

GCSE Combined Science: Trilogy

Worksheet: Maintaining biodiversity

TIME 35 min	TOTAL 32 marks	CALCULATOR Allowed	DIFFICULTY Easy, Medium
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Topics: Maintaining biodiversity

NAME

CLASS

DATE

- 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

Many different programmes aim to protect ecosystems and biodiversity from the effects of human activities.

0 1 . 1

Table 1

Programme	Letter
Breeding programmes for endangered species	
Reintroducing field margins and hedgerows	
Recycling resources rather than dumping waste in landfill	

Table 1 lists three programmes. Write the letter of the statement that explains how each programme helps biodiversity.

- A** It provides habitats and food for many species in areas where farmers grow only one type of crop.
- B** It increases the number of individuals of a species that is at risk of extinction.
- C** It means that less land is used for dumping waste and fewer raw materials need to be obtained.
- D** It increases the amount of fertiliser used on farmland.

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[3 marks]

0 1 . 2

Which action is taken by some governments to help maintain biodiversity?

Tick (✓) **one** box.

Reducing deforestation and carbon dioxide emissions

☐

Increasing the use of landfill

☐

Draining wetlands to build houses

☐

Removing hedgerows to make larger fields

☐

[1 mark]

0 2

A conservation charity is regenerating salt marsh, a rare habitat, on land that used to be farmed. In 2001, there were 140 hectares of salt marsh in the area. By 2013, there were 175 hectares.

0 2 . 1

Calculate the percentage increase in the area of salt marsh between 2001 and 2013.

.....

.....

.....

.....

Percentage increase = %

[2 marks]

0 2 . 2

Explain how regenerating rare habitats helps to maintain biodiversity.

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.....

.....

[2 marks]

0 2 . 3

Give **one** other programme that helps to maintain biodiversity.

.....

.....

[1 mark]

0 3

Scientists and concerned citizens have set up programmes to reduce the negative effects of humans on ecosystems and biodiversity.

0 3 . 1

Which **two** of these programmes help to maintain biodiversity?

Tick (✓) **two** boxes.

Breeding programmes for endangered species

☐

Increasing the use of landfill

☐

Removing hedgerows to make larger fields

☐

Protecting and regenerating rare habitats

☐

[2 marks]

0 3 . 2

Give **one** other programme that reduces the negative effects of humans on biodiversity.

.....

.....

[1 mark]

0 3 . 3

Farmers who grow only one type of crop are encouraged to plant hedgerows. Explain how this increases biodiversity.

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[2 marks]

0 4

A conservation charity is regenerating salt marsh, a rare habitat, on land that used to be farmed. In 2000, there were 160 hectares of salt marsh in the area. By 2012, there were 200 hectares.

0 4 . 1

Calculate the percentage increase in the area of salt marsh between 2000 and 2012.

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Percentage increase = %

[2 marks]

0 4 . 2

Explain how regenerating rare habitats helps to maintain biodiversity.

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[2 marks]

0 4 . 3

Give **one** other programme that helps to maintain biodiversity.

.....

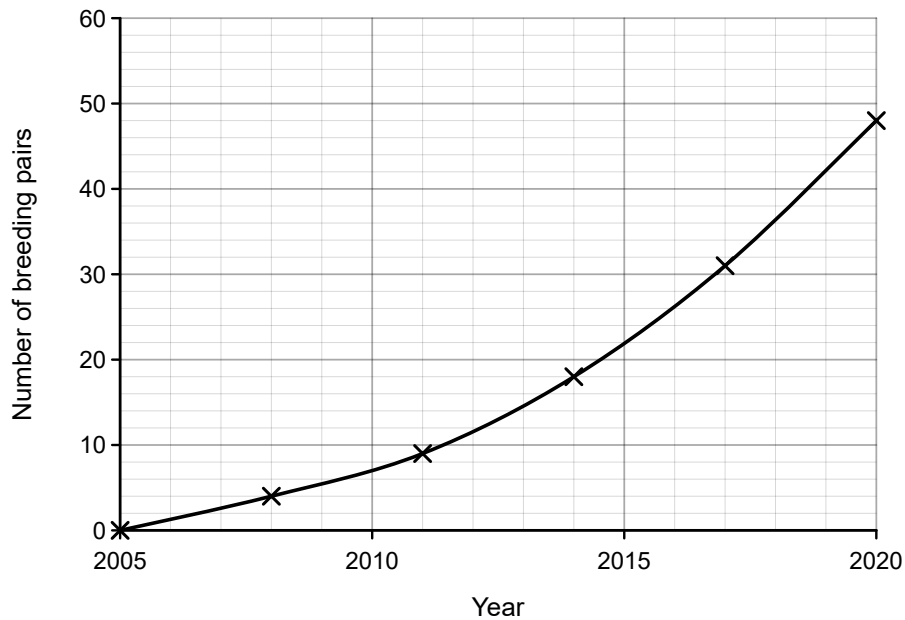
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[1 mark]

0 5

A species of large wading bird had become extinct in one country. From 2006, birds that had been bred in captivity were released into protected wetlands. Figure 1 shows the number of breeding pairs of the bird in the country.

