Science The Environment

15th - 19th June 2020

LO: I can perform a test and draw a conclusion.

Success Criteria

- I can measure and record the time taken for ice to melt.
- I can compare two different measurements.
- I can set up a simple comparative test.
- I can draw a conclusion from the results of a comparative test.

Discuss with an adult or write in your book what you already know about the environment.

We are going to be learning about the environment.

The Environment

Do you know anything interesting about the environment?

When we talk about 'the environment', what do we mean?



The Environment

Humans, like all living things, need certain things to live and be healthy. We need somewhere safe to live, clean air to breathe, clean water to drink, and good food to eat.

Humans, and all living things, get everything we need from our home, Planet Earth! This is our environment.

It is important that we keep the environment healthy by taking care of the soil, the water, the air and all the plants and animals that live here. That way the Earth can keep giving us all the things that we need to be happy and healthy.

Taking care of the Earth is also called caring for the environment, or 'being green'.

The Environment

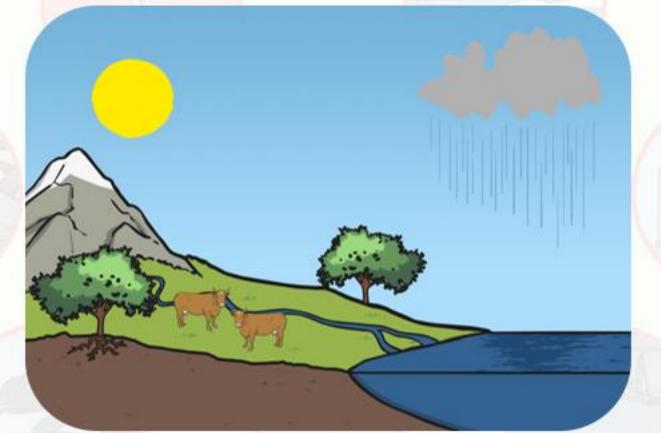
The weather, or climate, is a very important part of what makes Planet Earth a pleasant environment for humans, other animals and plants.

Maria



But the weather is starting to change because humans are doing things that are causing damage to the environment.





The sun keeps us warm. It gives us energy so that plants can grow. These plants give animals their energy when they eat them. The rain brings water for animals to drink and plants to absorb through their roots.

The Environment

The weather needs to be just right to keep the living things on Planet Earth happy and healthy.

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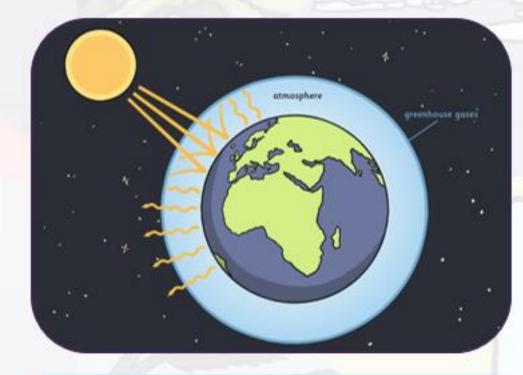
Greenhouse Gas

Planet Earth is surrounded by a layer of air. We call it the sky. Scientists call it the **atmosphere**.

Outside our atmosphere is a layer of gas that surrounds the Earth.

The gases let the sunlight through to warm us up.

The gases keep some of the heat in our atmosphere, making the earth nice and warm. They let some of the heat back out into space.



It's like the Earth was wearing the perfect blanket. Not too hot, not too cold. Just right!

Greenhouse Gas

Recently, the layer of gases has been getting thicker, like the Earth is wearing a thicker blanket!

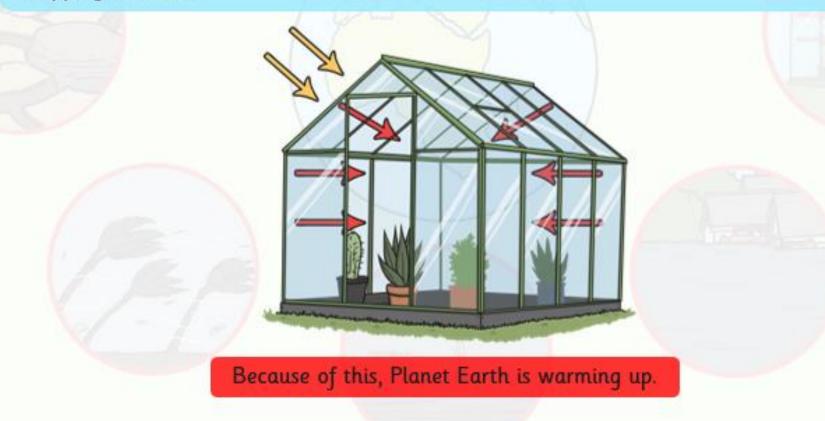
Less of the heat can escape out into space and more heat is staying in the atmosphere warming us up.



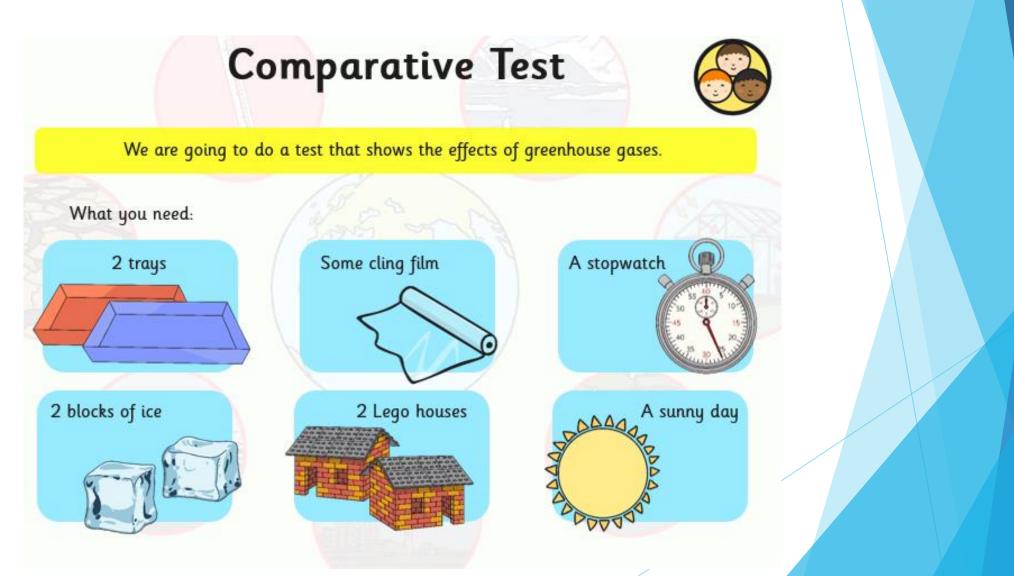
Greenhouse Gas

Have you ever been in a greenhouse?

