# Year 8 Science Work
# Week beginning 15th June – Lesson 1
# Climate Change

This week's work has been set by Miss Start

Where you see the pencil symbol, please write the information from the page down in your exercise book or on some paper

If you have any questions or problems, please email me:

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# Learning objectives

- To know what is meant by climate change
- To understand the role of greenhouse gases in the atmosphere
- To be able to explain how an increase in greenhouse gases relates to global warming

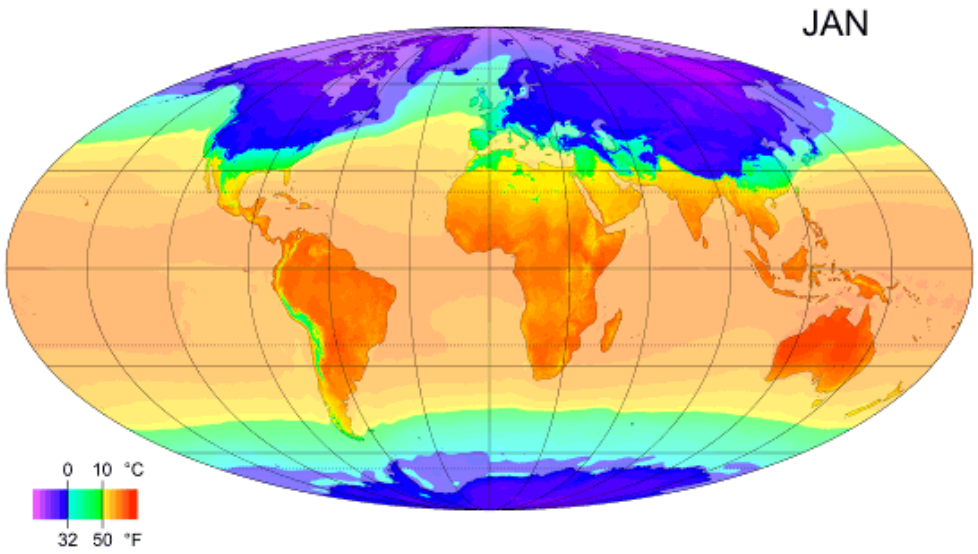
# Something to think about…

- What are greenhouses for?
- What does it feel like when you walk into a greenhouse?
- **What do you already know about climate change and global warming?**

# Climate vs. weather

**What is the difference between the climate and the weather?**

Have a think and jot some ideas down, on a piece of paper or in the back of your book.




# Climate vs. weather

**Climate** is the statistics of weather over a **long time** (usually over at least a 30-year period)

**Weather** is the state of the **atmosphere**: i.e. is it hot or cold, wet or dry, calm or stormy, clear or cloudy

So – when we are talking about climate change – we are talking about **long term changes in weather patterns that last for an extended period of time, from decades to millions of years**. Climate change does not mean just a short term change in weather conditions

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# Greenhouse gases

**Watch the video and answer the questions:**

https://www.youtube.com/watch?v=sTvqIijqvTg

1. What keeps the temperature of the Earth stable?
2. What type of radiation does the atmosphere absorb?
3. Which gases are greenhouse gases?
4. How do the levels of carbon dioxide in the atmosphere relate to the temperature?

