Activity #4 - Toss and Measure Activity

The object of this activity is to toss different items and measure how far the items traveled and is best done outside. Tossing is a good example of Sir Isaac Newton's **first law of motion**. According to Britannica, this law states that "if a body is at rest or moving at a constant speed in a straight line, it will remain at rest or keep moving in a straight line at constant speed unless it is acted upon by a force." The ground the object hits would be the force that stops the motion. How far will the object go before being stopped by the ground?

Materials Needed

- Find at least four items from around the house of varying sizes and weight.
- Measuring tape or ruler.
- Tape or other way to mark the starting spot where you will stand for the toss.

Directions

1. Collect items from around the house of various sizes and weights (ex. crinkled paper, bean bags, balls, spoons, whatever you're allowed to use!)

2. List these items in the table on the back of this sheet. Make a hypothesis! How far do you think each item will travel? Why? Also consider the tossing motion. Does throwing overhand vs. underhand make a difference?

3. Mark a spot on the ground. You always want to throw from this spot to get accurate measurements of how far an object traveled in comparison to other items.

4. Throw an item. Using the ruler or measure tape, measure how far the item is away from the starting mark. Do the same for all of the items you have. Record your results.

5. Evaluate your results. Did they match your hypothesis? If not, why do you think it did not match?

Item	Tossing Motion	Hypothesis Measurement	Actual Measurement

Additional Resources:

https://www.britannica.com/science/Newtons-laws-of-motion
https://youvegotthismath.com/2016/06/11/javelin-throw-stem-challenge/
https://www.livescience.com/46558-laws-of-motion.html
https://sciencing.com/how-are-newtons-three-laws-of-motion-used-in-baseball-7029501.html