We call the gases around the Earth **greenhouse gases**, because they behave like the glass in a greenhouse. They let the sunlight in but stop the heat from escaping, trapping it inside.



Independent Activity



Comparative Test



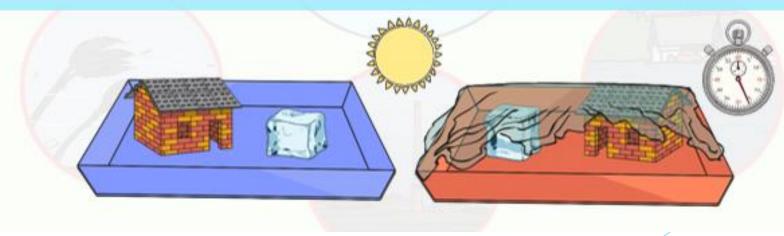
What you do:

Create two mini environments by placing a Lego building in a tray with a block of ice.

Cover one of the mini environments with a layer of cling film. This cling film will act like the extra layer of greenhouse gases that are building up around the Earth's atmosphere.

We are going to leave the trays in a sunny place and start the stopwatches.

Watch the trays carefully and time how long it takes for the ice to melt in each mini environment.



Method - write down in your book how you are going to set up the experiment and what you want to find out.

> Prediction what do you think will happen?

Conclusion -What happened and why?

Climate Cho	inge comp	urutive rest	
Method		000	
Prediction			
Results Time for ice to melt	Environment 1	Environment 2	
Conclusion			

What did you find out?

Climate Change



The Effects of Climate Change

The mini environment that was covered by the cling film became warmer than the other.



This is because, when it was warmed by the sun, the layer of cling film trapped the heat inside the environment and didn't allow it to escape.

This meant that the temperature inside this environment increased, and made the ice melt faster.

The Effects of Climate Change: Global Warming

Because the layer of greenhouse gas that surrounds the Earth is getting thicker, the temperature in our environment is rising too. Sometimes this is called **global warming**.

In many places, the weather is becoming hotter and dryer and there is less rain. There isn't always enough water to go around and some people do not have enough to drink.



In some places, plants will not grow properly because there is not enough rain. This means that there isn't enough food to eat and that some people are going hungry. We call periods when there isn't enough rain a **drought**. Droughts are becoming more common in many places in the world.

The Effects of Climate Change: Floods and Storms

In some places, the changing weather has led to **floods**, **hurricanes** and powerful **storms**.



Floods and storms are very dangerous and ruin the homes of people and animals.

The Effects of Climate Change: Melting Sea Ice

In the Arctic and Antarctic Circles, the warmer temperatures have melted lots of sea ice that used to stay frozen all year round. This is very bad for the animals that live there.

Polar bears live in the Arctic. The shrinking sea ice means that it is much harder for them to hunt the seals that they eat.





Some experts think that polar bears could become extinct as the ice continues to melt.

LIGHT LA SUCK STREET

The Effects of Climate Change: Rising Sea Levels

As the sea ice melts, it turns into sea water. This means there is more water in the sea and the sea level is rising. As this happens, some cities that have been built on the coast may be flooded and the people who live there will have to find new places to live.



The Causes of Climate Change: Fossil Fuels

Things that humans are doing to the planet are making more greenhouses gases. Burning fossil fuels like oil and coal adds greenhouse gases to the atmosphere.

We burn fossil fuels to make our gas and electricity and to power our cars, trains and aeroplanes.



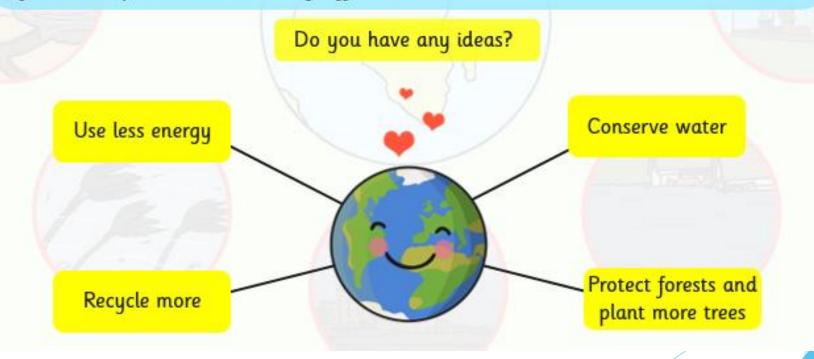
Factories burn lots of fossil fuels when they make new things for us to buy.

What Can We Do?



Luckily, there are lots of things that all of us can do to protect our environment from climate change.

In the coming weeks we are going to be finding out lots of ways that we can help the environment and stop climate change from having such a bad effect on Planet Earth. If we all help, we can make a big difference!



Reduce, Reuse, Recycle

LO: I can suggest ways we can reduce, reuse and recycle.

Success Criteria

- I can identify the material of an object.
- I can sort objects into groups.
- I can give examples of reducing, reusing and recycling.
- I can suggest a way that I can make good decisions about my rubbish.



Think about your day so far. How many things have you thrown in the bin today?

Each person in the UK throws away more than 1kg of rubbish each day.

Over a year, this weighs as much as an adult polar bear!

How many polar bear sized piles of rubbish will this class make in a year?

Where does it all go?



Sadly some of the rubbish is thrown away on the floor. We call this litter.

Why is it wrong to drop litter on the floor? What problems can it cause?



Littering is against the law! A person caught throwing litter on the ground can be prosecuted and made to pay a big fine!

Litter can be sharp, dirty or dangerous, and can cause people accidents and illnesses. Litter makes our public spaces look horrible. We want to keep them clean and tidy for everyone to enjoy.

