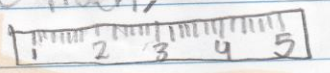
★ Due Friday ★ The 30th ★

Hot Wheels Lab

Purpose: To collect evidence that gravity is an accelerating force.

Hypothesis: If the car is positively accelerating down the track the distance the car travels per second will increase.

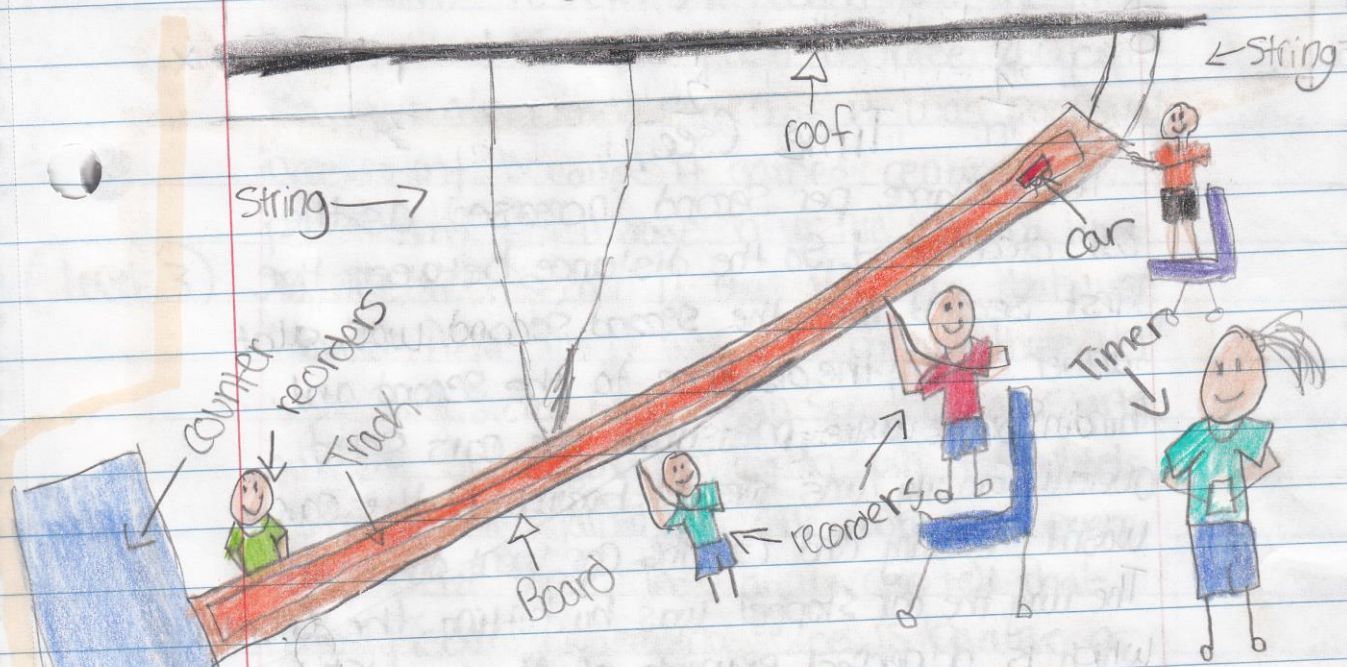
Materials:
- Hot wheels car 
- Hot wheels track
- Line (to hold the track)
- Meter Stick 

