

**MONDAY, 8 JANUARY –
FRIDAY, 9 FEBRUARY 2024**

BIOLOGY – Unit 3 (3400U30)

PRACTICAL ASSESSMENT

**INVESTIGATING THE EFFECT OF
SWEATING ON THE RATE OF COOLING**

SECTION B

1 hour, plus your additional time allowance

Surname _____

First name(s) _____

Centre Number _____

Candidate Number 0 _____

ADDITIONAL MATERIALS

A calculator and your Section A exam paper.

INSTRUCTIONS TO CANDIDATES

Use black ink, black ball-point pen or your usual method.

Write your name, centre number and candidate number in the spaces provided on the front cover.

Answer ALL questions.

Write your answers in the spaces provided in this booklet. If you run out of space, use the additional pages at the back of the booklet, taking care to number the question(s) correctly.

INFORMATION FOR CANDIDATES

The total number of marks available for this section of the task is 24.

The number of marks is given in brackets at the end of each question or part-question.

This task is in 2 sections, A and B.

You will have completed Section A in a previous lesson.

(Turn over)

For Examiner’s use only		
	Maximum Mark	Mark Awarded
Section B	24	

SECTION B

Answer ALL questions.

2 (a)(i)

State the dependent variable in this experiment. [1 mark]

(ii) State the range of the dependent variable for the 'sweating' tube. [1 mark]

(Turn over)

THIS IS A BLANK PAGE

TURN OVER

Control variable	How was this variable controlled?

2 (a)(iii)

Both tubes were covered in five layers of newspaper.

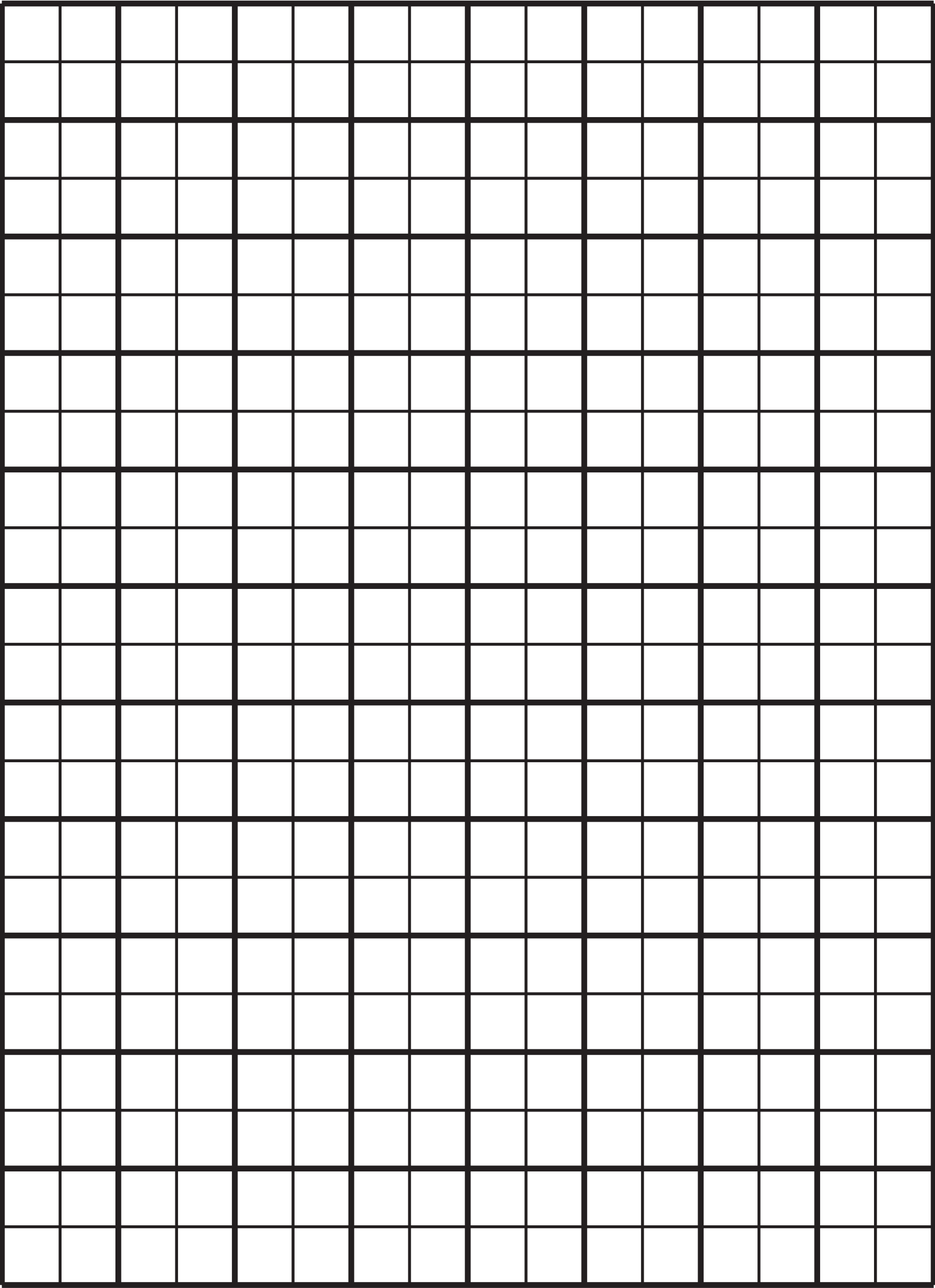
Complete the table on the opposite page by stating TWO other variables that were controlled.