Littering in cities encourages rats and other animals that spread diseases. They eat the food that people leave behind.

Cleaning up litter costs a lot of money that could be used for other important things. Litter is very dangerous for wildlife who can swallow it or get trapped in it. This is especially true at the coast and in the countryside.



How can we prevent littering?

Always throw your rubbish in the bin! If there is no bin nearby, carry your rubbish carefully until you see one or wrap it in a bag and take it home.



So, you put all your rubbish in the bin. Well done!

What happens to it now?

Our rubbish gets put into big bins, collected by waste collection lorries and taken for sorting and processing.





Some of our rubbish is incinerated, which means it is burnt in very hot fires.

Burning the rubbish causes lots of smoke and air pollution which is harmful to plants, animals and people. It leaves behind lots of ash which contains harmful chemicals that damage soil and water.

Burning rubbish also makes more of the greenhouse gases that are causing climate change.





Some of the waste that we throw away goes into huge rubbish mountains that we call landfill.

Landfill sites are very dirty and unpleasant to look at. They take up a lot of room and release harmful chemicals into the soil, the water and the air.

As we make more and more rubbish each day, the landfill sites grow bigger and bigger. If we carry on putting our rubbish in landfill sites we will soon run out of room for it all!





Littering, incinerating and landfill are not good things to do with our waste, as they are harmful to the world around us and the plants, animals and people who live here.

It's very important that we find better things to do with our rubbish that do not harm the environment. This way, we can make the world a pleasant place for everyone.



Reduce, Reuse, Recycle

Luckily, making good choices about what we do with our rubbish is something that all of us can do to help the environment every single day!

Reduce, Reuse, Recycle

Reduce

Try to make less rubbish by cutting down on waste.

> Don't buy things you don't need.

Use things until they are worn out instead of buying new things.

Doing this will mean there are fewer things to throw away.

Reuse

When you are finished with something, try to use it again.

If you don't want to use it, maybe someone else does.

Maybe you can use it for something else!

Recycle

Put rubbish in the recycle bin instead of the general waste.

It will be taken away and turned into something new.

Most of our rubbish can be recycled and turned back into something useful.

Reducing



The first step in making good decisions about our waste is to see if we can reduce it.

Reducing means finding ways to create less rubbish in the first place. Then there are fewer things to throw away!

Packed lunches create a lot of waste.

How could you reduce the amount of waste in this lunchbox?

You have 3 minutes to think of as many ideas as you can.

Reducing



What ideas did you think of for a waste free lunch?

Here are some ways you can reduce the amount of waste that will be left over from your lunch.

Only bring what you need! If you can't finish all your food then you have brought too much.

Pack your sandwiches in a reusable container.

Instead of buying individual packets of snacks, buy a big packet and bring a portion each day. Pack fresh fruit. It doesn't need any other packaging...and it's good for you too!

Bring drinks in a refillable bottle.

If you have any rubbish, make sure you put it in the right bin so it can be recycled.



After reducing our waste, the next step in taking good care of our rubbish is to reuse as much as we can.

Many of the things we throw in our rubbish can be used again.

Carrier bags can be reused to carry home your shopping from the supermarket.

Glass jars can be reused to store food in the kitchen.

Old toys, books, clothes and DVDS can be given to someone you know or donated to a charity shop.



Many things can be reused by turning them into something else!

These are all things that have been made out of items that people are finished with.

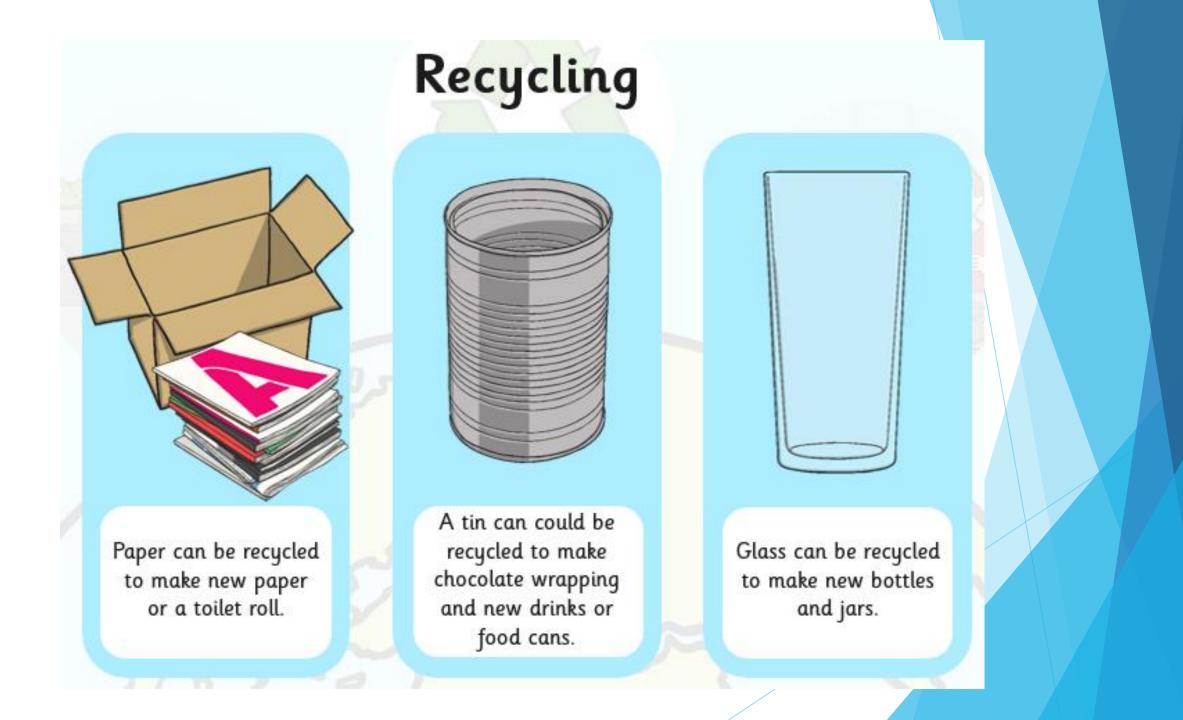


Recycling

After you have reduced your waste as much as possible and seen if there is anything you can reuse, you can recycle what's left.



