

STORMTROOPERS™



HOW SCIENTIFIC IS A PINBALL MACHINE?

WRITTEN AND CREATED BY:



Table of Contents

Chapter	Author	Page
Marbles on a ramp	Alyson Vikstrom	3
Making a Bulb Light Up	Oliver VanDenBerg	4
Magnetism	James Oosterhouse	5
Newton's 1st Law	James Oosterhouse	6
Newton's 2nd Law	Oliver VanDenBerg	7
Newton's 3rd Law	Alyson Vikstrom	8
Glossary	ALL	9

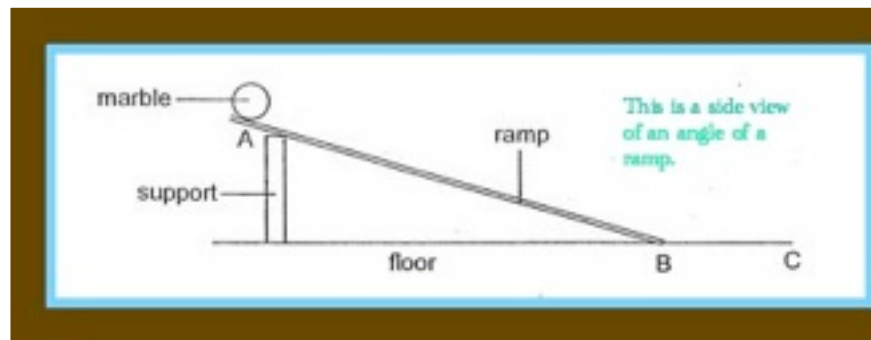
Marbles on a ramp

Where's the science?

To start with I want to talk about the angle of the ramp. And the difference of the speed it will go. It seems that the higher the ramp is the faster it goes which causes more acceleration. What I think is that because the higher the ramp is the gravity needs more to force the marble. Also the bigger marble has more weight which causes more friction and slows the marble down. That's why the smaller marble has more speed than the bigger marble. movement.

Did You Know???

Did you know that the angle (high or low) has a difference of the speed ?



Picture with label and arrows
Use PicMonkey

Life Connection Story...

Write a short story about their own life and where/when they have encountered this scientific phenomenon.

Vocabulary

Speed- Speed is how fast things are moving.

Force- Force is strength or energy of a physical action or movement.

Acceleration- Acceleration means to increase in the rate or the speed of something.

Gravity- Gravity is a force that attracts

Making a light light

Where's the science?

An **ELECTRIC CURRENT** is electricity running through wire. A switch is something that can **OPEN AND CLOSE CIRCUITS**. A **CONDUCTOR** is "copper" wire

Did You Know?!?

Did you know that you can get poked by plugging in or making a light bulb light up.



Life Connection Story...

My Great Grandma got struck by lightning .

Vocabulary

Is electricity that can only run in circles.

Open circuit- Is when the electricity is running.

Closed circuit-Is when the electricity is not running.

Load- is the wire that has electricity in it.

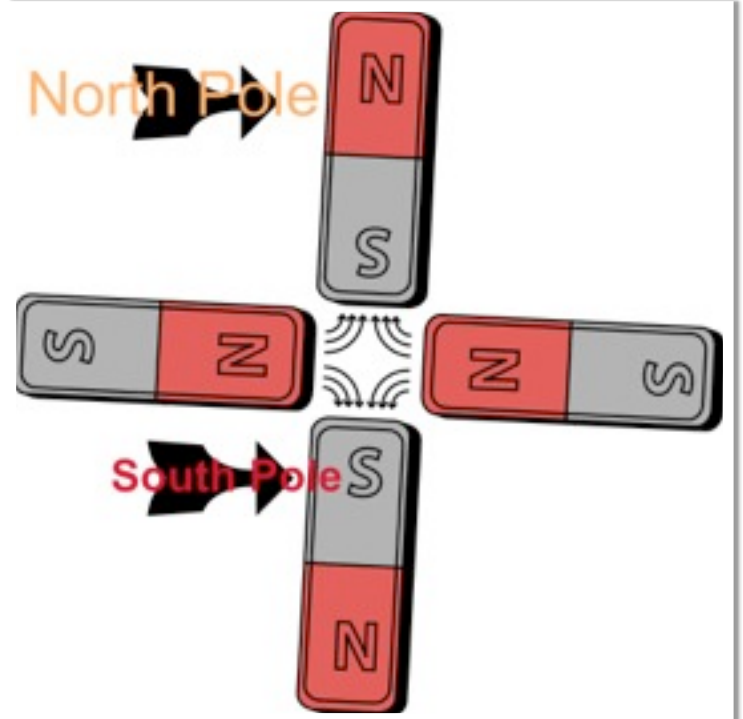
Magnetism

Where's the science?

