

23. 1–3. Deltoid; Gluteus maximus; Gluteus medius. 4. Quadriceps. 5. Calcaneal (Achilles). 6. Proximal.  
7. Forearm. 8. Anterior. 9. Posteriorly. 10. Knee. 11. Flex.
24. 1. Biceps femoris. 2. Antagonists. 3. Frontalis. 4. Vastus medialis.
25. 1. 4. 2. 5. 3. 17. 4. 16. 5. 7. 6. 6. 7. 19. 8. 14. 9. 18. 10. 12. 11. 11. 12. 10. 13. 21.  
14. 1. 15. 2. 16. 3. 17. 15. 18. 20. 19. 13. 20. 9. 21. 8.
26. 1. 2. 2. 1. 3. 5. 4. 9. 5. 7. 6. 4. 7. 12. 8. 3. 9. 8. 10. 10. 11. 11. 12. 6.

#### Developmental Aspects of the Muscular System

27. 1. Quickening. 2. Muscular dystrophy. 3–4. Proximal-distal and cephalocaudal. 5. Gross. 6. Fine.  
7. Exercised. 8. Atrophy. 9. Myasthenia gravis. 10. Weight. 11. Size and mass. 12. Connective (scar).

#### The Incredible Journey

28. 1. Endomysium. 2. Motor unit. 3. Neuromuscular. 4. Acetylcholine. 5. Sodium. 6. Action potential.  
7. Calcium. 8. Actin. 9. Myosin. 10. Calcium.

#### At the Clinic

29. Tendons attaching at the anterior wrist are involved in wrist and finger flexion. Malcolm will lose his ability to make a fist and grasp a baseball.
30. The hamstrings can be strained (pulled) when the hip is flexed and the knee is vigorously extended at the same time.
31. The rectus abdominis is a narrow, medially placed muscle that does not extend completely across the iliac region. No, if the incision was made as described, the rectus abdominis was not cut.
32. The latissimus dorsi and the trapezius, which together cover most of the superficial surface of the back, are receiving most of the massage therapist's attention.
33. The chances are good that the boy has Duchenne muscular dystrophy. This condition is fatal when it impairs the respiratory muscles.
34. By reducing the size of the abdomen, the abdominal contents are forced into a smaller space which would increase the intra-abdominal pressure. The rise in intra-abdominal pressure would, in turn, force the vertebrae to move farther apart, reducing vertebral compression and pressure on the nerve fibers that transmit pain.
35. The pesticide is a chemical that inhibits the enzyme that destroys acetylcholine. Acetylcholine remains in the synapse and stimulates muscle activity.

### Chapter 7 The Nervous System

1. 1. It monitors all information about changes occurring both inside and outside the body. 2. It processes and interprets the information received and integrates it in order to make decisions. 3. It commands responses by activating muscles, glands, and other parts of the nervous system.

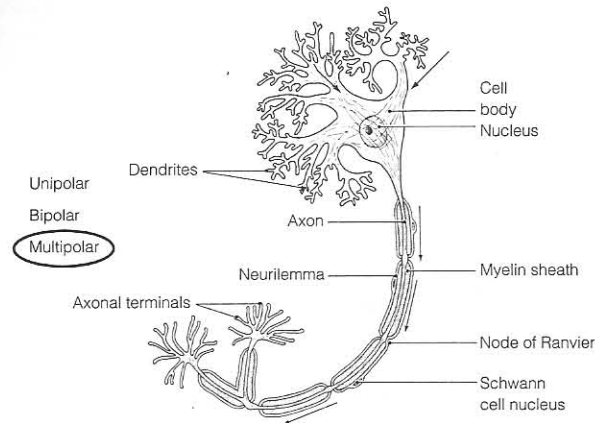
#### Organization of the Nervous System

2. 1. B or CNS. 2. D or somatic nervous system. 3. C or PNS. 4. A or autonomic nervous system.  
5. B or CNS. 6. C or PNS.

