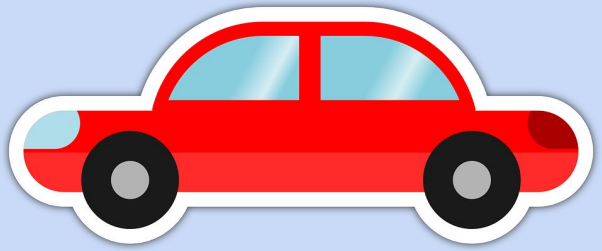
Going Further

Kindergarten
Mrs. O’Dea



Testable Question:

How does the weight of a car affect the distance it travels down a ramp?

Prediction:

I think car number one will go the furthest since it doesn’t weigh as much as the other cars.

Procedure:

1. Weigh twelve different toy cars on a kitchen scale, and record the weight in grams in logbook
2. Draw a line on a piece of wood (ramp).
3. Place a block of wood on three books so that the drawn line lines up with the end of the books so that part of the ramp is on the floor and the other part is on top of the books.
4. Place car one on top of the ramp.
5. Let go of the car without pushing it.
6. Using a tape measure, measure the distance from the bottom of the ramp to in front of where the car stopped and record in logbook.
7. Repeat steps 4-6 for the remaining eleven cars.
8. Repeat steps 4-7 for two additional trials.
9. Add each of the trial distances together and compare each car’s total distance to its weight.

Ramp Design

Background:

I chose this project because I like playing with cars and designing cars with legos.

In my research I found out that:

If tires were triangles or squares, they couldn't roll on the ground.
Axles are the things that connect the wheels so they can turn. Wheels work together in pairs.
Grooves on the tires keep the car from slipping on the ground.
Smooth and curved shapes are more aerodynamic.
Aerodynamic means that cars can go faster because air goes around the car when it moves.
The fastest car was the Thrust Super Sonic. It went 763 miles per hour.
More wheels can have more weight.
Engineers build new things and make things better using math and science.
Parts of the car: Engine, Axels, Tires, Wheels, and Fuel
Ramps are inclined planes.
Force is needed to make something move.
Inclined planes are shaped like triangles. The slope is the longest side.

This project is important because it will help engineers know how to design cars so they know if they should make them weigh more or less.

Constant Conditions:

Independent Variable: The ONE thing you change
The weight of the car

Dependent Variable: What you are measuring or observing
How far the car went down the ramp

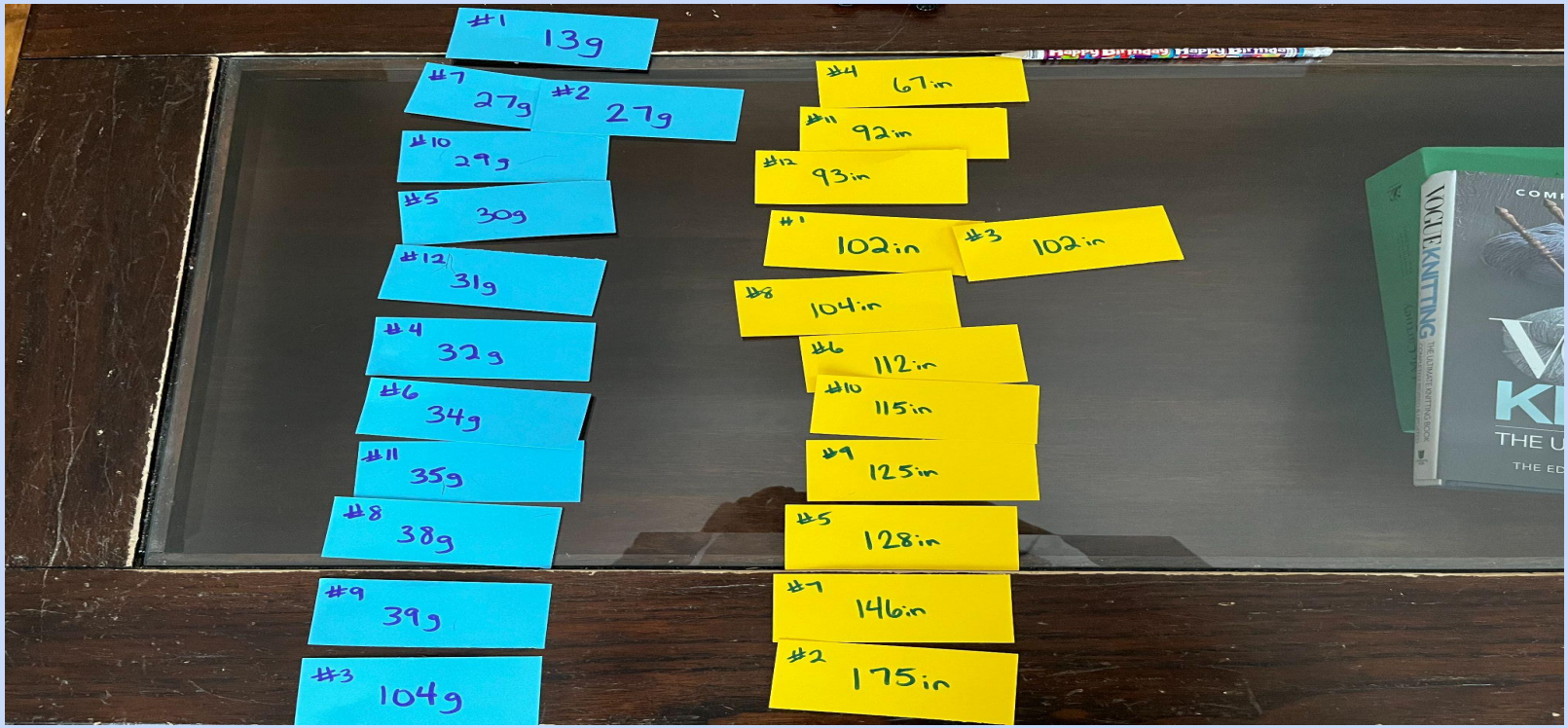
Constant Conditions: What you are keeping the same every time
Used the same books to make the ramp
Used the same piece of wood
Let go of the car at the same place on the ramp
Measured the distance from the same point

