

## GYSTC Activity



### Title: Barbie Bungee Jump

<b>Purpose:</b>	Students are going to create a bungee line for Barbie that will give her the most thrilling, yet SAFE, fall from a height that your teacher chooses.
<b>Standard:</b>	<p>MGSE4.MD.4 Make a line plot to display a data set of measurements in fractions of a unit (<math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{8}</math>). Solve problems involving addition and subtraction of fractions with common denominators by using information presented in line plots. For example, from a line plot, find and interpret the difference in length between the longest and shortest specimens in an insect collection.</p> <p>MGSE5.MD.2 Make a line plot to display a data set of measurements in fractions of a unit (<math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{8}</math>). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.</p> <p>MGSE6.SP.4 Display numerical data in plots on a number line, including dot plots (line plots), histograms, and box plots.</p>
<b>Materials:</b>	Ken or Barbie Rubber bands Tape measure Table Lab Sheet Ruler
<b>Procedures:</b>	<ol style="list-style-type: none"> <li>1. Connect two rubber bands with slipknot</li> <li>2. Wrap one end repeatedly around Ken and Barbie's ankles. Be sure the rubber bands are on tight enough not to fall off when she is being dropped.</li> <li>3. Measure Ken's or Barbie's height without the rubber bands. Record this amount next to the zero rubber bands on the data chart.</li> <li>4. Next, drop him/her with one rubber band attached to his/her, they/them ankles. Hold the band tight at the top of the tape measure and simply let Barbie drop from the head-down position. his/her, they/them won't swing: his/her, they/them will just lightly bounce.</li> <li>5. Now it's time to add more bands. Once again use a slipknot to connect a second band to the bungee line. ( Remember the band wrapped around his/her, they/them ankles does not count in the length of the line.)</li> <li>6. Do this for a total of six rubber bands and complete the data chart.</li> <li>7. On graph paper, graph the points from the data chart. Draw in the line of best fit on the graph.</li> <li>8. Now consider the SAFETY issue verses the THRILL issue:</li> <li>9. If you put too many rubber bands on, his/her, they/them head will reach the floor and his/her, they/them will hit their head on the floor.</li> </ol>

	<p>10. So based on your line of best fit, your prediction for the numbers of rubber bands for the bungee line for Barbie Jump from the assigned height is : _____</p> <p>11. Now you are ready to test out the jump using the number of rubber bands you wrote in the blank.</p>
<b>Science Behind It:</b>	<p>The stretch of the cord creates tension, which is an upwards force (opposite to gravity). The tension force increases as the cord stretches and will eventually become greater than the force of gravity, causing a switch in direction. The acceleration is now upwards.</p>
<b>Questions to Ask:</b>	<ol style="list-style-type: none"> <li>1. What is Gravity?</li> <li>2. What forces are acting on the dolls? When Bungee Jumping, where did the doll experience energy?</li> </ol>