# Greenhouse gases

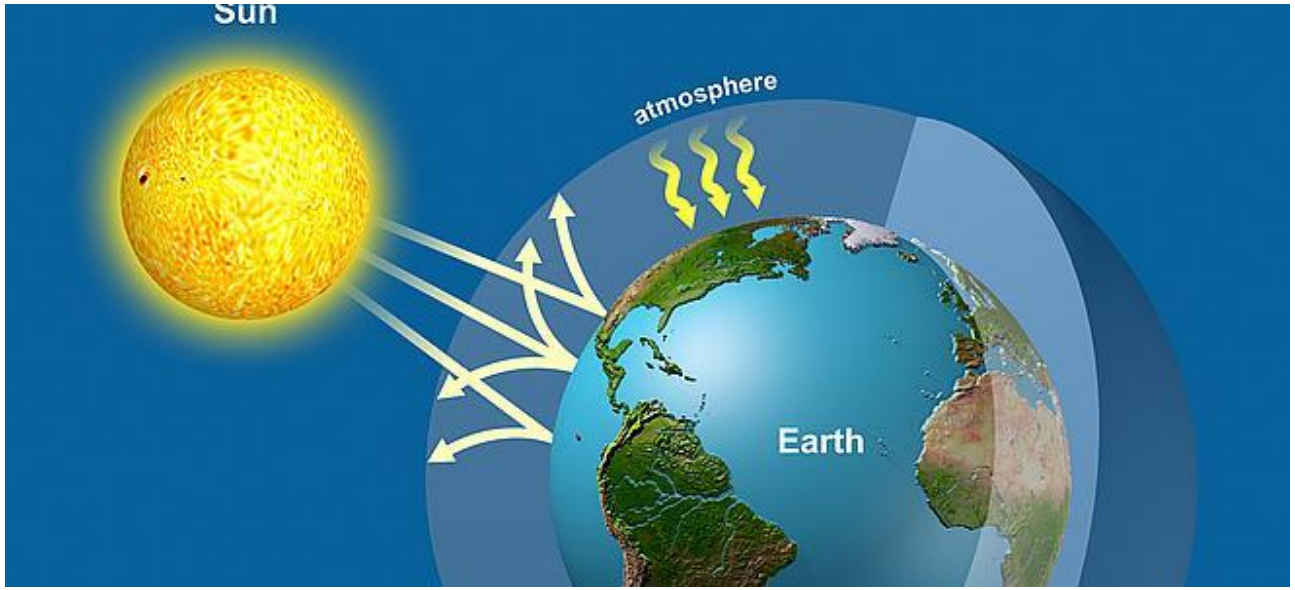
Please mark and correct your answers to these questions

1. What keeps the temperature of the Earth stable? **The atmosphere**
2. What type of radiation does the atmosphere absorb? **Infrared radiation (heat)**
3. Which gases are greenhouse gases? **Water vapour, ozone, nitrous oxide, carbon dioxide, methane**
4. How do the levels of carbon dioxide in the atmosphere relate to the temperature? **As carbon dioxide levels increase, temperature increases**

# The greenhouse effect

- Some of the radiation from the Sun is absorbed by the atmosphere, keeping the Earth warm: this is the **greenhouse effect**

- The Earth's natural greenhouse effect is critical to supporting life; without greenhouse gases, the Earth's temperature would change too much for life to be sustainable



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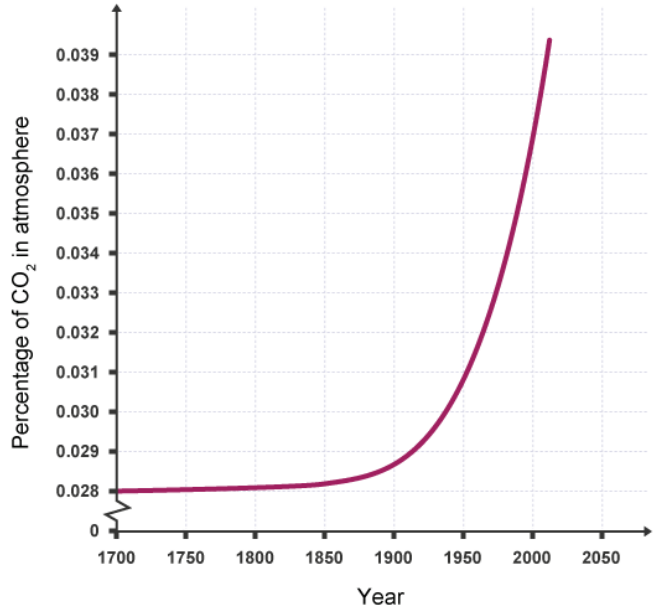
# Comprehension activity

