

Name: _____

Period: _____

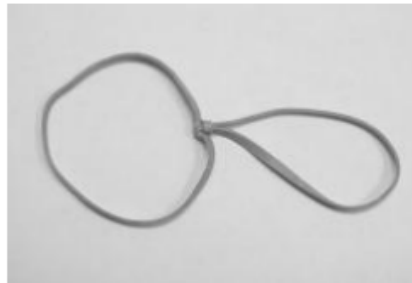
Ext- 8.2.1- *Barbie Bungee*

Materials

- Balance
- Tape measure/meter stick
- Barbie Doll
- Rubber bands
- Calculator

Procedures

1. Measure Barbie's mass and height and record them on your data sheet. (see figure 1)
2. Use two rubber bands to create a double-loop around Barbie's feet. A double-loop is made by securing one rubber band to another using a slip knot. (see figure 2)
3. Wrap the open end of the double-loop tightly around Barbie's feet, as shown. (see figure 3)

**Figure 1****Figure 2****Figure 3**

4. Hold Barbie upside down with her feet at the top of the tape measure.
5. Hold the rubber band at the top of the tape measure, and simply let Barbie drop from the head-down position. (see figure 4)
6. This is the tricky part. You need to observe the LOWEST spot her head reaches during the bounce. The final resting spot is NOT the lowest spot.
7. You will drop Barbie three times each time you add a rubber band to get an accurate reading, and record the data on your data sheet.
8. Calculate the average distance and record on your data sheet.

- 9.** Attach a second rubber band to the first one, again using a slip knot. (see figure 5)
- 10.** With two rubber bands now attached, hold the end of the rubber bands at the jump line with one hand, and drop Barbie from the line with the other hand.
- 11.** Measure the jump distance in centimeters, and record the value on your data sheet. Make sure Barbie jumps three times every time you add a rubber band.
- 12.** Accuracy is important—Barbie’s life could depend on it!
- 13.** Repeatedly attach an additional rubber band for each new jump. Measure the jump distance, and record the results in the data table.
- 14.** When you have completed the data table, graph your results, answer the questions and complete the C.E.R.



Figure 4

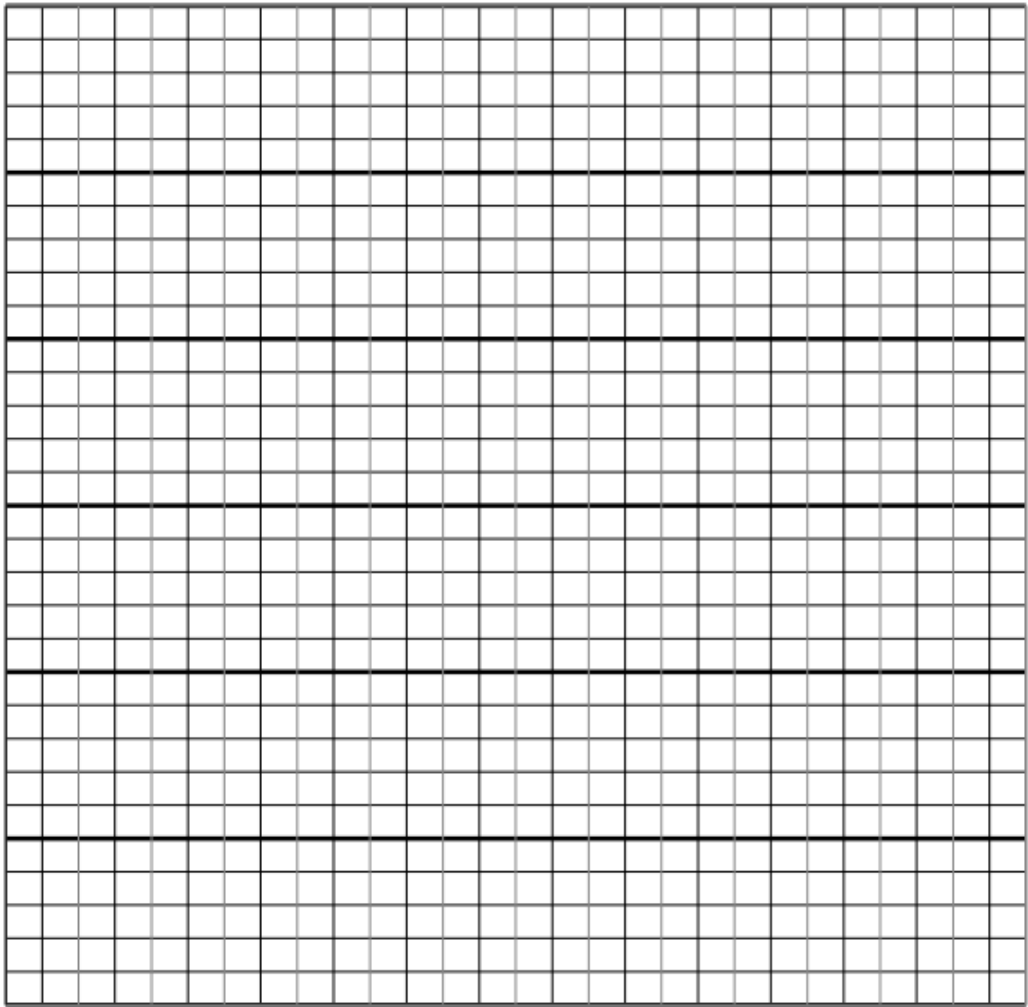


Figure 5

Barbie's Mass: _____

Barbie's Height: _____

| Number of Rubber Bands (X) | Jump 1 (in cm) | Jump 2 (in cm) | Jump 3 (in cm) | Average Distance of jump (in cm) |
|---|---------------------------|---------------------------|---------------------------|---|
| 0 | | | | |
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |



1. What is the relationship between the number of rubber bands and jump distance?
2. Do you think it would matter if Barbie lied about her mass and height to the bungee jumping team? In your explanation give evidence and reasoning.
3. The formula for calculating speed is distance/time. How fast was your Barbie doll traveling while she bungee jumped?
4. When did Barbie experience kinetic energy while bungee jumping?