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Zipline

Do ziplines have to go at 2 mph just to be safe? In this experiment that is what is being tested. A 25-pound weight, and eggs were used to test to see if this was true or not. They were sent down a zipline, like a person would be sent down, hanging from the handle. If no eggs cracked then the zipline would be dubbed safe. The experimenter then tried going down the zipline to be entertaining. The standard is 15 mph to be considered fun. This experiment worked very well, the newly assembled zipline was tested before anyone took a ride. A zipline is actually very scientific. The speed of the eggs and the experimenter were tested, for safety and speed.

This experiment is a term project for Mrs. Huss' 8th grade physical science class. The zipline experiment was picked because zipline safety is something more or less unusual to test, and some parents wonder if a zipline is safe. The kids wonder if it will still be fun if it is safe. For this experiment safe means that no eggs crack when they go down the zipline. Entertaining for this experiment means 15 mph. This zipline was brand new. The hypothesis for this experiment is that a safe and entertaining zipline can be built.

It took three hours to put up the zipline, and tons of hard work. A kit was bought, and the directions were followed. The zipline started at 11 feet in height and ended at 8 feet in height. The length from tree to tree was 68 feet. The ride length was 62 feet and 1 inch. The slope was as tight as the instructions said to make it. A test was even done to make sure that it was right. The wire that is strung around the tree is 3 feet away from it on both sides.

The zipline is scientific for many reasons. Gravity causes everything to go down the zipline. The wire is like an inclined plane and the zipline handles, because it has wheels, is like a car. Gravity also stops the zipline. The zipline isn't completely taut, so when the zipline gets close to the end of the wire the gravity has a lot stronger force on the zipline and is pulling it down so that there is a slope and it doesn't have enough momentum to get itself up the slope. There is a certain slope to the zipline for the length of the tree and how high the user. The zipline company says that if it is any higher then somebody could get hurt. When strung around the tree the wire is not supposed to be tight around the tree because then the tree can't support as strong of a force. It has a triangular point, and is suppose to come out one and a half times the diameter of the tree.

Materials

Tape Measure
25-pound weight
Lots of Plastic Bags
Carton of Eggs
Stopwatch
Zipline
Duct Tape
Ladder

Procedures

Put many bags together so that the bags don't rip on their way down the zipline. Put the weight flat in the middle of the bag. Cut the carton of eggs in half, just in case the eggs crack on their way down, so that the experiment can be done again. Duck tape the egg carton on to the weight so that the egg cartoon doesn't slide around causing the eggs to crack unnecessarily. Hang the bag from handles of the zipline. Pull the zipline up to the starting point. Let go, with out pushing. This was tried three times, and the last time was timed.

Results

The eggs didn't crack on any of the three runs. They jerked a little when they hit the bolt at the end, but they still didn't crack. The eggs sailed down the 62-foot zipline at 5.68 seconds. The experimenter went faster though at 5.52 seconds. The math done the eggs went 7 mph, and the experimenter went 7.5 mph.

Conclusions

None of the eggs cracked so that means that the zipline is safe. All though the zipline didn't reach the speed of 15 mph, the zipline was still very fun. The definition of entertainment for this experiment needs to be changed considering that Emily Brozowski didn't really have any insight on how fast 15 mph really was. This zipline would be dubbed fun from the riders of it, but not necessarily by the definition.

I would like to thank ...

My parents for donating their time and money in to this project. They took up a whole Saturday to put up this zipline, and spent \$100 give or take on the zipline. The Outdoor Fun Store for giving me a free copy of the installment tip sheet, which proved to be very helpful. The zipline was bought at the Outdoor Fun Store.