

Answer BOTH questions.

Write your answers in the spaces provided.

1. A student decided to carry out an investigation into the effect of acid rain on the shells of snails. Calcium carbonate is a major component of snail shells. Acid rain dissolves calcium carbonate, leaving the soft tissue inside the shell unprotected.

On collecting empty snail shells, the student noticed that the smaller shells were thinner than the larger shells. Therefore, she decided to test the hypothesis that acid rain is more damaging to smaller shells than to larger ones.

She weighed each shell before immersing it in the same volume of 0.4 mol dm^{-3} nitric acid. Each shell was left in the acid for 5 minutes, after which time it was removed, rinsed in water and then weighed again. She repeated this for seven more shells of different mass.

A copy of the student's notebook, showing the results of this investigation, is shown below.

Shell number 1	Original mass	0.85 grams	Final mass	0.05 grams
Shell number 2	Original mass	2.04 grams	Final mass	1.26 grams
Shell number 3	Original mass	2.50 grams	Final mass	1.61 grams
Shell number 4	Original mass	1.82 grams	Final mass	1.18 grams
Shell number 5	Original mass	1.02 grams	Final mass	0.21 grams
Shell number 6	Original mass	1.18 grams	Final mass	0.40 grams
Shell number 7	Original mass	1.55 grams	Final mass	0.76 grams
Shell number 8	Original mass	2.30 grams	Final mass	1.47 grams

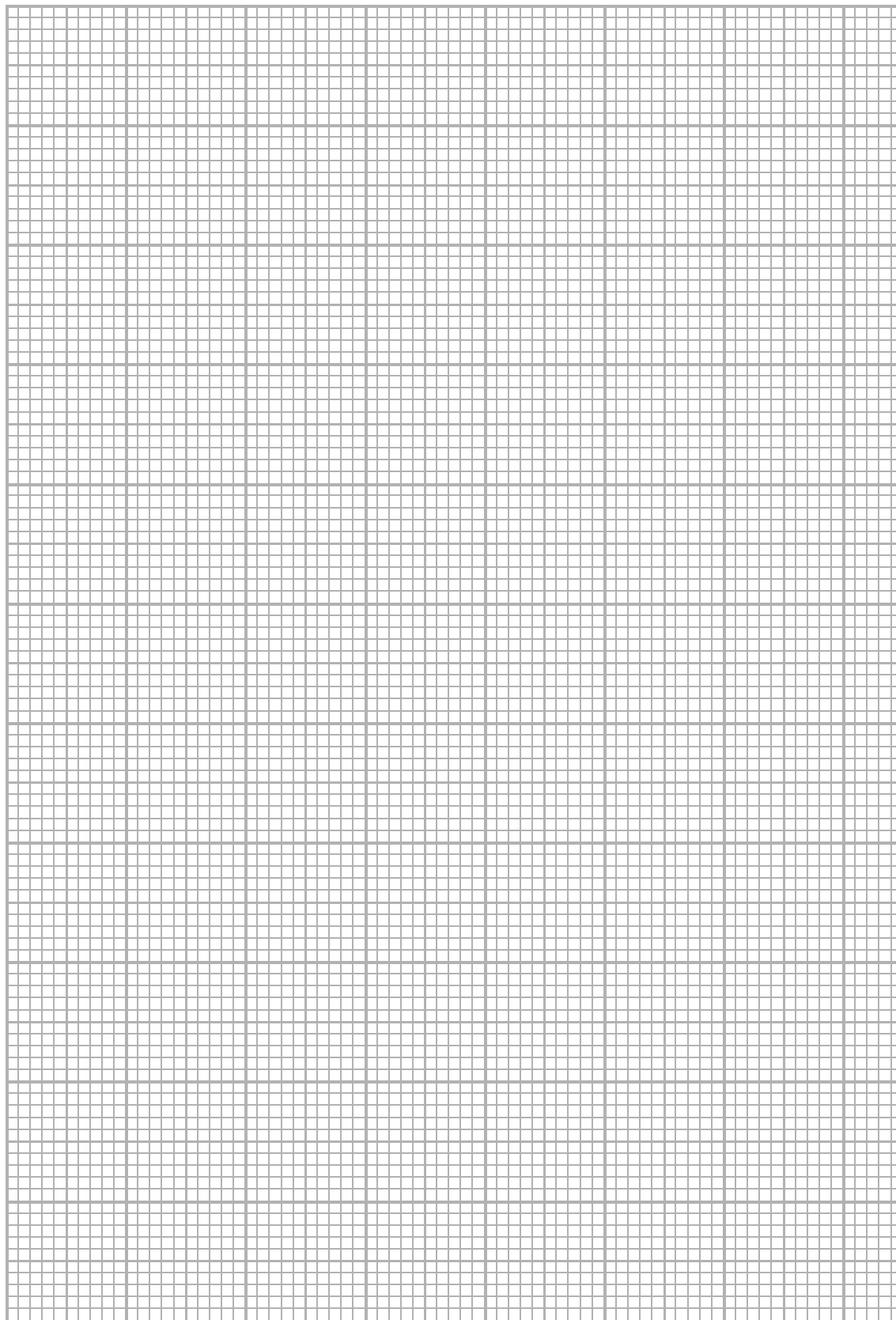
- (a) Prepare a table and present the results in a suitable way so that the **percentage change** in mass of each snail shell can be compared.

(4)



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(b) Use the data in your table to present the information in a suitable graphical form.



(4)



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(c) Describe the trends, patterns and any anomalies shown by these data.

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(d) Suggest **two** limitations of this method that could give rise to unreliable results.

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(2)

(Total 14 marks)

Q1

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(b) Recording of raw data measurements, presentation of results and methods of data analysis.

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(3)

QUESTION 2 CONTINUES ON THE NEXT PAGE



