


February 2022

Climate Crisis



Reddiford Science Digest



Have you ever wondered what causes Climate Change and how we can stop it? Well the answer is here! Inside this special edition of the Reddiford Science Digest, you will discover not only some interesting facts about the Climate Crisis we are all facing today, but also be able to play some fun board games and solve many word searches and puzzles!

3

***Do We Really Need to Fly?* by Aari Malde & Akshayen Sajiram 5B**

10

***Marine Mayhem* by Krisha Bidadi 6G & Anaiya Thukral 5G**

19

***Go Electric!* by Akshaj Mittal 5G & Pranit Narkar 5G**

30

***Energy Zappers* by Haren Ranjith 6G**

39

***Renewable Energy* by Rishi Kylaahsum 6O & Saayuj Shankar 6O**

44

***Deforestation* by Khai Shah 5G, Aaroh Mehta 5G & Vihaan Khandelwal 6O**

51

***Deadly Disasters* by Annika Cegla 6O & Zubiya Shaik 6G**

DO WE REALLY NEED TO FLY?

By AKSHAYEN SAJIRAM and AARI MALDE

We know you really want to know about fuels. Jet fuels, to be precise. You fly all the time, thinking that no harmful fuels are not used. Well, you're wrong. Read on to find out more.....

The Basics:

To fly there are four forces. These are conveniently called 'The Four Forces of Flight'. To keep the aircraft in the air, 'lift' is being used. To stop from flying away 'gravity (weight)' is used. To control the speed 'drag' is used. To keep the aircraft moving 'thrust' is used. The 'fifth' force is fuel. Fuel is the main topic we'll talk about.



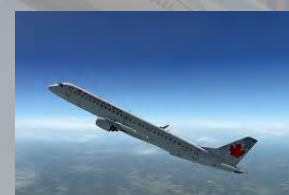
Fuels:

All aircrafts use fuel. The most common fuel found in aircrafts is kerosene, which is a highly combustible resource that is one of many more combustible chemicals. Here are some of them shown as a simple word equation. Kerosene + diesel + other chemicals = one of the fuels aircrafts run on.



How Does This Affect Climate Change:

Let's tell you how this affects climate change. Kerosene is nearly impossible to recycle. Imagine.... roughly 100,000 flights take off around the world. 3,500 gallons of fuel are used a day, per aircraft for a 3hr flight one way with no stops. That's around 350,000,000 gallons of fuel used for 100000 3hr flights. Kerosene contributes to the greenhouse gasses like carbon monoxide. If this continues, the whole world will face extinction.



HOW CAN WE RESOLVE THIS?

Solution 1 (Sunny days only): Plug in solar panels. These will work using a large battery and sunlight. Using a rough estimate, we at Reddiford reckon that if you leave large plug-in solar panels on aircraft for however long their flight is +2 days (for controls and quality on board) will store enough battery power to fly one way. However, if we charge three times the original time, it could work both ways (plus or minus a day).

The body of the plane (see Fig. 1 for plan): this plane follows the same body of a regular plane but with a few subtle changes. All that is changed is the plug in points of the plane and the wiring.

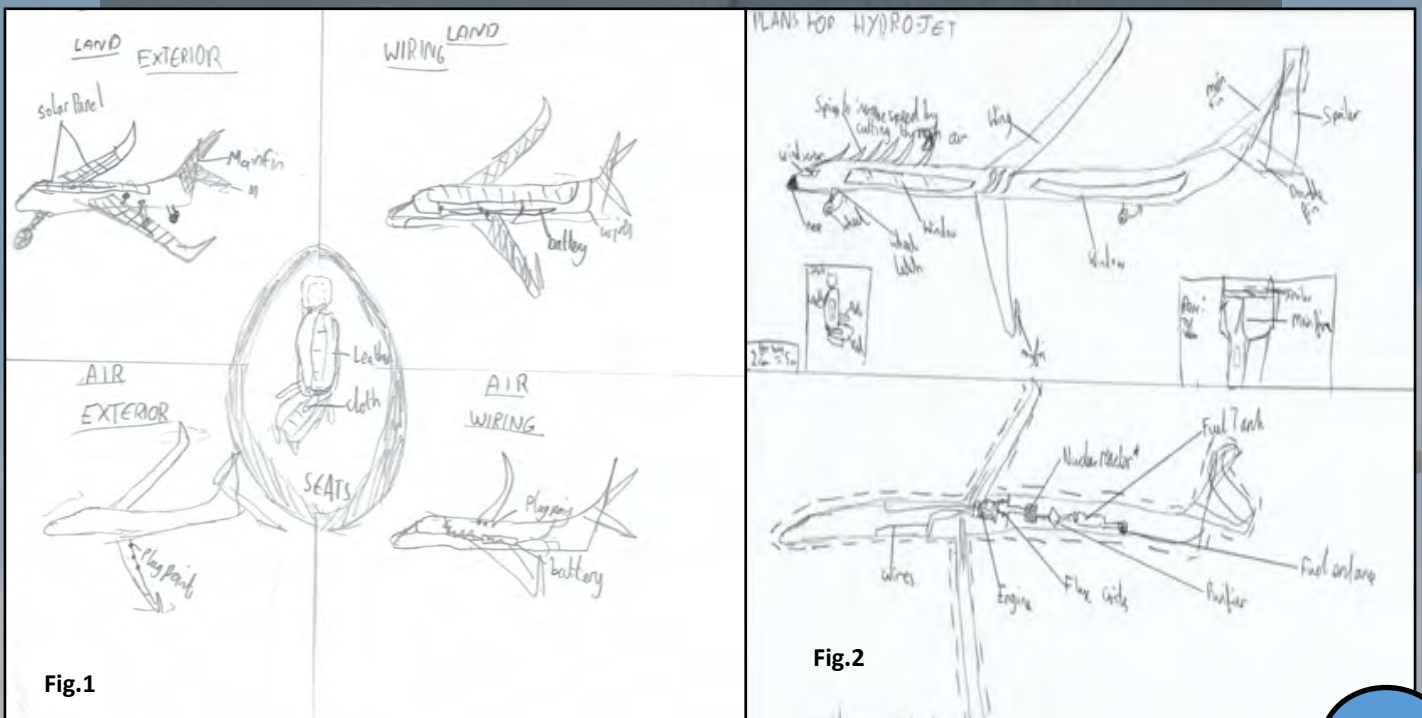
What you need to know: there are 104 cloth and leather seats. The fuel source is solar power and there is now fuel tank but in its place is a battery. The wingspan is 20m, the height is 7.52m, the length is 32m and it weighs 1.82 tonnes.

Fig. 1

Solution 2: Water powered jet. This will work by using salty ocean water as a fuel as: a) it is a conductor of electricity and b) it is endless. When it enters, it will go through a nuclear reactor with a 2.7mm spark fusion coil. After picking up 10ml of kerosene, the water will go through a purifier to get rid of bacteria and other harmful microbes. After going through the engine the water powers the plane.

The body of the plane (see inset for plan): to adapt the plane to its new fuel, changes had to be made. The change of windows decreasing the amount of glass windows to 4. The two mini tail wings now form a spoiler with a little fin on each edge.

What you need to know: There are 70 leather seats. It's fuel is salt water, the tank has a capacity of 1000000l.



Fact File: Jets & Aircrafts

1

It burns about 1 gallon of fuel every second, or 5 gallons per mile. Reversing this gives us the figure of 0.2 miles per gallon of fuel, lower than the average car's fuel efficiency at about 25 miles per gallon.

2

The longest commercial flight without refuelling lasted 23 hours, covering a distance of 12,427 miles. The longest non-stop commercial flight route as of today is 9,540 miles long and lasts nearly 18 hours.

3

It can carry a maximum of 238,604 litres of fuel, which is a lot of fuel. It has enough to fill 1400 minivans.

4

The melting point of jet fuel is -47°C , which is close to the south poles temperature which is 60° and the boiling point is 176°C but again is hot, compare to lava which is 700 to 1200 degree.

5

Piston-engine powered often have a single tank fuel system. On newer aircraft, two fuel tanks, with one in each wing requires additional components to allow controlled fuel to the single engine.

6

Kerosene+ diesel +other chemicals that are highly combustible- fuel aircraft runs on. This gives out a lot of greenhouse gasses.

7

All fossil fuels, including kerosene, release 'greenhouse gases' like carbon monoxide. This is directly attributed to global warming.

8

Unfortunately Kerosene is not easily recycled, so most of this fuel is effecting global warming which we are all currently trying to stop.

9

Most jet fuels in use since the end of World War II are kerosene-based. Both British and American standards for jet fuels were first established at the end of World War II.

10

British standards derived from standards for kerosene use for lamps—known as paraffin in the UK—whereas American standards derived from aviation gasoline practices.

Should We Fly?

We're in dark days,
the sky has gone grey.

Planes crowd the sky,
making fossil fuels fly.

It is time we found a solution,
for this air pollution.

Coming from an airplane,
everywhere the gas remains.

It is our mission,
to stop this emission.

To protect Earth our jewel,
by stopping using fossil fuels.

Emission down to zero,
will be our hero.

This is our climate emergency,
it is our urgency.

Akshayen Sajiram & Aari Malde

FUN FACT
 Antarctica is melting because of the
 emissions let out by aircrafts creating
 a hole in the ozone layer above the
 continent.....

Word Search

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| e | m | m | i | s | s | i | o | n | g | h |
| d | d | y | t | c | y | g | e | h | q | a |
| d | d | f | c | s | f | a | f | d | a | k |
| i | k | Y | j | n | c | s | e | s | x | e |
| e | f | p | k | g | e | t | q | q | a | r |
| s | g | p | r | e | a | g | s | s | a | o |
| e | s | e | u | m | e | h | r | g | x | s |
| l | m | f | i | e | e | g | f | e | c | e |
| e | s | l | c | c | p | b | q | q | m | n |
| c | c | p | r | o | t | e | c | t | a | e |

ssioienm

liedes

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merecegy

tropcte

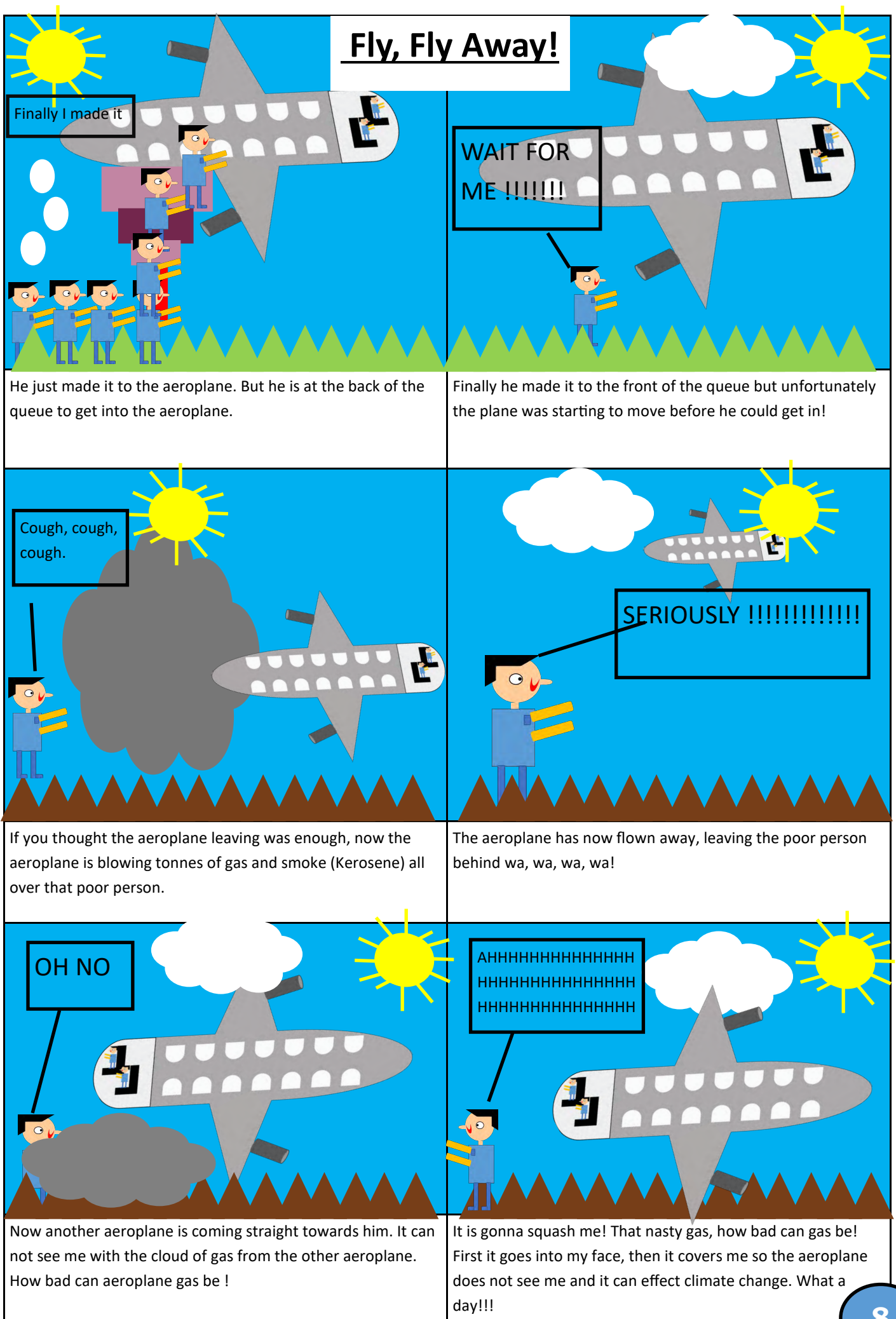
suefl

ags

Kerosene

we have done one for you

Anagram words: try and figure them out before finding them in the word search.



