Name: _____   Date: _____

Circumference Discovery

We will be looking at an experiment that uses different types of materials that form piles, where we will then measure the approximate circumference of each. We will work on making predictions, performing calculations and graphing and comparing results.

Before we conduct the experiment, let's make predictions on what we think might happen. You do not need to fill in numbers, but predict what will happen compared to each type of material and the different size holes in the cup. Will the pile be bigger or smaller, therefore will the circumference be bigger or smaller?

Predictions:

- How will the size of the hole affect the circumference of the pile? Do you think a bigger hole in the cup will make a smaller or bigger pile? Explain your reasoning.

- How will the circumference differ between the different kinds of materials? Will the pile of the beans be bigger or smaller than the pile of sugar? Why do you think?

Now that we have made predictions, let's see how they compare to our results. Follow these steps to complete the experiment:

1. Prepare Materials

Set-up tray, cut holes in cups, measure out ½ cup of each material (sugar, rice, beans).

2. Start conducting the experiment

Place the piece of paper on the tray. With the cup that has a hole with a radius of ½, fill the cup one at a time with each material. Cover the hole with your hand and then let out the material.

3. Measure circumference

Each time you create a pile, draw along the circumference, without trying to disturb the pile too much. Repeat the steps of filling the cup with diameters of ½ and 1 with each material.

4. Calculate Circumference

   a. Remove materials from the paper. Measure two different diameters in your circle. To do this, draw two lines from one random edge of the circle through the center to the opposite edge of the circle. The length of each line will give you the diameter of the circle.
   b. Next, calculate the average diameter (take both results and divide by 2.) To find radius, take this answer and divide it by 2.
   c. Now, use the formula for circumference ($2\pi r$).

5. Record Results in table:

	Materials		
	Sugar	Rice	Beans
Diameter 1/2 inch			
1 inch			

How does this compare to our predictions? Were you correct? What was your idea behind your predictions and what was proven now after performing the experiment.

Let's graph these results to compare!