Required Practical Field Investigations

GCSE Biology · Written to the shared content for AQA, Edexcel and OCR

Name _____ Class _____ Date _____

1. Worked example

Ten 0.25 m² quadrats contained 3, 0, 5, 2, 3, 1, 6, 3, 2, 5 dandelions. Calculate the mean, median and mode. (3 marks)

Step 1 · Mean

Total = 30; 30 ÷ 10 = 3 per quadrat.

Step 2 · Median

In order: 0, 1, 2, 2, 3, 3, 3, 5, 5, 6. Middle values are 3 and 3, so median = 3.

Step 3 · Mode

3 appears most often (three times), so mode = 3.

Answer: Mean 3, median 3, mode 3

Check: Range = 6 – 0 = 6.

2. Now try one with the steps

Using the mean of 3 dandelions per 0.25 m² quadrat, estimate the number in a field 40 m × 25 m. (3 marks)

Step 1 · Per m²

Step 2 · Field area

Step 3 · Estimate

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. What is a quadrat? [1]

2. What is a transect? [1]

3. Counts were 4, 6, 5, 7 and 8. Calculate the mean. [1]

4. Counts were 2, 9, 4, 4 and 6. Find the median. [1]

5. Give one reason for placing quadrats randomly. [1]

6. A 1 m^2 quadrat contained a mean of 7 plants. Estimate the population in a 50 m × 20 m field. [2]

7. A 0.25 m^2 quadrat contained a mean of 2 plants. How many plants per m^2? [1]

8. When should a transect be used rather than random quadrats? [1]

9. Name one piece of equipment to measure each abiotic factor: light intensity, temperature, soil moisture. [3]

10. Explain why taking more quadrats gives a better estimate. [2]

11. A 0.5 m × 0.5 m quadrat had a mean of 5 plants. Estimate the population in a 30 m × 30 m field. [3]

12. Percentage cover fell from 60% to 15% along a transect. Calculate the percentage decrease. [2]

13. Explain why a correlation between light intensity and daisy cover along a transect does not prove light is the cause. [2]

14. Suggest why percentage cover is used for grass instead of counting individual plants. [1]

4. Before you hand it in

Forgetting to convert quadrat area to m^2

Divide the mean count by the quadrat area to get the number per m^2, then multiply by the field area.

Placing quadrats where the plants are

Use random coordinates for random sampling, or regular intervals along a transect.

"The transect proves shade stops daisies."

Measure the abiotic factor and consider other variables before concluding.