



## Climate change

This booklet is designed to help teachers make overall, on-balance judgments by providing examples of student responses. The responses are not an exhaustive set.

C samples

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# C sample: Response 1

## Guide to making judgments — Year 9 Science

Student

Purpose: To use evidence and scientific argument to draw conclusions and to inform an opinion about climate change and its effects.

Investigating	Knowledge and understanding	Investigating	Communicating
<p>Draws conclusions and makes predictions consistent with data and evidence.</p> <p>Questions 1, 2, 3, 4, 5, 11, 13</p>	<p>Uses equations and diagrams to describe and explain chemical changes and energy transformations.</p> <p>Questions 8, 9, 10, 12</p>	<p>Uses data, evidence and scientific argument to evaluate and propose hypotheses and to inform an opinion.</p> <p>Questions 6, 7, 14, 15</p>	<p>Uses scientific terminology in conclusions, predictions and arguments.</p> <p>Uses appropriate formats in chemical equations and energy diagrams.</p> <p>Questions 1–15</p>

### Overall grade

Although this response demonstrates a high level of Knowledge and understanding and Communicating, the sound level of achievement in Investigating suggests an overall C. This on-balance judgment is made in light of the emphasis on Investigating in the purpose of the assessment.

Consistently and accurately interprets data and evidence to justify valid conclusions and predictions.

Writes chemical formulas with correct ratios and balances chemical equations. Energy diagrams correctly identify all energy forms and illustrate all transfers and transformations, including waste heat.

Provides accurate and insightful scientific arguments, considering all data and evidence.

Displays fluency in the use of scientific terminology when drawing conclusions, making predictions and constructing arguments.

### Investigating

Used some data and evidence to explain valid predictions and conclusions, though an invalid conclusion in Question 1 led to a misconception in Question 4. The response to Question 2 was repetitive and lacked detail, and Question 11 was not based on evidence.

### Knowledge and understanding

Used correct word equations and balanced chemical equations to explain combustion of carbon and methane. Energy diagrams illustrated energy forms and transfers/transformations but included an unnecessary step and did not show waste heat. Solar hot water diagram did not identify the source of energy.

### Investigating

Used evidence to evaluate the statement in Question 14 but did not validly evaluate or propose hypotheses in Questions 6 and 7. The opinion offered about global warming was based on a minimal consideration of the evidence, with some misinterpretation.

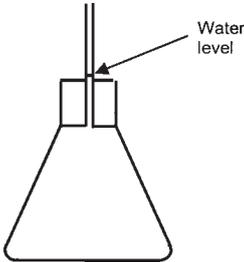
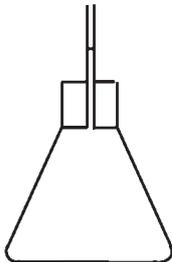
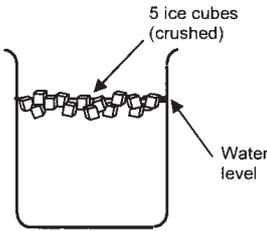
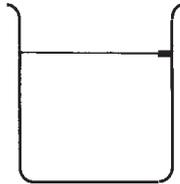
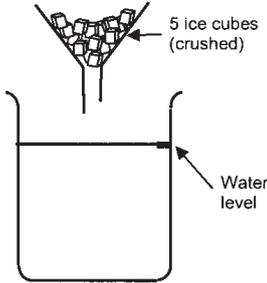
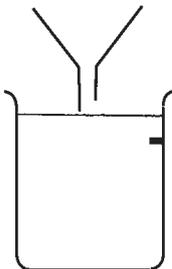
### Communicating

Used scientific terminology accurately when drawing conclusions and constructing an argument. Used accepted formats when writing chemical equations. Energy diagrams clearly drawn and fully labelled.