Describe how each of these variables was controlled. [4 marks]

(Turn over)

THIS IS A BLANK PAGE

TURN OVER



2 (b)(i)

Use your results from Section A to draw a graph of the temperature of the ‘sweating’ tube (vertical axis) against time (horizontal axis) on the grid opposite.

The scale on the time axis should continue to 6 minutes.

Include a plot for the starting temperature at 0 minutes. [5 marks]

(ii) Suggest a value for the temperature of the ‘sweating’ tube at 6 MINUTES. SHOW ON YOUR GRAPH how you arrived at this result. [2 marks]

temperature = _____ °C

(Turn over)

2 (c)(i)

**Use your results from Section A to describe the difference in temperature change between the 'sweating' tube and the 'dry' tube.
[1 mark]**

(Turn over)

2 (c)(ii)

This experiment demonstrates how sweating cools the human body. Explain how sweating cools the human body. [2 marks]

(Turn over)

THIS IS A BLANK PAGE

TURN OVER

Inaccuracy	Improvement
MEASURING CYLINDER WAS ONLY ACCURATE TO THE NEAREST CM³.	

2 (d)(i)

Complete the table on the opposite page by suggesting ONE improvement. [1 mark]

(ii) One limitation of this model is using cold water on the outside of the ‘sweating’ tube to represent sweat. Suggest why this is not a true representation. [1 mark]

(Turn over)

THIS IS A BLANK PAGE

TURN OVER

	Temperature change (°C)			
Tube	Trial 1	Trial 2	Trial 3	Mean
‘sweating’	27	26	29	27
‘dry’	21	14	15	17

2 (e) Libby and Angharad carried out a similar experiment to your method. Their results are shown in the table on the opposite page.

(i) Calculate a more appropriate mean for the temperature change of the 'dry' tube. [2 marks]

mean = _____ °C

(Turn over)

2 (e)(ii)

Explain why repeating results for the 'dry' tube allowed Libby and Angharad to have more confidence in their conclusion. [2 marks]

(Turn over)

2 (e)(iii)

**Libby says that the results for the
‘sweating’ tube are repeatable.**

Evaluate this statement. [2 marks]

24

END OF PAPER

Question number	Additional page, if required. Write the question numbers in the left-hand margin.

Question number	Additional page, if required. Write the question numbers in the left-hand margin.

[illegible]

Question number	Additional page, if required. Write the question numbers in the left-hand margin.

Question number	Additional page, if required. Write the question numbers in the left-hand margin.