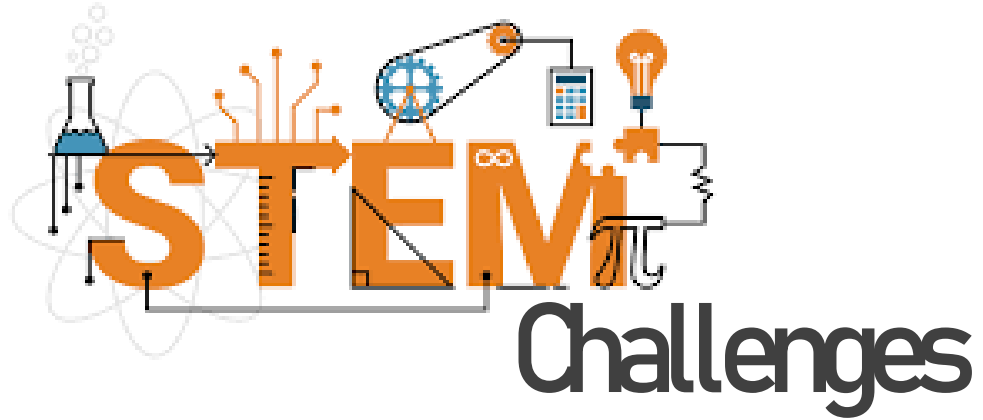


# THE JCB ACADEMY



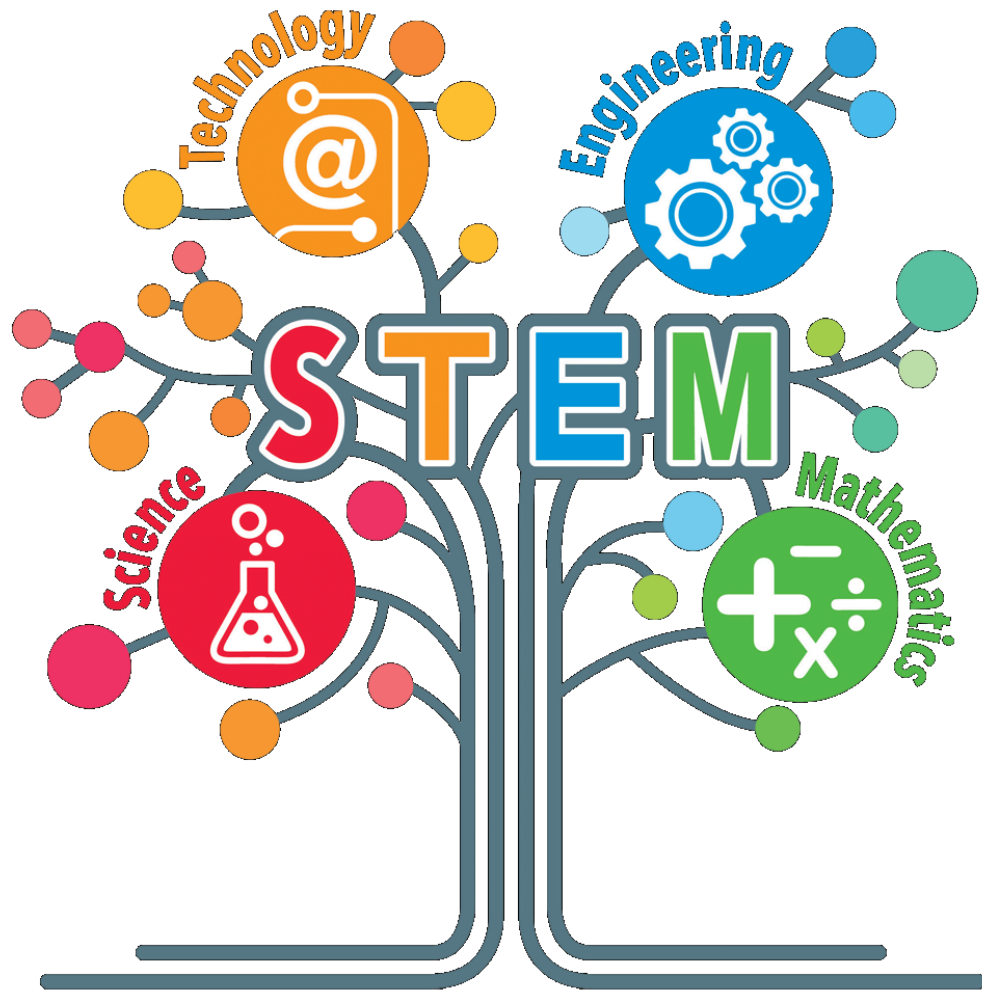
What's it like at the JCB Academy?