# C sample: Response 1

## Recording sheet

### Modelling the effect of global warming on sea levels

		<b>Observations</b> Draw the water level after warming or melting
<p><b>Experiment 1:</b> <b>Warming of the oceans</b> Modelled by warming water in a flask.</p>	<p>Before warming</p> 	<p>After warming</p> 
<p><b>Experiment 2:</b> <b>Warming of floating sea ice</b> Modelled by melting ice floating in a beaker of water.</p>	<p>Before warming</p> 	<p>After warming</p> 
<p><b>Experiment 3:</b> <b>Warming of ice on land</b> Modelled by melting ice above a beaker of water.</p>	<p>Before warming</p> 	<p>After warming</p> 

## C sample: Response 1

### Section 1: Interpreting evidence

1. Use your recorded observations from *Modelling the effect of global warming on sea levels* to complete Table 1.

Table 1

Global warming event	Effect on sea level (circle your prediction)	Use the observations from the modelling experiments to support your prediction.
<p><b>Warming of <u>water</u> in the oceans</b></p> <ul style="list-style-type: none"> <li>The oceans cover about two thirds of the Earth's surface.</li> </ul>	<p>rise</p> <p>fall</p> <p>no effect</p>	<p>WARMING THE OCEANIC WATERS CAUSES THE SEA LEVEL TO RISE. THIS IS DUE TO THE EXPANSION OF WATER WHEN IT IS WARMED.</p>
<p><b>Warming of <u>ice</u> in the Arctic Ocean</b></p> <p>The Arctic ocean is</p> <ul style="list-style-type: none"> <li>about twice the size of Australia</li> <li>mostly covered by floating ice about 3 metres thick.</li> </ul>	<p>rise</p> <p>fall</p> <p>no effect</p>	<p>WARMING OF ICE IN THE ARCTIC OCEAN WILL HAVE NO EFFECT ON THE SEA LEVEL. THIS IS DUE TO DISPLACING ITSELF IN THE WATER.</p>
<p><b>Warming of <u>ice</u> in Antarctica</b></p> <p>The continent of Antarctica is</p> <ul style="list-style-type: none"> <li>about twice the size of Australia</li> <li>covered with a layer of ice about 2 kilometres thick.</li> </ul>	<p>rise</p> <p>fall</p> <p>no effect</p>	<p>WARMING OF ICE IN ANTARCTICA WILL HAVE NO EFFECT ON THE SEA LEVEL. AGAIN, THE ICE IS DISPLACING ITSELF IN THE WATER.</p>

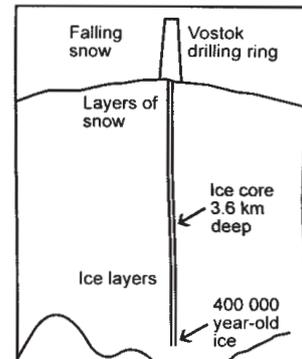
## C sample: Response 1

Use the evidence below to answer questions 2 to 5.

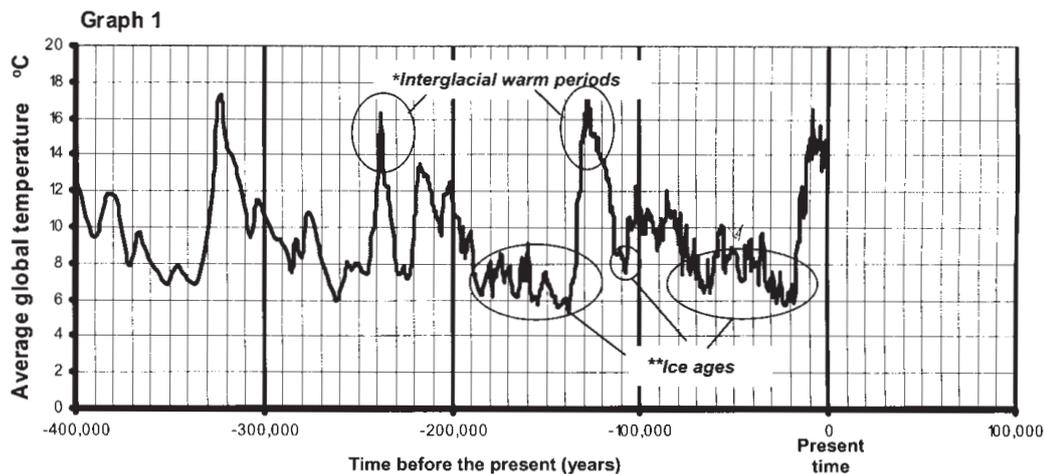
In 1995, scientists at Vostok Station in Antarctica drilled down 3.6 kilometres and retrieved ice cores containing air bubbles which have become trapped in snow over the past 400 000 years.

