The Fast & The Curious

By:
3rd Grade
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Introduction

My project is about understanding speed and how to make things faster. The problem is that I don't know if the condition of the toy race track or changing the toy race car will make a difference in the speed of the car. So we're going to use a Hot Wheels car, Hot Wheels track, a dime and some axle lubricant, so that we can change the speed of the car and test if my hypothesis was correct or incorrect. My hypothesis is that the momentum of the track will make the car speed faster.

The Independent variable is the race condition. The dependent variable is the time. The constant variable is the track length. The testable question is, how can different conditions change the speed of the toy car?

Body of Research

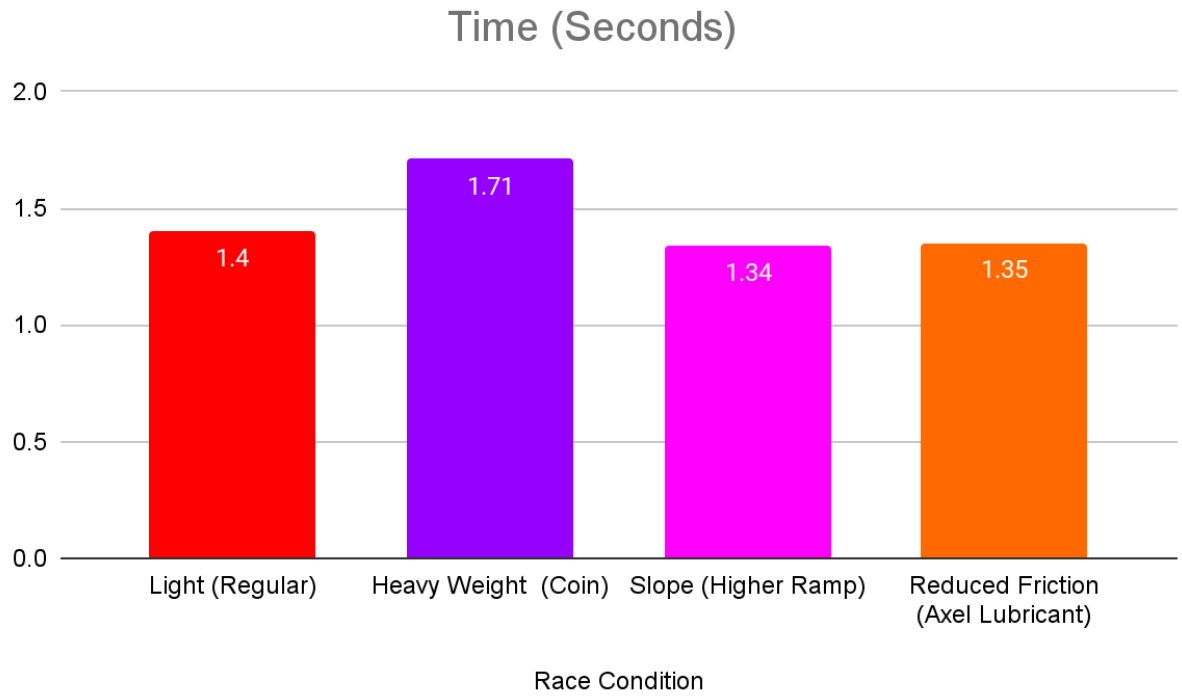
My first procedure is that you build the hot wheels track, second attach the Hot Wheels track to step ladder, third test lightweight card mode, fourth collect time from stopwatch. I repeat these same steps for all conditions of the race, add results to the table, create a chart with data and analyze to compare.

Hot Wheels cars use the science of physics, because physics is all about motion. Also there are several different forces of science in this project. My research shows that friction happens when the wheels touch the track and the axle. We are also influencing momentum by changing the race conditions. Momentum is the amount of motion for a moving object, measured by its mass and velocity. Gravity is the force that pulls objects towards the Earth. The higher track slope increases gravity force.

Discussion

Based on the chart, the fastest was the momentum on the car. The second fastest was the reduced friction. The third was the regular lightweight, and the slowest was the heavyweight.

Race Condition	Time (Seconds)	Weight (ounces)	Track Length (feet)	Ramp Height (inches)
Light (Regular)	1.4	1.28	6 ft	22"
Heavy Weight (Coin)	1.71	1.36	6 ft	22"
Slope (Higher Ramp)	1.34	1.28	6 ft	30"
Reduced Friction (Axel Lubricant)	1.35	1.28	6 ft	22"



Conclusion

In conclusion, my hypothesis was correct. The car speed was changed by the difference in the momentum and that made the car the fastest. This information is important for the real world because if we understand speed, we can get things to people who need them faster.

References

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