

0 4

A student plans an investigation using mould.

0 4 . 1

Mould spores are hazardous.

Give **one** safety precaution the student should take when doing this investigation.

[1 mark]

A student made the following hypothesis about the growth of mould:

'The higher the temperature, the faster the growth of mould'.

The student planned to measure the amount of mould growing on bread.

The student used the following materials and equipment:

- slices of bread
- sealable plastic bags
- a knife
- a chopping board
- mould spores.

0 4 . 2

Describe how the materials and equipment could be used to test the hypothesis.

[4 marks]

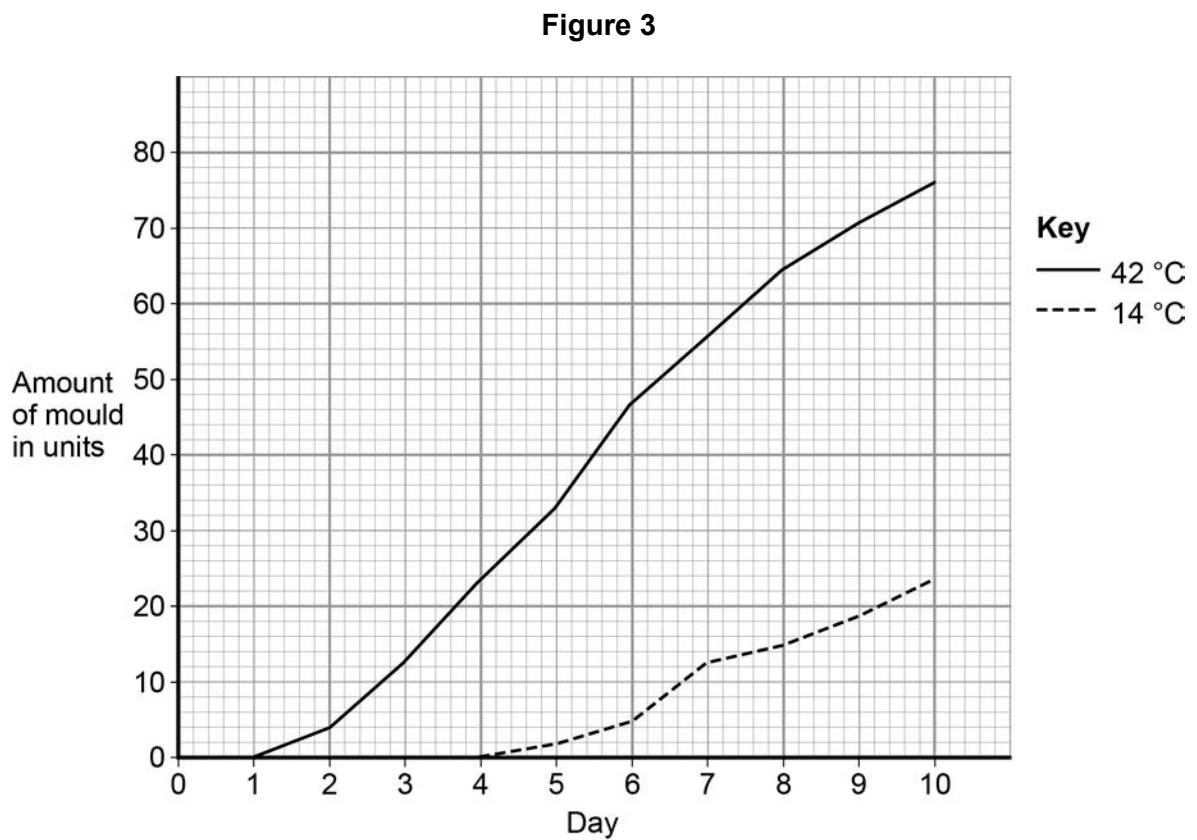
Question 4 continues on the next page

0 4 . 3 Give **one** variable the student should control in the investigation.

[1 mark]

Another student did a similar investigation.

Figure 3 shows the results.



0 4 . 4 Determine the rate of mould growth at 42 °C between day 2 and day 7.

[2 marks]

Rate of mould growth = _____ units per day

0 4 . **5** The growth of mould shows decomposition of the bread.

Give a conclusion about decomposition from the results in **Figure 3**.

[1 mark]

Turn over for the next question

Question 4

Question	Answers	Extra information	Mark	AO / Spec. Ref.
04.1	wear a face mask	allow wear gloves	1	AO2/2 4.7.2.3
04.2	Level 2: A detailed and coherent plan covering all the major steps. It sets out the steps needed in a logical manner that could be followed by another person to produce an outcome which will address the hypothesis.		3–4	AO2/2 4.7.2.3
	Level 1: Simple statements relating to steps are made but they may not be in a logical order. The plan may not allow another person to produce an outcome which will address the hypothesis.		1–2	
	No relevant content		0	
	<p>Indicative content</p> <p>Plan:</p> <ul style="list-style-type: none"> • cut a specified number of pieces of bread to the same size • place mould spores on the bread • the number of mould spores needs to be the same quantity of mould spores on each piece of bread • place bread in different sealable plastic bags • place in different temperatures (minimum of three) eg fridge, room, incubator • leave each for the same amount of time eg four days • measure the percentage cover of mould on each piece of bread • repeat experiment <p>additional examiner guidance:</p> <ul style="list-style-type: none"> • good level 2 answer will describe how the growth of mould can be measured and will give a range of different temperatures to be used • allow equivalent levels of credit for alternative methodologies that would clearly produce a measurable outcome in terms of mould growth at various temperatures 			

Question 4 continued

Question	Answers	Extra information	Mark	AO / Spec. Ref.
04.3	any one from: <ul style="list-style-type: none"> • type of mould • amount of mould (put on each piece of bread) • amount of air in the plastic bags • size of the pieces of bread • type of bread • amount of moisture / water added 		1	AO3/3a 4.7.2.3
04.4	(56 – 4 = 52) / 5 10.4	allow 10.4 with no working shown for 2 marks ecf for incorrectly read figures for 1 mark	1 1	AO2/2 4.7.2.3 AO2/2 4.7.2.3
04.5	(decomposition occurs at a faster rate when the temperature is higher or amount of decomposition is higher when temperature is higher		1	AO3/2b 4.7.2.3
Total			9	