He just made it to the aeroplane. But he is at the back of the queue to get into the aeroplane.

Finally he made it to the front of the queue but unfortunately the plane was starting to move before he could get in!

If you thought the aeroplane leaving was enough, now the aeroplane is blowing tonnes of gas and smoke (Kerosene) all over that poor person.

The aeroplane has now flown away, leaving the poor person behind wa, wa, wa, wa!

Now another aeroplane is coming straight towards him. It can not see me with the cloud of gas from the other aeroplane. How bad can aeroplane gas be !

It is gonna squash me! That nasty gas, how bad can gas be! First it goes into my face, then it covers me so the aeroplane does not see me and it can effect climate change. What a day!!!

Glossary

Kerosene

This is the fuel that 95% of all aircrafts use.

Spark fusion coil

When force is applied, this will release sparks that ignite the fuel to propel the aircraft.

Paraffin

This is simply another name for kerosene.



Marine Mayhem

By Krisha Bidadi 6G & Anaiya Thukral 5G

What do you imagine when you think about an ocean? Well, you may think about a beautiful, sapphire sea with a silk curtain sky.

The truth is that there is more to an ocean than just beautiful waters, there is life in there, life unknown and known, ocean lives that matter.



Ocean pollution affects more than 817 animal species around the world, a figure that has increased by 23% in the last five years alone. Plastic is one of the most common causes of ocean pollution, but it's not the only thing harming our seas. Ocean pollution is a complex mixture of toxic metals, plastics, manufactured chemicals, petroleum, urban and industrial wastes, pesticides, fertilizers, pharmaceutical chemicals, agricultural runoff, and sewage.

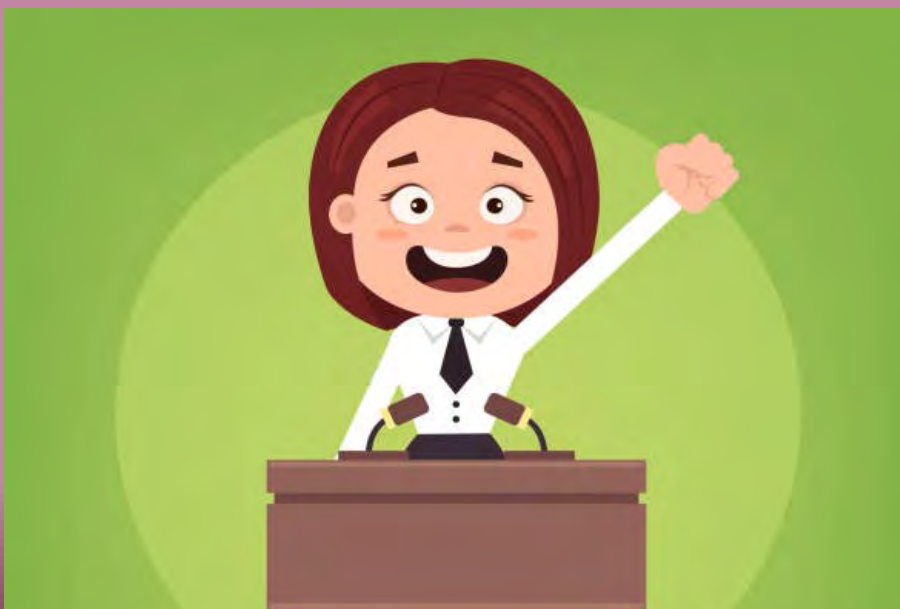


Parliament Talk

Hey there,

My name's Krisha and, well, I'm not really Prime Minister, instead, I attended the 2021 Children's virtual Parliament. The children's Parliament is held annually and is usually hosted by Sir David Amess, who unfortunately died this year and was therefore unable to host the big event. In his place, Peter Spencer Lane who is Headmaster of Saint Pierre School, hosted the parliament and the event.

At the beginning of the event, we asked the 'Speaker' questions and I talked about animals and protecting them further into the debate. Other children expressed their opinions and some added to my statement. At the end of the debate, there was a poll/vote where all the children were surveyed. After the big event had finished, the whole recorded debate was made available for everyone to watch on the Express website.



Marine Mischief Makers



Human: I guessed it! You're up to something!

Jellyfish: I've nothing to say. Oh, I'm absolutely disgusted!

Human: No more hiding. Admit it jellyfish, you're not as wobbly and clumsy as you think!

Jellyfish: You admit it human, speak for yourself!

Human: You sting me every time when I come. You just won't learn, will you?

Jellyfish: I have a voice you know but you won't let me use it!

Human: Oh, please! You jellyfish can't even read! Only if you prove me wrong.

Jellyfish: Think I'm talking bonkers, eh?

Human: Speak your voice.

Jellyfish: Well, you first reflect upon the damage you've caused.

Human: Hmm, I'll forgive you for stinging me, only if you say sorry.....

Jellyfish: Sorry for what?! You're the kind who throws plastic and suffocates our lives!

Human: Prove me wrong and don't ask for help!

Jellyfish: You think of only yourself and carelessly enjoy the water, am I right?

Human: Well.....

Jellyfish: Do you want to see the beach again?

Human: Yes.....

Jellyfish: Then listen to our marine voices and protect the ocean!

Human: Yeah....fine....whatever....!

Jellyfish: You humans need to save our Marine Mates. Do you understand me, Marine Mischief Maker?



Word Search

Can you find all the words?

Answers are on the last page of our article.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| O | C | E | A | N | C | H | E | L | J | U | K |
| L | C | L | E | A | R | H | U | J | M | K | A |
| L | H | M | N | Y | A | R | O | G | A | Z | B |
| K | C | G | C | C | B | A | S | E | R | W | U |
| I | O | R | E | F | L | E | C | T | I | O | N |
| N | R | K | L | V | C | X | Z | B | N | N | D |
| G | A | K | A | S | E | A | L | Z | E | D | A |
| D | L | R | H | X | R | I | L | P | N | H | N |
| O | G | C | W | A | L | R | U | S | S | X | C |
| M | E | F | H | H | K | L | N | V | X | C | E |
| M | N | B | P | L | A | S | T | I | C | R | W |
| K | L | M | N | I | Y | L | I | T | T | E | R |

WORD BANK

| | | | | |
|--------|------------|---------|-----------|-------|
| WALRUS | LITTER | WHALE | KINGDOM | CRAB |
| OCEAN | NARWHAL | CYAN | ABUNDANCE | CORAL |
| MARINE | REFLECTION | PLASTIC | SEAL | CLEAR |

Aquatic Anagrams

Can you unscramble these watery words?

Answers can be found on the last page of our article.



1. GALEA

2. SPWTRUOAET

3. RMOYA ELE

4. OYBU

5. LMAB

6. WRDFHISO

7. QENUE ONHCC

8. QUADCTAU

9. DEYD

10. LOPDNIH



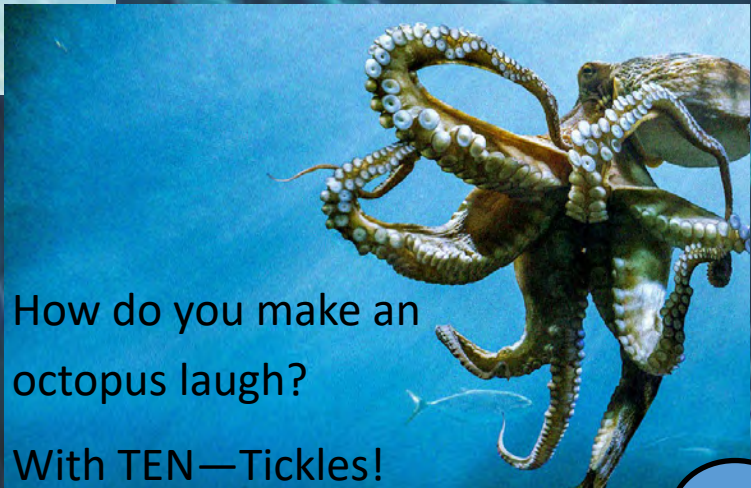
Fishy Facts

- Less than five percent of the planet's oceans have been investigated and explored.
- The world's longest mountain chain, which is the Mid—ocean Ridge, is almost entirely underneath the surface of the ocean.
- It is possible to find lakes and rivers beneath the ocean.
- The largest ocean is the Pacific Ocean and it contains around 25,000 islands.
- Over seventy percent of our planet's oxygen is produced by the ocean.



What does a dolphin say
when it's confused?

Please be more Pacific!



How do you make an
octopus laugh?

With TEN—Tickles!

Quiz Time!

Answers can be found on the last page of our article.

1. How many islands does the Pacific Ocean contain? ☐ 25,000 ☐ 2,500
2. What is the deepest point in the ocean? _____
3. The Southern most Ocean is called the Antarctic Ocean? True or False
4. How many Oceans does the USA border? ☐ 4 ☐ 3
5. There are 7 species of sea turtle in the world - how many of them out grow their shells and seek new ones?

What can we do to help?



Due to Climate Change, our oceans are falling apart and we need something stronger than probably super strong glue, we need cooperation. In other words, we all need to do our bit to protect the ocean.

So, what can we do to help? Well, there are lots of things and you can get involved too.

Maybe, you could grab a litter picker and start picking up strewn rubbish inconsiderate people have left, and collect them. See if the rubbish can be recycled, therefore, you have helped to keep plastic and other harmful objects away from the beauty of the sea.

When you go shopping at Sainsburys or anywhere like that with you mum or dad, you might notice a box stacked with net bags. Now, these are reusable bags you can use for shopping and you can wash them if they get dirty. Next time you go shopping, tell your parents to consider one of these bags and save the seas. Basically, you can reuse many things like foil or straws.

Harsh Reality

vs

Blissful Future



Puzzle Answers

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| O | C | E | A | N | C | H | E | L | J | U | K |
| L | C | L | E | A | R | H | U | J | M | K | A |
| L | H | M | N | Y | A | E | S | G | A | Z | B |
| K | C | G | C | C | B | A | S | E | R | W | U |
| I | O | R | E | F | L | E | C | T | I | O | N |
| N | R | K | L | V | C | X | Z | B | N | N | D |
| G | A | K | A | S | E | A | L | Z | E | D | A |
| D | L | R | H | X | R | I | L | P | N | H | N |
| O | G | C | W | A | L | R | A | S | S | X | C |
| M | E | F | H | H | K | L | N | V | X | C | E |
| M | N | B | V | C | A | X | Z | X | T | R | W |
| K | L | M | N | I | Y | L | I | T | T | E | R |

Here are
the word
search
answers.

Aquatic Anagrams Answers

1. ALGAE
2. WATERSPOUT
3. MORAY EEL
4. BUOY
5. BLAM
6. SWORDFISH
7. QUEEN CONCH
8. AQUADUCT
9. EDDY
10. DOLPHIN

Quiz Time Answers

1. 25,000
2. The Mariana Trench
3. False (It's called the Southern Ocean!)
4. 3
5. None seek shells, the shells grow with the turtles!

GO ELECTRIC!

By Pranit Narkar 5G and Akshaj Mittal 5G

Why should we go Electric?

Electric Cars

Electric cars are powered by electricity. Elon Musk's Tesla is a company that only makes electric cars. Electric cars don't need diesel or petrol which makes less pollution and CO₂. Just one electric car can reduce 1.5 million grams CO₂ a year! They function by plugging into a charge point and taking electricity. They store the electricity in batteries that powers a motor, which then *rotates* the wheels.

Electric cars can accelerate faster than vehicles with traditional fuel engines, so they feel lighter to drive. We can design electric cars so that sometimes the automatic engine can be driven by artificial systems using fully charged batteries; this also reduces the risks of accidents and it is not so tiring for the driver, as you don't have to press the accelerator for long drives.

Try this quiz: If cars aren't _____ then we will have a shortage of _____ fuels. Aeroplanes run on _____ fuel and fly in the sky causing _____ change.

jet climate electric fossil

Electric Airplanes

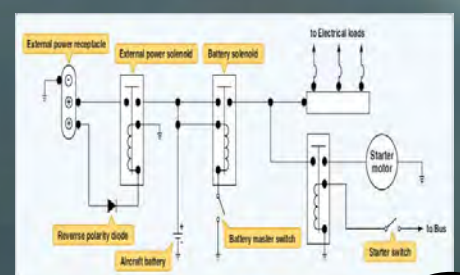
Electric cars and buses are becoming more common, but what about electric planes? Maybe they can look even cooler!

