

0 2

The Earth's atmosphere is always changing.

0 2 . 1

Gases in the Earth's early atmosphere caused changes on the Earth.

Draw **one** line from each change to the gas that caused the change.

[2 marks]**Change****Gas that caused the
change**

Ammonia

Oceans formed

Carbon dioxide

Nitrogen

Sedimentary rocks formed

Oxygen

Water vapour



Table 1 shows the percentage of some gases in the atmospheres of Earth and Mars today.

Table 1

Gas	Percentage of gas in atmosphere (%)	
	Earth	Mars
Argon	0.90	1.9
Carbon dioxide	0.04	95
Nitrogen	78	2.6
Oxygen	21	0.20

0 2 . 2 Which gas has the highest percentage in the Earth's atmosphere?

[1 mark]

0 2 . 3 Calculate how many times more carbon dioxide there is in the atmosphere of Mars than in the atmosphere of Earth.

Use **Table 1**.

Give your answer in standard form.

[3 marks]

Number of times more carbon dioxide (in standard form) = _____

Turn over ►



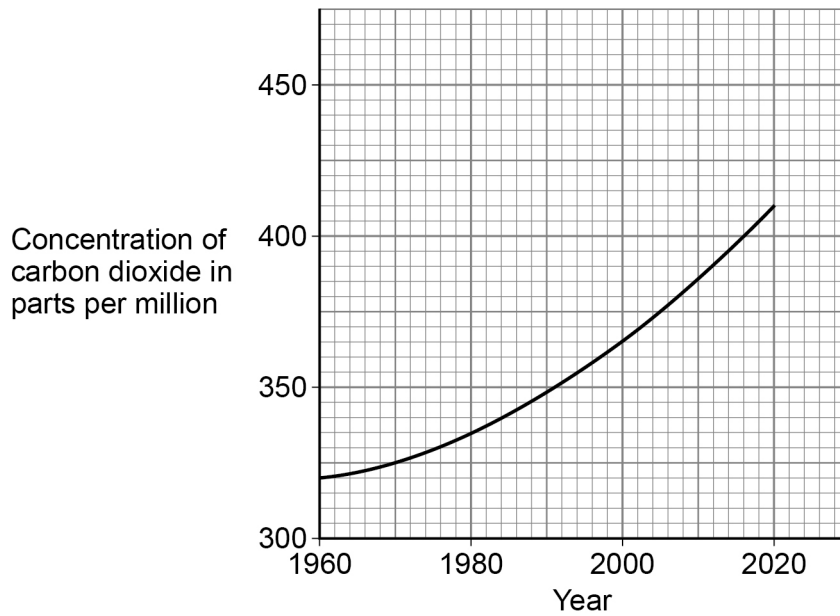
Carbon dioxide is a greenhouse gas.

Do not write
outside the
box

0 2 . 4

Figure 1 shows the concentration of carbon dioxide in the Earth's atmosphere from 1960 to 2020.

Figure 1



How has the concentration of carbon dioxide in the Earth's atmosphere changed from 1960 to 2020?

[1 mark]

Tick (✓) **one** box.

Decreased

Stayed the same

Increased



0 2 . 5 Cars emit carbon dioxide.

A car emits 17.2 kg of carbon dioxide on a journey.

There are four people in the car.

Calculate the mass of carbon dioxide emitted per person.

[2 marks]

Mass of carbon dioxide = _____ kg

0 2 . 6 Planting trees helps to reduce climate change, because trees use carbon dioxide from the Earth's atmosphere.

Name the process in trees which uses carbon dioxide.

