

How Scientific Is A Pinball Machine?



**By, Isaiah Geerlings
Mr. Commeret's Class
2013**

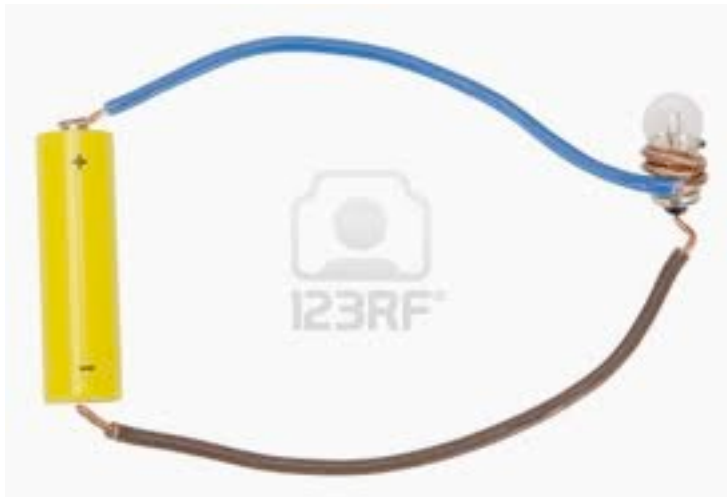
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Making A Bulb Light Up

What I learned

What did you learn about circuits: That we can make cool things with a circuit. To make a circuit, you need 2 wires, a battery, battery holder, and a light bulb holder. The battery is the source, the path is the wire, and the load is the light bulb. You would connect the wires to the ends of the battery holder, use one wire each for one side. Then hook the ends of those wires to the light bulb holder, and it should light up.



Where you'll find it on our Pinball Machine:

- You will only see the light bulb part because the battery is underneath the wood.

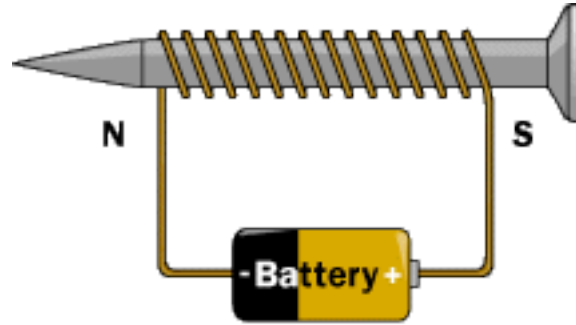
I Got Struck!

One day there was a guy named Roy Sullivan. He was struck by lightning 7 times and survived all times. I bet his Mother & Father were not happy. (Credits to The Big Book Of Trivia Fun)

Electromagnets



That to make an electromagnet, you have 2 feet of wire, then wrap it around a nail, then It will pick something up that is magnet. I learned that the amount coils wrapped, the more paper clips you can pick up. In order to make it stick, you can't just can't lift it up by you, you have to let it stick to the nails by itself. To make it stick, you may just have to use paper clips. May be it can work with anything that is attracted by an Electromagnet. Some objects attracted to magnets are such as paperclips, small metal bars, nails.



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Where you'll find this on our Pinball Machine:

- On each side of our pinball machine.

Is The World A Magnet?

One day there was a little boy who had a really weird dream. He was outside in the winter, and when he went in the air after he hit a ramp, he went into outer space because there was no gravity. I bet his Mother & Father were looking of him

Newton's Laws Of Motion

Law #1: Law of Inertia

- An object in motion will stay in motion. And an object at rest will stay at rest. Until the object ricochets off of something.
 - We did a demonstration where someone was in a car and he hit the ruler and was in a fake car accident. This is an example of the first law because the body continued in motion.
 - We hit a tennis ball on top of a roll of cardboard, and we tried to make the ball into the bucket. It may be worked. The tennis ball stayed at rest
 - When the troll hit the ruler, the motion was the troll moving forward. And the car wanted to stay at rest once it hit the ruler.

Law #2: $F = m \times a$

- Something that is heavier than an other object, will weigh more, and go more slower. For example, a medicine ball and a basketball. A medicine ball is heavier than the basketball. So the basketball will roll faster and longer than a medicine ball.
 - We pushed the medicine ball and the basketball, and most of the time the basketball went farther than the medicine ball.
 - We pushed each other on chairs, and we had to see who was more heavier than the other person.
 - We pushed Mr. Commeret on a skateboard, and he had more force = more acceleration

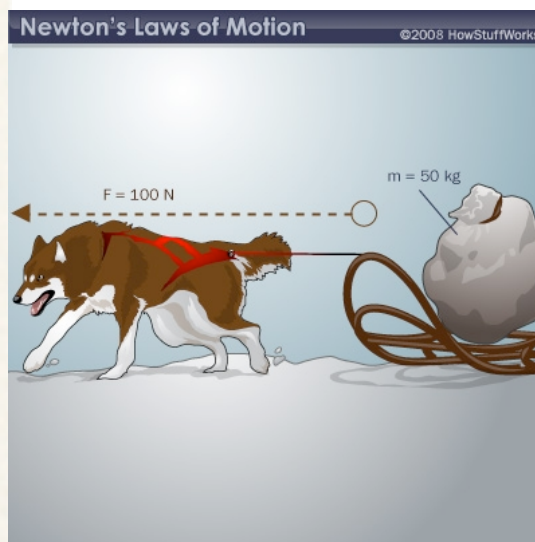
Newton's Laws Of Motion (Continued)