Electric aeroplanes are a great resource towards fighting climate change. At the moment, aeroplanes mainly use fossil fuels and release much more CO₂ gas into the atmosphere than our cars. Electric airplanes offer big advantages over traditional commercial jets and other fuel-powered propeller airplanes.

The advantages of an electric powered engine allows the electric airplane to not only reduce gas emissions but also reduce noise pollution. An aircraft engine, which uses solar and wind power, can produce enough energy to propel an aircraft.

Not only does it help to reduce climate change but it also helps to prevent engine failure. One of the biggest contributors to climate change is transport and the harmful gases produced by vehicles using petrol or other fossil fuels.

| Pros | Cons |
|---|--|
| It causes less noise pollution as the planes moves swiftly. | Electric airplanes cannot fly as far normal airplanes. |
| It does NOT produce harmful gases which can cause climate change. | Even modern airplanes that are electric cannot completely rely on solar energy, as they need batteries which can fail. |
| Much more efficient because of the new motors and also flies more smoothly. | There are not a lot of charging points in the world, so recharging is very difficult. |





Brief journey around the world!

Hello, I'm Akshaj and I am joined by my BF Pranit on a journey round Europe. We are going to talk about some things that are going on in the world to help fight climate change.

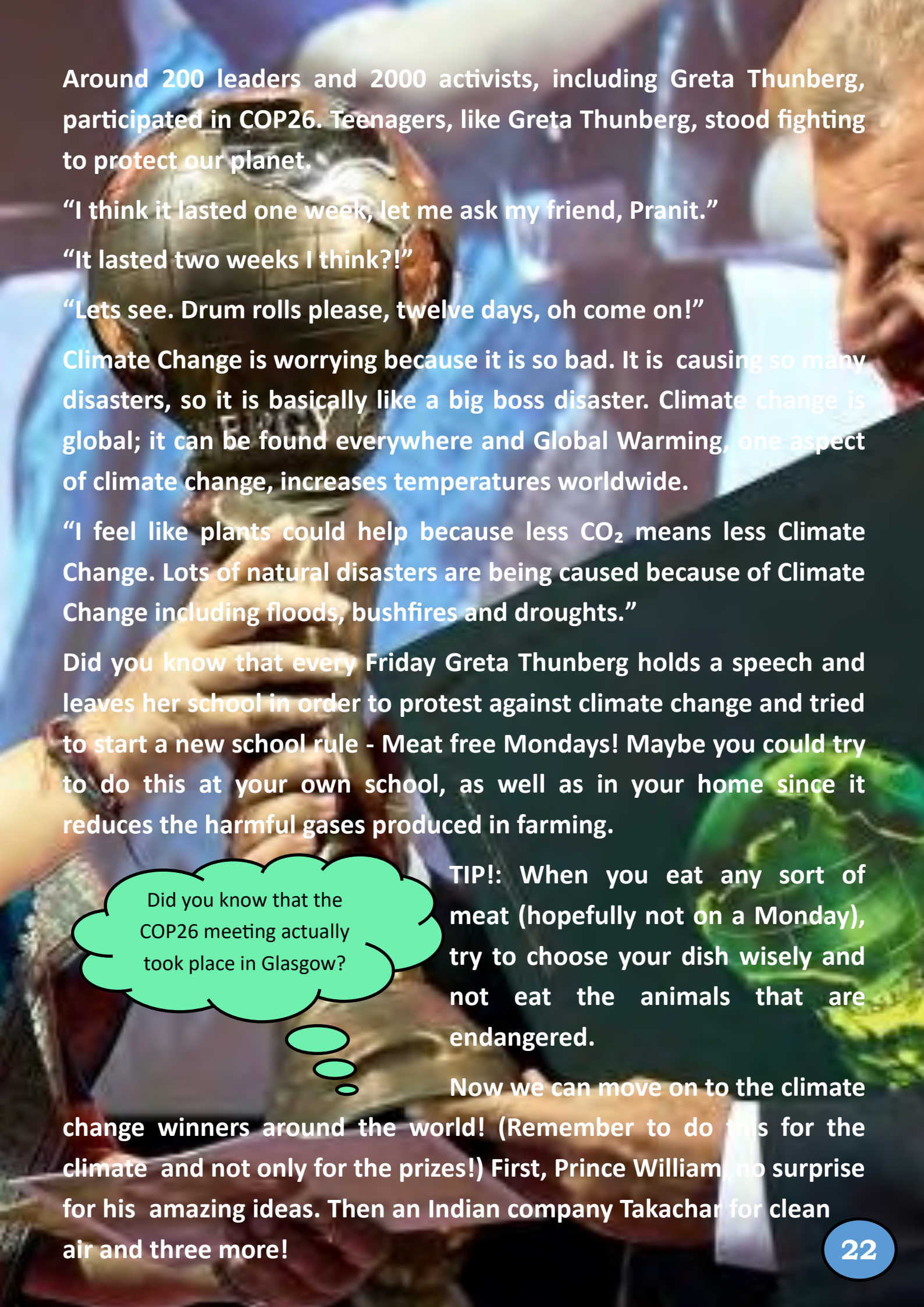
While doing so, we are also going to have a fun adventure travelling in an electric aeroplane around Europe. We are so excited to meet people like Greta Thunberg in Sweden! No hesitation, lets go! As you already know our heroes are Greta Thunberg and David Attenborough. Personally, my favourite is Greta Thunberg. I don't know about Pranit, I'll ask him...

"Hey, Pranit! Hey! One thing who are you most excited to meet?"

"Definitely Attenborough, not just because of COP26 but also because of his amazing encouraging documentaries."

".... ANYWAY Pranit, lets get back to Europe! Specifically Glasgow in Scotland, where the COP26 meeting actually took place in November 2021."

Did you know that electric airplanes are able to rely on water power and can land and take off from almost anywhere?

A person is holding a small, metallic globe. The background is blurred, showing other people in a crowd.

Around 200 leaders and 2000 activists, including Greta Thunberg, participated in COP26. Teenagers, like Greta Thunberg, stood fighting to protect our planet.

“I think it lasted one week, let me ask my friend, Pranit.”

“It lasted two weeks I think?!”

“Lets see. Drum rolls please, twelve days, oh come on!”

Climate Change is worrying because it is so bad. It is causing so many disasters, so it is basically like a big boss disaster. Climate change is global; it can be found everywhere and Global Warming, one aspect of climate change, increases temperatures worldwide.

“I feel like plants could help because less CO₂ means less Climate Change. Lots of natural disasters are being caused because of Climate Change including floods, bushfires and droughts.”

Did you know that every Friday Greta Thunberg holds a speech and leaves her school in order to protest against climate change and tried to start a new school rule - Meat free Mondays! Maybe you could try to do this at your own school, as well as in your home since it reduces the harmful gases produced in farming.

Did you know that the COP26 meeting actually took place in Glasgow?

TIP!: When you eat any sort of meat (hopefully not on a Monday), try to choose your dish wisely and not eat the animals that are endangered.

Now we can move on to the climate change winners around the world! (Remember to do this for the climate and not only for the prizes!) First, Prince William, no surprise for his amazing ideas. Then an Indian company Takachar for clean air and three more!

Ecstatic Electric Electronics

By Pranit Narkar 5G

While we watch airplanes fly,
Volcanoes will erupt in every breeze,
Petrol is running out,
But with Electricity you can roam about,
When mighty avalanches will form
And the world will be a storm.
Recycle, recycle. RECYCLE!
And always ride your bicycle

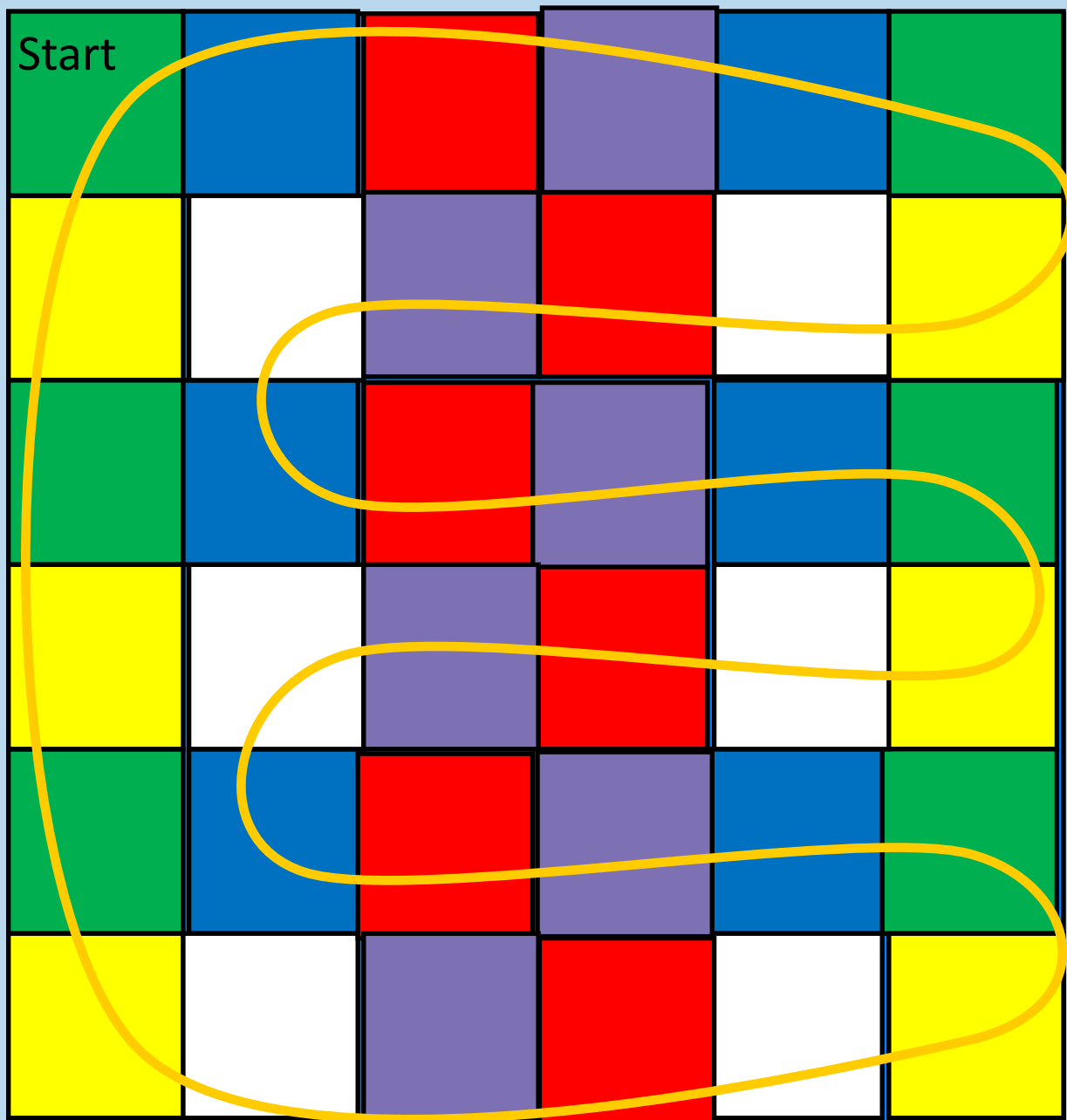
Once was a wonderland of green,
But the scenery is not serene,
The gas pressure will not wait,
As our impending doom awaits!
Loads of flowers are growing into full bloom,
DON'T lead them to their doom!
Recycle, recycle. RECYCLE!
And always ride your bicycle.

We can build water based aeroplanes,
And make loads of money rain,
Once there were fossil fuels,
Don't get involved with gas duels!
Recycle, recycle. RECYCLE!
And always ride your bicycle.