After you have placed your object for recycling in the recycling bin it will be taken away to a recycling factory, shredded into very small pieces and melted down into a liquid or pulp before being used to create something new.



Recycling



To recycle the rubbish, first we need to sort it into different materials so it can be taken away for processing.

Put each piece of rubbish next to the correct recycling bin.



Challenge!

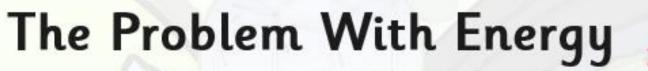
- Design something that reuses some of your rubbish at home. It could be out of an old cereal box or a milk carton!
- Look at your rubbish. Does it have the recycle sign on? Recycle everything you can!

Energy Experts

LO: I can take surveys and use the information to help answer a question.

Success Criteria

- I can take a survey using a tally.
- I can use the results of the survey to answer a question.
- I can think of a way to teach people to use less energy.
- I can communicate my ideas to other people.



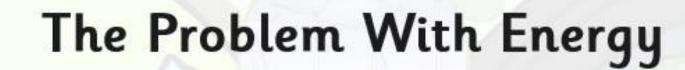
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Making Things Work

Many of the things we use in our daily lives need energy to make them work.

Here are some examples:

Can you think of any more?



Making Things Work

Some of these things get their energy from electricity.

Do you know what these appliances do?



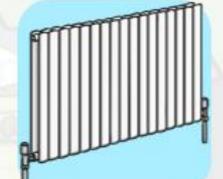
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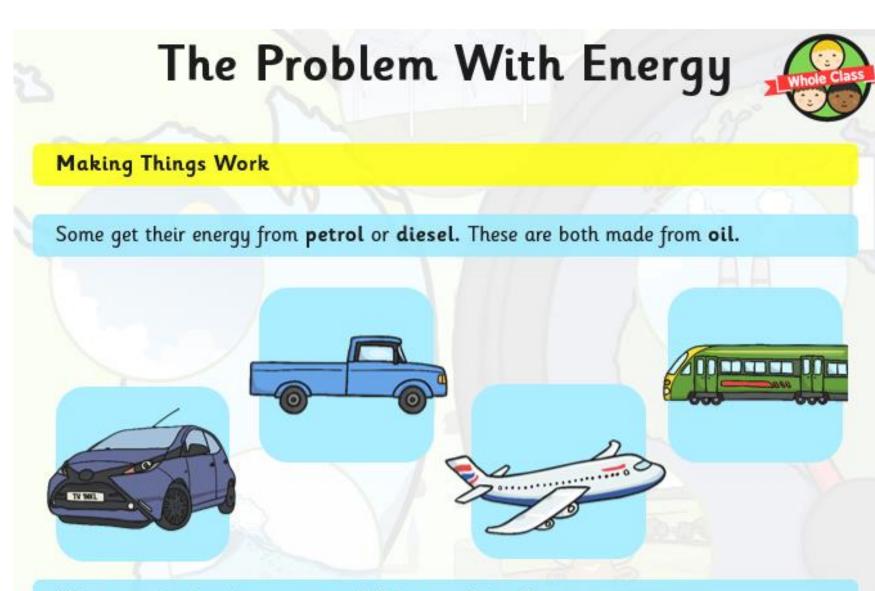
The Problem With Energy

Making Things Work

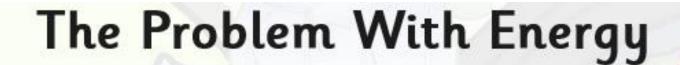
Some of these things run on natural gas.

Do you have any of these at home?





When was the last time you travelled in one of these?



Making Things Work

OIL

Electricity, gas and oil are all sources of **power**. They give us energy to make things work

Think about how hard life would be without them!

Unfortunately, we have a problem...

So many of the things we use need energy and we are all using far too much! This is causing **big** problems for the environment.

The Problem With Energy



Most of our energy is made from burning **fossil fuels**, like oil, coal and gas. These were made under the earth millions of years ago. We get them from mining or drilling deep underground.

When they are used up, there will never be any more. This means that they are **non-renewable**.

Some of our energy is made in nuclear power stations.

OIL

Nuclear power is made from the metal uranium, which is also non-renewable.

The Problem With Energy

Non-Renewable Energy

Uranium, coal, oil and gas are all running out!

Scientists think that, if we carry on using as much energy as we do now, that there might be....



What do you think will happen when they run out?



1 Whole Class

Climate Change

Nearly all of the energy in the world is made by burning the fossil fuels coal, oil and gas.



Making energy from fossil fuels releases greenhouse gases into the atmosphere.

Greenhouse gases are causing climate change.



Can you remember what we mean by climate change?



The Problem With Energy

Climate Change

Here are some of the problems caused by climate change....













What can we do to solve these problems? Do you have any ideas?

There are two main ways that people can help to solve these problems.

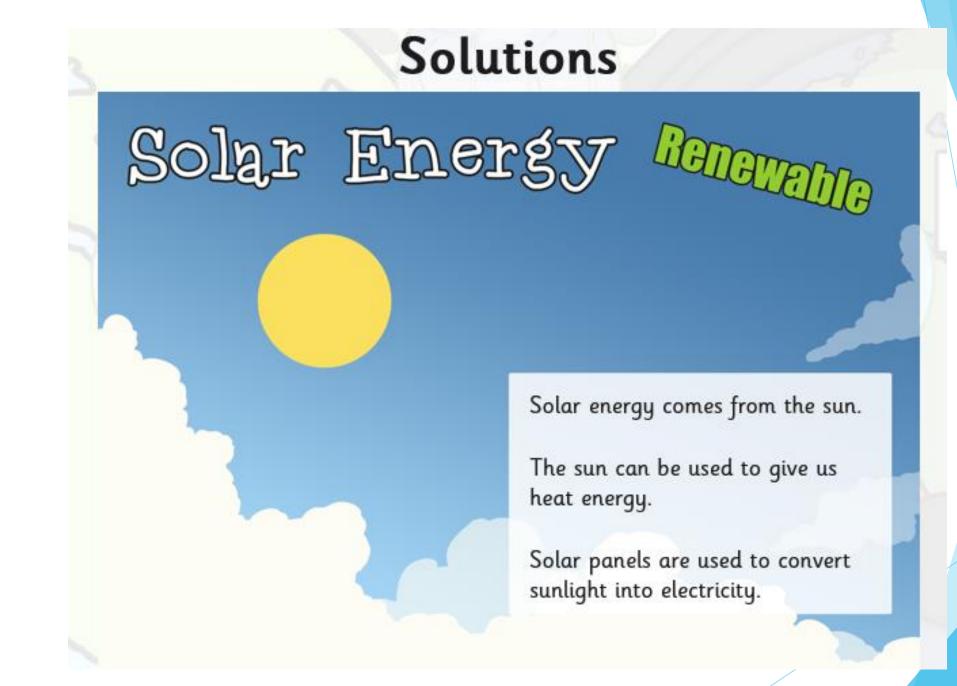
- Use renewable sources of power to make our energy.
- Cut down on the amount of energy we use.

