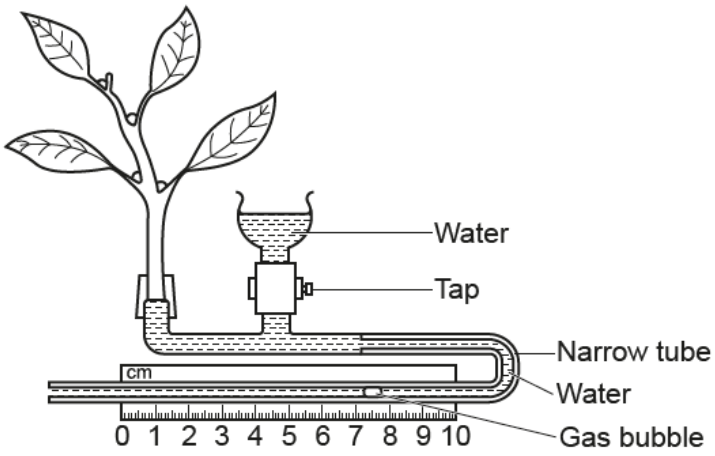
Practical Skills – 2022 GCSE Gateway Biology A

1. June/2022/Paper_J247/03/No.2

The diagram shows a potometer.



A student wants to test the hypothesis that the number of stomata on a plant affects water loss.

They first record the distance the gas bubble moves in 10 minutes.

What should the student do next before taking a second reading to test this hypothesis?

A Cover the plant with a black plastic bag.

B Remove some of the leaves.

C Repeat the test in a warmer room.

D Use an electric fan to move the air.

Your answer ☐ **[1]**

2. June/2022/Paper_J247/03/No.15

In experiments about photosynthesis, it is often necessary to compare light intensities.

Which equation gives the light intensity at a distance (d) from a light source?

A Light intensity = $1/d$

B Light intensity = $1/d^2$

C Light intensity = $d - 1$

D Light intensity = $\frac{d \times 2}{1}$

Your answer ☐ **[1]**

3. June/2022/Paper_J247/04/No.7

The table shows the number of insects caught using a net in a week.

Day	**M**	**Tu**	**W**	**Th**	**F**	**S**	**Su**
Number of insects	6	8	5	4	8	9	2

Which of these types of average have the same value for this data?

A Mean and median

B Mean and mode

C Median and mode

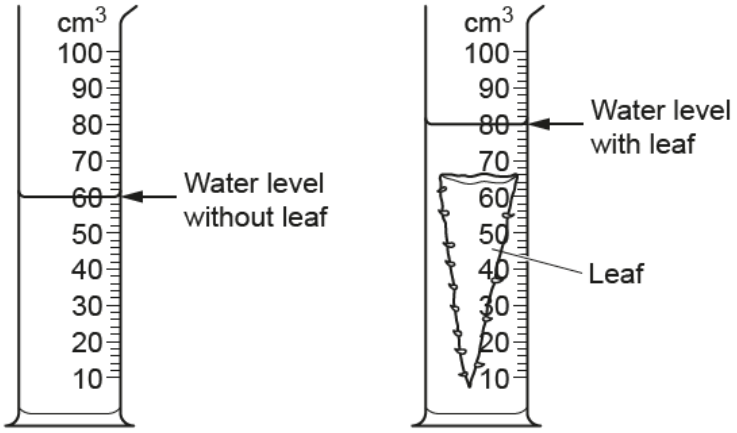
D Median, mode and mean

Your answer ☐ **[1]**

4. June/2022/Paper_J247/04/No.13

A teacher measures the volume of a leaf by placing it in a measuring cylinder of water.

They take the two measurements shown in the diagram.



The uncertainty of the scale is half of the smallest divisions shown on the scale.

What is the volume of the leaf, including the correct level of uncertainty?

A $20 \pm 0.1\,cm^3$

B $20 \pm 0.2\,cm^3$

C $20 \pm 1\,cm^3$

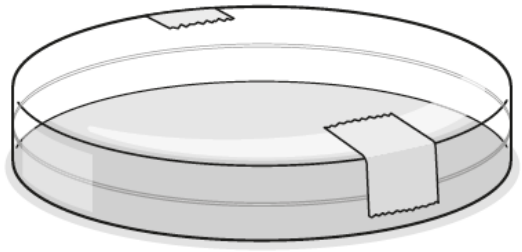
D $20 \pm 2\,cm^3$

Your answer ☐ **[1]**

5. June/2022/Paper_J247/04/No.15

A scientist inoculates an agar plate with bacteria.