By analysing the air in the bubbles, scientists were able to calculate the <sup>†</sup>average global temperature over the past 400 000 years.

<sup>†</sup>average global temperature is the mean temperature of the air at the Earth's surface



Graph 1 shows the results of this investigation.



\*\*Ice ages refer to times when the polar ice caps expanded and much of the northern hemisphere was covered in ice.  
\*Interglacial warm periods are warm times between ice ages

2. Describe how the average global temperature has varied over the past 400 000 years.

IN THE PAST 400,000 YEARS, THERE WERE INTERGLACIAL WARM PERIODS AND THE ICE AGES. THIS WAS DUE TO THE RISE AND FALL OF TEMPERATURES GLOBALLY. THIS CONTINUOUS RISE AND FALLING TEMPERATURES WERE CONTINUING OVER THE YEARS.

## C sample: Response 1

3. Use any patterns in the graph to predict how the temperature might change in the next 20 000 years. Explain.

IN THE NEXT 20,000 YEARS, THE GLOBAL TEMPERATURE WOULD PROBABLY DECREASE DUE TO THE PERIODS IN WHICH THE ICE AGE AND THE INTERGLACIAL WARM PERIODS HAD OCCURED DURING THE PAST. THE GRAPH STATES THIS CONTINUOUS RISE AND FALL OF THE AVERAGE GLOBAL TEMPERATURE.

4. Describe how sea levels may have changed over the past 20 000 years. In your answer, refer to Graph 1 and your answers to question 1.

OVER THE PAST 20000 YEARS, THE POLAR ICE CAPS HAVE BEEN MELTED AND FORMED AGAIN USING THE SAME WATERS SURROUNDING THEM. THE MELTING AND FORMATION OF THE POLAR ICE CAPS HAVE NO EFFECT ON THE SEA LEVEL WHATSOEVER.

Aboriginal stories record that the Moreton Bay islands were once part of the mainland, but long ago, water filled all the low areas, separating Stradbroke, Moreton and the other islands from the mainland.

5. Archaeological evidence shows that Aboriginal people have lived in Australia for over 50 000 years. Does the evidence from Graph 1 and the modelling experiments support these Aboriginal stories? Explain.

GRAPH 1 AND THE MODELLING EXPERIMENTS DO SUPPORT THE ABORIGINAL STORIES BECAUSE IN THE GRAPH, IT STATES THAT FROM 501000 YEARS TO NOW, THERE IS A GRADUAL RISE IN THE GLOBAL TEMPERATURE, WHICH THEY HAVE WARMED THE WATERS AND A EXPANDED IT, IN ORDER TO FILL THE LOW AREAS, SEPARATING THE LAND.

**C sample: Response 1**

6. Does the evidence presented in Graphs 2 and 3 support the following hypothesis? Explain.

*"The Earth is becoming warmer due to increased amounts of carbon dioxide in the atmosphere"*

THE EVIDENCE IN GRAPH 2 AND 3 DOES SUPPORT THE HYPOTHESIS.

THIS IS DUE TO THE INDUSTRIAL REVOLUTION, WITH THE CREATION OF MACHINES AND TECHNOLOGY.