Both of these things will help us to use less fossil fuels.

Renewable Energy

Luckily, scientists have been working very hard to think of ways that we can make energy without burning fossil fuels. These ways of making energy are called **renewable energy sources.** Renewable means, unlike fossil fuels, they don't get used up. We can keep using them forever and they will never run out!

Also, renewable energy sources do not produce nearly so many greenhouse gases as burning fossil fuels. This means they help reduce climate change too!



Wind Energy

Wind turbines are used to convert wind energy to electricity.

The wind blows the blades around and this movement is converted into electricity.

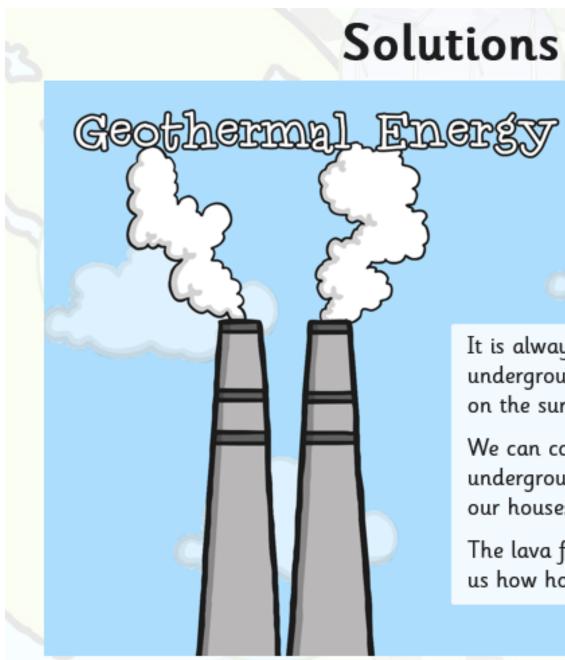
A group of wind turbines is called a wind farm.



Hydro energy is energy that comes from moving water.

Water that flows down fastflowing rivers is used to spin turbines that generate electricity.

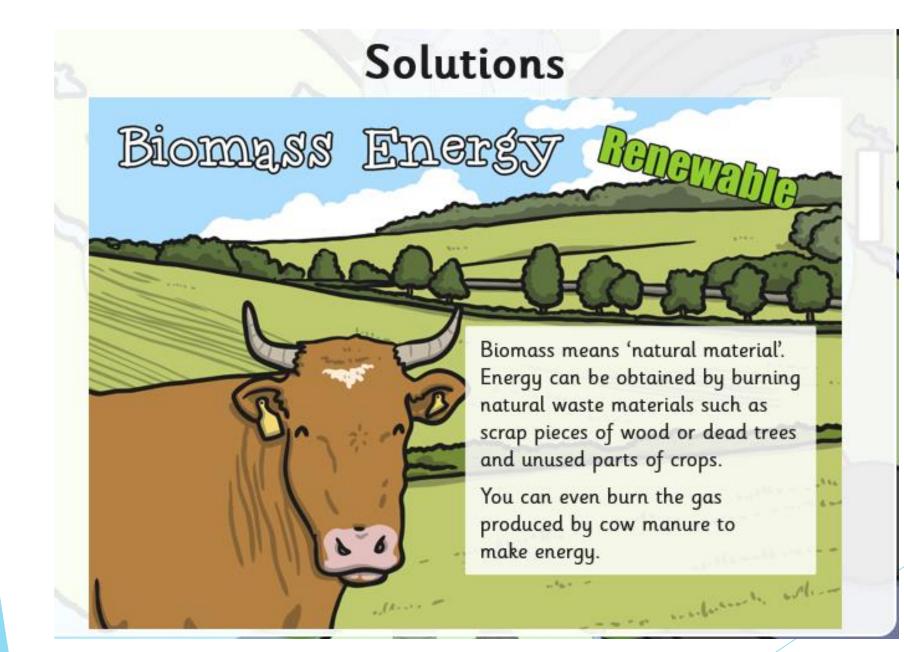
The movement of big waves at sea can also be used to generate energy.



It is always very warm underground, even if it is very cold on the surface.

We can collect heat from underground and use it to heat our houses.

The lava from volcanoes shows us how hot it is underground.



Using Less Energy

While energy companies and scientists get to work on making more renewable energy, we can all help by using less energy.

Can you think of any ways that people can use less energy?