The plate is now ready to be incubated.



Why do they seal the lid with two strips of tape, rather than sealing it all round the lid?

A If sealed all round the lid, no bacteria could grow.

B To make it easier to remove the lid after incubation.

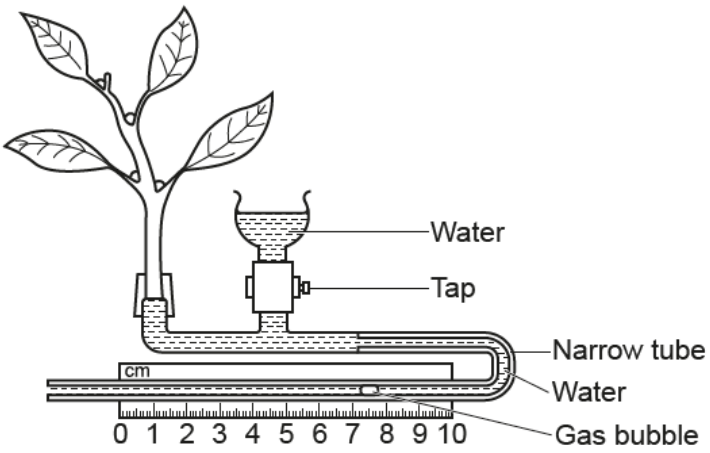
C To prevent water condensing on the lid of the Petri dish.

D To reduce the chance of pathogenic anaerobic bacteria growing on the dish.

Your answer ☐ **[1]**

6. June/2022/Paper_J247/01/No.15

The diagram shows a potometer.



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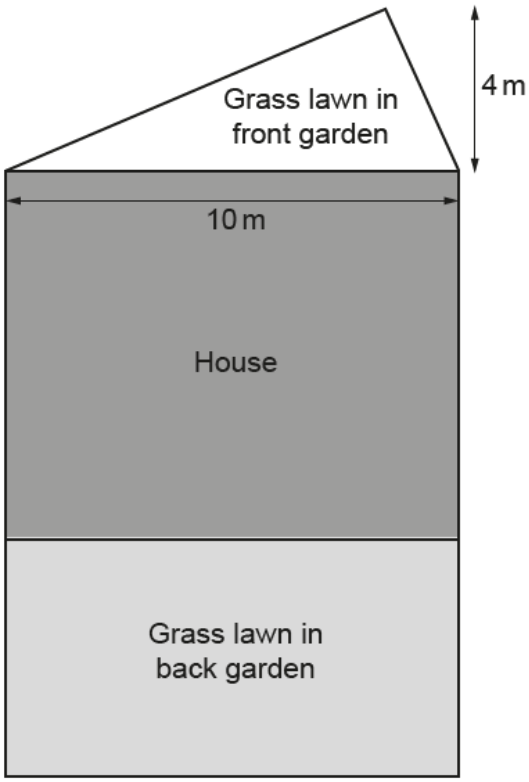
Your answer ☐ **[1]**

7. June/2022/Paper_J247/02/No.22

A gardener grows thistle plants as weeds in his grass lawns.
He wants to see if thistle plants grow better in the front garden than in the back garden.

The diagram shows a plan of the grass lawns in each garden.



(a) The gardener estimates the number of thistle plants in each metre squared of the **back** garden. He gets an estimate of 2.5 thistle plants / m^2.

Describe an experimental method the gardener uses to get this estimate.

Include the name of the piece of apparatus he uses.

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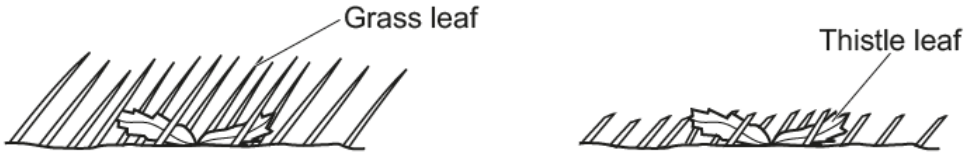
(b) The **front** garden is smaller so he counts all the thistle plants growing in the lawn. He counts 36 plants.

Calculate the number of thistle plants per metre squared in the front garden.
Use the formula: area of a triangle = ½ × base × height

Number of thistles = ... / m^2 **[2]**

(c) The gardener cuts the grass more often in the back garden. He thinks thistles grow better when he mows the grass more often.

The diagram shows the grass lawns before and after he has mown them.



Before mowing **After mowing**

Explain how cutting the grass more often can affect how well the thistles grow.

Use ideas about competition and photosynthesis.

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