

GCSE Combined Science: Trilogy

Worksheet: Global warming

TIME 35 min	TOTAL 32 marks	CALCULATOR Allowed	DIFFICULTY Easy, Medium
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Topics: Global warming

NAME	CLASS	DATE
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- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Answer all questions in the spaces provided.
- In all calculations, show clearly how you work out your answer.
- The marks for questions are shown in brackets.

0 1

The levels of some gases in the atmosphere are increasing and contributing to global warming.

0 1 . 1

Which **two** gases contribute to global warming?

Tick (✓) **two** boxes.

Carbon dioxide

☐

Methane

☐

Nitrogen

☐

Oxygen

☐

[2 marks]

0 1 . 2

Give **one** human activity that increases the level of methane in the atmosphere.

.....

.....

[1 mark]

0 1 . 3

Give **two** biological consequences of global warming.

[2 marks]

0 2

Human activities are changing the composition of the atmosphere, and the Earth is becoming warmer.

0 2 . 1

Which **two** of these are biological consequences of global warming?

Tick (✓) **two** boxes.

Changes in the distribution of species

☐

Changes in the migration patterns of animals

☐

An increase in the amount of nitrogen in the air

☐

All plants stop photosynthesising

☐

Every species becomes extinct

☐

[2 marks]

0 2 . 2

Table 1

Gas	Source (letter)
Carbon dioxide	
Methane	

Table 1 lists two gases that contribute to global warming. Write the letter of **one** source of each gas.

A burning fossil fuels

B cattle and rice fields

C photosynthesis

.....

.....

.....

.....

[2 marks]

0 2 . 3

Give **one** reason why low-lying habitats, such as salt marshes, could be lost as a result of global warming.

.....

.....

[1 mark]

0 3

In 1985 the mean concentration of methane in the atmosphere was about 1650 parts per billion. In 2010 it was about 1800 parts per billion.

0 3 . 1

Calculate the percentage increase in the concentration of methane between 1985 and 2010.

Give your answer to 3 significant figures.

.....

.....

.....

.....

Percentage increase = %

[2 marks]

0 3 . 2

Give **one** human activity that increases the concentration of methane in the atmosphere.

.....

.....

[1 mark]

0 4

In 2000 the mean concentration of carbon dioxide in the atmosphere was about 370 parts per million. In 2020 it was about 414 parts per million.

0 4 . 1

Calculate the percentage increase in the concentration of carbon dioxide between 2000 and 2020.

Give your answer to 3 significant figures.

.....

.....

.....

.....

Percentage increase = %

[2 marks]

0 4 . 2

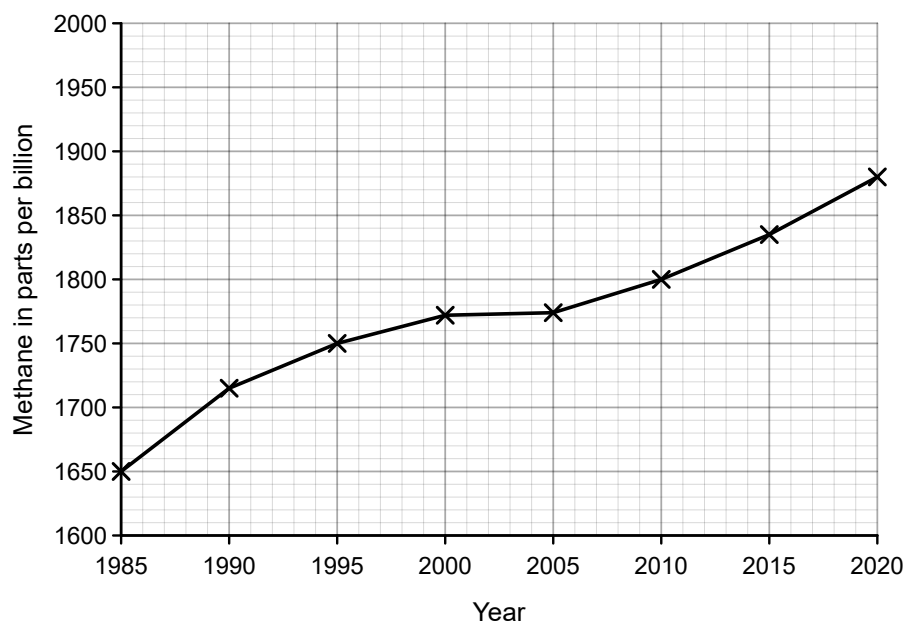
Give **one** human activity that increases the concentration of carbon dioxide in the atmosphere.

[1 mark]

0 5

Figure 1 shows the mean concentration of methane in the atmosphere between 1985 and 2020.

Figure 1



0 5 . 1

Calculate the percentage increase in the concentration of methane between 1985 and 2020.

Percentage increase = %

[2 marks]

0 5 . 2

Describe the changes in the concentration of methane shown in Figure 1.

.....

.....

.....

.....

[2 marks]

0 5 . 3

Give **two** human activities that release methane.

.....

.....

.....

.....

[2 marks]

0 5 . 4

Explain why an increase in the concentration of methane could reduce biodiversity.

.....

.....

.....

.....