<https://jcb-academy.com/>



# STEM Challenge

What is STEM?



STEM stands for -

**Science**

**Technology**

**Engineering**

**Mathematics**

These subjects are linked directly to each other and this task will highlight your skills in each of these subject areas.

## Objectives

To understand what is meant by STEM. To demonstrate the effects of Static Electricity

# What is the cause of lightning?



## Objectives

To understand what is meant by STEM. To demonstrate the effects of Static Electricity

We'll find out soon...

---

But it links closely to what we're looking at today:

# STATIC ELECTRICITY!

Ready to have a go?

# Static Electricity



## What do I need...

1 balloon

1 duster cloth

1 polythene rod / hair comb

1 empty pop can

Lots of small bits of paper (hole punch circles are perfect)

## Objectives

To understand what is meant by STEM. To demonstrate the effect of Static Electricity

# Experiment 1



## Instructions:

1. Blow up a balloon.
2. Rub it on your jumper.
3. Hold it close to your hair.
4. What happens?

## Objectives

To understand what is meant by STEM. To demonstrate the effect of Static Electricity

# Experiment 2



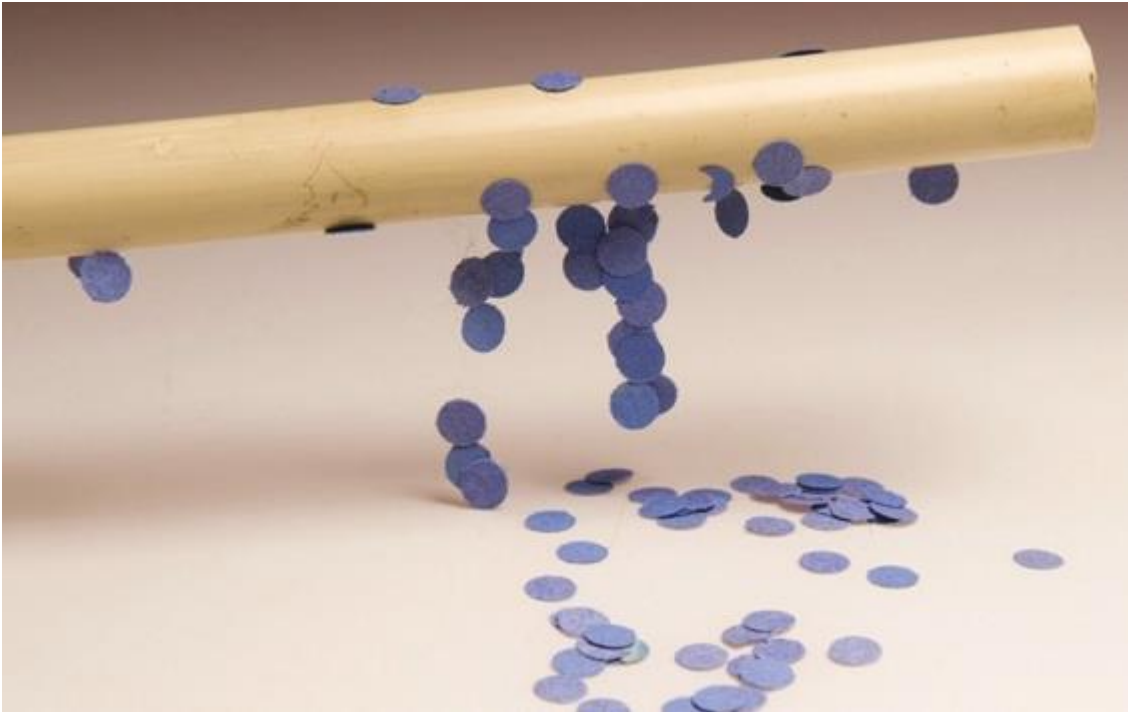
## Instructions:

1. Take your balloon from experiment 1.
2. Lay the can on it's side and hold the balloon close.
3. Repeat from the other side.
4. What happens?

