

PINBALL MACHINE



HOW SCIENTIFIC IS A PINBALL MACHINE?
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Marbles on a Ramp

Where's the science?

A OBJECT IN MOTION WANTS TO STAY IN MOTION unless it is acted by an unbalanced force. An object at rest wants to stay at rest.

Did You Know!?

Did you know if you roll a ball it would never stop unless it was acted by something like gravity!
In space there is less chance of the ball stopping because there is no gravity!



Life Connection Story...

last year I was playing soccer on my cousins team with all boys. and then I kicked the ball and it went right into the goal. it uses A OBJECT IN MOTION WANTS TO STAY IN MOTION unless it is acted by an unbalanced force the unbalanced

Vocabulary

Speed

Force

Acceleration

Gravity

Weight

Friction

Making a Bulb light up

Where's the science?

We learned that when you attach one wire to the light bulb and the other one to something metal like scissors it will make the bulb light up. And that a closed circuit will make the bulb light up. And an open circuit will make the circuit not complete.

We also learned that when you attach the switch it will turn the bulb ON, with a closed circuit because electricity can travel through, and an open circuit the bulb will be OFF. And that the Conductor allows the **Electric Current** to go through. In an Insulator the Electric Current cannot flow freely. The Load is the Motor, Sound effects, lights, etc. The source of Electricity is a battery. The Science in the Light bulb experiment is the Electricity.

Did You Know?!?

Electricity travels at the speed of light—more than 186,000 miles per second!



Vocabulary

Electric Current: is when Electricity can travel to something metal from the jumper cables.

Open circuit: is a not complete circuit.

Closed circuit: is a complete circuit.

Load: is Light, Sound effects, Motor etc.

Switch: is a device that turns Electricity ON and OFF.

Conductor: is something the Electricity can travel through.

Insulator: is something that Electricity can not travel through.

Life Connection Story...

One time me and my cousins were going to this store and my Uncle found this thing that would shock you and he told me to push the button and when I pushed it it shocked OUCH I said!

Magnetism

Where's the science?

We learned that magnets have a **North pole** and a **South pole**.

GO TO: [to see a picture so you can get an idea of what we learned!!!](https://docs.google.com/a/zcsms.org/drawings/d/1TC8Q4YobYEBGakx7WsZAFxMZH6KikJzgi9XfhUjSEyY/edit)

<https://docs.google.com/a/zcsms.org/drawings/d/1TC8Q4YobYEBGakx7WsZAFxMZH6KikJzgi9XfhUjSEyY/edit>

If you wrap a wire around a nail, and the wire is connected to a battery you may be able to pick up 1 or 2 paper clips. That's called an **ELECTROMAGNET**.



Did You Know!?

US nickels are made of 75% copper! And its magnetic!

Life Connection Story...

Magnets are cool right?? well I'm going to tell you a little story about me and my best friends, the magnets.:

One morning as I walked to my classroom and passed the room to my locker with my new locker accessories from amazon.com and 22 magnets I opened up my locker and started sticking magnets to my locker door.

Vocabulary

Magnetic attraction: Attraction for iron, associated with electric currents.

Magnetic field: The space all around a magnet where the force of the magnet can act.

Magnetic pole: The end of a magnet.

~Electromagnet: An arrangement of wire wrapped around a core producing a temporary magnet.

Newton's 1st Law

Where's the science?

OBJECT IN MOTION WANTS TO STAY IN MOTION unless it is acted by an unbalanced force. An object at rest wants to stay at rest.

Did You Know!?!?

Did you know if you roll a ball it would never stop unless it was acted by something like gravity! In space there is less chance of the ball stopping because there is no gravity!

Life Connection Story...

last year I was playing soccer on my cousins team with all boys. and then I kicked the ball and it went right into the goal. it uses A OBJECT IN MOTION WANTS TO STAY IN MOTION unless it is acted by an unbalanced force the unbalanced force was the goal that I kicked the ball into.



Vocabulary

Inertia
Force
Mass
Acceleration
Action & Reaction
Motion

Newton's 2nd Law

Where's the science?

Newton's 2nd law is $f=m \cdot a$ that means **Force=Mass** and **Acceleration**. When you push something you push it with **Force**. When you are pushing something with a lot of weight you use **Acceleration**. And when you push something with **Force** the harder you push the farther it goes.

Did You Know?!?

Newton's second law of motion pertains to the behavior of objects for which all existing forces are not balanced.

Life Connection Story...

One time me and my brother were wrestling and he pushed me into the wall and that took him a lot of **Force** to push me.



Vocabulary

Inertia: changing the way it goes, and the speed.

Force: it means when you push something hard with a lot of Force.

Mass: the more the weight the harder it is to push something.

Acceleration: Means increases the speed of something like a ball.

Action & Reaction: it means when something hits the other thing.

Motion: is when you push something it will go into Motion.

Newton's 3rd Law

Where's the science?

ACTION + REACTION

Every object in motion wants to stay in motion.
GET A PICTURE IN YOUR MIND OR WHAT I MEAN!!!
GOTO:

<https://docs.google.com/a/zcsms.org/drawings/d/159g0DBC2v-nKSyWrO7WLIbCz2ci5mrRYbo5qLIDv-tE/edit>



Did You Know???

Newton came to earth: January 4, 1643,-Newton died: March 31, 1727.

Life Connection Story...

One day my best friend and me where playing outside with a tennisball and I threw the ball and it hit the big cement wall and shot right back, **THATS WHAT I CALL ACTION AND REACTION!!!**

Vocabulary

Inertia: the bureaucratic inertia of government".
Force: A push or pull.

Mass: The amount of matter something contains.

Acceleration: increase in the rate or speed of something.

Action & Reaction: For every action there is an EQUAL + OPPOSITE.

Motion: A change of position.

***ONLY use the words that relate to YOUR law**