Name: _____   Date: _____

Purpose

You are going to create a bungee line for Barbie that will give her the most thrilling,
yet SAFE, fall from 160".

Procedures

1. Connect two rubber bands with a slipknot.

2. Then wrap one end repeatedly around Barbie's ankles. Be sure the rubber band is on tight enough not to fall off when she is being dropped.

3. Measure Barbie's height without rubber bands. Record this amount next to the zero rubber bands in the data chart on back side of this paper.

4. Next, drop her with two rubber bands attached to her ankles. Hold the band tight at the top of the yardstick, and simply let Barbie drop from the head-down position. She won't swing; she will just lightly bounce. Record her fall. You will need to do this several times to ensure accuracy.   Record all attempts in the chart.

5. Complete the data chart as you drop Barbie.

6. Now it's time to start adding more bands. Once again use a slipknot to connect a second band to the bungee line. (Remember the band wrapped around her ankles does not count in the length of the line.)

7. Do this for a total of SIX rubber bands.   Read about the line of best fit (in the assignments section of the MathReuls wiki).

Do not worry about your problems with mathematics, I assure you mine are far greater.
–Albert Einstein

Number of rubber bands	Lowest point head reaches
0	
2	
4	
6	

8. On graph paper, graph all of the points from the data chart.   If you dropped Barbie several times to ensure the highest accuracy, be sure to plot each test (all of the points).

9. Draw in the line of best fit.

10. Now consider the SAFETY issue vs. the THRILL issue:

If you put too many rubber bands on, her head will reach the floor, she will crack open her skull, and die. You will then be sued for negligence and will lose your business and owe her family millions of dollars that you don't have.

On the other hand, if you don't put enough rubber bands, therefore you shorten the bungee line TOO MUCH, the ride may not be thrilling enough, and Barbie will pay her big bucks to your competitor. You will lose clients and your business will suffer.

TEST JUMP:

11. Based on your line of best fit, your prediction for the number of rubber bands for the bungee line for the Barbie test jump from a height of 94" is _____.

12. Now, you are ready to test out the jump using the number of rubber bands you wrote for #10. (You may not change this number once it's written down or when you have seen other groups test their jumps!)

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