## Objectives

To understand what is meant by STEM. To demonstrate the effect of Static Electricity

# Experiment 3



## Instructions:

1. Rub the polythene rod up and down for 30 seconds with the duster cloth.
2. Hover the rod just above the small pieces of paper.
3. What happens?



# Experiment 4



## Instructions:

1. Turn on the tap so there is a slow but steady stream of water.
2. Hold the rod from experiment 3 near the water stream.
3. What happens?

## Objectives

To understand what is meant by STEM. To demonstrate the effect of Static Electricity

# The Science bit!

You won't be surprised, that these are all caused by Static Electricity!

So what is Static Electricity?

And what does this have to do with lightning?



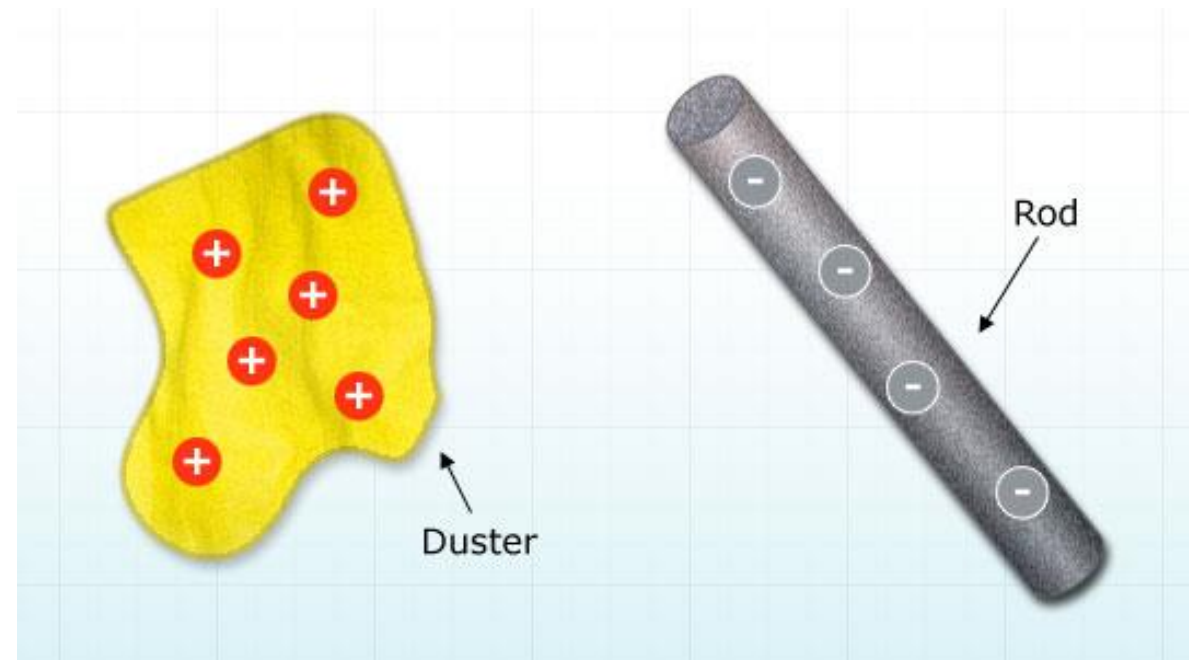
# Static Electricity

Static means not moving.

So Static Electricity is electricity that isn't moving.

It is created when insulators rub together and 'electrons' move from one insulator to the other.

