

# How important is a decimal place?

Name \_\_\_\_\_

Period \_\_\_\_\_

Date \_\_\_\_\_

## Introduction

- Place your flat beach ball on your table. **DO NOT INFLATE THE BALL!!!**
- Using the measuring tape, find the circumference of the ball. Record your measurement with units. Explain how you measured the circumference.
- Find a second way to measure the circumference of your circle. Record your method of measurement and circumference with units.

	Circumference	Method of Measuring Circumference
Measured Circumference 1		
Measured Circumference 2		

- The distance from the center of the circle to the edge is called the radius ( $r$ ). The diameter ( $d$ ) is the distance across a circle and is equal to  $2r$ .
- Measure the radius. Be as exact as you can and record this measurement in the chart below.
- Calculate the circumference using the formula:  $Circumference = 2 \pi r$
- Record your answer below. Include 4 decimal places and include units.

	Radius	Circumference
Calculated Circumference		

## Please answer the following questions in complete sentences.

1. Compare your two measured values. Are they the same? Explain why or why not.

\_\_\_\_\_

2. How close are your measured and calculated values?

\_\_\_\_\_

3. Which do you think is more exact? Why?

\_\_\_\_\_

4. Is the calculated circumference exact or has the calculator rounded this number?

\_\_\_\_\_

## How important is a decimal place?

Name \_\_\_\_\_

Period \_\_\_\_\_

Date \_\_\_\_\_

5. Where do you think it is reasonable to round the calculated circumference? Why?

---

---

### Background:

Pi ( $\pi$ ) is a never ending or repeating number [Pi ( $\pi$ ) = 3.141592654.....continuing]. Pi is very important when calculating the area, perimeter, and volume of a circle. Here are some of the formulas that are commonly used:

$$\text{Area} = \pi r^2$$

$$\text{Volume} = \frac{4}{3} \pi r^3$$

$$\text{Circumference} = 2 \pi r \text{ or } \pi d$$

### Assignment:

Pi is often rounded in math calculations, but what is the most accurate way to round pi? You are going to design an experiment to show what would happen if Pi were rounded, or approximated, to 3.0, 3.1, or 3.2. Your control is the real pi.

- Question: What is the most accurate way to round pi when solving for the volume of a sphere?
- Complete the Experimental Design Graphic Organizer.
- Complete all steps on the checklist (back of the graphic organizer).
- Complete the Explain assignment.
- Complete the Elaboration assignment.

\*\* This is practice for using the experimental design graphic organizer. Carefully complete ALL parts of the graphic organizer. You will also use your data to make decisions on other issues and assignments to practice supporting your opinions with facts.