



Introduction - Professor Jigget Carbon Clever Challenge Quiz



Tick all the right answers. Sometimes more than one choice is correct!

Which of these creatures loves cotton grass?

- Frog
- Dragon Fly
- Large Heath Butterfly
- Water Vole

Which ones did Professor Jigget say were 'poison'?

- Carbon Dioxide
- Pesticides
- Plastic Bags
- Peat

Peat (from the mosslands) is...

- Decaying matter
- Very wet
- Full of carbon
- Food for birds

Which of these areas was caused by mining?

- Mosslands
- Flashes
- Wetlands
- Manchester

Great crested newts, water voles and frogs are all...

- Naughty
- Aquatic
- Semi-aquatic
- Vegetarian

Which of these animals are in danger?

- Willow Tits
- Great Crested Newts
- Argus Butterflies
- Bog Brush Crickets

A wetland is wet ...

- All year round
- In the winter
- When it rains
- Most of the time

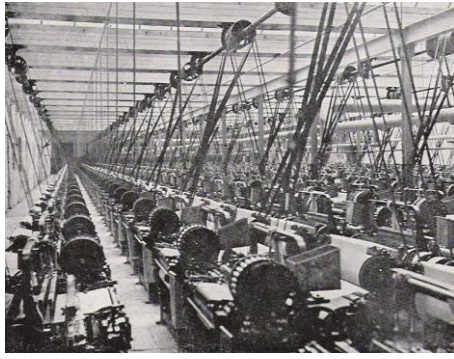
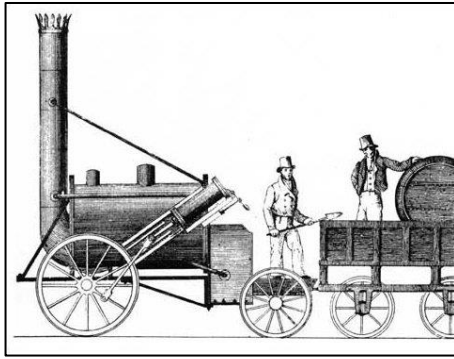
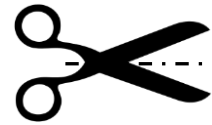
People dig up coal so that they can use it to...

- Make diamonds
- Colour things black
- Heal People (Medicine)
- Burn as Fuel

"Goodbye, and good..."

- Luck
- Riddance
- Goal
- Gravy

Cut out all the pictures and words along the lines (horizontal and vertical) to play the matching game.



Peat (not Pete)

Cotton mills

Great Crested Newt

Ponds

Cotton Grass

Wet woodland

Manchester Argus Butterfly

Sphagnum Moss

Steam engine

Willow Tit

Coal mines

Manchester Ship Canal

270 years ago

130 years ago

10,000 years ago

This animal has just returned to the area after 150 years!

Females lay 200-300 eggs and they can live up to 27 years!

A group of these animals is called a 'Banditry'



The Flashes of Wigan and Leigh were formed when the ground sank and filled with water, making lakes. Find the picture and name for *the reason why the ground sank...*



(picture goes here)

(name goes here)

This all started during the Industrial Revolution, which began in North West England about



(how many years ago?)

Find the picture and name for *something really important that was invented in the Industrial Revolution...*



(picture goes here)

(name goes here)

Find the picture and name for a rare animal that loves the Flashes.



(picture goes here)

(name goes here)

A fun fact about this animal goes below...



(fun fact goes here)

Where this animal lives goes below...



(animal **habitat** goes here)



Flashes

Which of these might you see in the Flashes?

- Huge variety of water birds
- Rare orchids
- Dragon boating
- Scientists studying nature

Can you write 3 other things that were *invented in the Industrial Revolution?*

- 1)
- 2)
- 3)



The mosslands formed very slowly, and they are some of our most precious wild places. Find the picture and name for *one of the most important plants in the mosslands...*



(picture goes here)

(name goes here)

The mosslands started to form after the end of the last ice age, which was over...



(how many years ago?)

