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91922



Draw a cross through the box (☒) if you have NOT written in this booklet

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Mana Tohu Mātauranga o Aotearoa  
New Zealand Qualifications Authority

## Level 1 Science 2025

**91922 Describe features of science that have contributed to the development of a science idea in a local context**

Credits: Five

Achievement	Achievement with Merit	Achievement with Excellence
Describe features of science that have contributed to the development of a science idea in a local context.	Explain features of science that have contributed to the development of a science idea in a local context.	Examine features of science that have contributed to the development of a science idea in a local context.

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

**Choose ONE science idea from the Resource Booklet to answer ALL parts of the task in this booklet.**

Pull out Resource Booklet 91922R from the centre of this booklet.

If you need more room for any answer, use the extra space provided at the back of this booklet.

Check that this booklet has pages 2–11 in the correct order and that none of these pages is blank.

Do not write in the margins (//////). This area will be cut off when the booklet is marked.

**YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.**

**Achievement**

**TOTAL 04**

# Page 1

Make sure you have the paper Resource Booklet 91922R.

## INSTRUCTIONS

This task is made up of three parts. You must answer ALL three parts.

Choose ONE science idea from the resource booklet to complete this assessment.

Science Idea Two: Reducing methane production by adding seaweed to cattle feed ▾

Use information in the resource booklet for your chosen science idea to answer ALL parts of the task.

## PART ONE

For part one, focus on **these two** features of science:

- the influence of social and cultural factors on science
- responding to needs and opportunities.

Using the information from your chosen science idea, discuss the following:

(a) How does the influence of social and cultural factors on science contribute to the development of the science idea?

**B** *I* U

The influence of social and cultural factors on science, which means how society and peoples beliefs affect science, contributes to the development of reducing methane production by adding seaweed to cattle feed. The social factor of this science idea is that society (specifically NZ society) is affected by the amount of cattle because cattle play a vital role in the economy and allows people to be employed in the dairy industry. The cultural factor of this science idea is that cattle have become a large part of NZ culture because of the large amount of cattle in NZ, which means that getting rid of the cattle isn't the best option.

(b) How does responding to needs and opportunities contribute to the development of the science idea?

**B** *I* U

Responding to needs and opportunities, which means linking the development of the science idea to musts and opportunities, contributes to the development of the science idea. The needs of this science idea is to reduce methane production so that there are less greenhouse gases so therefore a decrease in climate change. The opportunity of this science idea is to reduce a large amount of methane production through the cows process of enteric fermentation.

(c) Why are these features of science important to the development of the science idea?

**B** *I* U

These features of science are important to the development of the science idea because they affect how the science idea is approached and solved. The influence of social and cultural factors on science is important to the development because it impacts the choices scientists make to solve the problem of reducing methane production. If cattles were not a vital role in the economy then maybe they would have chosen another way to reduce the methane production that may affect the economy. But because cattles to affect the economy, scientists chose to change the cattle feed that reduces the production. Responding to needs and opportunities is important to the development because the needs of reducing greenhouse gases has made the process of solving this problem more necessary.

(d) How do the two features of science **work together** to support the development of the science idea?

B I U     

These two features work together to support the development of the science idea through the way scientists approach and solve the methane production. The influence of social and cultural factors on science influence how the problem is going to be approached by scientists (changing the cattle feed). Then the responding to needs and opportunities influence what part of the problem is most necessary to solve (in this case reducing methane production).

## PART TWO

For part two, focus on **these two** features of science:

- linking new evidence to existing models, theories, and ideas
- the influence of the development and use of technology on science.

Using the information from your chosen science idea, discuss the following:

(a) How does linking new evidence to existing models, theories, and ideas add to the science idea?

B I U     

Linking new evidence to existing models, theories, and ideas, which means connecting new information to old models, interpretations, and thoughts, adds to the science idea. The model in this case is the seaweed growing facility at the Ocean Beach Aquaculture Hub. This facility is where the seaweed is grown. This model allows scientists to grow the seaweed that can be used in the cattle feed to reduce methane production. The theory in this science idea is that cattle produce large amounts of methane during enteric fermentation. This theory allows scientists to understand that the methane production comes from the digestive process when the microorganisms in the rumen break down food. Because of this information scientists can then change cattle feed to change how the food breaks down in the stomach. The existing idea linked to this science idea is that methane is one of the greenhouse gases that contributes to climate change. This idea helps link the cattle fermentation to the methane production.

(b) How does the influence of the development and use of technology add to the science idea?

B I U     

The influence of the development and use of technology on science, which means how technology contributes to science, adds to the science idea. The technology in this science idea is the seaweed growing facility and another facility for further processing. The facilities use technology to help harvest, freeze, and turn the seaweed into cattle feed. This technology allows for enough seaweed to be turned into cattle feed which then decreases the amount of methane production in cattles.

(c) Why are these two features of science significant to the development of the science idea?

B I U     

These two features of science are significant to the development of the science idea because they help reduce the methane production. Linking new evidence to existing models, theories, and ideas allows old information to help solve this science idea. If there was no facilities or evidence of cattles producing large amounts of methane or theories of the methane coming from the digestive process then scientists would not be able to develop the idea of reducing methane production through cattle feed. The influence of the development and use of technology is significant because it allows scientists to produce cattle feed with seaweed faster which therefore allows the methane production to decrease faster.

(d) How do these two features of science **work together** to develop the science idea?

B I U   ↶ ↷ 🌐

These two features of science work together to develop the science idea. Linking new evidence to existing models, theories, and ideas allows scientists to understand where the problem can be solved, in this case the digestive process of the cattle. Then the influence of the development of technology links to the other feature of science because the information found can then be used with technology (the facilities) to help solve the problem.

### PART THREE

For part three, focus on **these two** features of science:

- the influence of the development and use of technology on science
- responding to needs and opportunities.

How do these two features of science **support each other** in the development of the science idea?

B I U   ↶ ↷ 🌐

These two features of science support each other in the development of the science idea. The influence of the development and use of technology on science supports the need that methane production must be reduced because the technology in the facilities which produce the seaweed cattle feed helps make the time that methane production decreases faster. The need of reducing methane production supports the technology because it allows scientists to get funding and support etc to use technology to reduce methane.

## Achievement

**Subject:** Science

**Standard:** 91922

**Total score:** 04

Part	Grade score	Marker commentary
One	A4	The response identifies the importance of cattle to New Zealand's economy and outlines how this impacts the choices scientists make. The response also identifies the need to reduce climate emissions, which makes solving the problem more necessary.
Two		The response outlines how new evidence about the effects of seaweed on gut microbes links to the existing theory of climate change, which uses prior information to help solve the challenge of climate change.
Three		The response attempts to explain how the two features support each other but it could have benefited from mentioning which technologies supported the development of the science idea.