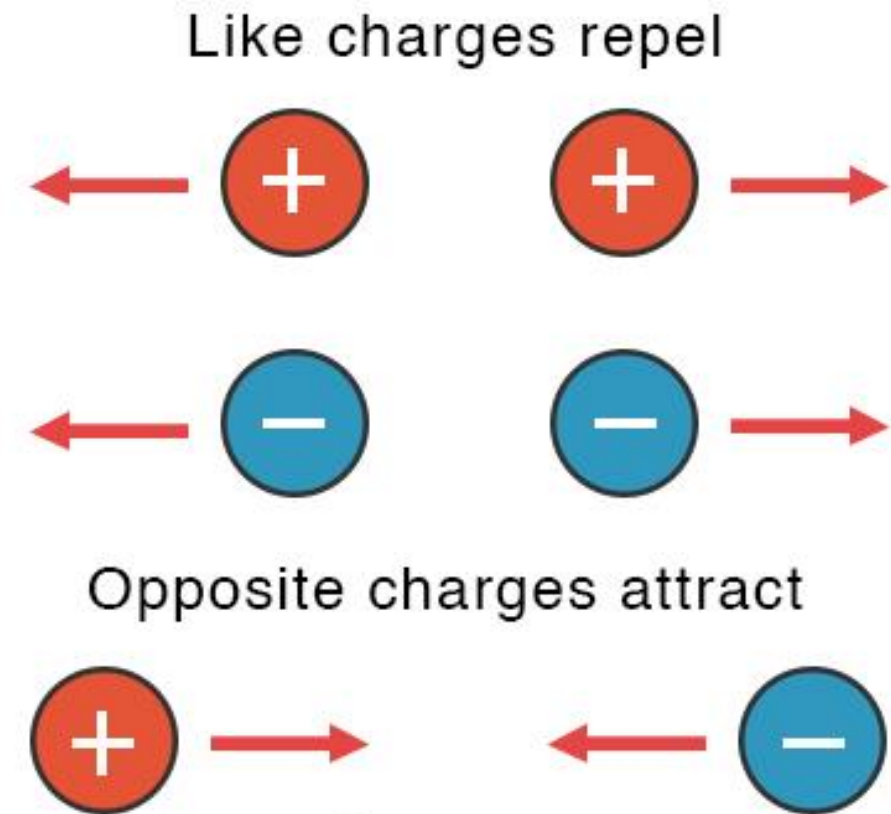
Electrons are negative, this means that the insulator that gains electrons becomes negative, and the other positive.



# How does this explain what I saw?

Like charges repel (push each other away) and opposite charges attract.

This is what makes your hair, the paper pieces and the drinks can move.

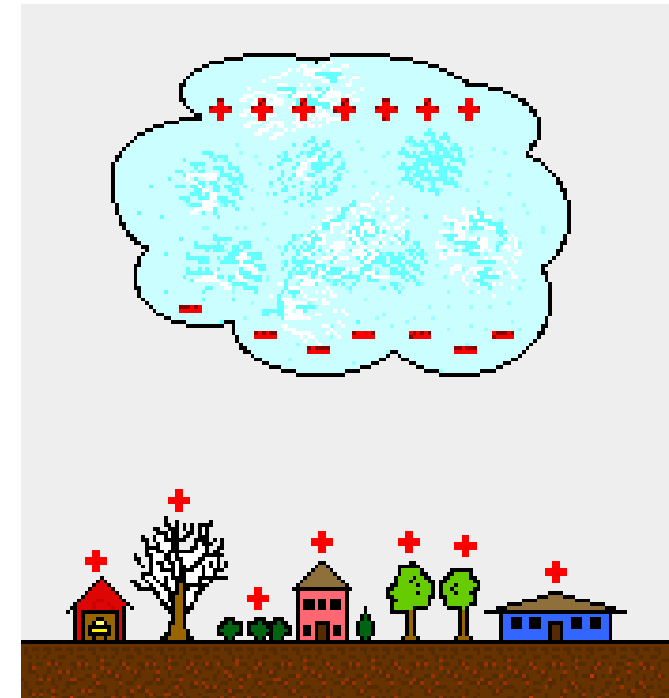


# And what about the lightning?

The clouds become really charged, much the same way as the balloon or the rod.

Eventually the charge is so great, that the electricity jumps through the air to the Earth.

This is what we see as a lightning bolt.



# STEM Challenge

## What's next?

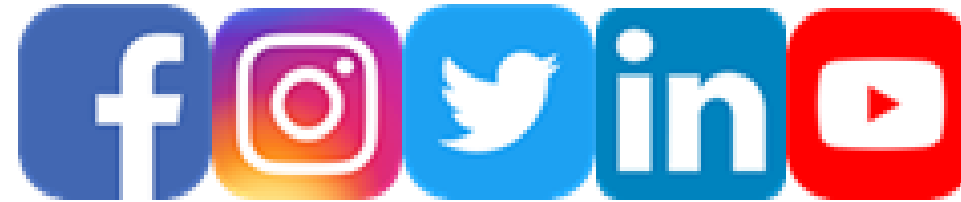
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