Find the picture and name for *something really important that is found throughout the mosslands* – it is what makes them so special



(picture goes here)

(name goes here)

Find the picture and name for a rare animal that loves the mosslands.



(picture goes here)

(name goes here)

A fun fact about this animal goes below...



(fun fact goes here)

Where this animal lives goes below...



(animal **habitat** goes here)



Mosslands

Mosslands help with

- Climate change
- Flood prevention
- Fibre for spinning
- Habitats for wildlife

Can you write 3 other species (plants or animals) that live in the mosslands?

1) _____

2) _____

3) _____



The Mersey Wetlands Corridor is the area around the river Mersey and another waterway. Find the picture and name for this other world-famous waterway



(picture goes here)

(name goes here)

Construction of this waterway, the largest of its kind in the world at the time, began about...



(how many years ago?)

Huge amounts of *something* was sent from India to Manchester for many years – it was big business! Find the picture and name for *where it was sent to...*



(picture goes here)

(name goes here)

Find the picture and name for a rare animal living in the wetlands



(picture goes here)

(name goes here)

A fun fact about this animal goes below...



(fun fact goes here)

Where this animal lives goes below...



(animal **habitat** goes here)



Which of these are 'wetlands'?

- Mersey Wetlands Corridor
- Flashes
- Mosslands
- The Ocean

Name 3 things you might find in a canal

- 1)
- 2)
- 3)



We've given you the first arrow. **Fill in the rest!**
There can be many from or to the same place.

Why we changed the landscape

People did this> For this reason> To meet the need for> Leading to this problem

Mined for coal

? To transport things to & from other countries

? Keeping warm & comfortable

? Destruction of habitats for wildlife

Built on and cut up the mosslands

? To build houses

? Eating

? Climate change

? To burn as fuel

? Generating electricity for lights

Built a huge canal between Manchester and the sea

? To grow food

? Getting things we can't make here (like raw cotton or tea)

? Polluting the water



Plants are eaten by
A _____, including
H _____s
(but hopefully they don't mind being eaten)

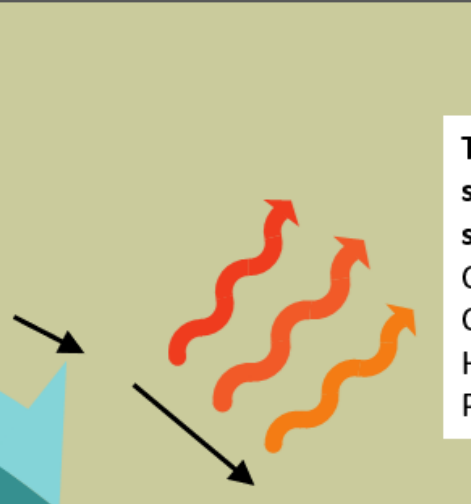


Hard Question: The Earth is like a SPACESHIP because it is:

Self-centred	<input type="checkbox"/>
Self-contained	<input type="checkbox"/>
Self-conscious	<input type="checkbox"/>
Self-directed	<input type="checkbox"/>

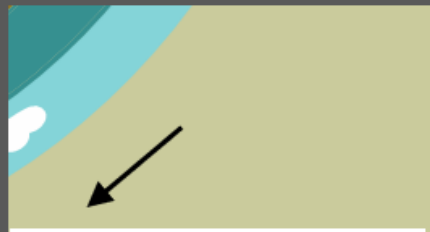
How much do you think the Earth weighs *today*, compared to when it first formed 4,600,000,000 years ago?

A lot more	<input type="checkbox"/>
A bit more	<input type="checkbox"/>
About the same	<input type="checkbox"/>
Less	<input type="checkbox"/>



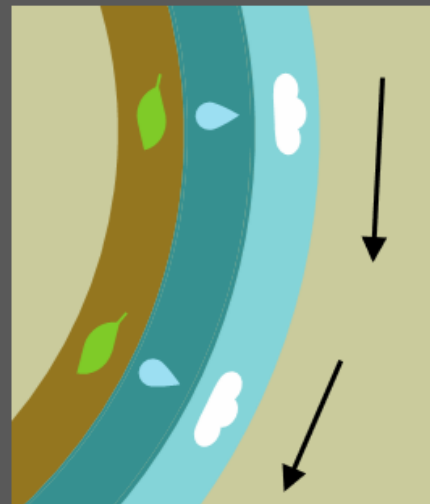
These red wavy lines show something going off into space. What are they?