Figure 1



0 5 . 1

Calculate the percentage increase in the number of breeding pairs between 2014 and 2020.

Give your answer to 3 significant figures.

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Percentage increase = %

[2 marks]

0 5 . 2

Describe how the number of breeding pairs changed between 2008 and 2020.

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[2 marks]

0 5 . 3

Explain why protecting the wetlands was needed as well as releasing birds bred in captivity.

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[2 marks]

0 5 . 4

Suggest **one** way that scientists could monitor whether the programme is successful.

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.....

[1 mark]

0 6

Table 2 shows the mass of household waste collected by one council in 2005 and in 2020, and what happened to it.

Table 2

Year	Total waste in thousand tonnes	Waste sent to landfill in thousand tonnes	Waste recycled or composted in thousand tonnes
2005	180	135	45
2020	172	52	120

0 6 . 1

Calculate the percentage of the waste that was recycled or composted in 2020.

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Percentage = %

[2 marks]

0 6 . 2

Explain how sending less waste to landfill helps to maintain biodiversity.

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[2 marks]

0 6 . 3

Explain how recycling resources helps to maintain biodiversity.

.....

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.....

[2 marks]

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: Maintaining biodiversity · 32 marks

Question 1 (4 marks)

01.1 [3 marks]

Answer: B; A; C

- breeding programmes: B (1)
 - field margins and hedgerows: A (1)
 - recycling: C (1)
-

01.2 [1 mark]

Correct: Reducing deforestation and carbon dioxide emissions

Question 2 (5 marks)

02.1 [2 marks]

Answer: 25%

- $(175 - 140) \div 140 \times 100$ (1)
 - 25 (%) (1)
-

02.2 [2 marks]

- it provides food and shelter for species that can live only in that type of habitat (1)
 - so more of these species survive and breed, and they are less likely to become extinct in the area (1)
-

02.3 [1 mark]

- breeding programmes for endangered species (1)
- reintroducing field margins and hedgerows (1)
- reducing deforestation (1)
- reducing carbon dioxide emissions (1)
- recycling resources rather than dumping waste in landfill (1)

Any 1 of the points above.

Question 3 (5 marks)

03.1 [2 marks]

Correct: Breeding programmes for endangered species; Protecting and regenerating rare habitats

03.2 [1 mark]

- reintroducing field margins and hedgerows (1)
- reducing deforestation (1)
- reducing carbon dioxide emissions (1)
- recycling resources rather than dumping waste in landfill (1)

Any 1 of the points above.

03.3 [2 marks]

- hedgerows provide habitats (food and shelter) for many species (1)
 - so more different species can live on the farm (1)
-

Question 4 (5 marks)

04.1 [2 marks]

Answer: 25%

- $(200 - 160) \div 160 \times 100$ (1)
 - 25 (%) (1)
-

04.2 [2 marks]

- it provides food and shelter for species that can live only in that type of habitat (1)
 - so more of these species survive and breed, and they are less likely to become extinct in the area (1)
-

04.3 [1 mark]

- breeding programmes for endangered species (1)
- reintroducing field margins and hedgerows (1)
- reducing deforestation (1)
- reducing carbon dioxide emissions (1)
- recycling resources rather than dumping waste in landfill (1)

Any 1 of the points above.

Question 5 (7 marks)

05.1 [2 marks]

Answer: 167%

- $(48 - 18) \div 18 \times 100$ (1)
- 167 (%) (1)

Notes: An answer of 166.7 (not given to 3 significant figures) scores 1 mark.

05.2 [2 marks]

- the number increased (from 4 to 48 pairs) (1)
 - slowly at first and then more quickly (1)
-

05.3 [2 marks]

- the birds need wetland habitat for food and for nesting (1)
 - without protected habitat, the released birds would not survive or breed / the cause of the original extinction would remain (1)
-

05.4 [1 mark]

- count the number of breeding pairs each year (1)
- count the number of chicks that leave the nest each year (1)
- ring / tag the birds to record how long they survive (1)

Any 1 of the points above.

Question 6 (6 marks)

06.1 [2 marks]

Answer: 69.8%

- $120 \div 172 \times 100$ (1)
- 69.8 (%) (1)

Notes: Allow 70 or 69.77.

06.2 [2 marks]

- less land is used for landfill, so more habitat is left for other species (1)
- less pollution of land / water by toxic chemicals from landfill, which kill organisms (1)
- less methane released by anaerobic decay in landfill, so less global warming (1)

Any 2 of the points above.

06.3 [2 marks]

- fewer raw materials need to be obtained, e.g. less quarrying / mining / tree felling (1)
 - so fewer habitats are destroyed (1)
-