*Barbie Zipline*

Barbie is adventurous. She is dangerous. She wants to venture into the world of ziplining. Your job is to design the most exciting zipline given the constraints that you have to work with.

**The Setup**

* Barbie will begin her zipline from the second floor of the math building
* Barbie will end her zipline at a distance that you determine as safe, yet fun
* Barbie ***must*** land safe, meaning that she can be caught with one hand at the conclusion of her journey
* Determine your distance prior to running a test

**Your Tasks**

* Input the height of the zipline
* Determine the ending point of the zipline
* Compute the lengths of twine required to create the optimum zipline (minimum of 3) using the distance formula and the Pythagorean Theorem



* Once you’re finished, we will test. Finally, you will create a promotional flyer (get creative) that justifies why your zipline is the best one for Barbie, including a mathematical explanation.

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| Pythagorean Theorem | Distance Formula | Distance |
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Grading Rubric for Barbie Zipline

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| --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 |
| Calculations with Distance Formula | No calculations are correct, but proper work is shown using DF | Calculations for 1 distance is correct using DF | Calculations for 2 distances are correct using DF | All calculations for 3+ distances are accurate using DF |
| Graph | No distances are graphed properly, but > 1 distance is attempted | 1 distance is graphed and demonstrated properly | 2 distances are graphed and demonstrated properly |  A minimum of three distances are graphed and demonstrated properly |
| Calculations with Pythagorean Theorem | No calculations are correct, but proper work is shown using PT | Calculations for 1 distance is correct using PT | Calculations for 2 distances are correct using PT | All calculations for 3+ distances are accurate using PT |
| Promotional Flyer | Routes are explained, but no mathematical justification | 1 possible route explained using mathematical justification | 2 possible routes explained using mathematical justification | All possible routes explained using mathematical justification |