CO2	<input type="checkbox"/>
Cow farts	<input type="checkbox"/>
Heat	<input type="checkbox"/>
Pollution	<input type="checkbox"/>



All creatures generate waste, when they P __

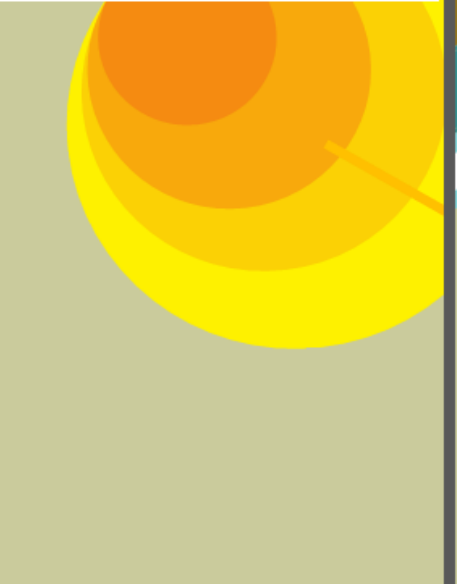
... and eventually, everything _ i e _



... and they turn waste back into _____
N _____
in the soil that new plants can use to grow.

Everything goes around and around again and again in a big C _____ of Life!

It all starts with energy from the _____ which we see and call S _____ t

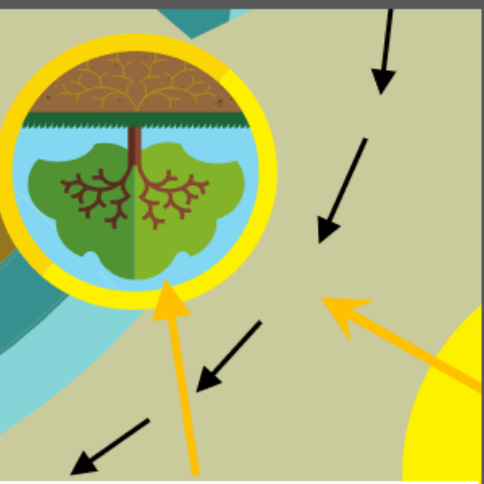


The Earth, our home

INSTRUCTIONS

1) Arrange all the pieces like a jigsaw.

2) Fill in the missing words and answer the multiple-choice questions



The energy from space can be 'eaten' by plants as 'food' because they can do something that scientists call _____ s _____ s



So lots of waste stuff is made **every day**, and luckily we have D _____ p _____ s (including fungi like mushrooms and tiny creatures called bacteria) that just LOVE to eat everyone else's waste!



P _____ live in towns and cities

OUTPUTs (things that go out) from society to nature

This energy, together with C _____ D _____ e from the air, and _____ from clouds and rivers, and N _____ t _____ from the soil, enables plants to GROW.



INPUTs (things that go in) from nature to society



Now we know the three big ways people harm nature & wildlife – can you draw 3 lines to show which of the problems on the left goes with which positive solution on the right...



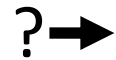
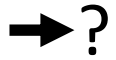
Unsustainable



Physically damage nature & wildlife (ecosystems)

Any time people reduce the amount of space, or places, for natural plants and animals to grow and live - like chopping down woodlands to build a railway for example - we are **damaging** ecosystems.

Ecosystems are groups of lots of different plants and animals that all live and work together, like a forest.