[1 mark]

Question 2 continues on the next page

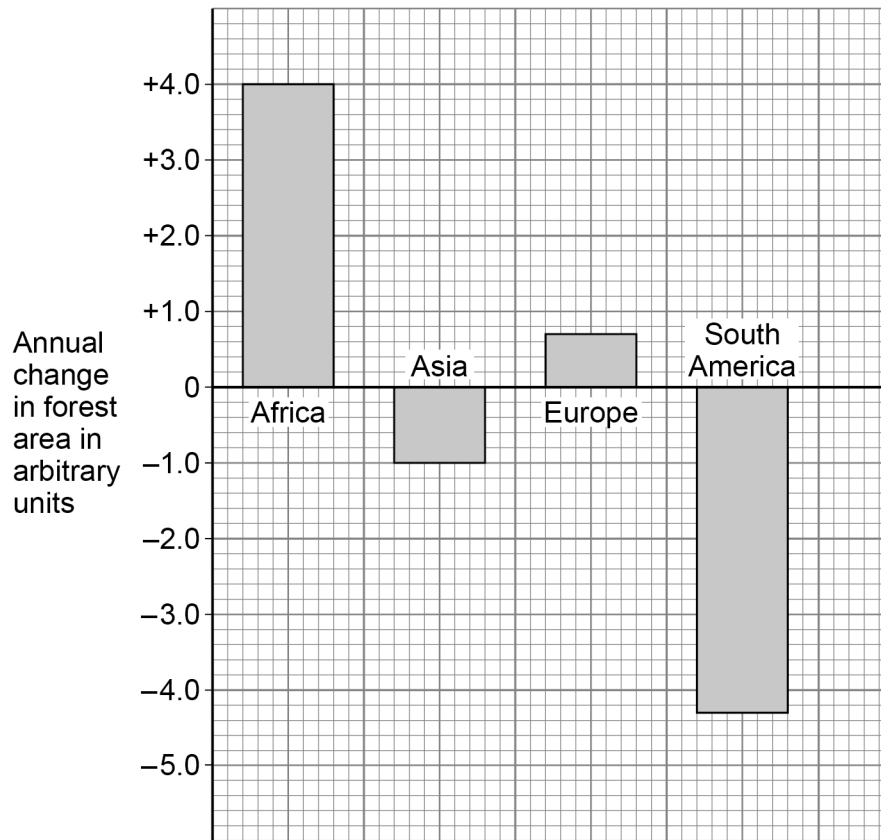
Turn over ►



0 2 . 7

Figure 2 shows the annual change in forest area in four different parts of the world.

Figure 2



Give **two** conclusions about the annual change in forest area.

[2 marks]

1 _____

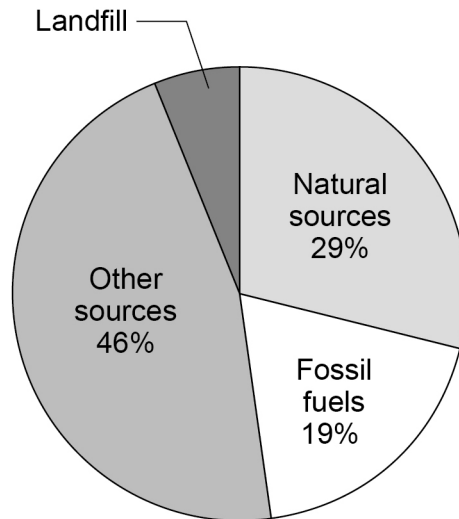
2 _____



0 2 . 8 Methane is a greenhouse gas.

Figure 3 shows sources of methane emissions.

Figure 3



Determine the percentage (%) of methane emissions from landfill.

[1 mark]

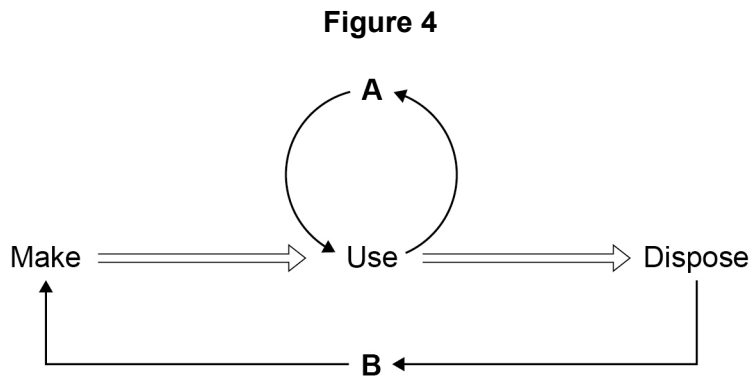
Percentage = _____ %

Question 2 continues on the next page

Turn over ►



0 2 . 9 Figure 4 shows two ways (A and B) of preventing used items going to landfill.