Law #3: Action - Reaction

- For every action there is an equal and opposite reaction
 - In Mr. Bouman's class, he tied a balloon to a straw. (He use tape to tied it around the straw) The action is the air coming out of the balloon, and the reaction is when the balloon is moving forward.
 - A funny part, was when the balloon was out of air, the tape was all over the balloon when the balloon lost all of the air
 - If I threw a tennis ball against a wall, the action is me throwing the ball and the reaction is the ball coming back to me after it hits the ball

Where you'll find it on our Pinball Machine:

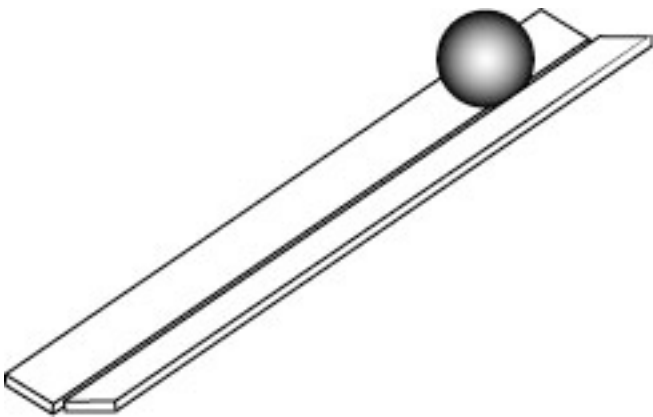
- For Law #3, the Action is the ball going forward, and the reaction is you pulling the launcher back.
- For Law #2, the more further you pull the Pinball Machine back, the more mass you will get.
- For Law #1, The ball wants to stay in motion until the unbalanced force, the magnet, wants to grab it.



Marbles On A Ramp

I learned that the more mass = more faster. And the results of the whole class was that the big marble took the shortest time. In my mind, I thought that the little ball would end up to have the shortest time. What the ball is being pulled down is by Gravity.

People Are Falling
Over spring break in 2013, I went to Safari Joe's. And I went on a water slide called "Rhino's Rage".
To me, It was the scariest water slide.
It was pitch black.



Where you'll find this on our Pinball Machine:

- You will not find a ramp on the Pinball Machine, the whole Pinball Machine is a ramp. (The Pinball Machine is on a slant)

Final Reflection

CONTENT

The Pinball Machine is more scientific than we thought because we added really cool stuff to make it look a little bit more scientific. The one thing that surprised us was about when we came up with these sweet ideas and it turned into a cool Pinball Machine. The thing that we learned was that when we listen to other people's ideas, the more cooler things we can add to the

COLLABORATION

The joy working in a group is when we worked so well together to make the cool Pinball Machine. Some of the struggles in our group is we couldn't think of stuff that would be right for the Pinball Machine, like one time we couldn't decide on should

GOALS

What I'll do for future group work is I'll try to go with other people's ideas. With a positive attitude :)

About The Author

The one who wrote How Scientific Is A Pinball Machine is Isaiah Geerlings. He is 9 years old, he likes to play the Guitar & Sing, He lives in Zeeland Michigan, He lives with his Parents, & his Sister. He likes the Detroit Tigers, his favorite sport is Baseball, and he's been at Zeeland Christian School for about 5 years.



Glossary

Attract- To attract means to pull toward one another. Iron and steel objects are attracted to magnets.

Battery- A battery is an electric cell that provides electricity or a power source for variety of electrical device. The battery is a source in an electrical circuit.

Closed Circuit- A closed circuit has a complete path, which allows electricity to flow continuously.

Conductor- A conductor is a material that allows electricity to flow through it. Metals are examples of good conductors.

Current Electricity- Current electricity is the flow of electric charge through a wire or another conducting material.

Electricity- Electricity is a form of energy that is found in nature (lightning, static) and can also be produced through rubbing, chemical reactions, and generators. Electricity is produced through the movement of electrical charges.

Electromagnet- An electromagnet is produced when electricity flows through a coil of wire wrapped around an iron bar. It acts like a magnet.

Friction- Friction is the rubbing of surfaces. Friction can produce heat energy

Light Bulb- A light bulb is a lamp or light source whose light is produced by the glow of a heat wire. The light bulb requires an electrical circuit to heat the wire.

Load- A load is a part of a circuit that uses electricity by giving off light, sound, heat, or increasing magnetic interaction. Light bulbs, motors, and electromagnets are examples of loads.

Magnet- A magnet is a material that has the ability to attract iron, steel, or an iron.

Magnetic- A magnetic is a substance that is attracted to a magnet and can act like a magnet.

Magnetic Field- A magnetic field is the area of attraction and repulsion that surrounds a magnet.

Magnetic Pole- A magnetic pole is a place on a magnet where the magnetic effect is the strongest. The two ends of a bar magnet are its poles.

Magnetically Attract- If two objects magnetically each other, they are pulled toward each other. Iron and steel objects are magnetically attracted to magnets. When two unlike poles of magnets are placed near, they are magnetically attracted.

Magnetically Repel- If two objects magnetically repel each other, they are pushed away from each other. When two like poles of magnets are placed near, they are magnetically repelled.

Open Circuit- An open circuit has a break in the conducting material of the path. Electricity cannot flow continuously in a open circuit.

Path-A path is the part of a circuit along which electricity travels. the path is made of conducting material.

Repel- To repel means to push away from one another.

Simple Circuit-

Source-A source is the part of a circuit that pushes electric current from the conducting material along the path. Batteries are examples of a source

Switch-A switch is a device made

Wire- The wire in an electric circuit provides a path for the flow of electrons from the source (battery) to the load (light bulb).