#### Nervous Tissue—Structure and Function

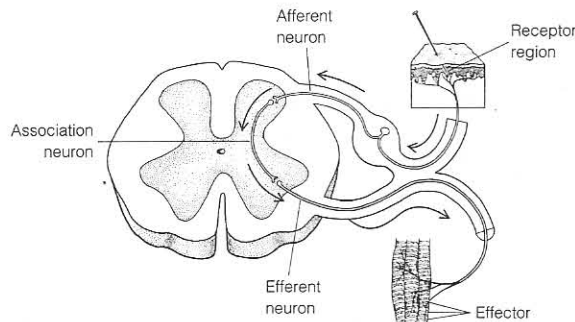
3. 1. B or neuroglia. 2–4. A or neurons. 5. B or neuroglia.
4. 1. B or axonal terminal. 2. C or dendrite. 3. D or myelin sheath. 4. E or cell body. 5. A or axon.
5. 1. A or bare nerve endings, D or muscle spindle. 2. A or bare nerve endings, E or Pacinian corpuscle.  
3. E or Pacinian corpuscle (perhaps also B and D). 4. B or Golgi tendon organ, D or muscle spindle.  
5. C or Meissner's corpuscle.
6. 1. C or cutaneous sense organs. 2. L or Schwann cells. 3. M or synapse. 4. O or tract. 5. B or association neuron. 6. I or nodes of Ranvier. 7. E or ganglion. 8. D or efferent neuron. 9. K or proprioceptors.  
10. N or stimuli. 11. A or afferent neuron. 12. G or neurotransmitters.

**7. Figure 7-1:**



8. 1. Stimulus. 2. Receptor. 3. Afferent neuron. 4. Efferent neuron. 5. Effector organ.
9. 1. E or refractory period. 2. B or depolarization. 3. C or polarized. 4. F or repolarization. 5. A or action potential. 6. D or potassium ions. 7. H or sodium-potassium pump.
10. 1. A or somatic reflex(es). 2. B or autonomic reflex(es). 3. A or somatic reflex(es). 4. B or autonomic reflex(es). 5. A or somatic reflex(es). 6. B or autonomic reflex(es). 7. B or autonomic reflex(es).
11. 1. Pin-prick pain. 2. Skeletal muscle. 3. Two (third with muscle).

**Figure 7-2:**



12. 1. Neurons. 2.  $K^+$  enters the cell. 3. Unmyelinated. 4. Voluntary act. 5. Microglia. 6. Stretch. 7. High  $Na^+$ .

**Central Nervous System**

13. 1. Cerebral hemispheres. 2. Brain stem. 3. Cerebellum. 4. Ventricles. 5. Cerebrospinal fluid.
14. Circle: Cerebral hemispheres; Cerebellum; Diencephalon.
15. 1. Gyrus. 2. Surface area. 3. Neuron cell bodies and unmyelinated fibers. 4. Myelinated fibers. 5. Basal nuclei.
16. **Figure 7-3:** 1. D. 2. L. 3. F. 4. C. 5. K. 6. B. 7. E. 8. A. 9. I. 10. H. 11. J. 12. G. Areas B and C should be striped.
17. **Figure 7-4:** 1. J. 2. L. 3. O. 4. M. 5. B. 6. D. 7. A. 8. K. 9. G. 10. I. 11. E. 12. N. 13. F. 14. H. 15. C. Structures #4, #6, #10, and #14 should be blue. Structure #2, the cavity enclosed by #15, #2, and #8, and the entire gray area around the brain should be colored yellow.
18. 1. Hypothalamus. 2. Pons. 3. Cerebellum. 4. Thalamus. 5. Medulla oblongata. 6. Corpus callosum. 7. Cerebral aqueduct. 8. Thalamus. 9. Choroid plexuses. 10. Cerebral peduncle. 11. Hypothalamus.
19. 1. Postcentral. 2. Temporal. 3. Frontal. 4. Broca's. 5. Left. 6. T. 7. Reticular system. 8. T. 9. Alert.
20. 1. Dura mater. 2. Pia mater. 3. Arachnoid villi. 4. Arachnoid. 5. Dura mater.