[2 marks]

0 5 . 5

Scientists cannot predict exactly how much the concentration of methane will change in the future, or exactly how much this will warm the Earth. Suggest **two** reasons why.

.....

.....

.....

.....

[2 marks]



0 6

Salt marshes are coastal habitats that are covered by the sea at high tide. Many wading birds feed on salt marshes. Table 2 shows the area of salt marsh along one estuary.

Table 2

Year	Area of salt marsh in hectares
1970	520
1990	470
2010	400
2030 (predicted)	310

0 6 . 1

Calculate the percentage decrease in the area of salt marsh from 1970 to 2010.

.....

.....

.....

.....

Percentage decrease = %

[2 marks]

0 6 . 2

Rising sea levels are one cause of the loss of salt marsh.
Give **one** reason why global warming causes sea levels to rise.

.....

.....

[1 mark]

0 6 . 3

Explain how the loss of salt marsh could affect wading birds.

.....

.....

.....

.....

[2 marks]

0 6 . 4

Give **one** biological consequence of global warming, other than loss of habitat.

.....

.....

[1 mark]

END OF QUESTIONS

Original practice questions written to match the specification. Not produced by, affiliated with or endorsed by AQA.

Mark scheme

GCSE Combined Science: Trilogy · Worksheet: Global warming · 32 marks

Question 1 (5 marks)

01.1 [2 marks]

Correct: Carbon dioxide; Methane

01.2 [1 mark]

- cattle farming (1)
- growing rice in flooded fields (1)
- landfill / anaerobic decay of waste (1)
- extracting fossil fuels (leaks of natural gas) (1)

Any 1 of the points above.

01.3 [2 marks]

- loss of habitat, e.g. low-lying land flooded as sea levels rise (1)
- changes in the distribution of species (1)
- changes in migration patterns (1)
- reduced biodiversity / extinction of species (1)
- pests and diseases spread to new areas (1)
- changes in crop yields / in where crops can be grown (1)

Any 2 of the points above.

Question 2 (5 marks)

02.1 [2 marks]

Correct: Changes in the distribution of species; Changes in the migration patterns of animals

02.2 [2 marks]

Answer: A; B

- carbon dioxide: A (1)
 - methane: B (1)
-

02.3 [1 mark]

- sea levels rise, so low-lying land is flooded (1)
-

Question 3 (3 marks)

03.1 [2 marks]

Answer: 9.09%

- $(1800 - 1650) \div 1650 \times 100$ (1)
- 9.09 (%) (1)

Notes: An answer of 9.091 (not given to 3 significant figures) scores 1 mark.

03.2 [1 mark]

- cattle farming (1)
- growing rice in flooded fields (1)
- landfill (anaerobic decay of waste) (1)

Any 1 of the points above.

Question 4 (3 marks)

04.1 [2 marks]

Answer: 11.9%

- $(414 - 370) \div 370 \times 100$ (1)
- 11.9 (%) (1)

Notes: An answer of 11.89 (not given to 3 significant figures) scores 1 mark.

04.2 [1 mark]

- burning fossil fuels (1)
- deforestation (1)
- burning or decay of peat (1)

Any 1 of the points above.

Question 5 (10 marks)

05.1 [2 marks]

Answer: 13.9%

- $(1880 - 1650) \div 1650 \times 100$ (1)
- 13.9 (%) (1)

Notes: Allow 14.

05.2 [2 marks]

- the concentration increased overall (from 1650 to 1880 parts per billion) (1)
- it increased quickly until about 1995, hardly changed between 2000 and 2005, then increased faster again after 2005 (1)

05.3 [2 marks]

- cattle farming (1)
- growing rice in flooded fields (1)
- landfill sites (anaerobic decay of waste) (1)
- extracting fossil fuels / leaks from gas pipes (1)

Any 2 of the points above.

05.4 [2 marks]

- methane contributes to global warming (1)
- which changes habitats and the distribution of species, so some species may not survive / may become extinct (1)

05.5 [2 marks]

- the climate is a complex system with many interacting factors, e.g. oceans, ice, clouds and living organisms (1)
- future human activities, e.g. how much cattle farming, rice growing or landfill there will be, are not known (1)
- natural sources of methane, e.g. wetlands or thawing permafrost, may change as the Earth warms (1)
- the data and the models used to make predictions are incomplete / have some uncertainty (1)

Any 2 of the points above.

Question 6 (6 marks)

06.1 [2 marks]

Answer: 23.1%

- $(520 - 400) \div 520 \times 100$ (1)
- 23.1 (%) (1)

Notes: Allow 23 or 23.08.

06.2 [1 mark]

- ice on land (e.g. glaciers / ice sheets) melts (1)
- sea water expands as it warms (1)

Any 1 of the points above.

Notes: Allow 'polar ice caps melt'.

06.3 [2 marks]

- less feeding area / habitat / food (1)
 - so fewer birds survive or breed / birds must move to other areas (their distribution changes) (1)
-

06.4 [1 mark]

- changes in the distribution of species (1)
- changes in migration patterns (1)
- reduced biodiversity / extinction (1)
- pests and diseases spread to new areas (1)
- changes in crop yields (1)

Any 1 of the points above.
