

# How Scientific is a Pinball Machine



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## Making a Bulb Light Up

### What I Learned

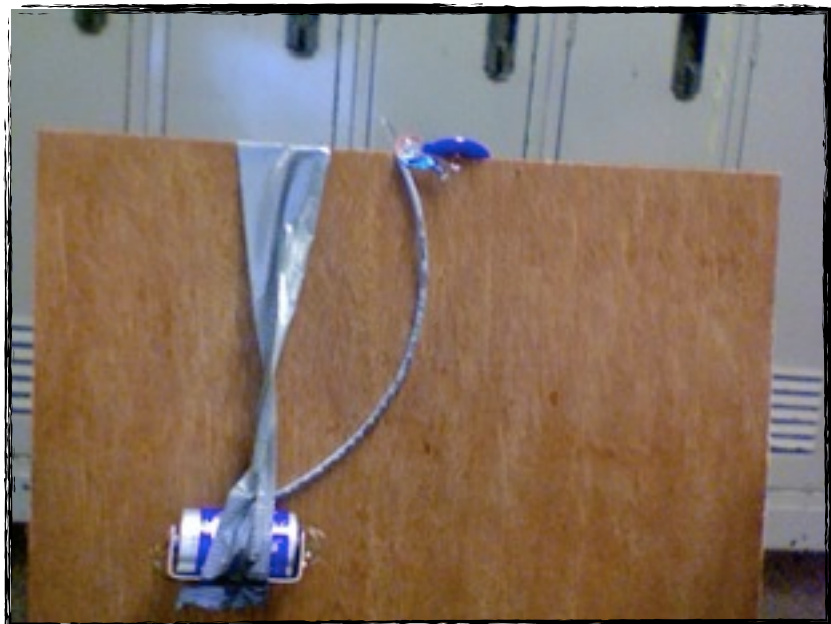
you need 2 wires a batteries and a light bulb

I can use it on my pinball when it goes threw the flickers the lights will go on.

I learned about a circuit was you need a source of power the lead and a path to connect the path between the source and lead.

Where you will see it.

we are going to put the light bulb on the pinball machine in the middle of the machine and when we play the light will go on and the light.



But it didn't work

## Electromagnets

### What I Learned

Electromagnets that they are a magnet that you can use it on our pinball machines.

Electromagnets that when you have a wire and a nail you raped the wire around the nail and you would have magnet.

Where you'll find it on a pinball machine:

- we are going to put the magnets on the side of the pinball machine



Marbles on a ramp  
quad going down the hill,

I was going to our lodge and we got there and I was riding my quad and I stopped on a hill half way up and I had it in neutral and it started to roll down and the hill and I thought that it would swerve and hit a tree and go down really fast and I was scared and it didn't stop until there was no hill left and I went back and I would never put it in neutral again.

The more mass= the more faster it is.

And all of the results of our whole class was the big marble was the fastest out of all of the marbles.

This can apply to a pinball machine by, you can't have a ruler in a pinball machine, so we were thinking that you can have a ramp like skateboarders go on, than it would go on a little curve and it can go on my pinball machine on the side of the pinball machine.

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Marbles on a ramp

where I can find it on my pinball  
machine.  
the pinball machine is on an angle



## Newton's Laws Of Motion

### Law #1 - Law of Inertia

- An object at rest will remain at rest unless acted on by an unbalanced force. An object in motion will remain in motion unless acted on by an unbalanced force.
  - We put a troll in a car we pushed it into a ruler, that made a car accident.

### Law #2 - $F=ma$

- Acceleration is produced when a force acts on a mass
  - The more heavier an object is, the more weight it's going to carry. Something that is lighter, will roll faster
  - I learned that law number 2 that the more heavier it the less farther it goes.

### Law #3 - Action-Reaction

- For every action there is an an equal and opposite reaction.
  - we tied a balloon to a straw, the action is the air coming out, and the reaction is the balloon going forward.
  - on a rifle you can get a action reaction. once you pull the trigger and it would come out of the gun it will give a kick.

This can apply to the pinball machine by once you pull the launcher you get the reaction then it will shoot up.

on my pinball machine with flippers the action is the flippers hitting the ball the reaction is the flippers hitting the ball.





The longer is a action reaction.



The bumpers make the game fun.



The longer makes the ball move.

Final reflection.

because we added a lot of details like making the flippers with wood because it would hit harder and it worked .

yes,  
That our group had some good ideas and we made it from all of our ideas and our pinball machine is cool.

I learned that on my pinball machine that it was tuff to do it but once we got throw it it got good.

In the groups  
we all hammered and we all tried the pinball machine and it worked and we all had fun.

what was the struggles in your groups  
that all of us wanted to hammer in our groups and that was our most struggles in our group

Mention SPECIFIC ways you can grow before Market day,

genera in central for future group work

to listen other people ideas.



## About the Author

I am Luke DeWitt I am 9 and I love to play sports. I am the youngest of 4 boys. I love to be outdoors, love to hunt, play with my brothers, and be with my family.



## 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 other 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 of conducting material that can open and close an electric circuit.

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