

Centre No.						Paper Reference						Surname	Initial(s)	
Candidate No.						6	1	0	6	/	0	2	Signature	

Paper Reference(s)

6106/02 (W2)

Edexcel GCE

Biology

Biology (Human)

Advanced

Unit Test 6 Paper 02 (W2)

Wednesday 28 January 2009 – Afternoon

Time: 1 hour 20 minutes

Materials required for examination

Ruler

Items included with question papers

Nil

Examiner's use only

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Team Leader's use only

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Question Number	Leave Blank
1	
2	
Total	

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initial(s) and signature.

The paper reference is shown above.

Check that you have the correct question paper.

Answer ALL questions. Write your answers in the spaces provided in this question paper.

Show all the steps in any calculations and state the units. Calculators may be used.

Include diagrams in your answers where these are helpful.

Information for Candidates

The marks for individual questions and parts of questions are shown in round brackets: e.g. (2).

There are 2 questions in this question paper. The total mark for this paper is 32.

Advice to Candidates

You will be assessed on your ability to organise and present information, ideas, descriptions and arguments clearly and logically, taking account of your use of grammar, punctuation and spelling.

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Answer BOTH questions.

Write your answers in the spaces provided.

1. Daisies are flowering plants frequently found growing amongst grasses on lawns.

A student earned money by cutting the grass on the lawns of his neighbours. Each neighbour supplied a lawn mower. These were of two types: those that had a box to collect grass cuttings and those that did not. He noticed that there appeared to be more daisy plants on lawns where the grass cuttings were left on the surface.

He set up a controlled investigation to test whether this observation was significant. He took a random selection of four lawns which were cut using a grass box and four which were cut without a grass box.

On each lawn he used a randomly placed 0.5×0.5 metre quadrat divided into 25 smaller squares. He counted the number of smaller squares in which daisies were present. This was then repeated ten times for each lawn.

The raw data from his investigation are shown below.

Lawn mower with a grass box

Number of squares in which daisies found

Lawn 1 2, 4, 0, 4, 2, 4, 4, 0, 3, 1

Lawn 2 4, 3, 0, 1, 1, 1, 5, 3, 0, 2

Lawn 3 0, 1, 1, 2, 1, 0, 0, 1, 2, 3

Lawn 4 3, 5, 12, 2, 4, 6, 2, 7, 2, 10

Lawn mower without a grass box

Number of squares in which daisies found

Lawn 5 12, 4, 4, 15, 2, 2, 2, 1, 5, 8

Lawn 6 8, 15, 6, 7, 11, 4, 6, 4, 5, 8

Lawn 7 5, 3, 8, 9, 2, 4, 6, 7, 11, 2

Lawn 8 2, 5, 2, 3, 6, 1, 1, 5, 2, 3



(a) Prepare a table that summarises both the number of daisies in the squares in each lawn and the mean number in each type of lawn.

