

Name:

Date:

Class:

## Day 1: Intro to Neural Circuits Worksheet **Answer Key**

1. What parts of the body do you think are involved in the clenching of your fist? Think broadly!

Possible answers: The muscles, the fist, the arm, the brain.

2. How would you program a robot to clench its fist?

Possible answers: Step-by-step instructions, coding each action using a computer, moving each finger down and squeezing, etc.

A **neural circuit** is a population of neurons interconnected by synapses to carry out a specific function when activated.

Multiple neural circuits interconnect to form large-scale brain networks.

3. Sketch the components involved with the task of a person clenching their fist. Include where the decision begins, how it is transferred to the fist, and what body parts go into clenching the fist.

Sketches will vary. They should include the brain, the spinal cord, and the muscles in their arm, wrist, and/or hand.

4. How is the brain involved in the task of clenching a fist?

Answers will vary. They may discuss the fact that the decision originates in the brain, the brain sends the signal down to the muscles through neurons, the brain stops sending the signal once the person decides to stop clenching, etc.

5. What similarities and differences would be involved if a robot was implementing this process instead?

Answers will vary. They may say that a robot would not be making a decision and instead may be programmed to “clench” its fist, a robot does not have a brain and instead would follow predetermined steps for the action, etc.