Procedure

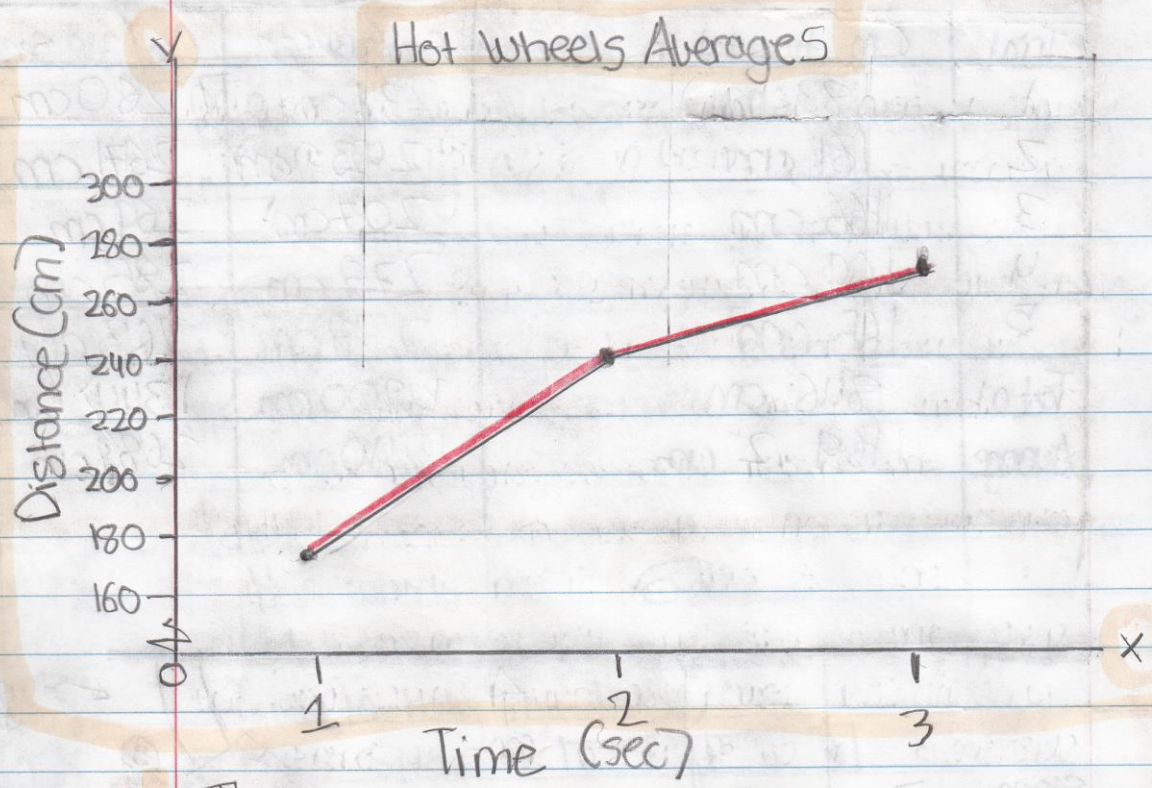
1. Set up the hotwheels track using string
2. Get people to help you record the time using a stopwatch and a meterstick
3. Set the timer to 0 and then let the car go
4. At one, two, and three seconds have someone put their finger on the track where the car was at those times.
5. Using a meterstick, measure the distance between each marked position
6. Record in your notebook the measurments, do this 5 times, and then average the times out.

Hot Wheels Data Table

Trial	Cm traveled in 1st second	Cm/2nd sec.	Cm/3rd sec
1	183 cm	234 cm	260 cm
2	161 cm	243 cm	267 cm
3	166 cm	207 cm	269 cm
4	169 cm	278 cm	285 cm
5	165 cm	238 cm	263 cm
Total	846 cm	1,200 cm	1,344 cm
Avenge	169.2 cm	1,240 cm	2688 cm



At the top you will let the car go. So you can see that whenever the watch hits one someone will say where the car was at that time. The desk stops the momentum of the car when it hits - which is an example of Newtons 1st Law of Motion.



The distance per second increased as the car accelerated. So the distance between the first second and the second second was alot farther than the distance to the second and third. So we were measuring the cars speed overall. Gravity was present because (1) the car wasn't floating and (2) the car went downhill. The way the car stopped was by hitting the counter which is a perfect example of Newtons 1st Law of motion.

Analysis Paragraph:

(Level 1) The purpose of this lab was to collect evidence that gravity is an accelerating force. Acceleration is the rate of change of velocity. For something to be accelerating it can be going faster or getting slower.

(Level 2) How we know that the car is positively accelerating is the fact that after each second the centimeters traveled increased. For example, on trial one at second 1 the car went 183 cm. At second two the car had traveled 234 cm, and at three 260 cm. So, you can clearly see that it was positively accelerating because it gained centimeters per second. On average after the starting line to the first second it was 169.2 cm that were traveled. After two it was 240 cm, and three it was 268.8 cm. As you can see the car starts out its slow - just starting to spin it's wheels. After two it gained a little more, and even more after three. The way we can tell that gravity is an accelerating force is because as gravity pushed the car downhill, it accelerated due to the more force of gravity. Overall I think it is interesting how not on any one of the trials were there the same exact numbers. Now obviously there could have been lots of errors. The timer and the starter could of not

(Level 3)

(Level 4)

perfectly in sync. Or the Starter could of gave the car a little push on accident. Or the recorders could of miss saw where the car was at the given time. Or even the measurers could of miss measured. So there were a number of things that could of gone wrong. Cause & effect in this lab would of been the cause of letting the car go, had the effect of the car building up momentum & crashing into the desk. This is much like how a skateboard acts when skating the halfpipe. The skateboard builds momentum skating down the halfpipe in order to skate up the othe side of it. Much like we used our hands to get the car going, skaters use their feet to push them to get going.

Conclusion: In this lab we wanted to find out if gravity is an accelerating force. I accept my hypothesis because as the car was positively accelerating, the distance traveled per second increased. In this lab I learned how accurate you have to be when you record data, and also the more of a slope there is, the faster the object will build momentum. Now I wonder, what would happen if we rolled a marble down the track instead? Would it be faster or slower?