**Troubleshooting tips**

1. If students have trouble uploading the code to the Arduino board make sure that they choose, from the **Tools** menu, the **Board** (Arduino/Genuino) and the proper COM **Port**. When the Arduino and USB cable are plugged into the computer it may take a minute for the computer to assign a COM port. Be patient. Each time the USB is unplugged and plugged back in the computer will assign a COM port.
2. Have students try different USB ports if the computer doesn’t recognize the one they have chosen. As a last resort, if that is unsuccessful, try a different computer (a good reason to have all students bring laptops to the lab).
3. Sometimes the code seems to take forever to load to the board. Should that happen try saving the code and exiting Arduino. Reopen Arduino, load the code, select the Board and Port and try again.
4. The baud rate on the serial monitor must be set to 9600. If it isn’t very odd characters will be printed. Set the rate using the drop down menu in the lower right of the monitor.
5. If the student’s circuit does not work (an indication would be initial temperature readings that are greatly different from room temperature) first check that all the connections have been made properly. Once that is done, wiggle the wires in the breadboard and the Arduino sockets to make sure they are making a good connection.
6. The temperature sensors are pretty accurate, so if the measured temperatures in the ice water bath are not close to zero it is probably because too much of the ice has melted. In that case pour out a lot of the water and add a lot more ice.
7. If the temperatures are clearly not correct, and the circuit seems to be correctly assembled, try another temperature sensor.
8. Tips for the Coding challenge.

A single line is required to have the program type the student’s name. To type the name once this line should be placed in the **setup**. To type the name lots of times this line should be placed in the **loop**.

The line of code should look like this;

Serial.println("Operator is YOUR\_NAME");

 **Serial** indicates that the text will be printed to the serial monitor.

 **Println** indicates that the text will be printed on a single line. Should students wish to print

something else on the line they should use the **print** command.

The text students wish to print must be in parenthesis, and in double quotes, as shown above.

The line must end with a semicolon.

Here is what the setup should look like.

void setup() //"Void" is a special keyword associated with functions that have no output, like this one.

 { //Curly brackets are part of the required syntax for the C language.

 Wire.begin();

 Serial.begin(9600);

 Serial.println("operator is YOUR\_NAME");

 } // end of setup.