IN THE GRAPHS, IT STATES THAT AS THE AMOUNT OF CARBON DIOXIDE IS RELEASED INTO THE ATMOSPHERE, THE HIGHER THE AVERAGE GLOBAL TEMPERATURE

7. Offer a different hypothesis to explain the evidence presented in Graph 2 and Graph 3.

AS THE INDUSTRIAL REVOLUTION BECAME MORE ADVANCED, THE

HIGHER THE AMOUNT OF CARBON DIOXIDE IS RELEASED AND THE TEMPERATURE WOULD RISE AND FALL DUE TO SOME COMPLICATIONS IN THE YEARS.

## C sample: Response 1

### Section 2: Applying knowledge to form an opinion

Since the Industrial Revolution of the 1800s, human activity has been contributing significant amounts of CO<sub>2</sub> into the atmosphere.

For example, heating water for use in homes can produce CO<sub>2</sub>.

Most people in Australia choose to use electric, gas or solar hot water systems.

Use the information given below to answer questions 8 to 14.

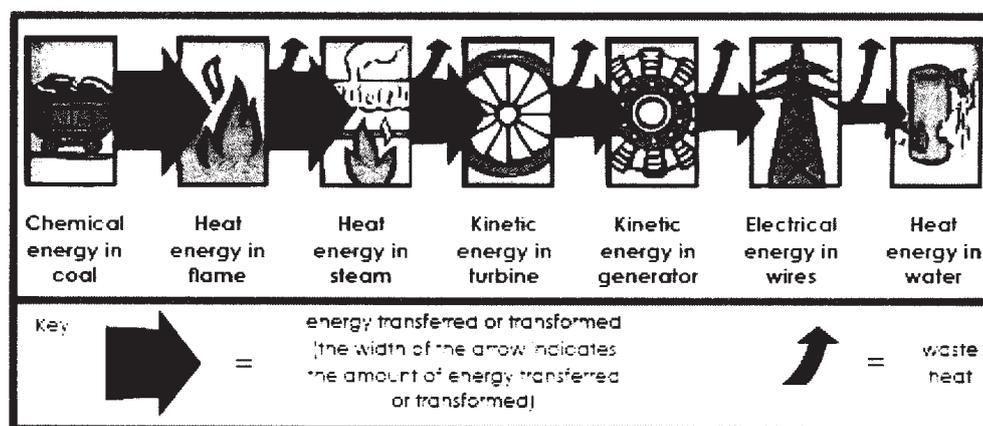
#### Electric hot water systems

Most of Australia's electricity is generated by burning coal (carbon) which combines with oxygen from the air, producing carbon dioxide.

The heat from burning coal boils water, producing steam to drive turbine-powered generators which produce electricity (electrical energy). Electrical energy is transmitted in wires to the electric hot water system in our homes. The electric element in the hot water system heats the water.

Energy Diagram 1 shows the energy changes that occur when electricity from a coal-fired power station is used to heat water in an electric hot water system at home.

Energy diagram 1: An electric hot-water system



8. Write a word equation for the burning of coal (carbon).



Use chemical symbols to write a balanced equation for the burning of coal.

