Year 10 Science: Sensory neurons, motor neurons and the reflex arc

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. Which type of neuron carries signals from the spinal cord to a muscle?

2. Name one effector that is a gland and the substance it releases.

3. You step on a sharp shell at the beach and lift your foot. Put these in order: motor neuron, receptor, effector, sensory neuron, spinal cord.

4. Why do you lift your foot before you feel the pain?

5. A student tests reaction time on one friend, once each, before and after an energy drink. Give two reasons the data is not reliable.

Fix the mistake

6. Correct this statement: "Sensory neurons carry the signal to the muscle."

7. Correct this statement: "In a reflex the brain decides very quickly what to do."

8. Correct this statement: "Effectors are always muscles."

9. Correct this statement: "Testing one friend ten times makes the result true for everyone."

Answer key (for parents and tutors)

1. Which type of neuron carries signals from the spinal cord to a muscle?
   A motor neuron.
2. Name one effector that is a gland and the substance it releases.
   For example sweat glands release sweat, salivary glands release saliva, or adrenal glands release adrenaline.
3. You step on a sharp shell at the beach and lift your foot. Put these in order: motor neuron, receptor, effector, sensory neuron, spinal cord.
   Receptor, sensory neuron, spinal cord, motor neuron, effector.
4. Why do you lift your foot before you feel the pain?
   It is a reflex: the signal goes through the spinal cord straight to the motor neuron, while the signal to the brain that produces the feeling of pain arrives slightly later.
5. A student tests reaction time on one friend, once each, before and after an energy drink. Give two reasons the data is not reliable.
   Any two: only one person was tested, only one trial was done in each condition, practice from the first test could make the second faster, and the friend knew about the drink and might try harder.
6. Correct this statement: "Sensory neurons carry the signal to the muscle."
   Sensory neurons carry signals in from receptors; motor neurons carry them out to effectors such as muscles.
7. Correct this statement: "In a reflex the brain decides very quickly what to do."
   A reflex arc passes through a relay neuron in the spinal cord with no conscious decision; the brain only finds out a moment later.
8. Correct this statement: "Effectors are always muscles."
   Effectors are muscles, which contract, and glands, which release substances such as sweat, saliva or adrenaline.
9. Correct this statement: "Testing one friend ten times makes the result true for everyone."
   Repeats make the result more reliable for that person, but people vary a lot, so you need to test many people before you can generalise.