Make sure you drive Electric cars,
or the pollution police will put you in bars!
There are gas thieves,
And the carbon dioxide weaves,
We can use the solar,
For the eyes it makes it cooler,
Recycle, recycle. RECYCLE!
And always ride your bicycle



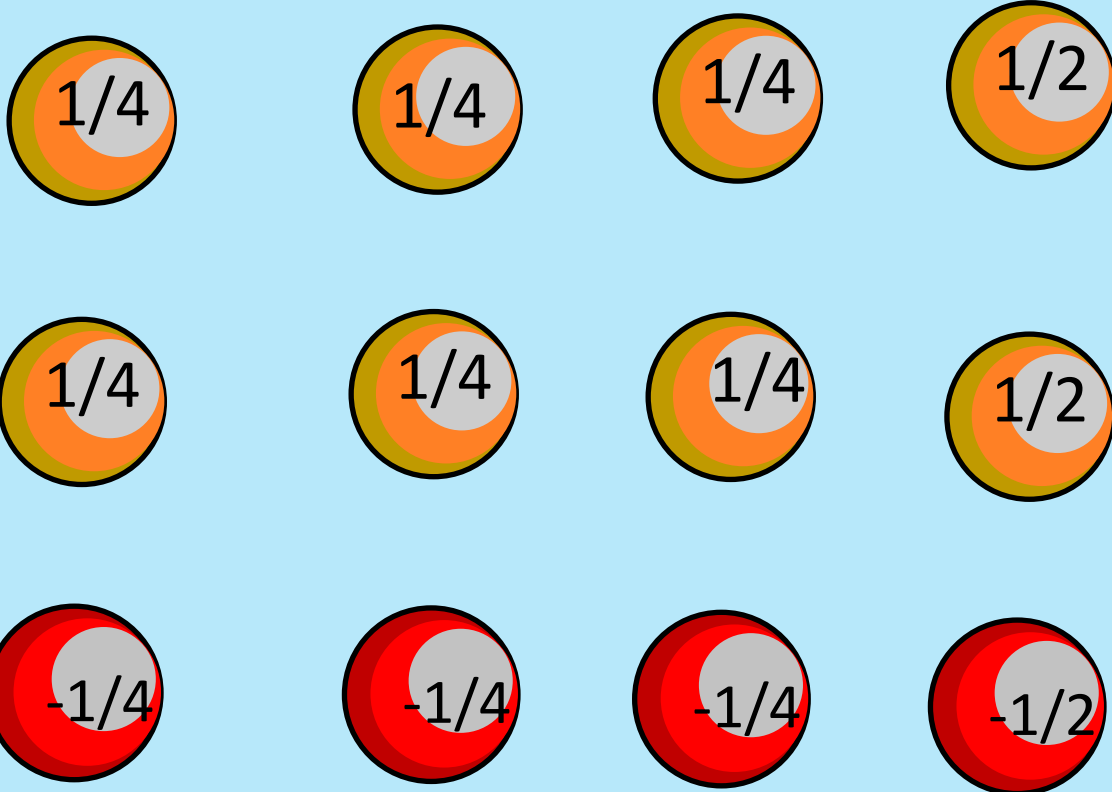
Cool Climate Race!



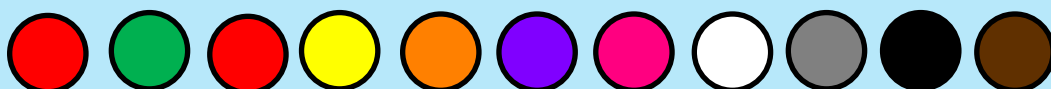
Counters

Cut these out:

Climate counters



Player counters



Instructions

AIM: Beat Climate change by Collecting Climate Counters adding to 1 in this action-packed adventure!

SETUP: Put the Climate Counters on the board in different random squares. Choose 1 player counter each. Put them at the start, get a die, and race!

PLAYERS: 2 or 3

HOW TO PLAY: Roll a die on your turn. Move your player counter that many squares along the orange path which takes you round in an endless loop. Pick up a Climate Counter if you land exactly on it. The Yellow Climate Counters advances you in your journey and Red Climate Counters are Setbacks. ENJOY!!

END OF GAME: The game ends when either somebody's Climate Counters add to 1 (Beats Climate Change) or all the Climate Counters have been picked up.

RULES: If you land on:

Blue or White – You don't do anything.

Red - Go back to start.

Yellow – Move forward 5 spaces.

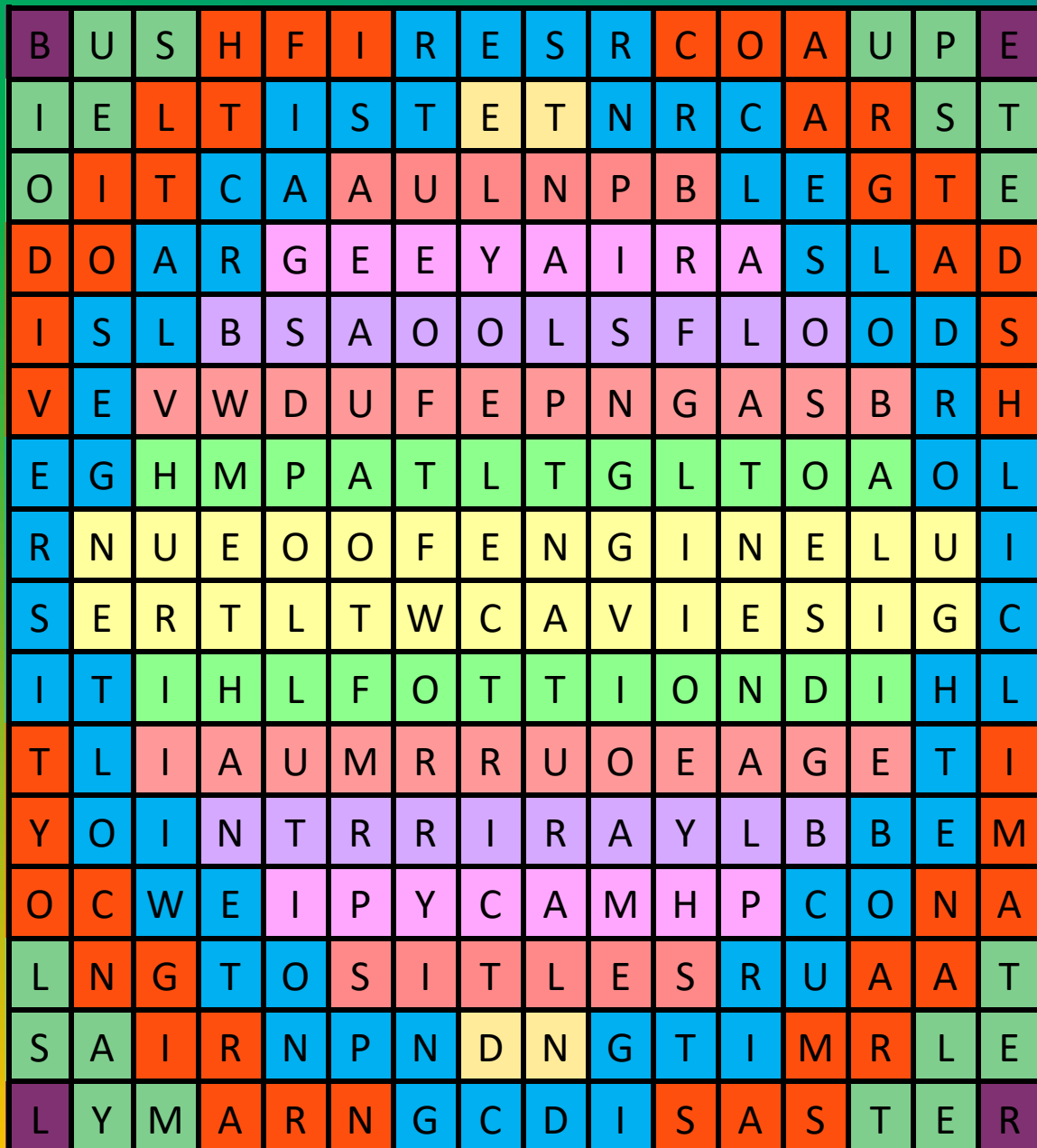
Green - Pick up the nearest token but don't move your player counter

Purple - Put all your tokens back to random spots and start from 0.

Anagrams with Wordsearch

LCITREEC ACSR LALGOB RYRNWIOG SGA THANEEM
 TRNALAU PNELARIA TMIEACL LTOLPOINU TOROM HOGTDUR
 FSIBSREH LTNPSA SRTAEDSI EGINEN BOIDVIREYTIS LOFSDO

All of the words can be found in our Electric Cars article section.



I found bushfire in
an anagram

Do the climate change themed anagrams and
find them in the wordsearch

Clues:

Easy

Across

1. Describes 'Coming from the sun'.
2. The type of car that runs on electricity.
5. Where an airplane takes off.
7. The Solar bodies that orbits planets.
8. A Famous Swedish environmentalist.

10. Climate change is _____.

11. The fuel that petrol cars run on.

12. The wildlife around us.

Down

1. What the sun is.
3. _____ Change.
4. The most common driveable thing.
6. Something members of the Public Fly in.
9. A type of natural disaster

commonly found in Australia.

Hard

Across

1. A type of power.
2. The type of car you need to have before 2030.
5. The departure site at an airport.
7. The Solar body that causes rainfall.
8. The youngest TIME person of the year.

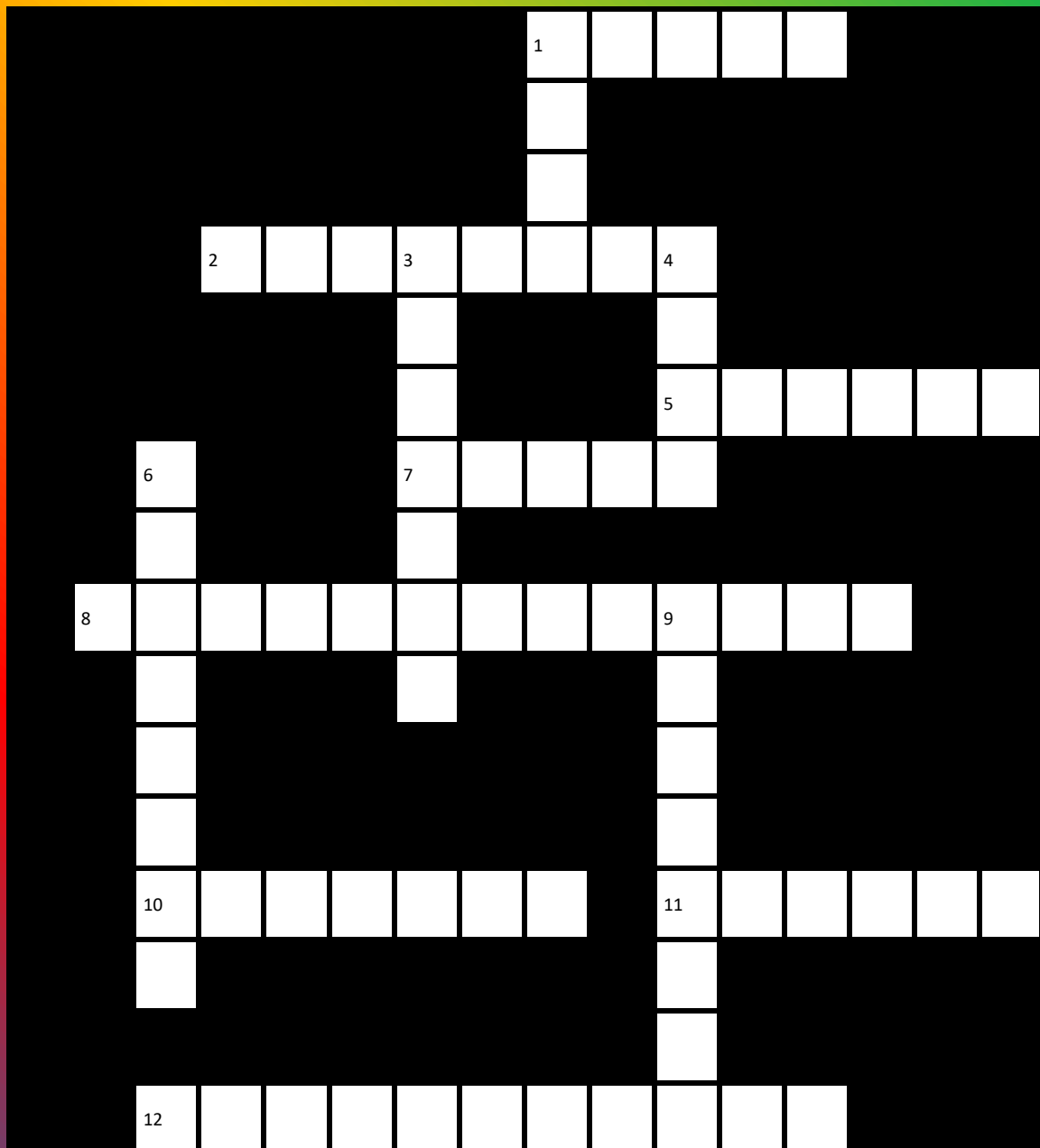
10. Things that are not done on purpose by civilization.

