MILLBROOK PRIMARY SCHOOL

BELIEVE | ACHIEVE | SUCCEED

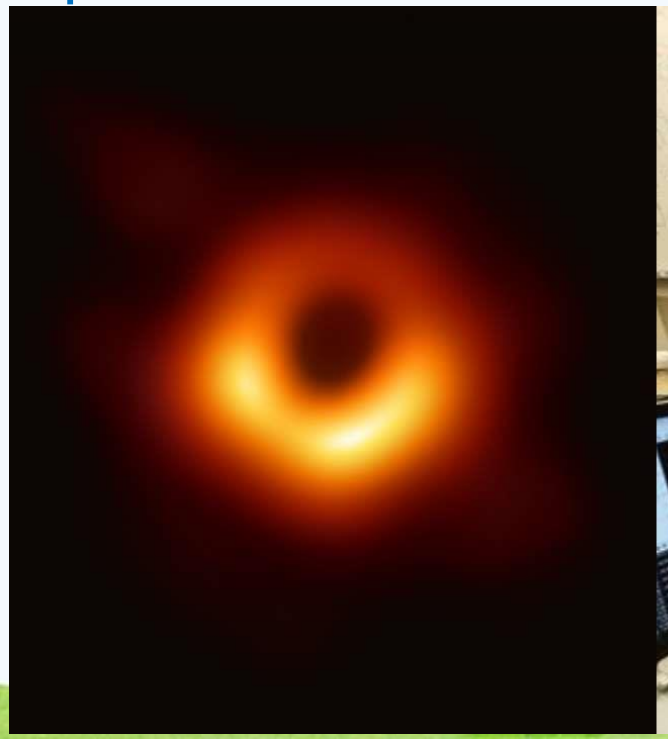
Today we are...

Scientists!

Science is the study of the natural world and everything in it. It is understanding how things work, using observation and experimentation.

Scientists can:

- Discover new things
- Answer questions about our world
- Improve people's health and make life easier for others



This unit is…

BIOLOGY

CHEMISTRY

PHYSICS

•Physics: the Study of Universe (including energy and forces)
•Chemistry: the Study of Matter
•Biology: the Study of Life and Living Organisms.