Name **A** and **B**.

Choose answers from the box.

[2 marks]

recycle

reduce

release

reuse

reverse

A _____

B _____

15



Question 2

Question	Answers	Mark	AO / Spec. Ref.														
02.1	<table style="width: 100%; border: none;"> <thead> <tr> <th style="width: 50%; text-align: center;">Change</th> <th style="width: 50%; text-align: center;">Gas that caused the change</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; vertical-align: middle;"> <table style="width: 100%; border: none;"> <tr> <td style="border: 1px solid black; padding: 5px;">Oceans formed</td> <td rowspan="4" style="border: none;"> </td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">Sedimentary rocks formed</td> </tr> <tr> <td style="border: none; height: 20px;"></td> </tr> <tr> <td style="border: none; height: 20px;"></td> </tr> </table> </td> <td style="vertical-align: top;"> <table style="width: 100%; border: none;"> <tr> <td style="border: 1px solid black; padding: 5px;">Ammonia</td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">Carbon dioxide</td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">Nitrogen</td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">Oxygen</td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">Water vapour</td> </tr> </table> </td> </tr> </tbody> </table> <p>do not accept more than one line from a box on the left</p>	Change	Gas that caused the change	<table style="width: 100%; border: none;"> <tr> <td style="border: 1px solid black; padding: 5px;">Oceans formed</td> <td rowspan="4" style="border: none;"> </td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">Sedimentary rocks formed</td> </tr> <tr> <td style="border: none; height: 20px;"></td> </tr> <tr> <td style="border: none; height: 20px;"></td> </tr> </table>	Oceans formed		Sedimentary rocks formed			<table style="width: 100%; border: none;"> <tr> <td style="border: 1px solid black; padding: 5px;">Ammonia</td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">Carbon dioxide</td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">Nitrogen</td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">Oxygen</td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">Water vapour</td> </tr> </table>	Ammonia	Carbon dioxide	Nitrogen	Oxygen	Water vapour	1 1	AO1 5.9.1.2
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Question	Answers	Extra information	Mark	AO / Spec. Ref.
02.2	nitrogen		1	AO2 5.9.1.1

Question	Answers	Extra information	Mark	AO / Spec. Ref.
02.3	(number of times more =) $\frac{95}{0.04}$ = 2375 = 2.375×10^3	allow a correctly calculated answer in standard form from an incorrect calculation which uses values given in Table 1	1 1 1	AO2 5.9.1.1

Question	Answers	Extra information	Mark	AO / Spec. Ref.
02.4	increased		1	AO2 5.9.2.2

Question	Answers	Extra information	Mark	AO / Spec. Ref.
02.5	(mass CO ₂ =) $\frac{17.2}{4}$ = 4.3 (kg)		1 1	AO2 5.9.3.1

Question	Answers	Extra information	Mark	AO / Spec. Ref.
02.6	photosynthesis		1	AO1 5.9.1.4

Question	Answers	Extra information	Mark	AO / Spec. Ref.
02.7	any two from: (forest area) <ul style="list-style-type: none"> • increases in Africa • increases in Europe • decreases in South America • decreases in Asia 		2	AO2 5.9.2.2

Question	Answers	Extra information	Mark	AO / Spec. Ref.
02.8	6 (%)		1	AO2 5.9.2.1 5.9.2.2

Question	Answers	Extra information	Mark	AO / Spec. Ref.
02.9	(A) reuse (B) recycle		1 1	AO2 5.10.2.2
Total Question 2			15	