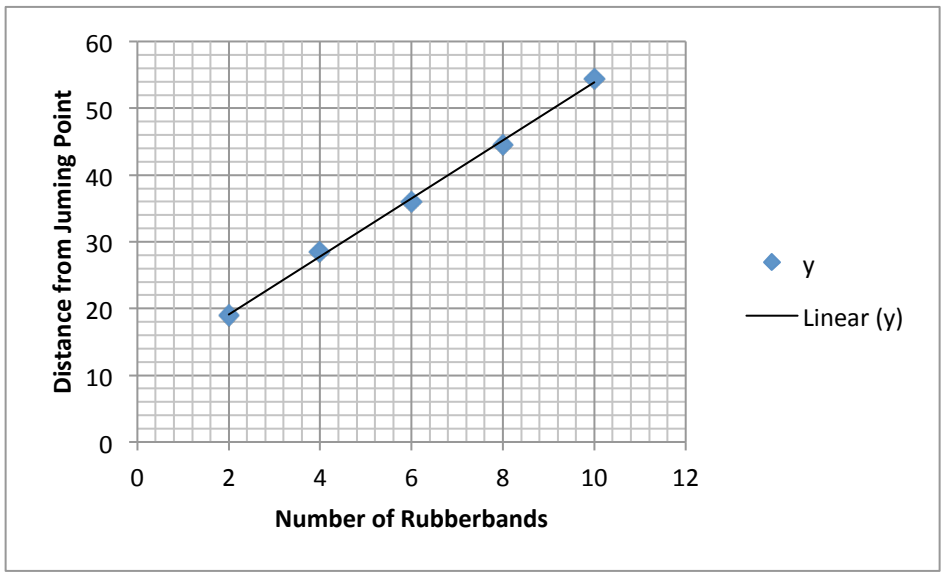
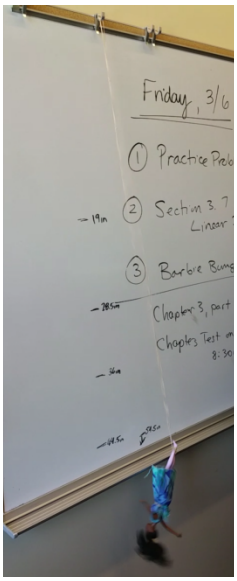
The purpose of this activity was to show how algebra can be applied to what we do in everyday life, including entertainment. In this activity, we were tasked to figure out how many rubber bands for Barbie to experience a thrilling but safe bungee jump. We test jumped Barbie from a smaller height distance at the top of the classroom white board beginning with two rubber bands. As Barbie dropped, we marked the furthest distance the top of her head reaches from the starting point and added two rubber bands after each marking until we reached a reasonable amount of 10 rubber bands to calculate our prediction on a larger scale. With the data we've collected, which includes the furthest distance reached with every two rubber bands added, we agreed the results were linear related due to its consistency and came up with a linear equation to determine how many rubber bands it would take for Barbie to bungee jump from a set height of 225 inches experiencing a thrilling but safe jump.

X = Number of Rubber Bands
Y = Distance from Jumping Point

x	y
2	19"
4	28.5"
6	36"
8	44.5"
10	54.5"





Finding the slope: We used two points (2,19) and (6,36).

$\frac{36 - 19}{6 - 2} = \frac{17}{4} =$ **4.25**

Seeing that the consistent increasing distance was 4.5 inches, we agreed to go with the slope = 4.5 in.

We used the slope intercept form seeing how Barbie falls an extra 4.5 inches with every with ever two rubber bands added, using that measurement as the slope and her actual height as the y-intercept.

Slope Intercept Equation: y= 4.5x+9

225 = 4.5x + 9
-9 -9

$\frac{214}{4.5} = \frac{4.5x}{4.5}$

48 = x

Using the slope intercept form, we calculated that it will take 48 rubber bands to reach to reach a distance of 225 inches

Barbie with a total of 48 rubber bands attached.

We tested our model three times from the set height of 225 inches from a balcony in the school walkway. On the first jump, Barbie collided with the ground so we removed two rubber bands to shorten the distance of Barbie and the bungees reach.
Barbie Bungee: Test Jump #1 -> https://youtu.be/HdOvHivfT7w

On our second attempt Barbie's hair touched the ground. From a safety standpoint, this was too close for comfort and we continued on removing another two rubber bands.
Barbie Bungee: Test Jump #2 -> https://youtu.be/HdOvHivfT7w

On our third and final test jump, Barbie experienced a thrilling and successfully safe bungee jump. We've then acknowledged that we needed to take in consideration the weight of Barbie, speed and momentum of her fall. Meaning there's more tension on the rubber bands the heavier and faster she falls causing them to extend further than our calculated distance on the smaller scale.
Barbie Bungee: Test Jump #3 -> https://youtu.be/nyAQuGVIxcw

In this activity we learned that by using algebra to find the slope we can have more accurate calculations when we use it in models. This concept would help us create safer and be more cost effective with minimum rework. By using a test model we can use the trial and error method perfecting on a smaller scale before attempts on a larger scale. This can be connected to many things outside the classroom. For example when budgeting for a project, this concept can be used to calculate how much and at what cost for the material you may need to accomplish a construction project.