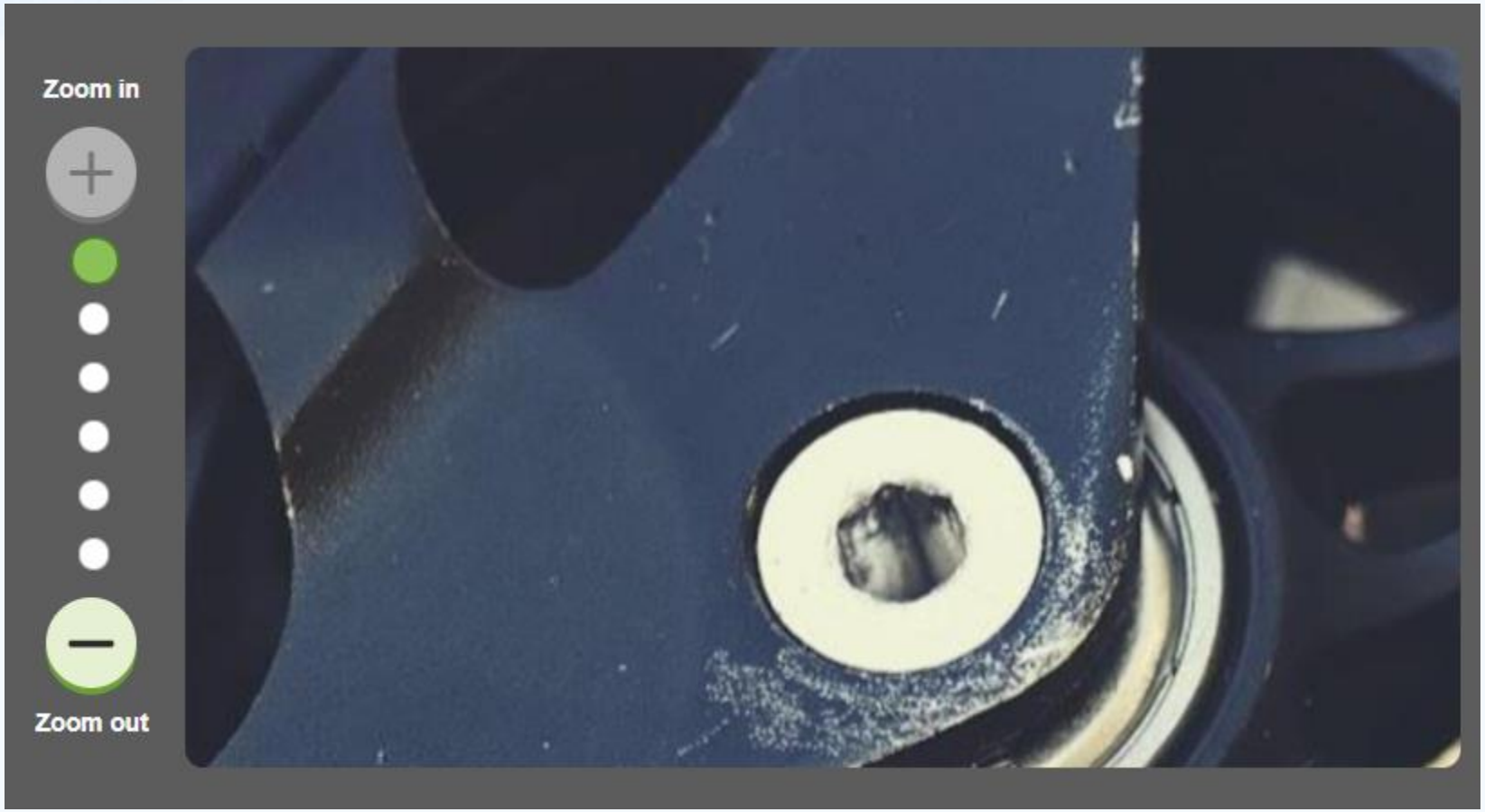
Science

Our Big Question: How and why do things move?

1. Context and Vocabulary
2. What is a force?
3. How and where can we see forces?
4. Does the weight of an item affect how quickly it falls to the ground?
5. Do all objects fall the same way through water?
6. What can change the effect of water resistance acting on an object?
7. How do submarines sink if they are full of air?
8. How does surface area of a parchute affect the time it takes to fall?
9. Does amount or depth of tread affect friction levels between a surface and a shoe?
10. Can you label and name all the forces acting on the objects in each of these situations?
11. How does the angle of launch affect how far a paper aeroplane will travel?
12. How long does a pendulum swing for before it stops?
13. How do see-saws work?
14. How can we use levers to lift heavy objects?
15. What is the most effective way to move an object?
16. Can you create a pulley system to lift a given load?
17. Assessment

Our outcome:
We will conduct a range of investigations throughout the unit. At the end of the unit, we will use our problem solving skills to create a pulley system to lift a given load.

What could it be?



https://explorify.uk/en/activities/zoom-in-zoom-out/roll-up-roll-up

Learning Objective

We are learning to understand the different forces.

KL: What is a force?

