**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Scientific Method Lab – Cheerio Cylinder**

**Supplies:**

2 transparency sheets Paper plate

Cheerios Calculator

Ruler/Meter stick

**Background**: Well-designed experiments will follow a predictable and logical method, called the “scientific method.” While there are many forms of the scientific method, they all have the same basic steps which are:

1.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Using your notes, please give a definition of the following terms:

**Hypothesis:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Manipulated variable**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Thinking back over information covered in class, the manipulated variable could also be called which of these: (circle one) independent variable OR dependant variable

**Responding variable**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Thinking back over information covered in class, the responding variable could also be called which of these: (circle one) independent variable OR dependant variable

**Pre-Lab Questions:**

1. What is the problem or question your experiment is going to solve?

2. List your hypothesis to the problem you stated in question #1:

**Procedure:**

1. Obtain 2 overhead sheets (clear plastic)
2. Roll each into a cylinder: one will be short/wide (cylinder A) and the other tall/thin (cylinder B)
3. Put this cylinder on a paper plate (just helps hold the cheerios)
4. Pour in the cheerios to the top of the cylinder

**Questions:**

1. Which container held more cheerios based on your observations?
2. You are now going to solve which holds more mathematically using the volume of the cylinder.

Formula: π x r2 x h

What you will do: (3.14) x (radius) x (radius) x (height)

1. Solve the volume of cylinder A (short/wide) Use centimeters!
   1. Measure the height of the cylinder: height = \_\_\_\_\_\_\_cm
   2. Measure the diameter of the cylinder (this is all the way across the top of the cylinder): diameter = \_\_\_\_\_\_\_cm
   3. Divide the diameter by 2 to get the radius: radius = \_\_\_\_\_\_\_cm
   4. Find the volume:

= (3.14) x (radius) x (radius) x (height)

Volume of A = \_\_\_\_\_\_\_cm3

1. Solve the volume for cylinder B (tall/thin) Use centimeters!
   1. Measure the height of the cylinder: height =\_\_\_\_\_\_\_cm
   2. Measure the diameter of the cylinder (this is all the way across the top of the cylinder): diameter = \_\_\_\_\_\_\_cm
   3. Divide the diameter by 2 to get the radius: radius = \_\_\_\_\_\_\_cm
   4. Find the volume:

= (3.14) x (radius) x (radius) x (height)

Volume of B = \_\_\_\_\_\_\_cm3

1. Looking at the math equation, try to explain why the tall/thin cylinder holds less than the short/wide cylinder.

