

# Adventures in STEM

## *Let Them Zip!*

Name: \_\_\_\_\_

Date: \_\_\_\_\_

### *Zipline Design Variables*

Match the variable to its definition

- |              |  |
|--------------|--|
| Distance     | The action of one surface or object rubbing against another.                                 |
| Slope        | The length of the zipline, as measured between the two trees.                                |
| Slack        | The friction of an object against air.   |
| Acceleration | The amount of sag created when riding on a zipline.  |
| Rider Weight | Measure of the force exerted on a rider's mass by gravity.                                   |
| Friction     | The direction and steepness of a line.   |
| Drag         | How long it takes for the rider to get enough speed to get to the other side of the zipline. |

How does the weight of the rider impact acceleration and speed?

What is wind drag and how does it impact your design?

## Slack

Draw a line between the two trees without any slack



Now draw a line between the two trees with slack



Why is it important to have account for slack when you design your zipline?