11. Diesel is a _____ fuel.

12. Flora & Fauna

Down

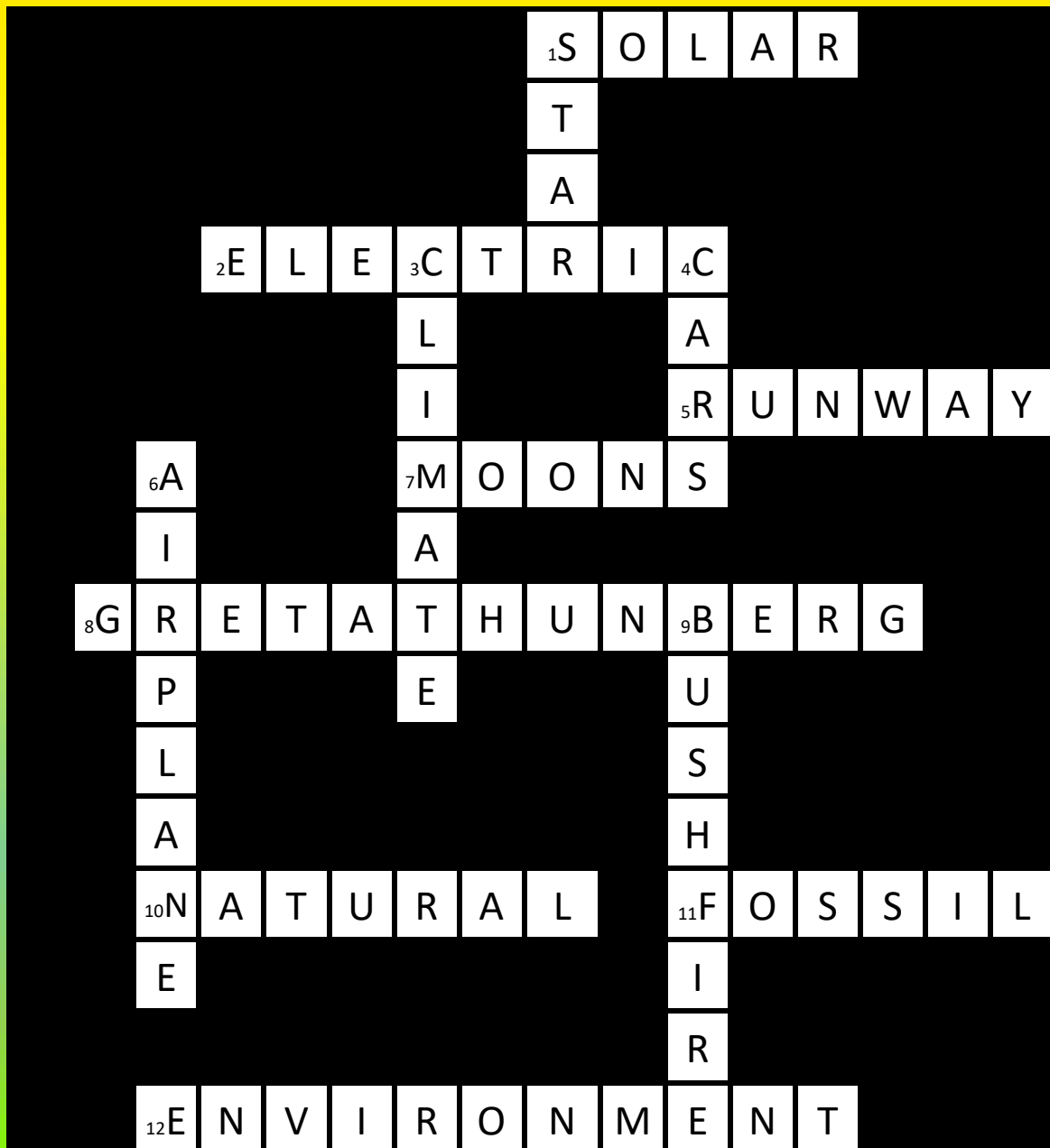
1. A hot floating body that a planet orbits.
3. Climate Change is increasing this by 3°C
4. Four wheeled vehicles.
6. A steel thing that defies gravity.
9. A type of Fire.



Answers

Anagrams

| | | | | | |
|-----------|----------|----------|-----------|--------------|---------|
| ELECTRIC | CARS | GLOBAL | WORRYING | GAS | METHANE |
| NATURAL | AIRPLANE | BAD | POLLUTION | MOTOR | DROUGHT |
| BUSHFIRES | PLANTS | DISASTER | ENGINE | BIODIVERSITY | FLOODS |



Energy Zappers

Energy has been used by humanity for thousands of years to power their homes, industries and transport systems. Following the explosion of the human population, the demand for energy increased by several folds. To meet this demand, several energy sources have been developed. Table 1 below shows the different types of energy sources.

| Energy Sources | Renewable or Non-renewable | Usage |
|----------------|----------------------------|-------|
| Fossil fuels | Non-Renewable | 84% |
| Nuclear Energy | Non-Renewable | 4% |
| Hydropower | Renewable | 6% |
| Solar Energy | Renewable | 5% |
| Wind Energy | Renewable | |
| Other | Renewable | 1% |

Table 1 – Types of Energy Sources

Fossil Fuels

Fossil fuel energy is made by burning coal, oil and gases.



Coal



Oil

Advantages:

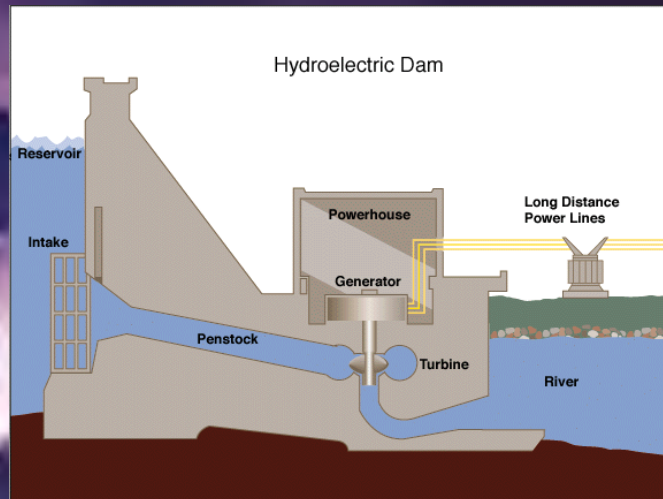
- Fossil fuels have been used for decades so they are easy to use.
- They make large amounts of energy cheaply.

Disadvantages:

- Burning these fossil fuels will release greenhouse gases like carbon dioxide, accelerating the pace of global warming.

Hydropower

Hydropower energy is generated using flowing water which goes through a spinning turbine, which turns a shaft that is connected to an electric generator. The more water that flows in, the more power is generated.



Hydro-electric power plant

Advantages:

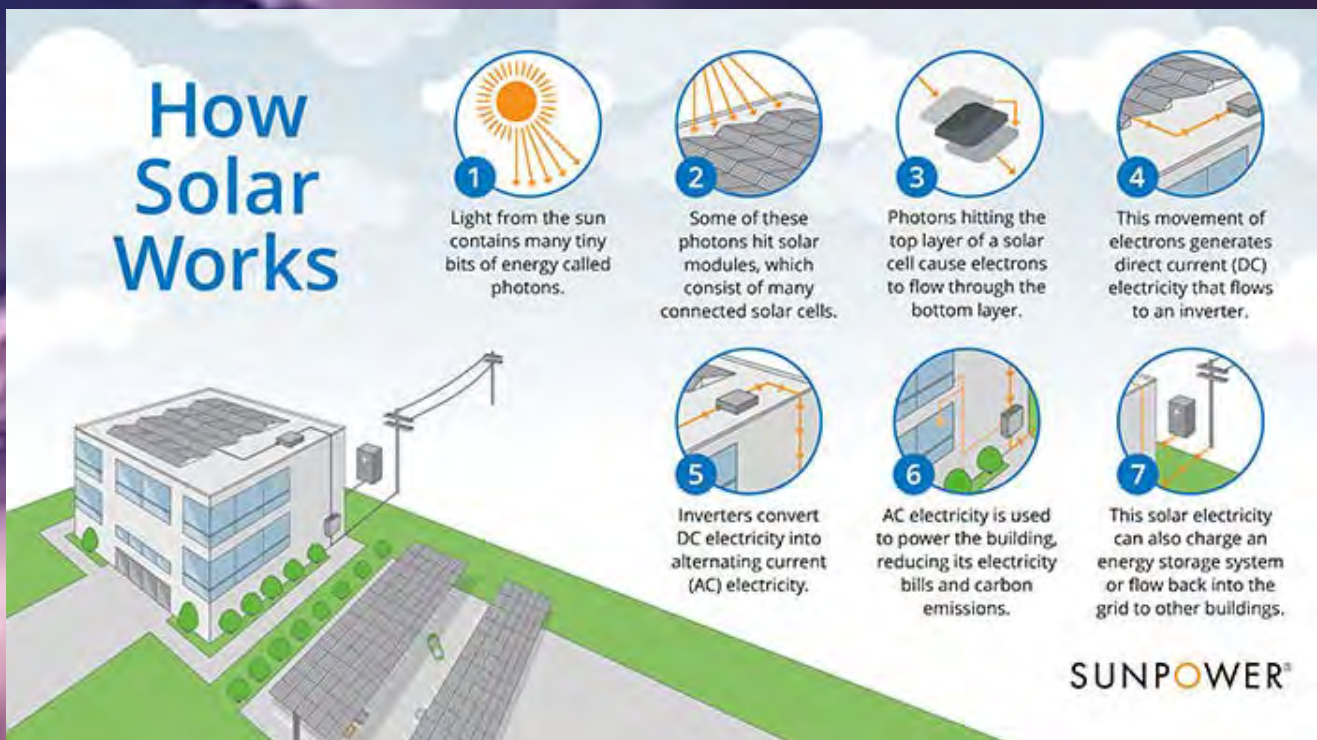
- Hydroelectric power does not create carbon emissions.
- Dams can reduce the risk of a flood and a water shortage.

Disadvantages:

- Dams cost a lot to build.
- Wildlife in the area will lose their habitats.

Solar Energy

Solar panels use the sun's energy to make electricity.



The process of how solar panels create electricity is in the picture above.

Advantages:

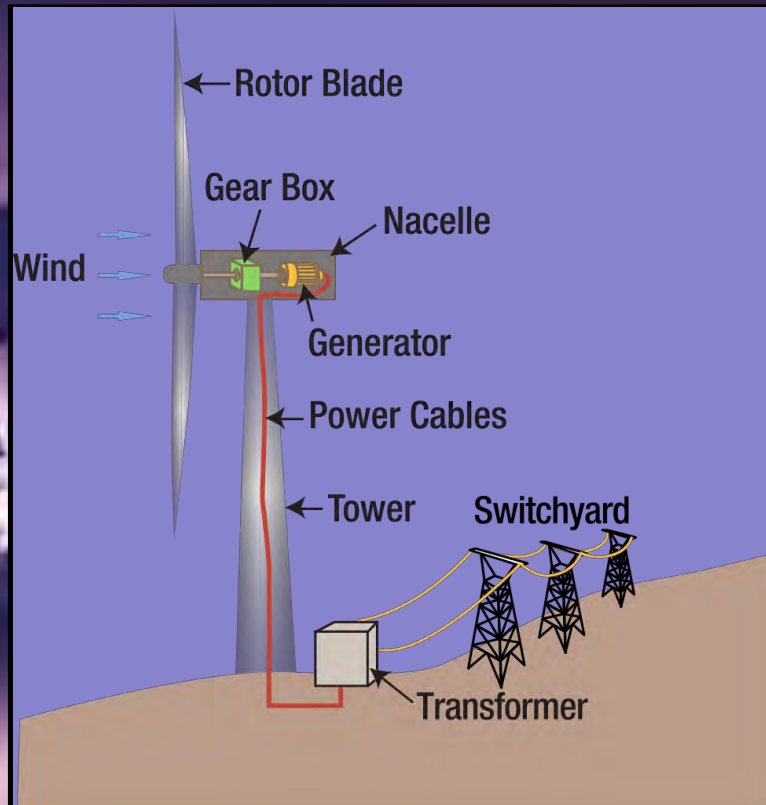
- Solar energy does not produce any carbon emissions.
- Solar panels can be installed on the roof of houses allowing households to become more secure with energy.

Disadvantages:

- Equipment needs to be maintained regularly.
- Fossil fuels are needed to manufacture the panels.
- It is not effective at night or on a cloudy day.

Wind Energy

Wind turbines work like this: wind turbines use wind to make electricity. Wind turns the blades of a turbine around a rotor, which spins a generator, which makes electricity.



Advantages:

- Wind energy does not emit carbon.
- The ground below wind turbines can be used for something else.

