

## Balloon Ball Bounce

Problem: How many balloons will a balloon ball need to have the greatest rebound?

Hypothesis: \_\_\_\_\_

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Procedure:

1. Using 10 balloons determine how many balloons a balloon ball needs to have the greatest rebound when dropped from a height of 1.0 meter.
2. Make the balloon ball.
3. Blow up a round balloon and tie it off so that it is slightly smaller than a fist.
4. Using a new balloon, cut the balloon with scissors at the neck of the balloon.
5. Open the balloon and place the blown up balloon inside.
6. Rotate the direction of the balloon ball and place another cut balloon around the balloon ball.
7. Repeat steps until the balloon ball has the desired number of balloons.
8. Drop the balloon ball from a height of 1.0 meter and record the height of the ball from the first rebound.
9. Record the results in the data table.
10. Repeat steps 4-9 two more times (change the number of balloons used).
11. Graph the results and share the data with classmates.

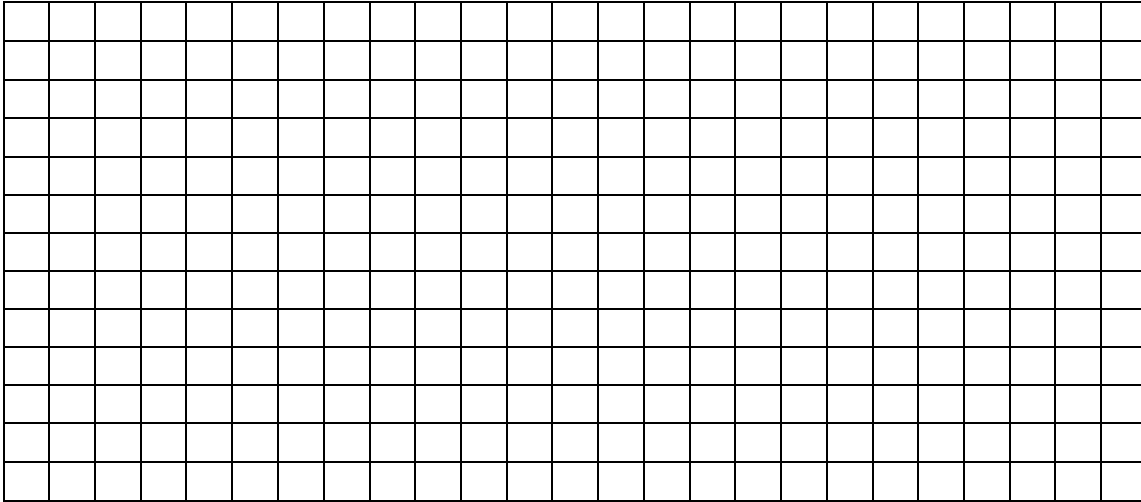
Data:

Number of Balloons in balloon ball	Height of balloon ball rebound in centimeters	Height of balloon ball rebound in centimeters	Height of balloon ball rebound in centimeters	Average height in centimeters	Mode of balloon ball rebound

**Graph:**

Create a bar graph to show all of your results for the three trials. The y-axis = height in centimeters (dependent variable). The x-axis = the number of balloons (independent variable).

Title: \_\_\_\_\_



**Conclusion:** Use your data to help you answer these questions.

1. What is the best number of balloons to use for the bounciest balloon ball?
2. Do your findings support your hypothesis? Explain why or why not.
3. Why do you think this number of balloons makes the ball bounce better?
4. What is your definition of rebound?
5. What do you think might happen to the height of the balloon ball rebound if 100 balloons were used to make the ball?
6. What do you think would happen if the initial drop height were 2.0 meters?
7. What do you think would happen if a balloon ball was made from Mylar?

8. What do you think might happen if the medium inside the first balloon was changed from air to helium or water?
  
9. Draw the balloon ball and label the gravitational potential energy (GPE), the elastic potential energy (EPE), the kinetic energy (KE) and any other forms of energy or energy conversions observed.