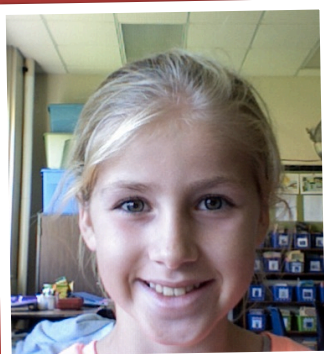


# PINBALL MACHINE

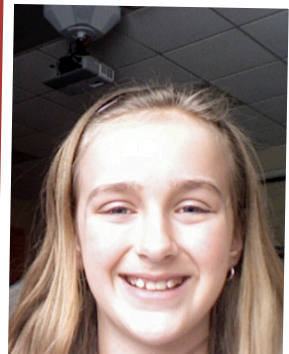


HOW SCIENTIFIC IS A PINBALL MACHINE?

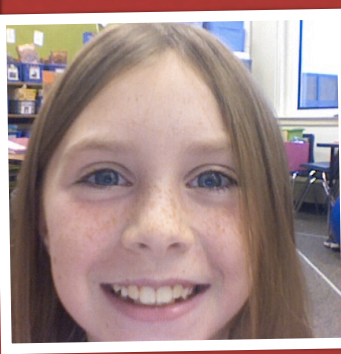
WRITTEN AND CREATED BY:



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ASHLEY HUNDERMAN



KYLIE NYLAND



ANNA SLENK

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# Marbles on a Ramp

Where's the science?

**Gravity** pulls the ball down to the bottom of the pinball machine.

**Speed** makes the ball go quickly.

**Force** pushes the ball somewhere else.

**Friction** will slow down the ball.

The **weight** of the ball changes the speed.

**Acceleration** is a type of speed.

Did  
You

Know?!?

Objects with  
mass are  
attracted to  
each other,  
this is known  
as gravity.



Life Connection Story...

I was sledding with my friend and I said "Hey Ruby watch this!" I yelled I was standing on a sled. I went down my neighbors hill. I wipeout and me and my friend laugh.



# Making a bulb light up

## By Ashley Hunderman

When there is an **open circuit** electricity can't go through.

When there is a **closed circuit** electricity can go through.

The **load** is something like a motor or light

**Conductors** are pieces of metal that can be attracted to a magnet and they allow electricity to flow through them.

A **switch** is a button or a switch that completes the circuit by pushing a wire closer to another wire and completes the circuit.

**Electric currents** go through wires and make electricity.

**Insulators** are foam or any thing that is not metal, these things that doesn't let electricity go through.

Did  
you  
know?

lighting strikes the  
ground about 8 million  
times a day. Lighting also  
strikes the ground  
20,000,000 times a  
year.

### Life Connection

One day my mom was putting my little sister's hair in a ponytail and she was sitting on the counter in the bathroom by the light switch and she started playing with it, By turning the light on and off and my mom said, "Stop I'm trying to put your hair in a ponytail." For that she started screaming at my mom. Now whenever she's by a light switch she says, "Di bu." Which means light switch. Every time she says that I think, "Here we go again." Then she makes me pick her up so that she can play with it.



# Magnetism

By Jenna Vandenbrink

**Magnetic Attraction** is a magnet attracts certain objects. The objects are either other magnets or particular types of metal.

**Magnetic fields** are produced by electric currents, which can be macroscopic currents in wires.

There is two **magnetic poles** on a magnet the north and south pole.

**Electromagnets** are used to convert electrical control signals into mechanical movements.

The science in all of these things is that they all work together to make Magnetism happen.



Two poles our on the magnet if two of the same magnets our on top of each other then they will repel which makes them look like they are floating.

Life Connection  
Once I was playing with magnets at school we were learning about them and so I said " hey maybe they are strong magnets" so I put them on my ear and they stuck together and Mr. Commeret said "You look like a pirate!"

# Newton's 1st law

## *By Jenna Vandenbrink*

### Where's the Science

All objects have **inertia**, which means it wants to keep doing the same thing either resting or moving.