- Read through the following two slides of notes about climate change
- You can print these pages out, highlight and stick into your exercise book if you wish
- Then, once you have read the notes, answer the questions that are on the following slide

# Climate change

Read these pages first

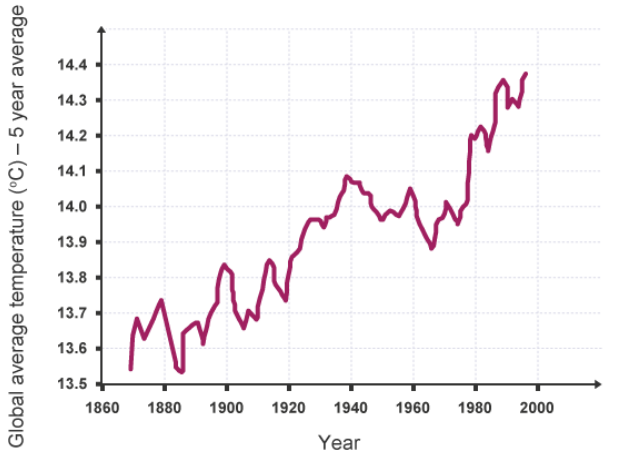
Humans burn **fossil fuels** (such as oil and coal) to power cars and machines, to generate electricity, and to keep buildings warm. Burning (**combustion**) of these fossil fuels releases gases including **carbon dioxide**. As the human population increases, more fuel is needed, so more fossil fuels are combusted and more carbon dioxide is released. Carbon dioxide is also released into the atmosphere as a result of **deforestation**: because trees absorb a lot of carbon dioxide for photosynthesis, if trees are cut down, levels of carbon dioxide in the atmosphere increase further.




Human activities have caused the % of carbon dioxide in the atmosphere to increase

Extra carbon dioxide in the atmosphere increases the **greenhouse effect**. More thermal energy is trapped by the atmosphere, causing the planet to become warmer than it would be naturally. This increase in the Earth's temperature is called **global warming**.

The majority of climate scientists agree that there is a link between the increasing levels of carbon dioxide and the increasing temperatures. Global warming is having an effect on the world's climates.




The average temperature of the planet has increased in recent years

# Climate change

Read these pages first

## Climate change and its effects, as a result of global warming, include:

- Ice melting faster than it can be replaced in the Arctic and Antarctic
- The oceans warming up: the water is expanding and causing sea levels to rise
- Changes in where different species of plants and animals can live – may lead to extinction
- Climate instability – more regular droughts, floods, heatwaves etc.
- May be more difficult to produce food as crops may not grow properly in a warmer climate

Ice melting in the Arctic is affecting polar bear populations, as it makes it more difficult for them to hunt and survive

# Questions

1. Which human activities are adding extra carbon dioxide to the atmosphere?
2. What are the impacts of climate change?

# Answers

Please mark your work!

1. Which human activities are adding extra carbon dioxide to the atmosphere? **Combustion (burning) of fossil fuels for heating, electricity and to run cars/machinery, deforestation (cutting down trees)**
2. What do most climate scientists agree on about carbon dioxide levels? **That there is a link between carbon dioxide levels and increasing temperature (i.e. they agree that the increase in carbon dioxide levels in the atmosphere is causing global temperatures to increase)**
3. What are the impacts of climate change? **Ice caps melting at the Arctic and Antarctic faster than the ice can be replaced, rising sea levels, changes in the areas where plants and animals live (and possibly extinction), climate instability (including drought, floods and heatwaves), difficulty in producing food**

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# What can we do about global warming?

- Watch the video for a few ideas

- https://www.youtube.com/watch?v=1gFRHVYjsP0

# Extra work

There is plenty of extra work and reading you could do to learn more about this topic. You could:

- Research the solutions to climate change, and what we can do to help as citizens
- Make a poster to give advice to citizens about reducing our human impact on the planet
- Watch the documentary Before The Flood (it is now on Disney+), and check out the website for more information and activities https://www.beforetheflood.com/

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