Egg Bungee Jump

**Objective:** Construct a bungee cord for an egg that allows the egg to jump and get as close to the floor as possible without hitting the floor. Teams will test various bungee cords from only 1.5 meters. From this data, create a bungee cord for an egg to drop somewhere between 2.0 and 2.5 meters.

**Materials:** Each group will receive enough rubber bands to make a cord for an egg to jump from at least 2.5 meters. The rubber bands will be either $\frac{1}{16} \text{th}$ or $\frac{1}{8}$ inch wide and between 1.5 – 3.5 inches long. They will all be identical, new rubber bands.

Each group will be given a golf ball with a string “handle” glued to it. The mass of the ball in grams will be written on the ball.

Each team will be given their egg with a glued handle. The mass of the egg in grams will be written on the egg.

Each team will get three (3) pieces of clay of mass 10.0 gram ± 0.1 gram. The clay can be added to the golf ball to approximate the mass of the egg. The pieces of clay can be divided, but no balance will be available, so for example teams can take half of a piece to approximate 5.0 grams.

**Note on how the eggs will be dropped:** For the actual egg drop, the egg will be held in place using a rod through the string handle. The rod will be pulled away and the egg will fall. The bungee cord will be connected to the platform at the same height as the rod.

**Testing:** You will have approximately 25 minutes to construct and test bungee cords using your golf ball. You will be provided a dropping station that will be 1.50 meters above the floor. You will not be allowed to change this. You can make bungee cords from multiple rubber bands, test how far the golf ball will fall and gather data points. Graph paper will be available to you if you want to graph your data.

**Creating your bungee cord:** After the testing time is done, you will not be allowed to do any more testing. You will be given the height that your egg will be dropped from. It will be somewhere between 2.0 and 2.5 meters. Using only the data you gathered, your team will now modify or add to your bungee cord to get ready for the egg jump.

**Jumping:** After all teams have their cords made, the cords will be collected so they cannot be modified. Each team will take turns dropping their eggs.

**Scoring:** The distance from the egg to the floor will be measured using slow motion video. Back up video and sight-based scores will be available if needed. The egg that is closest to the floor will receive the highest score of 100 points. Eggs that successfully jump (don’t hit the floor) will be given scores less than 100 points based on how close to the floor the egg got. Teams whose eggs hit the floor will be given a score of 50% of the lowest successful jump score.