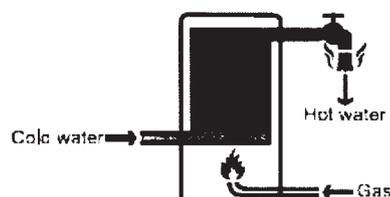


## C sample: Response 1

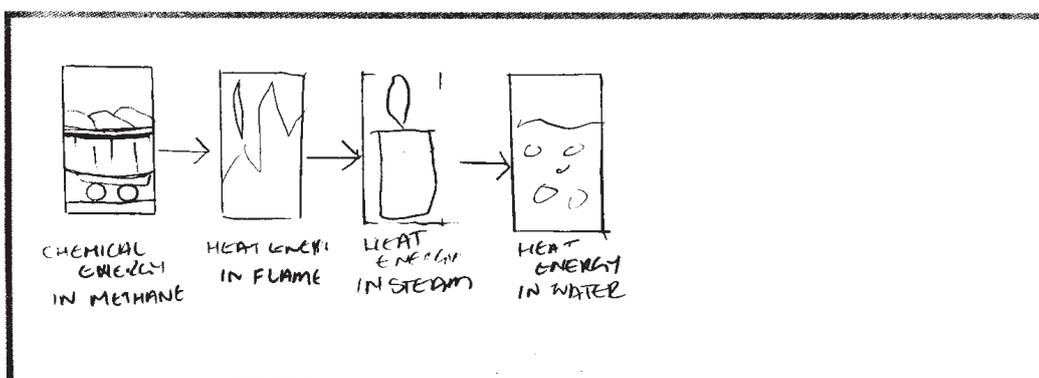
### Gas hot water systems

A gas hot water system heats water by burning gas.

The gas used in a gas hot water system is mostly methane ( $\text{CH}_4$ ). Methane burns by combining with oxygen to produce carbon dioxide and water.



9. Draw a labelled energy diagram below (similar to Energy diagram 1 on page 12) to show the energy changes that occur in a gas hot water system.



10. Write a word equation for the burning of methane.

METHANE + OXYGEN → CARBON DIOXIDE AND WATER

Use chemical symbols to write a balanced equation for the burning of methane.

$\text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O}$

11. Does using a gas hot water system produce more or less  $\text{CO}_2$  than using an electric hot water system? Explain by referring to the energy diagrams.

USING THE GAS HOT WATER SYSTEM DOESN'T USE MORE OR LESS  $\text{CO}_2$

THAN AN ELECTRIC HOT WATER SYSTEM, BUT JUST HAS A SMALLER

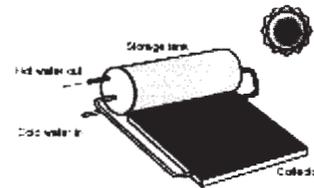
CONCENTRATION OF  $\text{CO}_2$  THAT WILL BE DIFFUSED WITHIN THE

ATMOSPHERE CONTAINING MOSTLY OF  $\text{H}_2\text{O}$ .

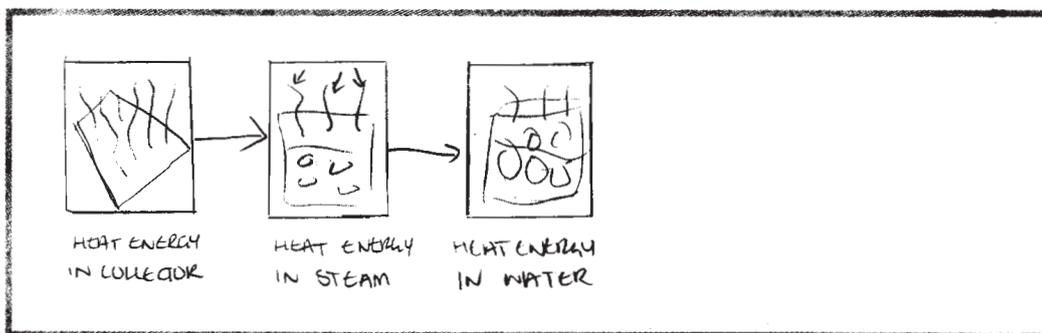
## C sample: Response 1

### Solar hot water systems

A solar hot water system heats water by absorbing heat from the sun



12. Draw a labelled energy diagram for a solar hot water system.



13. Does using a solar hot water system emit  $\text{CO}_2$ ? Explain.

SOLAR HOT WATER SYSTEMS DO NOT EMIT  $\text{CO}_2$  BECAUSE THERE ARE NO CHEMICALS USED IN THE PROCESS ; JUST HEATING OF WATER.

14. Do your answers to questions 8 to 13 support the following hypothesis? Explain.

"Our energy choices can affect the amount of  $\text{CO}_2$  released into the atmosphere."

