



#### **I. Background:**

A. The bicep muscle is your main (upper-lower?) \_\_\_\_\_ arm muscle.

B. Something that can be measured and may change is a V\_\_\_\_\_.

C. The Dependent Variable is the thing that you measure to find out if it c\_\_\_\_\_. You will use bicep muscle temperature as your dependent v\_\_\_\_\_.

D. The Independent Variable\* is the thing you change to see if it makes a d\_\_\_\_\_.  
\* (also called manipulated variable)

E. ALL other variables are Controlled V\_\_\_\_\_ and should be kept the same.

#### **\*Possible Independent Variables:**

- Student A / Student B;
- Dominant arm / Nondominant arm
- Weight A / Weight B

#### **II. Your Problem/Questions:**

Circle your choice of A or B:

A. Does \_\_\_\_\_ (independent v\_\_\_\_\_) have an effect on the temperature change of the working (lifting) bicep muscle?

B. Does the temperature of the bicep muscle increase when lifting?

**Name:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Period:** \_\_\_\_\_

#### **Scientific Method of Inquiry**

#### **III. SOME HELP:**

1. Data should be collected for at least 3-minutes with one reading every second.
2. Use tape to make sure the sensor stays in one place BUT, a student needs to continue to hold the Temperature Sensor against the bicep muscle.
3. Before collecting data, the tip of the Temperature Sensor should stay against the bicep muscle for at least one minute to allow the probe to measure the skin /muscle's temperature and stabilize.
4. After the temperature stabilizes, then start data collection. Be sure you have a beginning muscle temperature before the student begins curling their arm and lifting weight (Record any added weight.)
5. Choose a Problem: For A, compare by changing one independent variable. For A or B, all other variables should be CONTROLLED.
6. Present using the 8-part Scientific Method Inquiry Format.

#### **III. Sources:**

1. [www.vernier.com/innovate/innovativeuse12.html](http://www.vernier.com/innovate/innovativeuse12.html)
2. [http://en.wikipedia.org/wiki/Independent\\_variable](http://en.wikipedia.org/wiki/Independent_variable)