# 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. You will sort the bones two ways, count them, find bones 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.

**3.** The clavicle, scapula and hip bone sit in your trunk. Use the word **girdle** to explain why they are appendicular.

## 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.

**6.** A fingertip bone is smaller than a wrist bone, but it is a long bone. Use its **shape** to explain how that can be.

**7.** Which shape surrounds the brain and the heart? _____ Explain how that shape fits its job.

## 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 |
|---|---|---|---|---|---|
| | | | | | |

**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.** Use the word **joint** to explain why your hands and feet need so many small bones. Think about what they do.

## 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.

| 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? _____

## Wrap it up

SEP 6, 7 · CCC Structure and Function

**14.** Claim: **A bone's shape fits the job it does.** Give evidence from two different parts of this lab. Then give your reasoning: how does each shape help the bone do its job?

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.