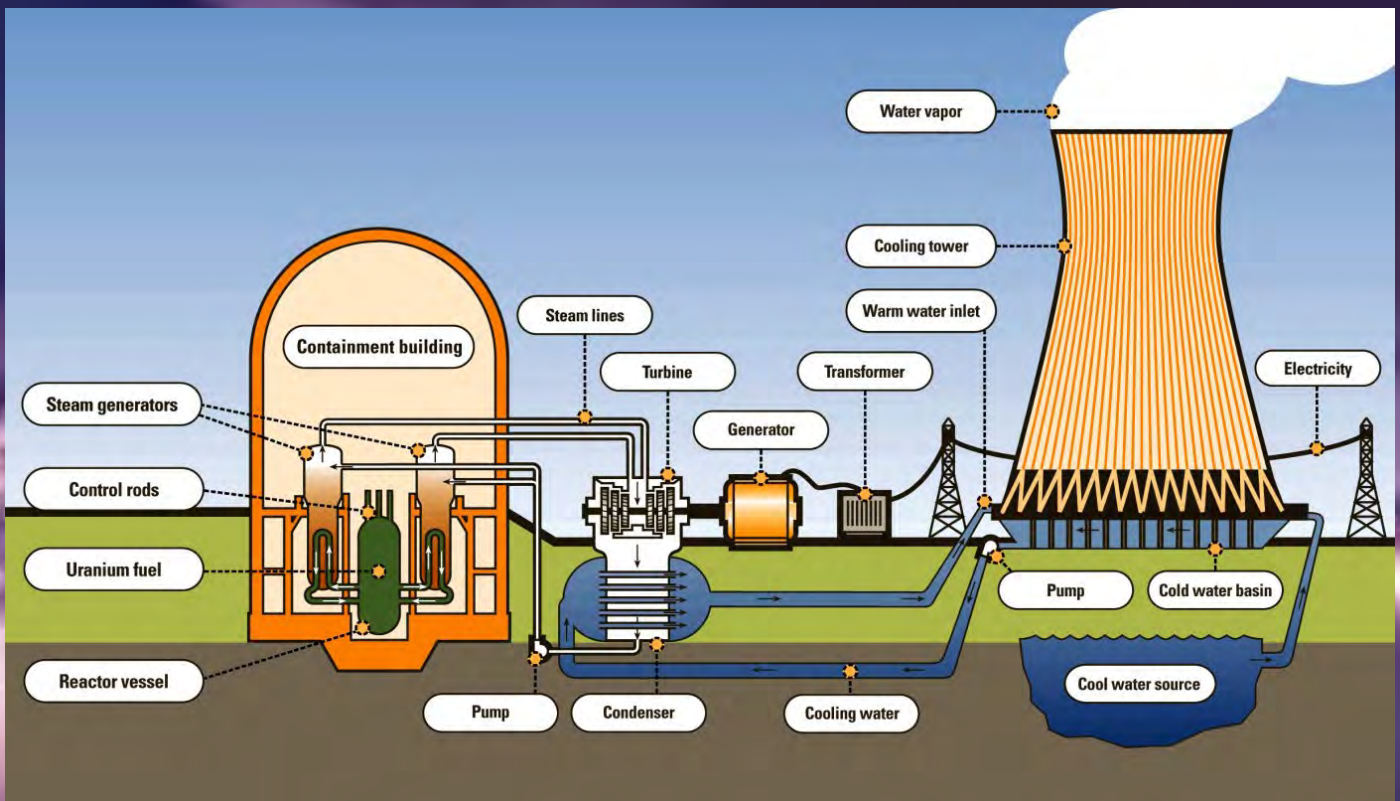
Disadvantages:

- The wind turbines only work when there is wind.

Nuclear Power

The nuclear reactor creates heat by splitting atoms to make steam. The steam goes through a turbine which is connected to a generator, which uses an electromagnet (a magnet which is running on electricity) to create electricity.

This has low carbon emissions but some people hate this idea, as there have been many accidents like the Chernobyl 1986 nuclear disaster in Russia and the Fukushima 2011 nuclear disaster in Japan.



Advantages:

- No greenhouse gases are produced.
- More energy is made with 1kg of uranium than 1kg of fossil fuels.

Disadvantages:

- Radioactive waste is formed so it needs to be stored safely for centuries.
- If the reactor explodes, it could cause loss of lives and the conditions will become uninhabitable for years due to radiation..

Even though a few massive disasters occur and radioactive waste would form, in my opinion nuclear power is better because it causes less deaths per energy unit than fossil fuels, which is our main enemy right now. Hence, we should stop decommissioning nuclear power plants for fossil fuels for a better world.

QUEST

Try to go through this journey and to the end, you need to crack the code to get a prize. However, there are fossil fuels. You will start at 0pts. Every time you are in a fossil fuel zone, you will lose 1pt but if you pass a clean energy zone, you will earn 1pt. Find the letters and unscramble them to find the code. If you get as low as -5pts, you will LOSE.

Starting point

X

N

(Clean energy)

(Fossil fuels)

L

U

C

A

E

R

CODE

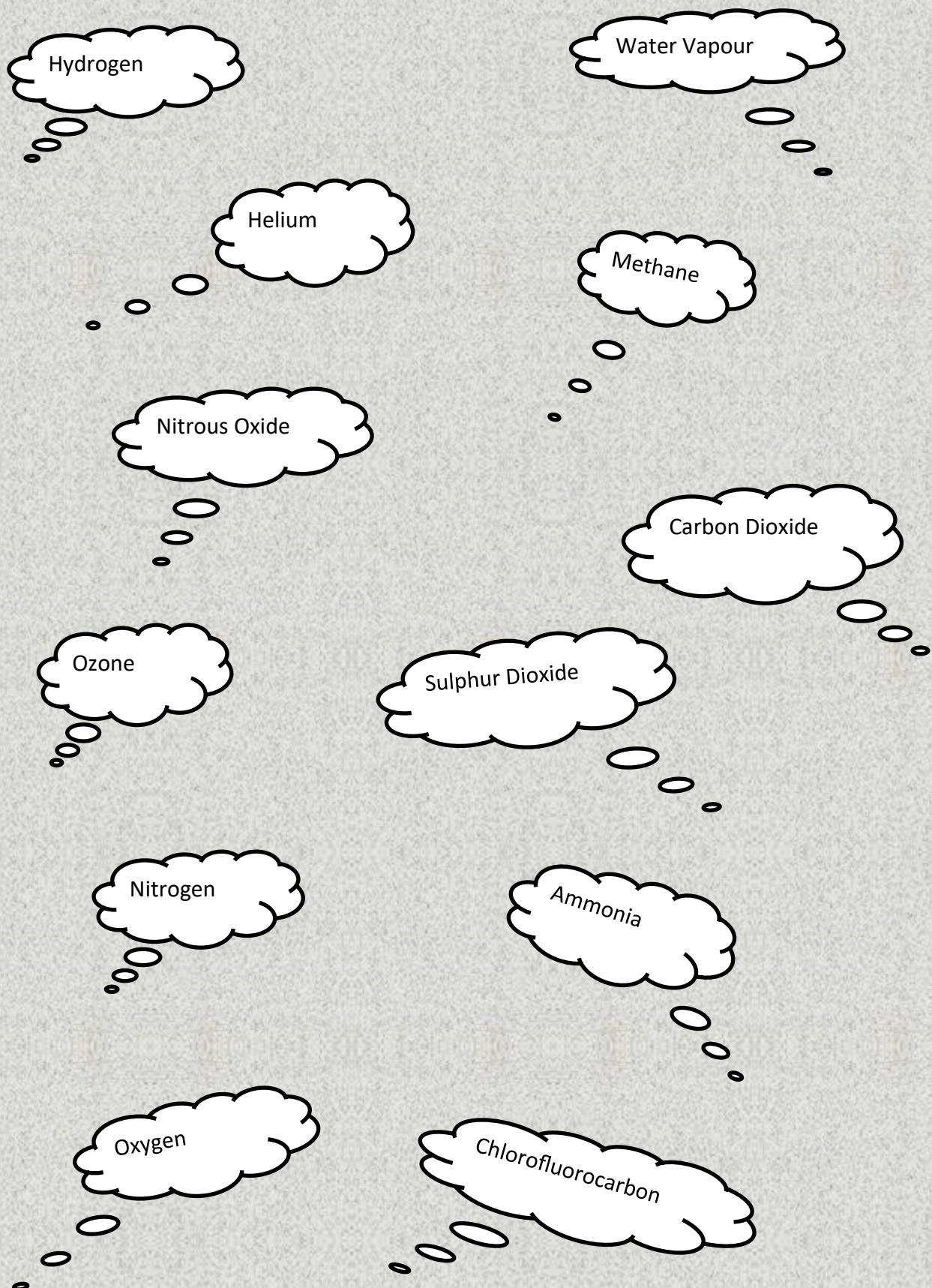


The prize is an electric car!



QUIZ

Can you identify the greenhouse gases below?



Let us end with a story. This one is about a man who works nearby a power station. He describes the scene outside his workplace.

Looking out of my window, I saw black smoke coming out of the fossil fuel power plant in abundance. I really hate fossil fuels: the putrid greenhouse gas emissions from the power plants are one of the factors why global warming is destroying the planet right now.

I remember my lungs felt impure and the next moment I was coughing so madly, that I felt as if I was coughing my insides out! I also saw other people coughing even more than I did, because they were not used to such conditions. A week ago, somebody needed to go to hospital as he could not breathe because of the fumes. These fossil fuels are horrendous!

The thing that particularly caught my attention was the soot that was starting to form on the windows. This is making an unhygienic environment everywhere, which is concerning many people in this building. We really should plant more trees and phase out fossil fuels to clean energy to make the world a better place!

Reflecting on what I saw, I thought to myself that fossil fuels are the worst source of electricity, yet it is the most widely used. From then on, I wished and still wish to seek ways to get sustainable clean sources of energy and not use fossil fuels anymore.

By Haren Ranjith 6G

RENEWABLE ENERGY

Wind Energy:

This is created using **wind turbines**. The wind **turns** the **propeller-like blades** of the turbine and this spins a **generator** which creates **electricity**. There are about **11,000** wind turbines in the UK and these meet the electricity demand of over **12 million houses**. Even though this option is available, many houses still use **harmful fossil fuels** as they last longer and are cheaper.

Solar Energy:

Solar energy is created using **rays from the sun** that are captured by **solar panels**. The panels **absorb the energy** from the rays and use it to provide the building with **electricity**. The panels can also absorb **heat** to **warm up water** and **central heating**.

Hydro Energy:

Hydro energy is created by using the **movement of water**. The water flow **spins a turbine** which **turns a shaft** that's connected to an **electric generator**. The energy from the generator **flows all through your home**.

Nuclear Energy:

Nuclear energy is created by **splitting an uranium atom**. This generates **heat** which **produces steam**, which is used by a **turbine generator** which generates **electricity**. But this method is extremely dangerous as **explosions could occur**. This is why there are only a **few nuclear power plants** in the world.



Solar! Solar!

*Solar Energy,
Energy from the sun,
It can power hundreds of things,
It can help everyone.*

*The sun's rays' power me,
A solar panel doing my part,
I turn sun particles into energy,
As for solar energy I'm the heart.*

*I am better than fossil fuels,
I don't cause climate change,
I am even better than hydro because,
Water doesn't go to waste.*

By Saayuj Shankar 60

Word Search

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| N | B | E | L | R | J | S | S | A | D | R | I |
| F | U | T | Y | G | H | J | O | I | E | R | A |
| E | D | C | F | R | V | X | L | G | Z | E | S |
| W | Q | R | L | E | T | Y | A | I | O | N | P |
| B | G | A | S | E | S | N | R | M | K | E | J |
| E | D | F | G | N | A | H | P | K | X | W | D |
| N | E | E | R | H | T | R | A | D | O | A | F |
| E | L | C | H | O | H | Y | D | R | B | B | O |
| R | F | D | I | U | Y | T | D | A | L | L | C |
| G | A | S | T | S | Y | Y | U | H | J | E | L |
| Y | Z | Q | N | E | H | M | O | M | O | T | A |
| T | Y | T | I | C | I | R | T | C | E | L | E |

Nuclear

Solar

Greenhouse

Renewable

Energy

Electricity

Gases

Atom

Hydro



ANAGRAMS

1. LOARS _____

2. UBRINEJ _____

3. OWERP _____

4. OTAM _____

5. NUS _____

6. RENHSGEHOE ASG _____

(2 WORDS)

7. JNSP _____



I am the worst polluter on the planet!



No, I think I'm the worst polluter on the planet.



I'm way worse than you two, you can't compare with me!



We are just going to leave now....

Deforestation – Causes and Effects

Why do forests matter?

Forests cover about 30% of the land mass and provide safe habitats for many plants animals and human tribes. The Amazon, also known as 'the lungs of the Earth, provides 20% of the Earth's oxygen. Trees hold up to 45% of the land's carbon. When trees are burnt for land, this carbon is released back in to the atmosphere!

Reasons for deforestation

Deforestation is loss of forested areas due to human activity such as farming, building and mining. In many countries deforestation is for farming (for animal feed, food for export e.g. coffee, palm oil, avocados, grazing of animals for meat and dairy), and for wood and building for growing populations, and mining of minerals and precious stones.



Deforestation for mining and wood



Deforestation for monoculture farming such as Palm Oil

There has been approximately 14,800 square miles of deforestation every year which is about the size of Switzerland. Although the rate of deforestation has reduced slightly over the last few years, it is still continuing at an alarming rate. Much deforestation is approved by governments for economic reasons, however a large proportion is illegally carried out by logging companies and by local farmers.

