

Ball Drop

Summary

In this activity, we will be learning about experimentation in a fun and challenging game. With some help from gravity and inertia, can you get the ball into the cup without touching the ball?

Materials

- Ball
 - *Try with various sizes and weights.*
- Plastic cup
 - *Big enough to hold or catch the ball.*
- Cardboard tube
 - *A toilet paper roll works great.*
 - *Cutting a paper towel roll also works so that you can have different heights.*
- Cardboard square
 - *Cardstock or a heavy construction paper are alternatives.*

Steps to Follow *(All activities must be done with adult supervision)*

1. Place a ball on the floor, table, or a flat surface. *Does the ball move? How can we get the ball to move? How much force do we need to move it?*
 - a. *Inertia is a property that explains how likely our ball will continue to do what it is doing. The more massive an object, the more inertia.*
 - b. *An object at rest tends to stay at rest until acted upon by another force like a push or a pull. More force is needed to move a bowling ball versus a tennis ball.*
2. Build a tower using the materials by starting at the bottom and working up.
 - a. *Cup (at the bottom), cardboard square (flat on top of the cup), tube (standing up in the center of the square), and ball (on top of the tube).*
3. Your goal is to pull the cardboard square so the ball falls into the cup.
 - a. *It's ok if you don't get it on your first attempt, keep trying!*
4. For an experiment, try changing just one variable at a time.
 - a. *To change a variable, replace it with an alternate version:*
 - i. *Different size or weight of ball*
 - ii. *Different length of tube*
 - iii. *Different type of square material*
 - b. *Each of these changes will have a small or large affect on the outcome of our experiment.*
 - i. *Which tower format was the easiest/hardest?*
5. An extension of this activity is to try and get the ball into the cup by any other method you can think of, but without touching the ball.

Ohio Learning Standards

2.PS.1, 5.PS.1, 8.PS.1

Next Generation Science Standards (NGSS)

5-PS2-1, MS-PS2-2