ANSWER KEY

Skeletal System Quiz

31 questions · correct answer and why

1. C — Producing digestive enzymes

Bones support the body, protect organs, act as levers for movement, store minerals and fat, and house the red marrow that makes blood cells. Digestive enzymes come from the pancreas, salivary glands and gut lining.

2. A — In red bone marrow

Hematopoiesis, the production of red cells, white cells and platelets, takes place in red bone marrow, found mainly in spongy bone.

3. B — Fat

Yellow marrow is mostly adipose tissue. It fills the medullary cavity of long bones in adults and serves as an energy reserve.

4. D — About 99 percent

Almost all of the body's calcium, roughly 99 percent, is held in the bone matrix and can be released into the blood when needed.

5. B — They act as levers that muscles pull on

Muscles attach to bones through tendons. When a muscle contracts it pulls on the bone, which works as a lever around a joint.

6. A — Long bone

Long bones are longer than they are wide and have a shaft with two ends. The femur, humerus and phalanges are long bones.

7. B — Carpals and tarsals

Short bones are roughly cube-shaped, about as long as they are wide. The carpals of the wrist and the tarsals of the ankle are the classic examples.

8. C — Sternum, ribs and scapula

Flat bones are thin and often curved. They protect organs and give broad surfaces for muscle attachment: the sternum, ribs, scapulae and the roof of the skull.

9. D — Irregular bone

Irregular bones have complex shapes that fit no other category. The vertebrae and many facial bones are irregular bones.

10. B — A sesamoid bone

Sesamoid bones are small, rounded bones that form inside tendons. The patella, in the tendon of the quadriceps, is the largest sesamoid bone.

11. C — Long bones

Bone type depends on shape, not size. Each phalanx is longer than it is wide and has a shaft and two ends, so phalanges are long bones.

12. B — Diaphysis

The diaphysis is the tubular shaft between the two ends of a long bone. Its hollow center is the medullary cavity.

13. A — Epiphyses

Each end of a long bone is an epiphysis. The epiphyses are filled with spongy bone and are covered by articular cartilage where they form joints.

14. C — At the epiphyseal plate

The epiphyseal (growth) plate is a layer of hyaline cartilage between the diaphysis and each epiphysis. New cartilage forms there and is replaced by bone, lengthening the bone.

15. B — The epiphyseal line

When the cartilage of the growth plate is fully replaced by bone in late adolescence, a thin bony remnant called the epiphyseal line is left.

16. B — Periosteum

The periosteum is a tough, fibrous membrane with blood vessels and nerves. It covers bones except at joint surfaces, where articular cartilage is found instead.

17. C — Endosteum

The endosteum is a thin membrane lining the medullary cavity. Bone growth, repair and remodeling take place there as well as under the periosteum.

18. B — Hyaline (articular) cartilage

A thin layer of hyaline cartilage, the articular cartilage, covers joint surfaces. It reduces friction and absorbs shock.

19. C — An artery that supplies the bone

The nutrient foramen is a small opening in the shaft through which the nutrient artery enters to supply the inner bone and marrow.

20. B — The osteon

Compact bone is built of osteons (Haversian systems): rings of matrix around a central canal that carries blood vessels and nerves.

21. B — Trabeculae

Spongy bone is a lattice of trabeculae. The spaces between them hold red marrow, and the lattice makes the bone lighter while resisting stress.

22. C — Osteoclasts

Osteoclasts are large, multinucleated cells that resorb bone matrix. Osteoblasts build new matrix, and osteocytes maintain it.

23. A — Osteoblasts

Osteoblasts secrete the collagen and other organic parts of the matrix, which then mineralizes. Once surrounded by matrix, an osteoblast becomes an osteocyte.

24. B — The flat bones of the skull, the mandible and the clavicles

In intramembranous ossification, bone forms directly in sheets of mesenchyme. This is how the flat bones of the skull, the mandible and the clavicles form; most other bones develop from a hyaline cartilage model (endochondral ossification).

25. C — 206

The adult skeleton usually has 206 bones. Newborns have more separate bony pieces, which fuse during growth.

26. A — 80

The axial skeleton has 80 bones: the skull, the ear ossicles, the hyoid, the vertebral column and the thoracic cage. The remaining 126 belong to the appendicular skeleton.

27. C — Sternum

The sternum is part of the thoracic cage, which belongs to the axial skeleton. The clavicle and scapula form the pectoral girdle and the hip bones form the pelvic girdle, both appendicular.

28. D — Clavicle

The clavicle is part of the pectoral girdle, which attaches the upper limb to the trunk. The hyoid, sacrum and ribs are all axial bones.

29. A — Ilium, ischium and pubis

The ilium, ischium and pubis fuse at the acetabulum to form each hip bone. The two hip bones make up the pelvic girdle; the sacrum and coccyx belong to the axial skeleton.

30. A — 7, 12 and 5

The adult vertebral column has 7 cervical, 12 thoracic and 5 lumbar vertebrae, followed by the sacrum and the coccyx, which are made of fused vertebrae.

31. C — Ribs 11 and 12

Ribs 1 to 7 are true ribs, attached to the sternum by their own cartilage. Ribs 8 to 12 are false ribs; the last two, 11 and 12, have no anterior attachment and are called floating ribs.