Local Effects of deforestation

Deforestation causes loss of habitat for plants and animals and many are now endangered. Many indigenous tribes still live in the rainforests and their way of life is being threatened. Clear cutting and burning of trees causes soil erosion resulting in changes in the water cycle. This is often catastrophic with land-slides and further damage to habitats for endangered species and local villages

Global Effects of Deforestation

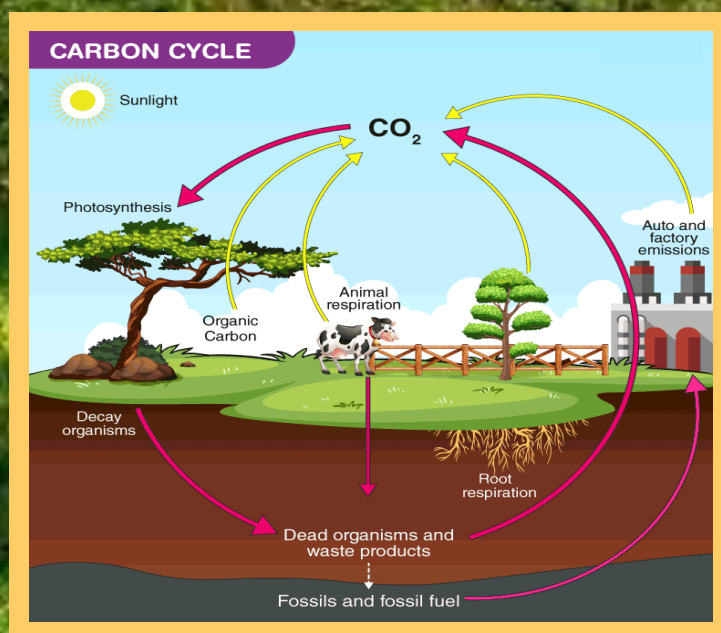
Loss of trees worldwide effects the amount of carbon dioxide absorbed from the atmosphere, and the oxygen released. Furthermore burning of trees releases stored carbon into the atmosphere along with other greenhouses gases. This causes global warming which is now one of the causes of polar melting, melting of permafrost (frozen peat which releases even more carbon), sea levels rising and changes in climate worldwide.



Landslides caused by deforestation and extreme rainfall



Indigenous Tribe of the Amazon



What can we do?

To prevent deforestation we can recycle the things we do not need, instead of putting it in the general waste. You can recycle plastic, wood products, glass and metal and batteries/computers. We can also plant trees in our gardens to restore their numbers. Upcycling - we can reuse things we do not need and use them for a different purpose. For example, wellington boots can be used as plant pots. We can all try to reduce our meat and dairy intake, as most soya beans and grasslands that are grown in the deforested areas are used for animal feed.

We should all check where our food comes from and whether any ingredients used are sustainably sourced. For palm oil look for the RSPO (Roundtable on Sustainable Palm Oil) and for wood and paper look for the FSC (Forest Stewardship Council) logo.

At the recent COP26 in Glasgow 2021, 197 countries had pledged to reduce deforestation and to reforest. Tree of varying local species are planted for biodiversity. In Africa trees are being planted on the edge of the Sahara desert to try and reduce to spread of the dry desert climate (afforestation).

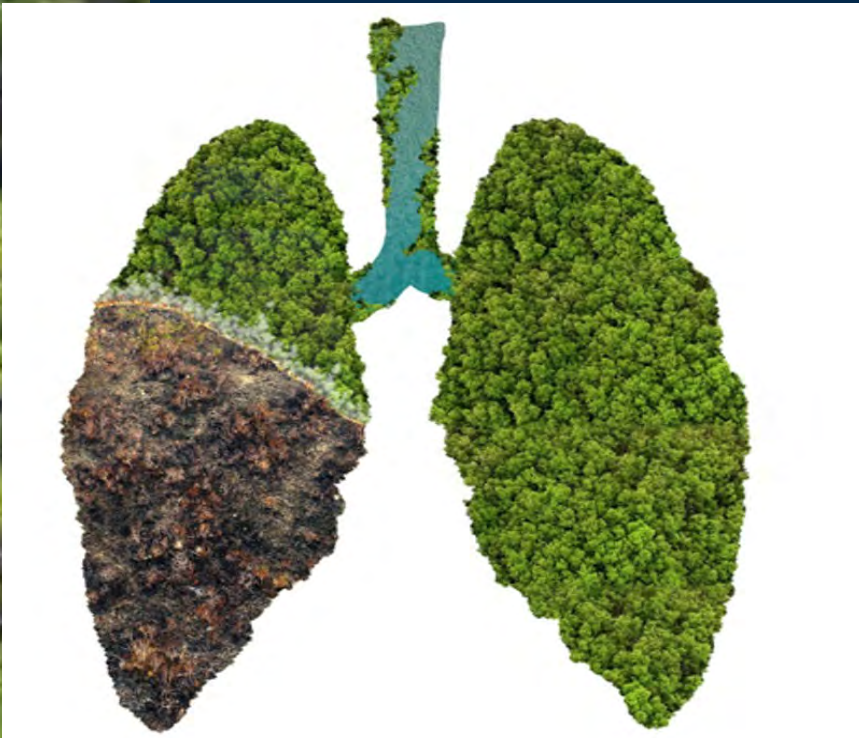
Climate change is also causing natural forest fires and work needs to be done to reduce this.

No matter how small, we can all do something to help recycle, and re-use to reduce waste and reduce our demands on the rainforests.

By Khai Shah 5G

Breathing Cycle

Forests are known as the lungs of the Earth. Animals and plants rely on each other for breathing. Animals breathe in Oxygen (O_2) and release Carbon Dioxide (CO_2). The plants breathe in CO_2 and release O_2 that you breathe in. When you cut down trees, the CO_2 gets released into the atmosphere and is harmful as well as the CO_2 we release. This amount is even more than the depleting trees can breathe but it also increases because of natural causes like volcano eruptions but only a tiny fraction is caused by natural causes. Most of it we can control and have a breather of a life! Get it? I guess that is a no.



Food Chain

The animals rely on plants and each other to survive. For example, imagine a plant eaten by a caterpillar and a small bird, like a robin, eats the caterpillar. Then, a bigger bird, like a hawk, eats the robin. When the hawk dies, microbes decompose it and release energy that the plants use. Basically, if we carry on chopping plants down, the animals that eat plants will become extinct. The animals that eat those animals, will also become extinct. This will turn into a domino effect until humans die as well. Microbes might survive.



The Impact of Deforestation on Ecosystems

Polar Regions

By cutting down trees more carbon dioxide remains in the atmosphere and traps more heat which increases the Earth's average temperature. This causes the ice caps to melt.

Polar Regions are very important to the Earth and they include animals that you probably won't see anywhere else. Some of these include polar bears, walruses, emperor penguins, arctic foxes, arctic hares, arctic wolf, beluga whales and many more. Lots of these are endangered. The icecaps of the Arctic and the Antarctic are melting at an alarming rate, causing avalanches and rise of sea level.

What If All Icebergs Melt?

It is predicted that if all the glaciers melt, it would be a catastrophe. The icecaps occupy 10% of the surface of the Earth and it would cause the sea levels to rise by 70 metres, causing floods and tsunamis. Many coastal cities would be submerged completely underwater. An example is Djakarta. Also, the icebergs contain freshwater and seawater is salty and lots of fishes, sharks, whales and other creatures depend on this with osmosis. When the icebergs melt, 60% of the freshwater supply will mix up with salt water, contaminating it. Also, many creatures will die because they need saltwater to survive and the freshwater will kill them. Basically, there will be a mass extinction, so we need to stop cutting trees now to have a better future.



By Vihaan Khandelwal 60

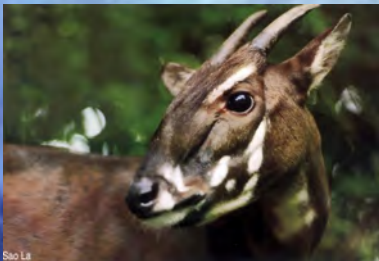
Animals Affected by Deforestation

Endangered species



Giant pandas are endangered but thanks to wildlife reserves, they're being bred in captivity and then released into the wild.

Fun fact: Pandas are the only animal in the world that can do a handstand!



The saola, also called spindlehorn, Asian unicorn, or infrequently, Vu Quang bovid, is one of the world's rarest large mammals, a forest-dwelling bovine native to the Annamite Range in Vietnam and Laos.

Fun fact: There are fewer than 750 saola left in the wild.



The eastern gorilla is a critically endangered species of the genus *Gorilla* and the largest living primate. At present, the species is subdivided into two subspecies. The eastern lowland gorilla or Grauer's gorilla is more populous, at about 3,800 individuals. The mountain gorilla has only about 1,000 individuals.

Fun fact: We share around 98% of our DNA with them!



By some estimates, a century ago 50,000 to 80,000 tigers roamed India alone. Today, the tiger is classified as Endangered in the Red List of Threatened Species published by the International Union for Conservation of Nature (IUCN) and it is estimated that there are only 3,500 tigers remaining in the wild worldwide.

Fun fact: Tiger cubs are born blind and only half of the cubs survive.

A white Arctic fox with blue eyes is lying on a dark, rocky surface. The fox is looking directly at the camera. The background is a blurred, dark blue-grey.

ANAGRAMS

AOLAS—ALSO CALLED SPINDLEHOR

LEONCHAME—MASTERS OF DISGUISE

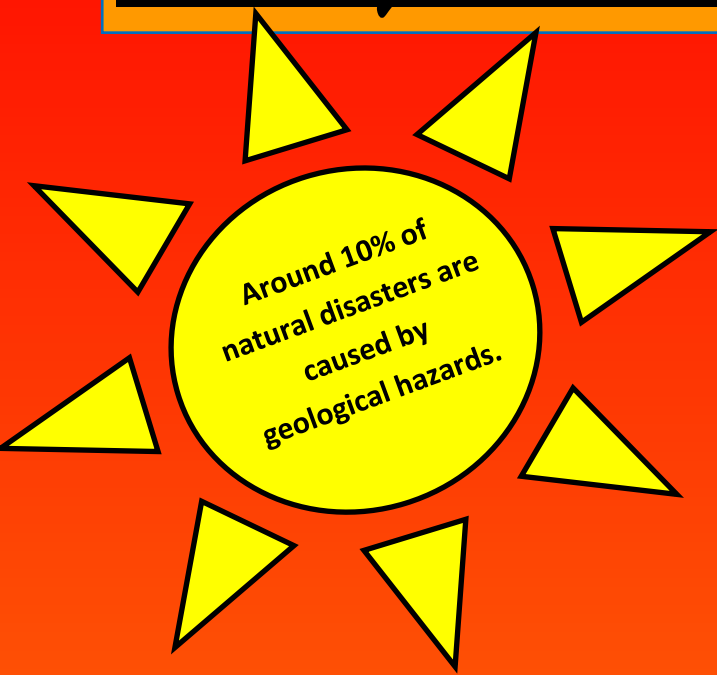
SAXET DENROH DRAZIL—THEY SQUIRT
BLOOD FROM THEIR EYES

RAUGAJ - NATIONAL ANIMAL OF
BRAZIL

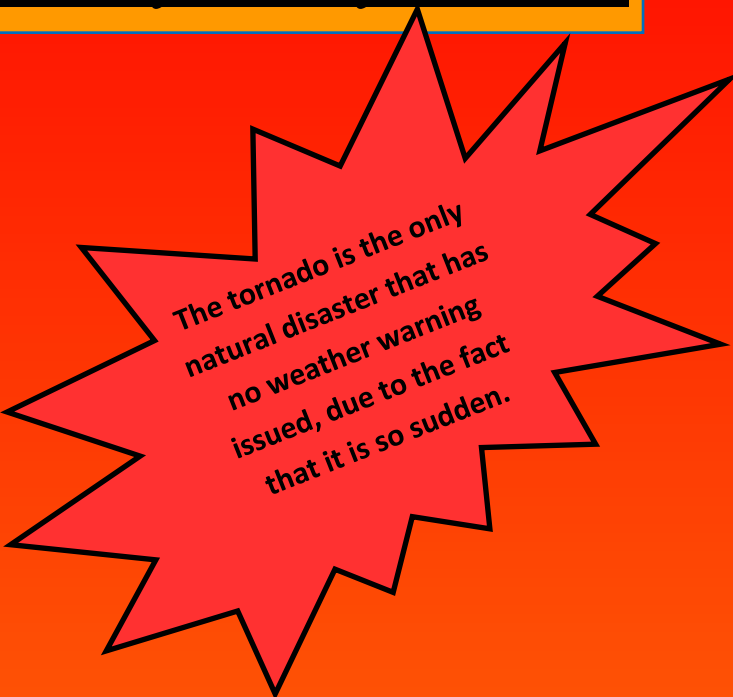
FOWL—THE BACKGROUND ANIMAL OF
THIS PAGE

BY AAROH MEHTA 5G

Deadly, Disastrous Fun Facts!



Around 10% of natural disasters are caused by geological hazards.



The tornado is the only natural disaster that has no weather warning issued, due to the fact that it is so sudden.