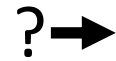
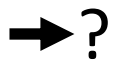


Sustainable

Balance flows of natural stuff

'Poison' nature & wildlife with stuff that doesn't belong there

There are two main kinds of **'poison'**. The red and white are natural things like lead and mercury, but they harm people and life if we eat them. The black and yellow are human-made chemicals and things like plastic that don't really belong in nature.

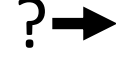
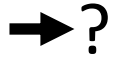


Restore & connect resilient ecosystems (nature & wildlife)

Resilient means strong and able to recover well.

Overwhelm (too much too fast) with natural stuff like CO2 from fossil fuels

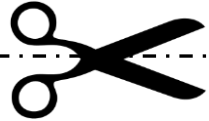
The main thing we have been doing that is **Overwhelm** is burning so many **fossil fuels** like coal and oil and gas for **energy** - which puts loads of **CO2** into the air and is a big cause of **climate change**.



Use materials safe for nature and cycle everything else again and again



Cut along the lines to get the pieces for the action grid exercise



Get new plastic bags every time you go shopping.	Learn lots and get good at things so you can do more to help yourself and others	Turn lights off when you aren't using them.	Cycle or use public transport instead of a car, if you can.
Build new towns and neighbourhoods so you need a car to get around.	Be kind and helpful.	Make it so <i>everything</i> we 'throw away', like packaging, is safe to be put into nature.	Make all electricity from burning fossil fuels (oil & gas).
Always ignore other people's problems.	Cut down rainforests to make space to grow food.	Just think of yourself, not anyone else.	For shopping use paper or cloth bags.
Make sure everywhere that people live has great places for children to play.	In decisions big and small, look for ways to make things <i>fairer</i> for everyone, everywhere.	Re-use things where possible instead of getting new stuff (e.g. clothes)	Design new buildings that need much less energy for heating and cooling.
Design products so they can be easily taken apart, so we can re-use everything in them.	Use peat from ancient peat bogs to help plants grow in pots or your garden.	Protect very large areas of land for nature & wildlife.	Join in with fun activities to help wildlife & nature!
Enable all people & businesses to switch to renewable energy as much as possible.	Just put anything in the bin and it will go away.	Make it so all neighbourhoods and schools have to include spaces for wildlife.	Do some nature-friendly gardening at home or school.





Nature

People

Sustainable



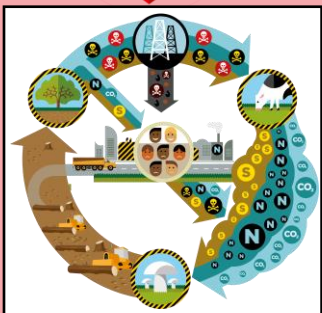
SYSTEM UPGRAGDE
New ways that don't cause the problems



CREATING CHANGE
Things we can do ourselves or together

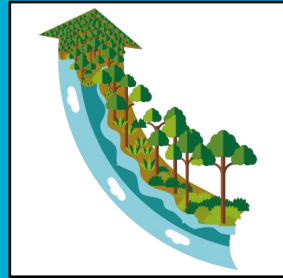


Old ways causing the problems
(‘Business as Usual’)



Unsustainable

Restore & connect resilient ecosystems (wildlife & nature)



Balance flows of natural stuff like CO2



Use materials safe for nature & cycle everything else repeatedly



Move towards health and wellbeing for everyone



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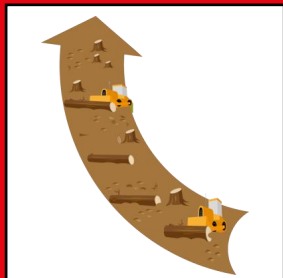
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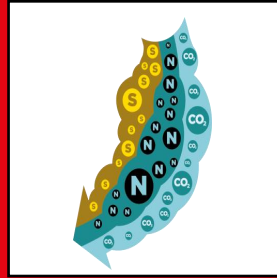
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Physically damage nature & wildlife.



Overwhelm (too much too fast) with natural stuff like CO2 (e.g. from fossil fuels)



‘Poison’ nature & wildlife with stuff that doesn't belong there



Cause harm to people's health and wellbeing