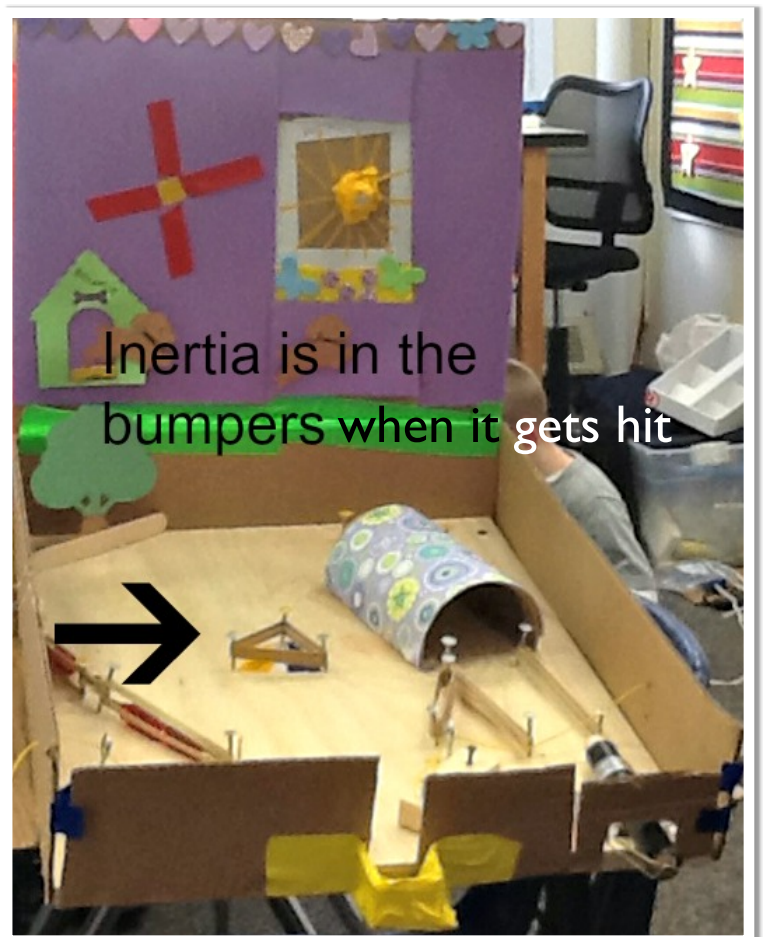
All of those things makes Newton's 1st law.

### Did you Know ?

Inertia is the cause of crashes it means that since there is an object (the car) it will not want to stop fast because they are fast and heavy.

### Life Connection

There was once a time when me and my dad went shopping at a mall. We came up to a speed bump so we said "lets go over it fast" once we did the car did not want to stop that was a sign of inertia.




# Newton's 2nd law of motion

## By Kylie Nyland

Where's the Science  
This is the science in force,  
mass, and acceleration.  
 $\text{Force} = \text{Mass} \times \text{Acceleration}$

When I was younger I loved  
to kick a soccer ball. When I  
get older I will kick harder that  
is a connection to force



Did you know?  
Newton's birthday was on  
January 4, 1643





# Newton's 3rd law

## By Ashley Hunderman

### Where's the Science

**Action & Reaction** are in the bumpers because they repel and the launcher also has **action & reaction** when you pull the lever it goes back and pushes the ball out. I also see **action & reaction** in the flippers when they hit the ball and sends it back into play. For every action there is an equal and opposite reaction.



If you have ever played tennis, when you hit the ball it always bounces forward and if it hits something the ball will come back in the opposite direction. There is science in baseball, tennis, soccer and a number of other sports.

My brother and I were playing football (not the real version) in the basement he threw it in the wrong direction and almost hit me but I ducked in time but hit the TV instead of me, it was close to breaking it but it didn't break it but it hit the TV and went flying back and landed on the couch, then I started yelling at him, "Clayton you could have broken the TV, you are glad it didn't break mom would be VERY mad!" My brother didn't start crying but he got mad at me for yelling at him, so he ran at me and screamed, "GRRR," and then he tackled me. thankfully I wasn't hurt. I'M STILL HERE!!! :-)



## Glossary

Acceleration(increase in the rate or speed of something.)

Action & Reaction(According to Newton's third law, for every **action** force there is an equal (in size) and opposite (in direction) **reaction** force.)

Closed circuit (a circuit that does not have a break in the circuit.)

Conductor (something that can complete a circuit and and make the load do it's thing.)

Electric Currents go through wires and make electricity.

Electromagnets are used to convert electrical control signals into mechanical movements.

Force (A push or a pull)

Friction(Friction is the rubbing. Friction can produce heat energy.)

Gravity(the force that attracts a body toward the center of the earth)

Inertia All objects have inertia, which means it wants to keep doing the same thing either resting or moving.

Insulator ( things that don't let electricity go through them.

Load ( a light or a motor.)

All Magnetic attraction has a Magnet to have attraction for magnets.

Magnetic fields are produced by electric currents, which can be macroscopic currents in wires.

The Magnetic pole is not located exactly at the real North pole.

Mass(large body of matter with no definite shape.)

Motion(the action or process of moving or being moved)

Open circuit (when there is a space in the circuit.)

Speed(move quickly.)

Switch (something that can turn the light or motor on.)

Weight(a heavy object or a light object.)

# Thank you for listening!