Natural disasters are worldwide and occur at any time of the year — they are partly caused by the impact of climate change and have been devastatingly effecting our wildlife. Snow storms are caused by the change of winds and sudden drops in temperature. Wildfires can be caused by the atmosphere heating up, and can ignite and burn masses of plants and destroy and wound an abundant amount of wildlife. Storms are caused by the winds clashing with each other, and the water heating up to form water vapour and swirls in a spiral with the winds. Floods occur when the ocean level rises, this can be due to hurricanes and tornadoes washing up on the shore, and also by climate change as when the snow melts, it turns to water, causing the floods to spread across the land.



On average only 17% of natural disasters involve loss or injuries!



Between 2000 and 2020, 416 deadly and perilous natural disasters were recorded as a whole on planet Earth.

Deadly Disasters—Anagrams

1. *Lofed*

2. *Valahncse*

3. *Seodanrot*

4. *Senacirruh*

5. *Qethaurasek*

1. *Flood*

2. *Flavineches*

3. *Tornadoes*

3. *Hurricanes*



All across the world,...increasingly dangerous weather patterns and devastating storms are abruptly putting an end to the long-running debate over whether or not climate change is real. Not only is it real, it's here, and its effects are giving rise to a frighteningly new global phenomenon: the man-made natural disaster.

— Barack Obama —

Perilous Peace

The Angry Sea,
Bites the beach,
Hurricanes, raucous winds,
Rains of mortal reach,
It's as if Nature wants,
To clean it all away.

Cleanse what we have soiled,
Shattering all rules of decency,
Are we being punished for our sins?
For the disrespect to this Earth.

The disrespect to human feelings?
Who can say?
All we know is that our behaviour,
Does not give Hope much to say.

By Zubiya Shaik 6G

Floods

Floods are one of the natural disasters affecting climate change and causing it too.

What are floods?

A flood is a situation when water overflows from reservoirs and any other water storages. At some point these areas contain too much water, usually due to the amount of rainfall.



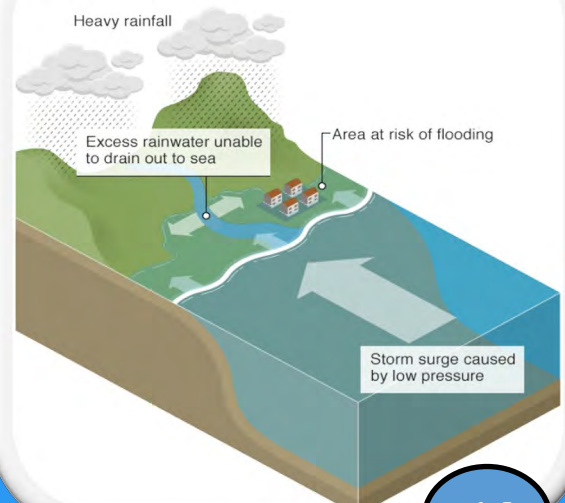
Building submerged in a flood

People can die, be injured and lose many things such as their houses and other owned properties.

These disasters are becoming more common now because of deforestation, people cutting down trees. Now the soil cannot absorb all the water causing the flood. This makes everything worse. Every action links with another to make it worse or better.



Storm surge and heavy rain lead to increased risk of flooding



Floods– Activities

Anagrams

* STARDISE

* TWRAE

* LDOFO

* FVOOWELR

* BUSREMEGD

* Submerged

* Overflow

* Flood

* Water

* Disaster

Answers

Match these different years in which floods happened with where they were situated. The first one is done for you!

| Places | Years | |
|----------------------------|-------|--|
| 1. Thailand | 1333 | |
| 2. Peking (Beijing), China | 1995 | |
| 3. Gujarat, India | 2017 | |
| 4. Florence, Italy | 1890 | |
| 5. Mississippi, USA | 1927 | |

Answers
 5. 1927
 4. 1333
 3. 2017
 2. 1890

Flooding Word Search!

Rivers and Flooding

V H U O Z Q F L O O D P L A I N U
V Y R A T U B I R T E R O S I O N
N O I T A T I P I C E R P H M G T
H Y J S E K A L F I Q M B I Z F W
B I N F I L T R A T I O N M G B A
F R H P N K Y D Z S M R W P W N X
G H T U O M A E R T S U W E Y O M
G Z C V L N L R L W W B G R X K H
D O O L F N I A A L Y F L M T B U
X G K H N V E T I R A E D E L T A
G P X Q E S E K A Z N V A A J L H
N R D R W R V U N N T K U B A D O
Z O R G C J T T A A W V U L Y I C
Y F O Y H S W H Q N B P P E Y R E
V I C L E R C A Z Q S O U R C E A
D L C R C K W A R M H R C D U F N
E E D F A K K E L B A E M R E P U

watercycle
impermeable
floodplain
profile
erosion
source

sea
permeable
flood
bank
lake
tributary

ocean
infiltration
stream
channel
mouth

precipitation
estuary
valley
delta
river

By Annika Cegla 60

Wildfires

Many wildfires have been happening recently on Earth. These disasters have a big impact on climate change and are mainly caused by humans.

What are wildfires?

Wildfires are uncontrollable infernos. Wildfires often occur in wild, unpopulated areas, but they can occur anywhere and harm homes, agriculture, humans, and animals in their path. They are also known as conflagration.

What is the impact of wildfires on climate change?

Humans are the main cause of wildfires. Forests and woods are dry because there is less water in them as temperatures are rising. People are being careless with nature and throwing away cigarettes and match sticks in forests, which means that these little acts will lead to large, dangerous fires. They also release greenhouse gases making the atmosphere worse.



Recent Examples of Wildfires
Greece, 3 August 2021 – 3 people were killed, 20 were injured and a dozen houses were destroyed.
Australia, 1 February 2021 – 86 houses and 2 fire trucks were destroyed, and an area of 10,500km² burned.

Wildfires – Activities

Spot The Difference



Fill in the gaps

A wildfire is an _____.

The three things needed for a fire are _____, _____ and _____.

They are called the _____.

Fires are _____.

Wildfire Wordsearch

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| H | A | E | T | W | I | T | A | E | H |
| N | O | I | T | S | U | B | M | O | C |
| H | L | E | U | F | M | C | L | D | F |
| Y | R | K | R | R | R | O | H | E | I |
| D | E | J | E | I | K | L | K | A | R |
| R | S | L | S | A | F | E | W | E | R |
| O | C | M | C | G | L | D | E | I | F |
| G | U | N | U | K | A | I | L | L | D |
| E | E | O | W | I | M | U | Z | I | G |
| N | D | P | Q | U | E | V | Y | X | W |

Wildfire

Combustion

Fuel

Smoke

Heat

Char

Flame

Rescue

Hydrogen

Safe

By Annika Cegla 60

Avalanches

An avalanche occurs when a layer of snow collapses and slides downhill. They are caused by four factors: a steep slope, snow cover, a weak layer in the snow cover and a trigger. Roads and railway tracks may be rerouted to reduce risks and safe avalanches may be triggered in dangerous snow packs.

Thousands of avalanches occur in Canada each year due to this type of disaster. They happen in all regions of Canada, but are more frequent in the mountains of British Columbia, Yukon and Alberta.

Avalanches can be triggered by wind, rain, warming temperatures, snow and earthquakes. They can also be triggered by skiers, snowmobiles, hikers, vibrations from machinery or construction. Falling masses of snow and ice pose a threat to anyone on snowy mountainsides. Although beautiful to witness from afar, they can be deadly because of their intensity and seeming unpredictability.



If the temperatures get warmer, you have a larger ratio of your precipitation coming in the form of rain rather than snow. Wet avalanches occur when warm temperatures, sun or rain cause water to percolate the snowpack and decrease its strength.



My life as an avalanche:

The rain has made me feel like a slushy; I'm usually strong and rigid. I am slipping like there's butter under me. After just three days in this state, I feel myself sliding off my mountain. I tumble down at an immense speed and clobber numerous forests and kill sorry animals. I somehow find myself on course to collapse into a puny human village. I panic and end up turning into a watery, curled heap before descending upon my naïve target.

Avalanche Word Search

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| G | E | C | O | S | Y | S | T | E | M |
| I | C | E | C | A | P | S | B | D | A |
| E | F | A | F | D | C | T | A | E | H |
| W | H | I | C | J | K | F | X | V | F |
| T | S | Y | A | I | E | I | W | A | L |
| X | U | I | L | F | E | O | O | S | O |
| A | A | B | U | W | U | R | N | T | O |
| C | W | E | R | O | B | C | S | A | D |
| M | E | L | T | I | N | G | D | T | S |
| E | R | U | T | A | R | E | P | E | T |

Glaciers

Snow

Ecosystem

Ice caps

Melting

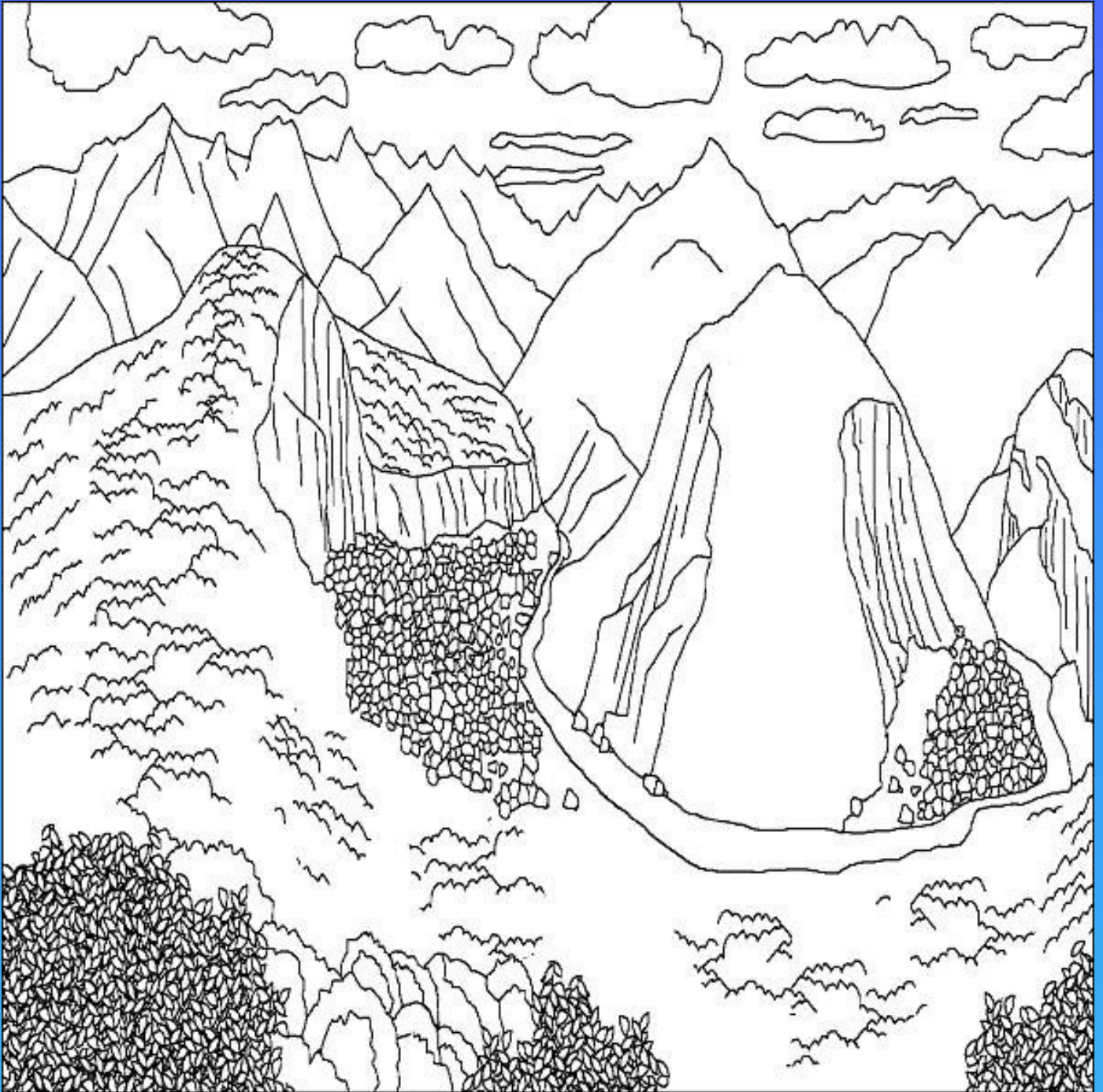
Floods

Temperature

Devastate

Heat

Avalanche Colouring Page



Avalanche Quiz Time!

What is another name for a small avalanche?

- A) Sluff
- B) Stuff
- C) Avalanche
- D) Baby Avalanche

What is another word for how steep a mountain is?

- A) Slope
- B) Slide
- C) Edge
- D) Sensuosity

When are avalanches most likely to occur?

- A) Within the first 24 hours after a snowstorm drops 12 or more inches of snow.
- B) Within the first 2 hours after a snowstorm drops 12 or more inches of snow.
- C) Within the first 24 hours after a snowstorm drops 1 or more inches of snow.
- D) Within the first 100 hours after a snowstorm drops 1,200 or more inches of snow.

By Zubiya Shaik 6G