a

Billions of years ago, what was the surface of the Earth covered in?

_____

What gas made up most of the Earth's early atmosphere?

Circle one of the following.

oxygen carbon dioxide nitrogen helium

ammonia methane water vapour

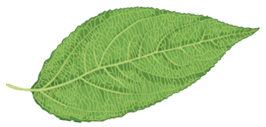
b

How was carbon dioxide removed from the atmosphere?

_____

What evolved to carry out photosynthesis?

_____



c

Match up the proportions of gases with the percentage for today's atmosphere.

nitrogen	less than 1%
oxygen	80%
other gases	20%

d

Why is it difficult to be sure about the evolution of the atmosphere? Clue: think about the length of time.

_____

_____

_____

e

Name two other gases that are produced from burning fossil fuels.

1. s_____ d_____
2. n_____ o_____

What problems can they cause?

_____

_____

_____

_____

_____

_____

f

How many billions of years ago did algae evolve? Choose the correct answer.

a. 1.0

b. 2.7

c. 5.6

d. 6.4

g

Complete the equation for photosynthesis.

carbon dioxide + water ⟶

$6CO_2 + 6H_2O$ ⟶

Why is this equation so important for the evolution of the atmosphere?

_____

_____

_____

_____

_____

What could then evolve?

_____

_____

_____

h

What is a greenhouse gas?

_____

_____

_____

_____

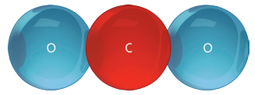
How do greenhouse gases work?

_____

_____

i

Why is carbon dioxide linked to climate change? Clue: think about the Earth's average temperature.



_____

_____

_____

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j

Why is climate change such a problem? What are the consequences of it? Clue: think about the weather and the polar ice caps.

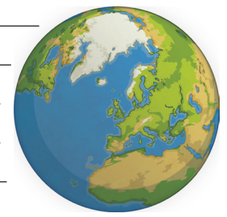
_____

_____

_____

_____

_____



k

Why is releasing particulates a problem?

_____

_____

_____

What can carbon monoxide do to the body?

_____

_____

l

Scientists use the term carbon footprint. Define what this term means. Clue: CO_2

_____

_____

_____

m

List three ways of reducing the carbon footprint.

1. _____

   _____
2. _____

   _____
3. _____

   _____

n

What is the biggest reason for governments not lowering their carbon footprint?

_____

o

Complete combustion is...

_____

_____

Incomplete combustion is...

_____

_____

During incomplete combustion, what other things are released into the atmosphere?

1. s_____
2. c_____ m_____
3. u_____ f_____

a

Billions of years ago, what was the surface of the Earth covered in?

volcanoes

What gas made up most of the Earth's early atmosphere?

Circle one of the following.

oxygen | **carbon dioxide** | nitrogen | helium | ammonia | methane | water vapour

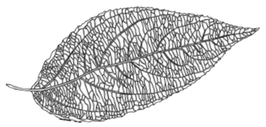
b

How was carbon dioxide removed from the atmosphere?

Dissolved into the oceans.

What evolved to carry out photosynthesis?

Green plants and algae.



c

Match up the proportions of gases with the percentage for today's atmosphere.

nitrogen	80%
oxygen	20%
other gases	less than 1%

d

Why is it difficult to be sure about the evolution of the atmosphere? Clue: think about the length of time.

The atmosphere started to evolve around 4.6 billion years ago, so there is a lack of evidence.

e

Name two other gases that are produced from burning fossil fuels.

1. **sulphur dioxide**
2. **nitrogen oxides**

What problems can they cause?

Acid rain, damage to buildings, kills animals and plants and causes respiratory problems.

f

How many billions of years ago did algae evolve? Choose the correct answer.

a. 1.0

b. **2.7**

c. 5.6

d. 6.4

g

Complete the equation for photosynthesis.

carbon dioxide + water ⟶ **glucose + oxygen**

$6CO_2 + 6H_2O \longrightarrow \mathbf{6O_2 + C_6H_{12}O_6}$

Why is this equation so important for the evolution of the atmosphere?

This built up the amount of oxygen in the atmosphere, and it also removes carbon dioxide.

What could then evolve?

This meant that oxygen dependant lifeforms could then evolve.

h

What is a greenhouse gas?

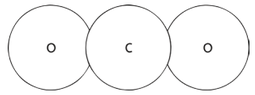
They keep the Earth warm enough to support life, e.g. carbon dioxide. Too many of these gases in the atmosphere may lead to climate change. Another example could be methane.

How do greenhouse gases work?

They stop heat escaping from Earth into space (they absorb it), warming the Earth's atmosphere up.

i

Why is carbon dioxide linked to climate change? Clue: think about the Earth's average temperature.



The Earth's surface temperature has been increasing. Scientists believe this is due to the extra carbon dioxide being produced by human activity. This may lead to climate change.

j

Why is climate change such a problem? What are the consequences of it? Clue: think about the weather and the polar ice caps.

Answers can refer to: melting of the polar ice caps; sea levels may rise; more flooding; changes in rainfall; more severe/frequent storms; may affect food production.

k

Why is releasing particulates a problem?

If breathed in they can cause lung damage and breathing problems. Also, they can contribute to global dimming.

What can carbon monoxide do to the body?

Stops the blood carrying oxygen around the body, a lack of oxygen could kill.

l

Scientists use the term carbon footprint. Define what this term means. Clue: CO_2

The amount of greenhouse gases released over the full life cycle of something.

m

List three ways of reducing the carbon footprint.

Answers could include: renewable energy resources; governments could tax companies on the amount of gases they give out; limits on greenhouse gases; carbon capture to store CO_2 underground.

n

What is the biggest reason for governments not lowering their carbon footprint?

Economic reasons.

o

Complete combustion is...

plenty of oxygen available and all the fuel burns.

Incomplete combustion is...

not enough oxygen available and some of the fuel does not burn.

During incomplete combustion, what other things are released into the atmosphere?

1. **soot**
2. **carbon monoxide**
3. **unburnt fuel**