FREE SAMPLE: THE FIRST QUESTION

Question One (7 marks)

(a) In a fictional practice account set in Southland, scientists studied tītī (muttonbirds) and its island colonies.

A: The researchers published their method and data in a science journal, and other scientists checked and questioned the results.

B: After the first study, the researchers changed their explanation when later data did not fit their first idea.

C: The scientists noticed that when there was more food, the returning birds each season increased in the island colonies, and they used this pattern to suggest an explanation.

D: Local iwi shared their long-held knowledge about when the tītī are present, which helped the team to choose when and where to measure.

(i) For each of statements C, A, B, name the feature of science that it shows.

(ii) Explain how one of the features you named helps scientists to be more confident about a science idea.

(iii) Explain why scientific ideas are described as ‘tentative’ and how the statement that shows this helps to improve science.

[7 marks]

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THE WORKED ANSWER TO THAT QUESTION

Question 1 (7 marks) [Features of science in a local context]

(a) In a fictional practice account set in Southland, scientists studied tītī (muttonbirds) and its island colonies. A: The researchers published their method and data in a science journal, and other scientists checked and questioned the results. B: After the first study, the researchers changed their explanation when later data did not fit their first idea. C: The scientists noticed that when there was more food, the returning birds each season increased in the island colonies, and they used this pattern to suggest an explanation. D: Local iwi shared their long-held knowledge about when the tītī are present, which helped the team to choose when and where to measure. (i) For each of statements C, A, B, name the feature of science that it shows. (ii) Explain how one of the features you named helps scientists to be more confident about a science idea. (iii) Explain why scientific ideas are described as 'tentative' and how the statement that shows this helps to improve science.

(a) Answer: (i) C a pattern in the data; A sharing and review; B a tentative idea

- Evidence level: Merit (match each statement to the feature it describes).
- (i) C: a pattern in the data; A: sharing and review; B: a tentative idea.
- Achievement: (ii) Names the feature of statement C.
- Merit: Links it to confidence.
- Excellence: Full explanation: a pattern in the data: a pattern or trend in the data (a link between the variables) is used to propose an explanation or to predict what will happen; this builds confidence because the idea is checked against evidence by more than one person or method.
- Achievement: (iii) States that ideas can change with new evidence.
- Merit: Links to the account: the explanation was changed when new data did not fit.
- Excellence: Full explanation: scientific ideas are tentative because they are the best explanations for the evidence we have at the time; when new evidence (or better methods) is found, scientists test the idea again and may change or replace it, so the scientific explanation improves; this is a strength of science, not a weakness.

KEY TAKEAWAY

Features of science: replicable data, patterns in data, tentative ideas, sharing and review, mātauranga Māori and improved technology all contribute to a science idea.

LOS: Features of science in a local context (91922)

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