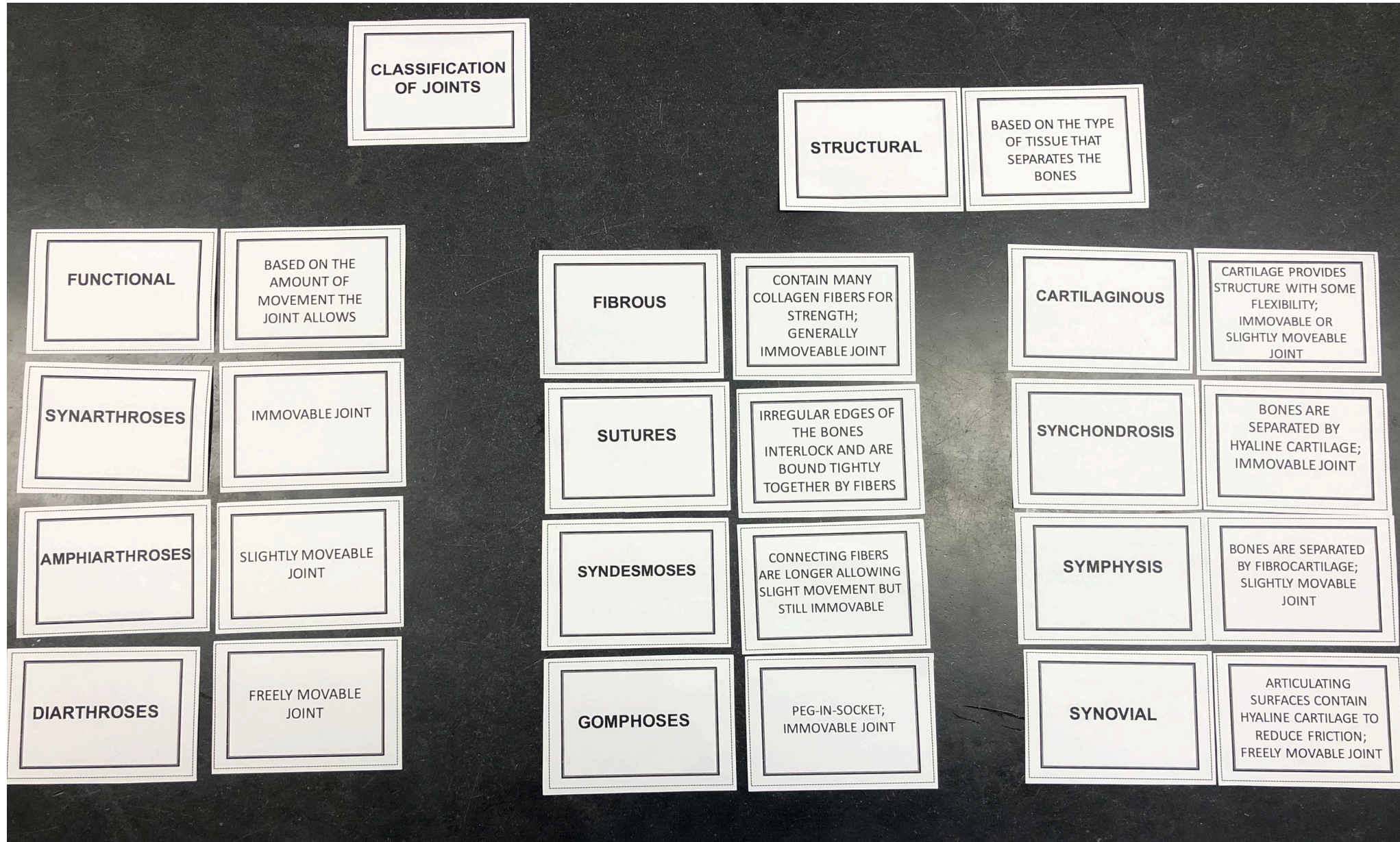
egg-shaped articular
surface of one bone fits
into an oval concavity in
another; bones move
from side-to-side and
back-and-forth



STATION 11



STATION 11



STATION 12

carp-

wrist

intra-

within,
inside

-blast

developmental
stage

ax-

axis

inter-

between

osteo-

bone

peri-

around

endo-

inside

arthro-

joint

clav-

bar

-clast

break

append-

hand to

STATION 13

organic

inorganic

collagen
fibers

calcium
salts

flexible

hard

great
tensile
strength

resist
compression

STATION 14

periosteum

perforating
(Volkmann's)
canal

central
(Haversian)
canal

canaliculi

lacunae

osteocyte