The Human Skeleton

Name _____

Date _____

Period _____

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The **skeletal system** is your bones plus the cartilage and ligaments that join them. The model shows all 206 bones of one adult, built from real scans. Sort them, count them, find them from clues, and test yourself.

☐ I can find and name major bones on a model and sort them as axial or appendicular.

☐ I can sort bones by shape and explain how a bone's shape fits its job.

Part 1. Two skeletons (Color by: Axial / appendicular)

SEP 2 · CCC Systems and System Models

Press **Axial / appendicular**. Turn the model to see both colors from the front and the back.

1. Axial skeleton: _____ bones. Appendicular skeleton: _____ bones. Total: _____ bones.

2. Click each bone. Tick one box in each row.

Bone	Axial	Appendicular	Bone	Axial	Appendicular
Skull bones	☐	☐	**Clavicle**	☐	☐
Hyoid	☐	☐	**Scapula**	☐	☐
Sternum	☐	☐	**Hip bone**	☐	☐
Sacrum	☐	☐	**Patella**	☐	☐

READ FIRST. In the lab, find the blue **Learn It** box under the model and read it. Then answer 3.

CLUE: *Appendicular* comes from *appendage*: a part that hangs off the body, like an arm or a leg.

3. The clavicle, scapula and hip bone sit in your trunk. They are part of a **girdle** . So why are they appendicular?

- ☐ They attach the arms and legs to the axial skeleton.
- ☐ They are made of cartilage, not bone.
- ☐ They move every time you breathe.

Part 2. Sort by shape (Color by: Shape)

SEP 4 · CCC Structure and Function

Press **Shape**. Read the five kinds in the key. Click a row in the key to see only that kind.

4. Write how many bones of each shape.

Shape	Long	Short	Flat	Irregular	Sesamoid
Number of bones					

5. Click each bone. Tick its shape.

Bone	Long	Short	Flat	Irregular	Sesamoid
Femur	☐	☐	☐	☐	☐
Distal phalanx of a finger	☐	☐	☐	☐	☐
Capitate (wrist)	☐	☐	☐	☐	☐
Calcaneus (heel)	☐	☐	☐	☐	☐
Parietal bone	☐	☐	☐	☐	☐
A rib	☐	☐	☐	☐	☐
A lumbar vertebra	☐	☐	☐	☐	☐
Mandible	☐	☐	☐	☐	☐
Patella	☐	☐	☐	☐	☐

READ FIRST. In the lab, find the blue **Learn It** box under the model and read it. Then answer 6 and 7.

CLUE: Sort by shape, not size. A long bone is longer than it is wide, even a tiny one.

6. A fingertip bone is smaller than a wrist bone, but it is a long bone. How can that be?

☐ It is longer than it is wide. ☐ It is the strongest bone in the hand. ☐ It is made of cartilage.

7. Which shape surrounds the brain and the heart? ☐ long ☐ short ☐ flat ☐ irregular

It fits the job because it makes a thin, curved _____ that _____ the organ.

WORD BANK shield · protects · lever · moves

Part 3. Count them (Color by: Region)

SEP 5 · CCC Scale, Proportion, and Quantity

Press **Region**. Click a row in the key to light up that part of the body.

8. Write the counts from the key.

Skull	Ear bones	Vertebral column	Rib cage	Wrists and hands	Ankles and feet

Example: 50 bones out of 200 is 50 ÷ 200 = 0.25, which is 25%.

9. Wrists and hands _____ + ankles and feet _____ = _____ bones. That is _____ % of all 206 bones.

READ FIRST. In the lab, find the blue **Learn It** box under the model and read it. Then answer 10.

10. Each place two bones meet is a **joint** . Why do hands and feet need so many small bones?

☐ more joints, so they bend and grip ☐ more weight, so they are stronger ☐ small bones never break

Part 4. Find the bone from the clue (Search, then read the card)

SEP 8 · CCC Structure and Function

Search or click, then read the card. **See it alone** shows bones hidden inside the skull.

11. Name the bone that matches each clue.

WORD BANK femur · stapes · hyoid · mandible · axis (C2) · clavicle · ulna · sphenoid · atlas (C1) · radius

Clue	Bone
The longest and strongest bone in the body	
The smallest bone in the body, about 3 mm long	
The only bone that does not touch another bone	
The only skull bone that moves	
The pivot your head turns on when you shake it "no"	
The only bone that links your arm to your trunk	
The point of your elbow is the top of this bone	
It touches every other cranial bone and holds the pituitary gland	

Part 5. Take a hand and a foot apart (Take it apart slider)

SEP 2 · CCC Systems and System Models

Press **Shape**, drag **Take it apart** all the way, and zoom in. Short bones are the wrist and ankle bones.

12. Count the bones in **one** hand and **one** foot.

	Wrist or ankle bones (carpals, tarsals)	Palm or middle-of-foot bones (metacarpals, metatarsals)	Finger or toe bones (phalanges)	Total
One hand				
One foot				

The thumb has _____ phalanges. Each other finger has _____. Do two hands match question 8? _____

Part 6. Find the bone (Find the bone tab)

CCC Structure and Function

Play two rounds of **Major bones**. A point counts only on the first click.

13. Round 1 score: _____ / 10. Round 2 score: _____ / 10. Missed: _____

Where is it? ☐ head ☐ trunk ☐ arm or hand ☐ leg or foot

Wrap it up

SEP 6, 7 · CCC Structure and Function

14. Claim: **A bone's shape fits the job it does.** Fill in one bone from each of two different parts of the lab.

	Part	Bone	Shape	Its job
Evidence 1				
Evidence 2				

Reasoning: Each shape helps because _____.

NYSSLS: building toward HS-LS1-2 (DCI LS1.A Structure and Function). Anatomy & Physiology, Hole's Essentials Chapter 7: The Skeletal System.
Tags: SEP = Science and Engineering Practice, CCC = Crosscutting Concept.