Today's Science skill is…

Comparative Test

Observation

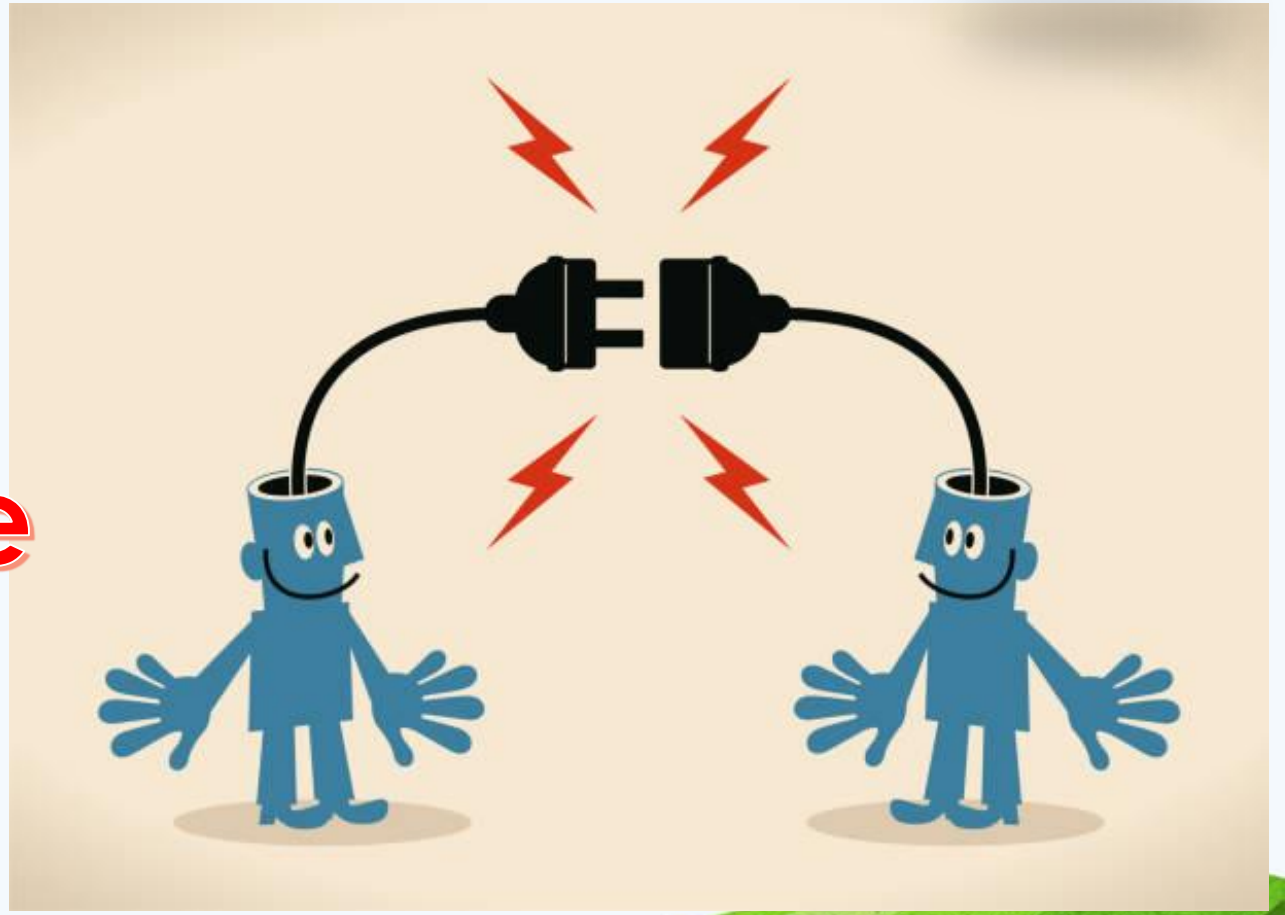
Research

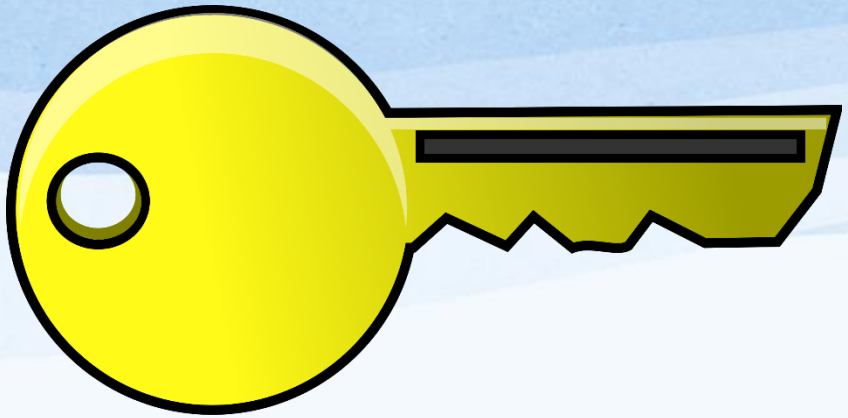
Identify and Classify

Pattern Seeking

Why are we learning this?

We know the basic definition of a force but which forces are there?





Vocabulary

air resistance	water resistance	gravity
friction	balanced	unbalanced

Pushes and Pulls

Last lesson we discussed forces as pushes and pulls.

TTYP. Which pictures show pushes and which show pulls?

Dig a little deeper!

Although pushes and pulls is a good way to describe forces, it's a little **basic**.

Forces affect the movement or shape of an object. They can make an object start to move, stop moving, move faster or move more slowly. They could also make an object change its shape or cause a moving object to change direction.

Examples

This man is falling to the ground. Why?

If he continues falling at this speed, what will happen?

What can he do that will **affect** the speed at which he is falling?

Air Resistance

He opened his parachute! Now he falls more slowly.

But **WHY?**

Gravity continues to **pull** him down…

Unbalanced force!

But now air resistance has been increased, which **pushes** him up.

Another Example

This girl is riding her bike and if about to hit a traffic jam!

If he continues travelling and nothing changes, what could happen?

What can she do that will **affect** the speed at which she is moving?

Friction

She pressed her brakes, slowed down and then stopped.

But **WHY?**

The brakes caused the wheels to stop turning, increasing the **friction**.

Forces become balanced.

Where else might we see friction at play?

Final Example

For this part of the fun run, the boy needs to run through some deep water.

Will he continue running at the speed he has been on land?

How will the water **affect** the way he moves?

Water Resistance

He continues to put in the same amount of effort but he has slowed down.

Unbalanced force!

But **WHY?**

The boy is still using his own force to move forward but water resistance > than air resistance.

Where else might we see this force at play?

Your Task:

1. Draw a picture to show:

- Gravity
- Air resistance
- Friction
- Water resistance
- Balanced forces
- Unbalanced forces

Gravity	Friction	Air Resistance
Water Resistance	Balanced Force	Unbalanced Force

Plenary: Find the Fib!

Increasing air resistance can slow the affect of gravity.

Water resistance plays a part in keeping boats afloat.

Gravity stops working under water.