1.1

* The human body is complex
  + Levels of organization
    - **Cells** – smallest basic unit of life
    - **Tissues** – groups of similar cells that work together to perform a particular function
    - **Organs** – a structure that is made up of two or more types of tissue that work together to carry out a function in the body
    - **Organ systems** – a group of organs that together perform a function that helps the body meet its needs for energy and materials, together allow the organism to grow, reproduce, and maintain life
    - **Organism** – collection of cells to organ systems working constantly together for survival
  + The body’s systems interact with one another to maintain homeostasis
    - **Homeostasis** – stable internal conditions

1.2

* The skeletal system provides support and protection
  + Bones are living tissue
    - **Skeletal system** – made of connective tissue called bone, serves as the anchor for all of the body’s movement, provides support, and protects soft organs
  + Two types of bone tissue
    - **Compact bone** – functions as the basic supportive tissue of the body, dense tissue that gives the bone much of its strength
    - **Spongy bone** – strong but lightweight, ends of long bones and most irregular bones, inside the compact bone
      * **Marrow** – produces red blood cells, fills the spaces in spongy bone
      * **Blood vessels** – transport new red blood cells from the marrow and carry materials to and from the bone
  + The skeleton is the body’s framework
    - **Axial skeleton** – the part of the skeleton that forms the axis, provides support and protection (skull, ribs, vertebrae)
    - **Appendicular skeleton** – functions mainly to allow movement (arms, legs)
  + The skeleton changes as the body develops and ages
  + Joints connect parts of the skeletal system
    - **Immovable joint** – locks bones together like puzzle pieces, bones of the skull
    - **Slightly movable** **joint** – able to flex slightly, ribs connected to the sternum
    - **Freely movable joint** – allow body to bend and move

1.3

* The muscular system makes movement possible
  + Muscles perform important functions
    - Movement
      * Works along with the skeletal system
      * Muscles that produce movement are made up of individual cells called muscle fibers that contract and relax
      * Most muscles work in pairs, when they contract they shorten and pull against the bones
      * They do not push against the bone
      * Connected to bones by stretchy connective tissue
    - Maintaining body temperature
      * When muscles contract, they release heat
    - Maintaining posture
      * **Tension** – muscle tone, most muscles are always a little bit contracted even when sleeping and only relax completely when you are unconscious
  + Your body has different types of muscle
    - Skeletal muscles
      * Muscles that are attached to your skeleton, perform voluntary movement
      * **Voluntary muscles** – muscles involved in voluntary movement, movement that you choose to make
      * Contract quickly (fast-twitch muscles)
    - Smooth muscle
      * Found inside some organs, like intestines and stomach, perform automatic movement
      * **Involuntary muscles** – perform involuntary movement, or automatic movement
      * Contract slowly
    - Cardiac muscle
      * Moves without conscious control, cells have a branched shape
      * Heart is made of cardiac muscle
      * Contract slowly
  + Skeletal muscles and tendons allow bones to move
    - **Tendons** – strong tissues that attach skeletal muscles to bones
  + Muscles grow and heal
    - Develop and strengthen due to maturity
    - Regular exercise increases muscle size – increases number of muscle cells and muscle cell size