

Bungee Barbie and Kamikaze Ken

Setting: You have been hired to work for the Acme Daredevil Entertainment Company. This company provides rock climbing, skydiving, “extreme skiing”, and cliff diving adventures to the public. However, to keep up with the market, the board decided to add bungee jumping to its list of offerings.

As a part of the first assignment, the board decided that the teams should undertake the task of working out the details of the new venture. The company has several sites planned for bungee jumping and each site is at a different height.

Problem: Initially each group works with just one action figure doll. The task is to determine the ultimate length, or number of rubber bands that can be used with your action figure at any given height and not cause any type of injury or fatality – but that allows your action figure to come as close to the floor as possible (for maximum thrills).

Step 1: Collect the Data

Use the table below to organize the data that you collect. Collect data for your figure by attaching a certain number of rubber bands to the doll’s feet and dropping. Run three trials, each time recording the distance that the doll dropped, and then take the average of the trials. Continue adding rubber bands and complete the table.

Number of Rubber Bands	Distance Dropped Trial 1	Distance Dropped Trial 2	Distance Dropped Trial 3	Average
1				
2				
3				
4				
5				
6				

Step 2: Graph the data (number of rubber bands, average) in a scatterplot.

Step 3: Draw the line of best fit.

Step 4: Write an equation for your line. (Show ALL WORK on your graph. Fill in blanks with answers.)

- Use two points on the line. _____ and _____
- Find the slope. _____
- Put it in the Point-Slope Form. _____
- Put your equation in Slope-Intercept Form. _____

Step 5: If the height of the jump is _____, how many rubber bands do you need? _____

Step 6: Test your conjecture!

Interpreting the Data: Use COMPLETE SENTENCES to answer each question. (2 pts per correct answer)

1. Describe 3 errors that may have thrown off the results of your experiment.
2. What was the slope of your line of best fit? _____ What does this number physically represent when bungee jumping?
3. What is the y-intercept of your line of best fit? _____ What does this value physically represent when bungee jumping?
4. Circle the appropriate answers. (Be sure you circle 2 words for *each problem*.)
If you had a heavier jumper, the (slope / y-intercept) would (increase / decrease).
If you had a shorter jumper, the (slope / y-intercept) would (increase / decrease).

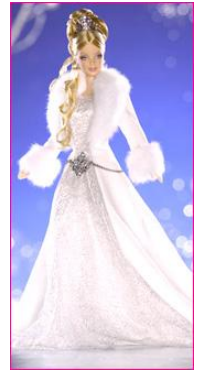
Predicting with your Data: Show ALL work! (2 pts per correct answer)

Rewrite your prediction equation (from step 4) _____ and use it to answer these questions.

5. How far should your figure need to be above the ground if there were 18 rubber bands attached to it?
6. How far should your figure need to be above the ground if there were 100 rubber bands attached to it?
7. How many rubber bands would be needed to drop your figure from 50 feet, 5 inches?
8. How many rubber bands would be needed to drop your figure from the top of the Statue of Liberty, which is 93 meters tall? (Hint: 1 meter is about 39.4 inches)

Bungee Barbie Rubric

1.) Data: Accurate and complete	_____ / 5
2.) Scatter Plot: Axes, points, line of best fit	_____ / 5
3.) Two points & slope	_____ / 3
4.) Equation of Line of Best Fit: Point Slope/Slope Intercept	_____ / 4
4.) Answers on WS: (2 points per problem)	_____ / 16
5.) Bonus Points for Winners!	_____ / 0
TOTAL:	_____ / 33



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