Supplies needed if intending to complete in **one lab period**:

|  |  |
| --- | --- |
| Per student group  | * Laptop with Arduino IDE and libraries (downloaded from the internet) and Excel (student laptops)
* Arduino kit
	+ Arduino board
	+ Mini breadboard
	+ Arduino/Breadboard holder
	+ USB connector
	+ Waterproof temperature sensor (DS18B20) with one male jumper wires connected to each of the three wires
	+ 4.7k ohm pull-up resistor
	+ 2 male-male jumper wires
	+ 1 male-female jumper wires
* Styrofoam cup (to make calibration ice bath)
* Stop watch (to measure response times)
* 500 ml graduated cylinder (to make two-layer system)
* 2 400 ml beakers (for response time/making of two-layer system)
* Stir rod (to mix ice baths)
* Small sponge (to make two-layer system)
* Meter stick (to measure sensor depth in two-layer system)
 |
| Per lab | * Boiling water bath
* Microwave
* Cold water (tapwater is fine)
* Ice (to make calibration/response time ice baths)
* Food coloring (for two-layer system)
 |

Supplies broken down by section if activity is completed over **multiple lab periods**:

|  |  |
| --- | --- |
| Per student group  | * Laptop with Arduino IDE and libraries (downloaded from the internet) and Excel (student laptops)
* Arduino kit
	+ Arduino board
	+ Mini breadboard
	+ Arduino/Breadboard holder
	+ USB connector
	+ Waterproof temperature sensor (DS18B20) with one male jumper wires connected to each of the three wires
	+ 4.7k ohm pull-up resistor
	+ 2 male-male jumper wires
	+ 1 male-female jumper wires
* Calibration
	+ Ice
	+ Chilled water
	+ Styrofoam cups
	+ Stir rod
* Response time
	+ 2 250 ml beakers
	+ Microwave
	+ Ice
	+ Chilled water
	+ Stop watch
* Taking data
	+ 500 ml graduated cylinder
	+ 2 250 ml beakers
	+ Food coloring
	+ Stir rod
	+ Meter stick
	+ Small sponge
 |