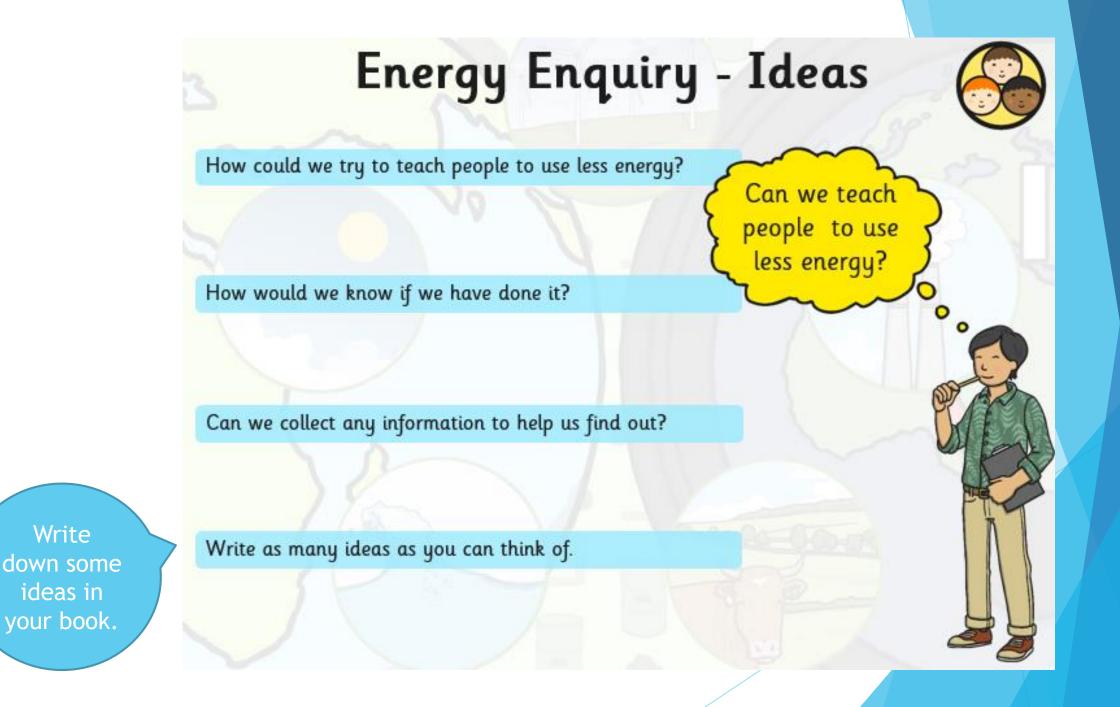
Using Less Energy

Here are a few ideas that can help you use less energy. Did you think of any more?

Read a book instead of watching television.

Turn lights off when you leave the room.

Wear a jumper instead of asking for the heating to be put on. Walk instead of going in the car. Turn off computers, televisions and games consoles when you are finished with them.



Look carefully around the room.

How many of these appliances have been left on while the room is empty? Count them using a tally.

Appliance	Tally	Total	
Lights			
Computers			
Projectors			
Heaters and radiators			
Other appliances			

Complete this activity. Draw the chart in your book.

Total number of appliances left on:

Forest Friends

LO: I can identify and classify rainforest animals

Success Criteria

- I can ask questions about the rainforest.
- I can use different sources to find out answers to my questions.
- I can sort rainforest animals into groups.
- I can label the animal groups.

What do you already know about the rainforest? What would you like to find out? Write down some ideas in your book.

What Do You Know about the Rainforest?

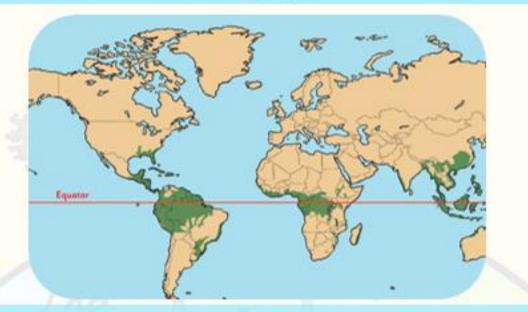




Tropical rainforests are located around the equator. The weather here is very hot and rainy.

The rain and the heat help many trees and plants to grow. The trees and plants provide a habitat for many animal species.

Tropical rainforests are sometimes called jungles.



Only a very small amount of the worlds land is covered in rainforest, but about half of all plants and animals live here.

Scientists think there might be millions of kinds of plants and animals in the rainforest that have not yet been discovered.

The Amazon is the biggest tropical rainforest. Is it so big that the UK would fit inside it 17 times!

Many tribes of people live in the Amazon that have no contact with the outside world.

Plants from the rainforest have many different uses. Many fruits and vegetables that we eat, like pineapple, bananas, tomatoes, corn and potatoes, are originally from the rainforest.



Lots of the medicines that we use are made using ingredients found in the rainforest.



Rainforest trees produce lots of the oxygen we breathe. They clean carbon monoxide and other greenhouse gases from the air.

Rainforests are very important for humans, for the plants and animals that live there, and for the environment too!



The rainforest is under threat from deforestation. This is when people cut down big areas of trees.

People are cutting down the rainforest to make way for farms, homes and roads. People also chop down the trees to use the wood to make furniture and paper.



When the rainforest has been cut down the people and animals that live there lose their habitat. Many species of animal are at risk of extinction because of this.

You have now learnt some new facts about the rainforest. I would like you now to write down 3 questions you still don't know the answer to in your book. Use the internet to find out the answers.

Animals of the Rainforest

There are more kinds of animals in the worlds rainforests than anywhere else on Earth! Here are some of them.



Animals of the Rainforest

t withole Class

What do all these animals have in common?



Climbing Salamander



Blue Poison Dart Frog



Panama Golden Frog



Suriname Toad



Red Eyed Tree Frog

Animals of the Rainforest

What do all these animals have in common?



Black Capped Lorikeet



Harpy Eagle



Blue and Yellow Macaw



Great Hornbill



Malachite Kingfisher

Animals of the Rainforest

What do all these animals have in common?



Jaguar



Capybara



Orangutan

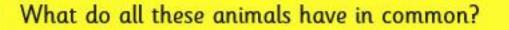


Okapi



Lemur

Animals of the Rainforest





Jaguar



Capybara



Orangutan



Okapi



Lemur



Sort the animals on the previous slides into four groups.

The four groups are:

- Birds
- Mammals
- Amphibians
- Reptiles

Draw a table in your book and write the name of the animals under the correct group. Alternatively if you can print at home, there is a worksheet on the home learning page for you to complete.

Water Wise

LO: I can set up a test and record the results. I can accurately measure water and record my measurements.

Success Criteria

- I can set up a simple test.
- I can record and interpret the results.
- I can measure an amount of water in ml.
- I can record the amount of water I have measured.



Water Is Life

We are very, very lucky.

In our classroom today, and in all of our homes, we have one of the most precious things there is.

It's more precious than diamonds and more valuable than gold.

We use it every day.

Can you guess what it is?

Discuss with an adult why you think water is so important.

Water Is Life Water! You might not know this, but water is the most precious thing there is.

Why do you think that water is so important?

Water Is Life

Human Body

65%

water

Water is so precious because life on Earth depends upon it.

Our lives, the lives of every person in the world, the lives of every single plant and animal depend upon water. Not one living thing on Earth can survive without it!

In fact, water is what most of your body is made from!



