Modern Atomic Theory & Probability

**Materials** Target Pen, pencil or marker

# Procedures

1. Students can work with a partner or by themselves.
2. Give each student or group a piece of scrap paper.
3. Draw 3 concentric circles within each other to form a “target” with a bulls-eye.
4. Have students place their target on the floor face up.
5. Students may use a pen or a marker (markers are best)
6. Have students hold the marker at hip level and drop the marker aiming at the bulls-eye.
7. Perform 50 trials.

# Calculations and Data # of Hits % of hits

1. Count the number of bulls-eyes you had. \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_
2. Count the number of marks within the innermost circle area. \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_
3. Count the number of marks within the second circle area. \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_
4. Count the number of marks within the outside circle area. \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_
5. Determine the percentage of hits for each of the area

# Conclusions and Questions

1. Which of the areas on the target got the most hits?
2. How does this show the probability of finding an electron orbiting the nucleus of an atom?
* *Where were you at 4:00 am? 8:00 am? 11:00 am? The probability is in bed, class, hallway … but maybe you were in the restroom, office, restaurant, etc.*