

Physics 200

Egg Bungee Jump Challenge

Goal: Predict the final position of weighted egg above the floor when the egg “bungee jumps” from a known point near ceiling height.

Materials:

- Ceiling Hook
- Bungee (elastic strip)
- Egg harness (plus small, wooden connector piece)
- Wire ring/hook for attaching weights to bungee
- Tape
- Various Weights:
 - 100g (1 of these)
 - 200g (2 of these)
 - 500g (1 of these)
 - Possibly more
- Metric tape measure
- Egg

Recommended Procedure:

1. Find or install a ceiling hook in a location where you can reach it by standing on a table – and where an egg can fall to the floor unobstructed.
2. Get a variety of weights and a wire ring/hook to attach them to your bungee
3. Collect “Hanging Mass vs. Bungee distance From Floor” data.
 - a. First, measure the height of the bungee with zero mass attached. Measure from the bottom of the bungee to the floor.
 - b. Collect data in order of increasing mass. Add 100g at a time.
 - c. Measure the distance from the **bottom end of the bungee** to the floor.
 - d. The most accurate way to do this is to use the electronic balance mass all of the weights that you are attaching – plus the ring/hook – every time (but you do it your own way :-))
 - e. Continue collecting data until your bungee is as close as possible to the floor (without the weights touching the floor).
4. Measure and record the “Hook to floor” distance. This is the distance from the top of the bungee to the floor.
5. Remove your bungee. Then measure and record your bungee mass.
6. Enter the data from #3 and #4 into your spreadsheet.
7. Connect your bungee to an egg harness. Add an egg. Add mass symmetrically* until your egg+bungee+harness+added weights is between 170g and 220g. *Make sure that the weight(s) is(are) evenly distributed and arranged so that the egg will hit the floor before the weights. Secure with tape.
8. Find the final mass of your jumper by massing the egg+weights+harness+bungee+tape, and by then subtracting the bungee mass.
9. Measure and record the distance that the egg protrudes below the end of the bungee.
10. Enter your final “Bungee Jumper” total mass and “Distance egg hangs below bungee” into your spreadsheet.
11. Use your graph to determine the final bungee and final egg distances from the floor. Record on the back of this sheet. If your expected egg distance is closer than 5cm from the floor, remove some weight and return to step #7.
12. Record the heights at which you would like the floor tile to be placed on your first and second jumps.
13. Tell Mr. Stapleton that you’re ready.
14. Drop your egg, holding the bottom end of the bungee even with the top of the bungee.
15. Remove tape from your egg and put things away. Return your unbroken egg or clean up your mess.