<u>https://www.youtube.com/watch?v=4V-</u> <u>KoJGGJ4s</u> - Water walk link

Water Is Life



We are lucky to have clean, fresh, safe water always available everywhere we go. In many countries around the world, people are not so lucky.

Watch this clip to see how a family collects their water in Mali, Africa.



What do you think it would be like if your family only had one bucket of water to use every day?

Every Drop Counts

About 70% of the surface of the Earth is covered in water.

If you could push all the land on the Earth together on one side, and all the water on the other, a map of the Earth would look like this.

What a lot of water that is!

Every Drop Counts



With all that water, you would think that there would be enough to go around....

But there isn't!

Nearly all the water on the Earth is ocean water. This water is full of salt and minerals, and humans can not drink it.

Only a small amount of all the water on the Earth is fresh water...but most of this is frozen in the ice glaciers of the North and South Poles!

Of the water that isn't ocean and isn't ice, most is far away beneath the ground.

Only a very tiny part of the water on Earth is available for humans to use for all the many things that we need it for.

Every Drop Counts

That little bit of fresh water has to go around all the humans, animals and plants on the planet...they can't live without it!

It is important to save water so that there is enough for everyone.

Also, when we use water, it must be cleaned before it is safe for us to use again. Cleaning it uses electricity. Making electricity burns fossils fuels and causes greenhouse gases.

So saving water is good for the environment too!

Saving water is also called water conservation.

Water Wise		
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How much water can you save by turning off the tap while you wash your hands?

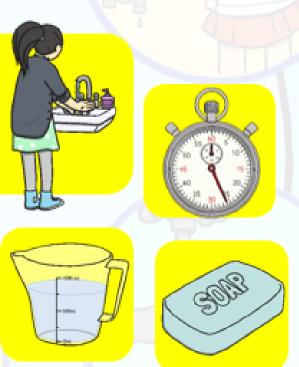
How could we answer this question? What equipment would we need? What will your prediction be?



You are going to work in pairs to investigate how much water you can save by turning off the tap while you wash your hands.

Washing with the tap left on

- Put a large measuring jug underneath the tap.
- Turn the tap on.
- Wet your hands.
- Use the soap to lather your hands for 30 seconds. Time this with a stop watch.
- Rinse the soap off.
- Turn off the tap.
- Use the scale on the measuring jug to measure the water you have used.
- Record this number on your activity sheet.



Washing with the tap left off

- Put a large measuring jug underneath the tap.
- Turn the tap on.
- Wet your hands.
- Turn the tap off.
- Use the soap to lather your hands for 30 seconds. Time this with a stop watch.
- Put the tap back on.
- Rinse the soap off.
- Turn off the tap.
- Use the scale on the measuring jug to measure the water you have used.
- Record this number on your activity sheet.

Equipment

Copy this in to your book to record your results.

Write down the equipment you will need. Prediction

I think that turning off the tap when washing hands will use the same amount of water.

I think that turning off the tap when washing hands will save water.

I think that turning off the tap when washing hands will use more water.

[Results	Tap left on	Tap turned off
	Amount of water used	ml	ml

Conclusion I have learnt that



Conclusion

Is turning off the tap while you wash you hands a good way to save water?

How much water did you save by turning off the tap?

LO: I can ask and answer questions about endangered animals.

Success Critiera

- I can ask questions about endangered animals.
- I can answer questions about an animal I have researched.

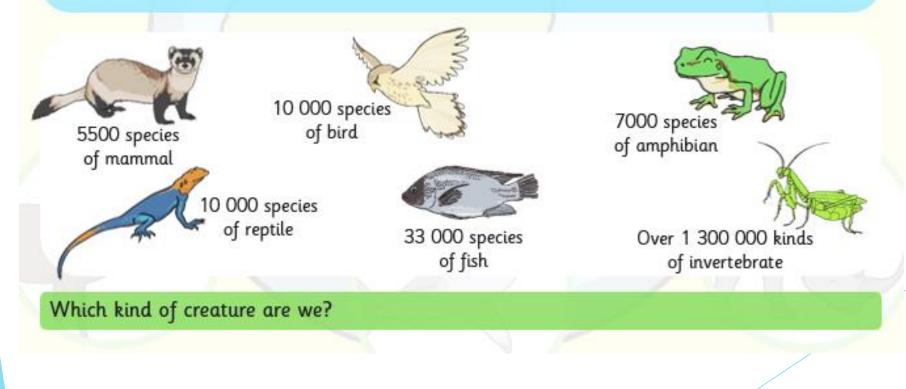
Animal Planet



Scientists think that there are nearly 8 million species of animals in the world, living on the land, in the sky and in the sea.

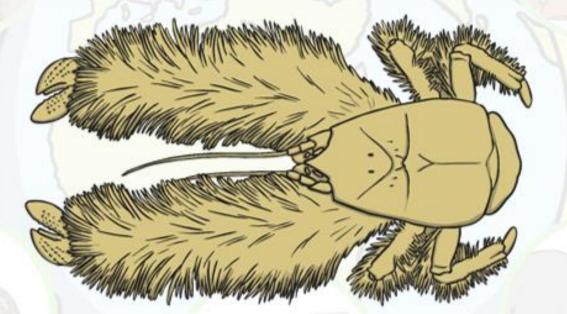
We only know about 1.4 million of these...which means that over 6 million species of animal are yet to be discovered!

