

Chapter 8, The Skeletal System

“Apply What You Know” Answers

- p. 243—If the teeth had been lost from the skull after death, the alveoli in the mandible and maxilla should be deep and there should be obvious alveolar processes between the alveoli. If the person lived for some time after the tooth loss, the alveoli would fill in and the alveolar processes would be resorbed, leaving a relatively smooth area where the tooth had been.
- p. 247—The lower on the vertebral column a vertebra is, the more of the body’s weight it supports. Cervical vertebrae don’t have to be very strong because they support the weight of only the head and neck. Lumbar vertebrae must be relatively strong because they support almost all of the body’s weight except for the lower limbs. Thus the lumbar vertebrae have heavier centra, and the intervertebral discs in this region are larger, than in the cervical region, and we see a steady trend in heaviness from the cervical through the thoracic and into the lumbar spine.
- p. 249—Vertebrae from C3 down allow very little rotation of one bone on the next, so side-to-side movements of the head would be very restricted if C1 and C2 were structured like C3. Also, if C1 and C2 had spinous processes like the others, these processes would also interfere with one’s ability to tilt the head back and look upward. The occipital bone would strike the spinous process and be unable to tilt back as far as it does now.
- p. 255—Primates evolved primarily as arboreal mammals. They were able to move about freely in this habitat because of the progressive evolution of an ability to reach out in all directions—straight ahead, out to the side, overhead, behind the body—and to grasp or hang from the branches. The selection for this ability gave primates, in time, a shoulder joint that is much more mobile than the shoulders of other mammals (think of the limited range of motion of a dog or horse foreleg, for example). Humans are the heirs to this trait that evolved in the treetops.
- p. 266—Each of the lower limbs has a patella, which has no counterpart in the upper limb.