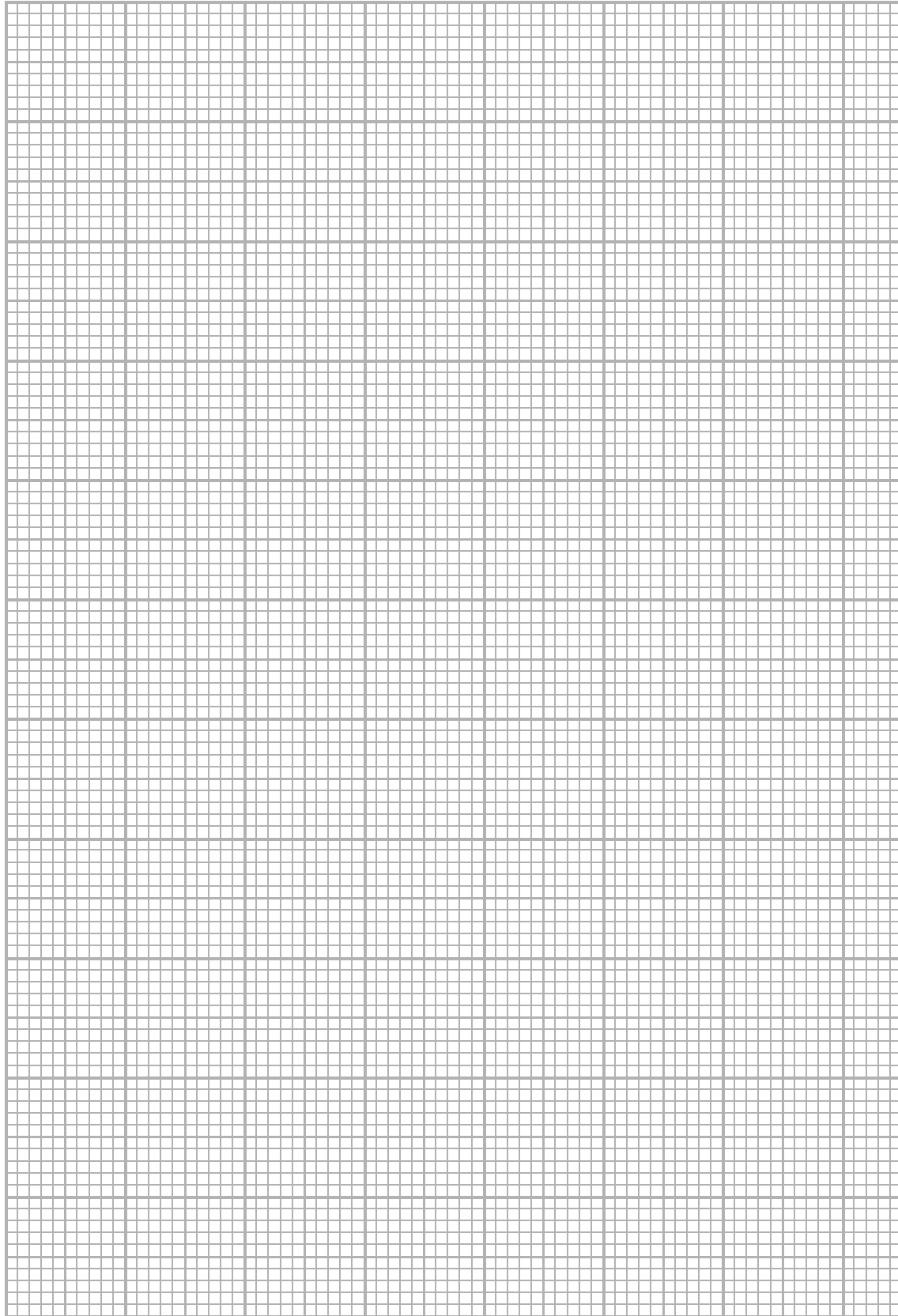
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(b) Use the data in your table to present the information in suitable graphical form so that the distribution of daisies can be compared.



(3)



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- (c) A t -test was applied to determine whether the mean numbers of daisies on lawns cut with the two types of mower were significantly different.

A t value of 3.81 was calculated.

The table below shows the critical value for t with 78 degrees of freedom for various levels of significance.

Significance level (%)	20	10	5	2	1
Critical value of t	1.29	1.66	1.98	2.36	2.61

What conclusion can be drawn from this investigation? Use the information in the table to explain your answer.

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(2)

- (d) Use the information in your table and graph to comment on the variability of the data collected and how this may affect the reliability of this investigation.

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(3)

Q1

(Total 11 marks)



2. The banded snail (*Cepaea nemoralis*) has many varied phenotypes, ranging from a shell having a single stripe to one having six or more stripes. An example of a banded snail is shown in the photograph below.



Magnification $\times 2$

The main reason for this variation in numbers of stripes may be due to selection by predators, since the different phenotypes provide camouflage in different habitats.

The song thrush is a major predator of banded snails. The song thrush carries the snail to a favourite place containing a large stone, called an anvil stone. Here it repeatedly hits the snail on the anvil stone until the shell breaks open. The snail is then eaten and the shell is left behind.

The shells left near the anvil stone form a useful way of monitoring the type of snail selected by individual birds.

Design an investigation to test the hypothesis that banded snails with more stripes are better camouflaged in open grassland areas than in woodland.

Your answer should give details under the following headings.

- (a) Plan of the investigation to be carried out.

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(c) Limitations of your method and an indication of further work that could be undertaken to provide additional evidence for your conclusion.

Limitations

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Further work

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(6)

Q2

(Total 21 marks)

TOTAL FOR PAPER: 32 MARKS

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