Cars Used in Trials

Data and Trials:

Car Number	Weight (g)	Trial 1 Distance (in)	Trial 2 Distance (in)	Trial 3 Distance (in)	Total Distance (in)
1	13	31	28	34	102
2	27	58	93	24	175
3	104	33	35	34	102
4	32	18	23	26	67
5	30	42	38	48	128
6	34	35	42	39	112
7	27	41	52	52	146
8	38	32	32	40	104
9	39	38	47	40	125
10	29	41	42	32	115
11	35	25	32	35	92
12	31	18	31	43	93

Ordering the weights and distances to compare

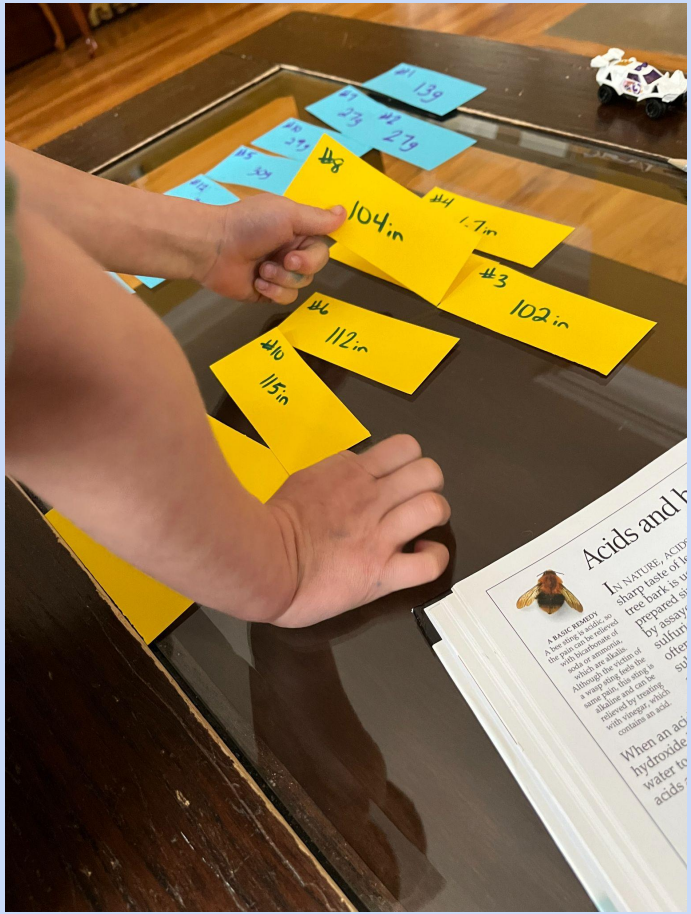


Conclusion and Reflection:

I found out that the weight didn't effect how far the car went.

I was surprised that the weight didn't effect how far the car went.

If I did this project again I would use the same car each time and just add pennies to the trunk so I could tell if it was the weight that made a difference. Some of my cars were older and different shapes so it was hard to tell if it was the weight that made it go further or some other different thing about the car.



Sources:

The Book of Cars and Trucks by Neil Clark

Zoom in on Simple Machines Inclined Planes by Andrea Rivera

Findout! Engineering by Emily Hunt