We have already discovered:

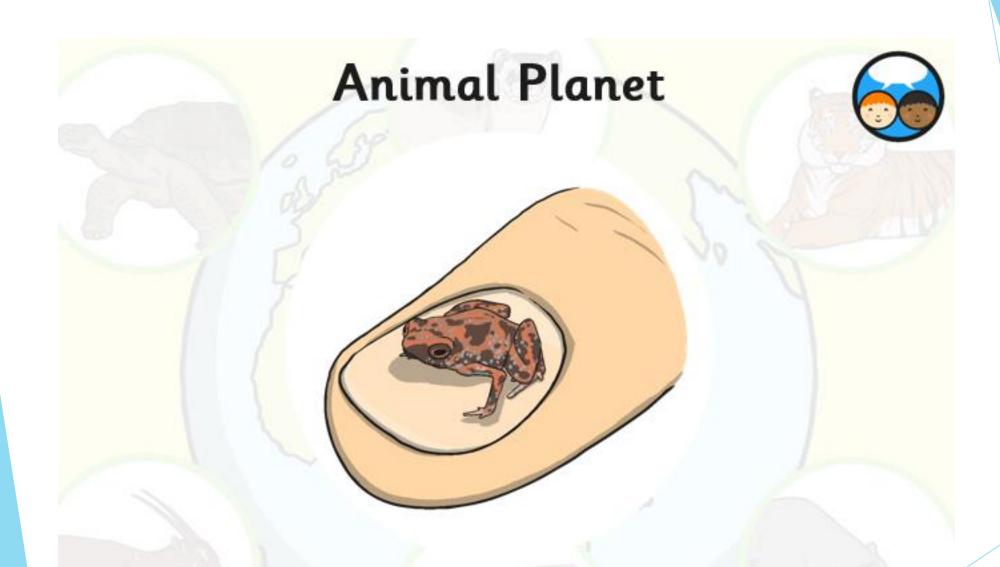


Animal Planet

Here are some amazing animals that have been discovered recently.



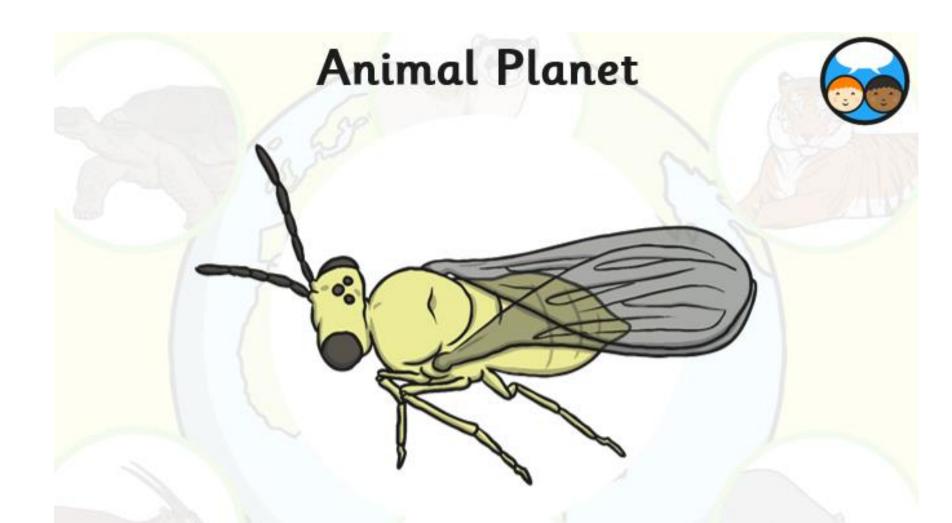
The Yeti Crab was discovered in 2005. It lives on hot water vents deep below the sea. Scientists think it may use the hair on its pincers to filter out toxins from the water.



Discovered in 2009 in Papua New Guinea, this tiny frog is the smallest known vertebrate in the world. It measures just 7mm long!



The Caquetá Titi Monkey was discovered in 2010 in the Amazonian rainforest. When they are happy, they purr like cats!



In 2009 a scientist discovered a new species of wasp living in a tree in a school playground in Kent. The wasp lays its eggs inside another insect. It is so small that you need a microscope to see it.

Animal Planet

As you can see, there are many strange and wonderful animals in the world, and many more that have not yet been discovered.

Keep an eye out next time you are in the garden or in a park...maybe you will discover the next new animal!

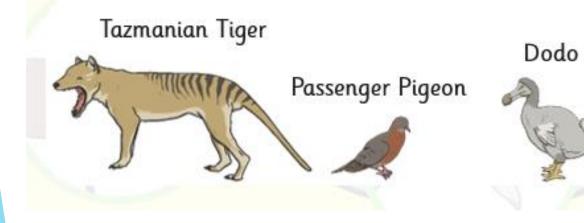
Sadly, not all of the creatures in the world are doing very well. Some species of animal are endangered.

Quagga

Being endangered means that scientists think that the animal is at risk of disappearing forever. If this happens, we say that an animal is extinct.

When an animal is extinct, it cannot ever be brought back.

Here are some animals which are now extinct.





Why do animals become endangered or extinct?

All animals have a habitat. This is their home. It gives them all they need to live and be healthy, like food, water, shelter and safety from harm. Most animals are adapted to their habitat and cannot live anywhere else.

Animals become endangered when their habitat is threatened. Around the world, animal habitats are being destroyed to make way for farming or houses, or because people want to use the materials in that habitat to make things. Habitats are also destroyed by chemicals that humans use that can damage the soil, the air and the water.

As habitats are destroyed, animals have less room to live, less food to eat, and fewer safe places to raise their young. Sometimes, because these animals are forced to live close to humans, they are hunted and killed. They can be killed for food, because people think they are dangerous or because people want to use parts of their bodies to make things.

Here are some things made out of the bodies of endangered animals.









Here are some endangered animals that you may recognise.



Giant Panda: 1862 left in the wild

Tigers: about 3200 left in the wild



Mountain Gorilla: only 800 left in the wild

Blue Whale: 10 000 - 25 000 left

Polar Bear: less than 25 000 left in the wild

Do you know of any more?

Endangered Animal Fact File

You are going to do some research about an endangered animal.

Researching means finding out more information about something you are interested in.

How can we find out more information about something?



You can read about it in an information book.



You can find out about it by looking it up on the internet.



You can ask questions about it from someone who knows more information.

We are going to do all of these things today to find out more about endangered animals.

Endangered Animals Fact File

You are going to research one endangered animal by looking in books and on the internet.

- Draw a picture of the animal
- Appearance: what does the animal look like?
- Habitat: where does the animal live?
- Behaviour: what does the animal do?



Create a fact file of the endangered animal in your work book.

How Can We Help?

There are lots of things we can do to help endangered animals so they do not have to face extinction.

Find Out More

The first step in protecting endangered species is to find out more about them and to tell your friends and families. The more people know, about all the amazing animals that are at risk of extinction, the more that can be done to help them.

Reduce, Reuse, Recycle

Making new products uses lots of resources. When these resources are taken from the natural world, animal habitats are destroyed. Make sure that your family recycles all the waste that they can, and don't forget about reducing and reusing too!