625 BC to about 545 BC. **Magnetism** got its name from a Greek word, which means “The Stones Of Magnesia”. Magnesia was an area in Ancient Greece that had a lot of “Lode stones” and therefore the stones were called “**magnet**” because they were from those area. Lode stones were the first ever **magnets**.

Did You Know???

Magnetism and electricity are scientific cousins. Together they make an **electromagnet**



Vocabulary

Speed

Magnetic attraction when a magnet attracts something

Magnetic field many magnets

Magnetic pole top and bottom of the magnet

Electromagnet Electricity+magnets

Force

Life Connection Story...

Once I was watching “Curious George” and they made a magnet by scratching a magnet with a paper clip!

Newton's 1st law

Inertia is someone or something that does not want to move. If **Inertia** did not exist, objects could keep on going for eternity. **Inertia** can only happen when **Force** is applied. (I.E. when an object is at rest gravity (Force) is applied.)

Did You Know???

Newton is just Sir Issac Newton's last name.



Life Connection Story...

I once tried to move a huge plastic table by myself but I couldn't move it because it had **Inertia**.

Vocabulary

Inertia: someone or something that does not want to move or wants to move

Force: someone or something applying Force.

(Force is invisible mass that causes Action-Reaction.)

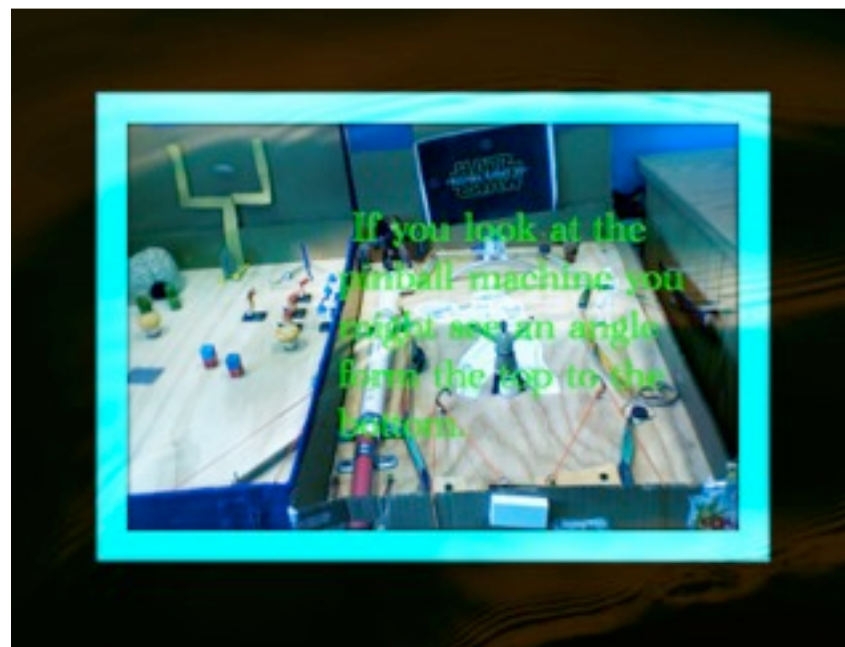
Newton's 2nd law

Where's the science?

Mass+Acceleration=Force because mass is something that moves and acceleration is something that moves.

Did You Know???

That Sir. Isaac Newton invented the Newton's laws of physics



Life Connection Story...

I was playing baseball and I hit the ball and it went far because there was action reaction.

Vocabulary

Inertia

Force-**FORCE** is something that pushes against mass.

Mass

Acceleration-**ACCELERATION** is something means that it is going faster.

Action & Reaction-**ACTION - REACTION** is where you hit

Newton's 3rd law

Where's the science?

To start with I am going to tell you about Newton's 3rd law. Some things have inertia and other things have so much force which causes acceleration. Also the more mass the slower the motion is which causes less action & reaction.

Did You Know!!?



Life Connection Story...

Vocabulary

Inertia- Inertia means that it is something or someone that is lazy (not moving)

Force- Force is something that affects something or someone.

Mass- If you compare an object with another object that have a different mass, which means it has more weight.

Glossary

Friction- Friction is when two things rub together. Speed- Speed is how fast things are moving.

Force- Force is strength or energy of a physical action or movement.

Acceleration- Acceleration means to increase in the rate or the speed of something.

Gravity- Gravity is a force that attracts something to the ground.

Weight- Weight is a heavy object or very light.

Electric Current- Is electricity that can only run in circles.

Open circuit- Is when the electricity is running.

Closed circuit- Is when the electricity is not running.

Load- is the wire that has electricity in it.

Switch- Is the thing that cuts the circuit in half.

Conductor- Is the path for the wire to follow.

Insulator- Something that block.

Magnetic attraction when a magnet attracts something

Magnetic field many magnets

Magnetic pole top and bottom of the magnet

Electromagnet Electricity+magnets