

ZIP
WORLD

SCHOOLS

LLECHWEDD



WE'RE GOING ON AN UNDERGROUND ADVENTURE!

**BOUNCE
BELOW**



**Deep Mine
Tour**



We will be bouncing our hearts out on a subterranean net playground, jumping and sliding our way through a disused mine, as well as travelling 500 feet underground to learn about the history of the Welsh mines!

BEFORE WE BOUNCE

We need to understand the science behind the fun...

...let's remind ourselves about forces!

Today you will be working in teams, talking to and teaching each other, while I will be observing and helping!

There will be a short activity on each table. You will have about 5 minutes at each table before I ask you to move on to the next one.

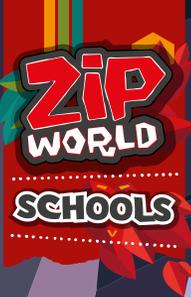


It does not matter if you do not finish the activity
– I will be listening to your discussions and
watching how well your team works together.

If you do finish, there is an extension idea on each card.

If you are unsure of something, your group must try and talk it through and work it out, using what you have learned before, or what you have experienced, as well as your imaginations.

This activity is about working things out, not necessarily getting the right answer; we will talk about these at the end.



We need to **share** the work, not rely on one person

We need to **listen** to each other

WHAT THINGS WILL HELP YOUR TEAM WORK WELL TOGETHER

We need to share all our ideas and **work things out together.**

We must value each other's opinions and show **respect** to each other.

GROUP ROLE CARDS

SCRIBE



- After the group has decided upon their ideas and answers, write them on the recording sheet

TIME KEEPER



- Make sure the group finishes on time

READER



- Read the information on the card out to the group

RESOURCE MANAGER



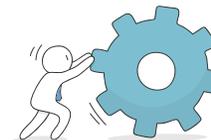
- Make sure that your group leaves each table as you found it (put all the objects back where they belong!)

QUALITY CHECKER



- Make sure the discussions are all relevant
- Check everyone is happy with the group's answers

FACILITATOR



- Keep things moving
- Be sure you know what the group should do next

ACTIVITY CARD 1

You and your group have approximately 5 minutes to read the information on this card and complete the activity.

FORCE PUSHES AND PULLS

A force is a push or a pull. Nothing can move without a force. Together with your group, can you find 10 examples of pushes and pulls you can see in and around your classroom. Here are some pictures to help you:



ACTIVITY CARD 2

You and your group have approximately 5 minutes to read the information on this card and complete the activity.

FORCES

Can you look at the objects on the table and push or pull them and see what effect your pushing or pulling force has.

As a group, decide on the things that forces can cause objects to do.



on: Draw pictures of the objects on the back of your sheet and try and arrow to show the direction of the force you applied in each picture

ACTIVITY CARD 3

You and your group have approximately 5 minutes to read the information on this card and complete the activity.

FRICITION

Friction occurs when two surfaces touch each other.

Can you and your group test friction by pushing a rubber and a plastic pencil sharpener across the table?

Which is easier to push across the desk?

Which has the most friction?

Complete the sentences on your own sheet by crossing out the incorrect word:

Rough/Smooth surfaces slow things down a lot.

Rough/Smooth surfaces don't slow things down as much.

Extension: Make a list of examples of when friction is helpful (like the grip on the bottom of our shoes)

ACTIVITY CARD 4

You and your group have approximately 5 minutes to read the information on this card and complete the activity.

BEATING GRAVITY

Gravity is an invisible pulling force that pulls everything towards the centre of the Earth. It is what keeps us on the ground and stops us floating about into space.

Can you and your group come up with any ways we can beat gravity?!

(Hint: How do birds overcome the force of gravity and stay up in the air? Or how might you beat gravity while you're at Zip World?!)

The bird's wings push against the air, providing an upward force



Extension: Draw pictures on the back of your sheet to match your descriptions, showing the direction of the forces with arrows if you can.

ACTIVITY CARD 5

You and your group have approximately 5 minutes to read the information on this card and complete the activity.

GRAVITY AND FRICTION AT ZIP WORLD

At Bounce Below, you will have the opportunity to zoom down a rather long and fast slide! After you have given yourself a push from the top, gravity will make sure you travel downwards. But friction between your clothes and the slide, as well as resistance from the air, will slow your ride.

If you wore a suit made of sandpaper, would you travel faster or slower down the slide?! Why?

Can you think of at least three ways you could limit friction to travel faster down the slide?



Extension: Think of three ways your journey down the slide could be slowed down! Write them on the back of your sheet.

ACTIVITY CARD 6

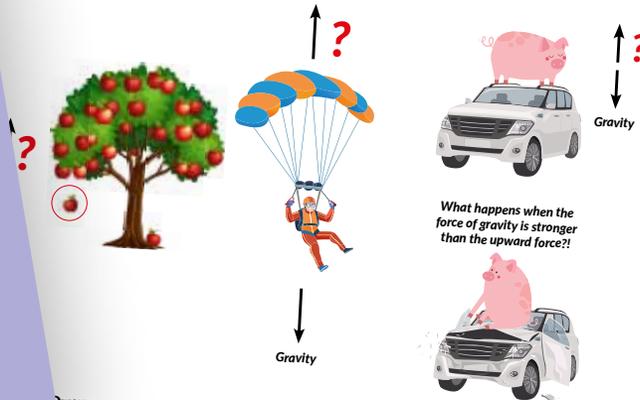
You and your group have approximately 5 minutes to read the information on this card and complete the activity.

GRAVITY AND OPPOSITE FORCES

Gravity is an invisible force that pulls everything towards the centre of the Earth. It is what keeps us on the ground and stops us floating about into space.

But there is always a force pushing in the opposite direction to gravity (from the air, from water or from the object or ground that the object is touching).

Can you and your group discuss what force is acting against gravity in these pictures?



What happens when the force of gravity is stronger than the upward force?!

Draw your own diagrams to show gravity (and its opposite force) on the back of your sheet.

ACTIVITY CARD 7

You and your group have approximately 5 minutes to read the information on this card and complete the activity.

ELASTICITY AT ZIP WORLD

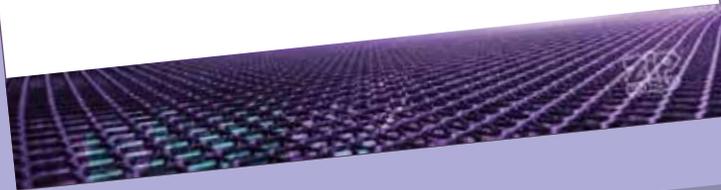
Some materials stretch when you pull them, or squash when you squeeze them.

If they return back to their original size or shape when the force is removed, they are called **elastic materials** or **elastic objects**.

Look at the objects on your table. Which ones are elastic?

The nets at Zip World are attached with bungee ropes. Elastic materials like these store energy so that they can release it and send you bouncing upwards.

Extension: Look around the classroom, can you see any other objects or materials that are elastic? Make a list on the back of your sheet.





Now you know a little more about how forces affect our movement, you will have a zipping good time at

ZIP[®]
WORLD

ENJOY YOUR TRIP

And don't forget to think about all the forces acting on you as you bounce, slide and climb during your underground adventure!