Unplugged Chain Activity Guide
Mission 2: Neuron Navigator, Objective 2

Name:

The activity for this objective is to run a simulation of an artificial neural network. In this class activity, each student will act as a neuron, carrying a signal message from initial activation to response.

1. Each student gets a neuron card.
• Eye neurons: start sending messages when they see a specific color
• Brain neurons: receive signals and then pass signals on to connected neurons
    ○ Excitatory neurons (pass signal instantly)
    ○ Inhibitory neurons (delay passing the signal)
    ○ Malfunctioning neurons (skip a turn or fail to pass the signal)
• Final (or snap) neuron: performs action when it receives a signal
	☐ Get a neuron role

2. Line up in a neural network grid. • Eye neurons are up front. • Each eye neuron gets a stack of playing cards • Brain neurons spread out in rows. Each neuron should have at least one neuron in front and behind for receiving and sending signals. • The final neuron stands at the back.	☐ Set up simulation

3. Start the simulation.
• The eye neurons wait until they see the specified color.
• The eye neurons fire a signal (card) to all neurons they are connected to.
• The brain neurons wait to receive the number of signals indicated on their card. Then they transmit the signal following their role on the card (excite, inhibit, or ignore).
    ○ Excitatory neurons send the signal instantly to the next neurons.
    ○ Inhibitory neurons wait to send the signal to the next neurons.
    ○ Malfunctioning neurons either skip a turn and wait for more signals, or throw out the signals all together.
• When the final neuron reaches full signal strength, the student performs the action on the card.
	☐ Perform simulation

4. Record your observations. • Using the chart provided, write down the role you played in the simulation and what you observed or learned about neurons during the simulation.	☐ CodeTrek followed
5. Repeat the simulation several times. • Select a new neuron card. Your teacher may change the number of eye neurons, inhibitory neurons and malfunctioning neurons. • The brain neurons may be in different places in the neuron network. • Record your role and observations for each simulation.	☐ Repeat the simulation with different scenarios
6. In CodeSpace, write a reflection of the artificial neural network activity. • Create file **unplugged_chain** • Write at least one paragraph that answers the prompts.	☐ Write a reflection

Scenario Observations:

My role:
Observations / What I learned:

My role:
Observations / What I learned:

My role:
Observations / What I learned:

My role:
Observations / What I learned:

My role:
Observations / What I learned:

My role:
Observations / What I learned: