I. PNS
   A. Carries info to and from CNS
   B. Cranial Nerves
      1. 12 pair - not all are mixed
      2. sensory
         a. special
      b. general
      3. motor
         a. somatic
         b. parasympathetic
   C. Spinal Nerves
      1. all are mixed
      2. some have parasympathetic or sympathetic components
      3. plexus
         a. cervical (C1-C5)
      b. brachial (C5-T1)
      c. lumbar (L1-L4)
      d. sacral (L4-S4)

II. Motor Neurons
   A. Alpha motor neurons
      1. extrafusal fibers
      2. muscle contraction
   B. Gamma motor neurons
      1. intrafusal fibers (spindle)
      2. contraction of muscle spindle
      3. too few and too weak to cause muscle shortening
         a. pulls intrafusal fibers “tight”
         b. tightens spindle
         c. allows sensing of stretch regardless of muscle state
III. Skeletal Muscle Reflexes
   A. Monosynaptic stretch reflex
      1. independent of upper motor neurons
      2. involves reflex arc
         a. sensory to motor pathway
         b. synapses within the CNS

   B. Muscle stretch reflex (monosynaptic)
      1. many sensory and motor NEURONS involved
      2. reaction to change in resting muscle length
      3. sensors in spindle cause reaction to muscle stretch
      4. reflex muscle shortening to counteract stretch

   C. Reciprocal innervation
      1. afferent neurons may have collateral branches
      2. stimulates agonist (alpha); inhibits antagonist (alpha)
      3. monosynaptic reflex contractions of antagonist muscles must be inhibited

   D. Double reciprocal innervation
      1. greater complexity of reflex (multiple spinal segments)
      2. contralateral muscle involvement
      3. includes crossed extensor reflex