Climate Change

Background:

1. Since the 1860s the global climate has been recorded.
2. Since then the climate globally has increased by 0.8° Celsius.
3. Climate scientists can use methods to find out about the global climate before we started recording it. ***(B)***
4. From this evidence we can see that the planet has always gone through periods of warming and cooling. ***(A)***
5. However, the rapid increase of carbon dioxide in the atmosphere from burning fossil fuels, is causing the enhanced greenhouse effect. ***(D)***
6. The enhanced greenhouse effect is causing changes to the planet, such as the melting of Artic sea ice, rising temperatures, and an increase in extreme weather events such as tropical storms. ***(E, F)***
7. Countries are trying to resolve the climate change issue by limiting the amount of carbon dioxide released into the atmosphere, this is known as mitigation. ***(G, H)***
8. Some countries are trying to adapt to climate change by building flood barriers and growing drought resistant crops. ***(G, H)***

A.	**Changes in climate *(3)***
Climate change	The process of the Earth's climate changing over time.
Glacial periods	Cold periods.
Inter-glacial periods	Warm periods.

B.	**Measuring climate change *(3)***
Ice cores	Each layer of ice in a core represents a different year. CO_2 can be measured in each layer, and therefore the temperature.
Tree rings	Each ring represents a different year. Thicker rings show a warmer climate.
Historical evidence	Paintings and diaries e.g. paintings of ice fairs on the frozen Thames 400 years ago.

C.	**Natural climate change *(3)***
Volcanic eruptions	Ash from volcanic eruptions can block sunlight, making it colder.
Sun spots	The sun can give out more energy due to an increase in sun spots.
Orbital change	The orbit of the sun changes from oval (ellipse) to circular approx. 96,000 yrs.

E.	**Effects on people *(6)***
Tropical storms	Increase in frequency and intensity so more damage.
Sea-level rise	Increased risk of floods, damaging property and businesses.
Melting Arctic ice	Affects trading routes in the Arctic Circle.
More droughts/ floods	Crop failure, could lead to starvation and famine.
Cost of defence	Governments have to spend more money on disasters instead of developing.
Environmental Refugees	Pressure on countries to accept refugees.

G.	**Strategies to resolve climate change *(4)***
Adaptation	Adapting to climate change to make life easier.
Adaption examples *(3)*	1. Building flood defences. 2. Growing new crops to suit the new climate. 3. Irrigation channels, sending water from areas of surplus to deficit.
Mitigation	Trying to stop climate change from happening by reducing greenhouse gases.
Mitigation examples *(3)*	1. International agreements. 2. Alternative energies. 3. Carbon capture.

D.	**Human-induced climate change *(5)***
Greenhouse effect	The way that gases in the atmosphere trap heat from the sun. Like glass in a greenhouse they let heat in, but prevent most wave radiation from escaping.
Greenhouse gases	Gases like carbon dioxide and methane that trap heat around the Earth, leading to climate change.
Transport	More cars, therefore more combustion so more CO_2 causing the enhanced greenhouse effect.
Farming	Farming livestock produces methane, this is a greenhouse gas.
Energy	More energy required, meaning more fossil fuels burnt, so more CO_2.

F.	**Effects on the environment *(4)***
Sea temperature rises	Coral bleaching and destruction of marine ecosystems.
More droughts	Migration/ death of species which can not survive drought conditions.
Melting glaciers (ice rivers)	Will send more fresh water into the sea, causing the sea level to rise.
Melting Arctic ice	Loss of habitats for animals, such as polar bears.

H.	**Place specific examples *(2)***
Adaption	***The Thames Barrier.*** Positive: Stops flooding due to rising sea levels. Negative: Expensive
Mitigation	***The Paris Agreement.*** Positive: Countries are trying to lower CO_2 emissions. Negative: The USA pulled out and China did not sign up.