THE QUESTIONS 8 TO 13 DOES SUPPORT THE HYPOTHESIS 'ENERGY CHOICES CAN AFFECT THE AMOUNT OF  $\text{CO}_2$  RELEASED INTO THE ATMOSPHERE. THIS IS BECAUSE IN EACH PROCESS, THERE ARE DIFFERENT WAYS TO HEAT WATER, AND SOME OF THESE PROCESSES WILL PRODUCE MORE  $\text{CO}_2$  THAN THE OTHER. BY CHOOSING THE RELEVANT CHOICE, WILL ALTER THE AMOUNT OF  $\text{CO}_2$  THAT YOU WILL RELEASE ONTO THE AIR.

# C sample: Response 1

"Global temperature changes occur naturally, so there's nothing we can do about it. Anyway, there's no problem being a few degrees warmer."

## 15. What is your opinion of the statement above?

agree      disagree      partially agree      (circle one)

Justify your opinion by referring to:

- historic and recent temperature and CO<sub>2</sub> data in questions 2 to 8
- information about energy choices in questions 9 to 13
- your predictions from the model in question 1

I BELIEVE THAT THE GLOBAL TEMPERATURE CHANGES OCCUR NATURALLY AND THAT THERE'S NOTHING WE CAN DO ABOUT IT. THERE IS ACTUALLY NO PROBLEM BEING A FEW DEGREES WARMER.

'GLOBAL WARMING IS A HOAX' AND QUESTIONS 2 TO 8 SUPPORT THIS PHRASE. THE MELTING OF ICE DOES NOT RAISE THE WATER LEVEL, BUT ACTUALLY DISPLACES ITSELF IN THE WATER, IN THE FORM OF A SOLID. EVEN GRAPH 1 STATES THE FACT THAT THE AVERAGE GLOBAL TEMPERATURE CONSTANTLY RISES AND FALLS, FORMING ICE AGES AND INTERGLACIAL PERIODS.

THEREFORE, THE RISE AND FALLS OF THE GLOBAL TEMPERATURE IS A NATURAL OCCURENCE AND WE ARE SURE THAT THERE IS NOTHING WRONG WITH BEING A FEW DEGREES WARMER.

# C sample: Response 2

**Overall grade**  
This response demonstrates a sound level of Knowledge and understanding and Investigating and a high level of Communicating, and on balance is judged to be an overall C.

**Guide to making judgments — Year 9 Science** Student .....  
**Purpose:** To use evidence and scientific argument to draw conclusions and to inform an opinion about climate change and its effects.

Investigating	Knowledge and understanding	Investigating	Communicating
<p>Draws conclusions and makes predictions consistent with data and evidence.</p> <p>Questions 1, 2, 3, 4, 5, 11, 13</p>	<p>Uses equations and diagrams to describe and explain chemical changes and energy transformations.</p> <p>Questions 8, 9, 10, 12</p>	<p>Uses data, evidence and scientific argument to evaluate and propose hypotheses and to inform an opinion.</p> <p>Questions 6, 7, 14, 15</p>	<p>Uses scientific terminology in conclusions, predictions and arguments.</p> <p>Uses appropriate formats in chemical equations and energy diagrams.</p> <p>Questions 1–15</p>

**A**      **B**      **C**      **D**      **E**

Displays fluency in the use of scientific terminology when drawing conclusions, making predictions and constructing arguments.

Uses accepted formats when constructing formulas for chemical compounds and when writing and balancing equations. Draws clear, fully labelled energy diagrams.

Correctly uses some scientific terminology when drawing conclusions, making predictions and constructing arguments. Writes formulas and equations with variable use of accepted formats. Draws energy diagrams which adequately convey meaning.

Makes minimal use of scientific terminology.

**Communicating**  
Made appropriate use of scientific terminology when drawing conclusions. Used accepted formats when writing chemical equations.

Provides accurate and insightful scientific arguments, considering all data and evidence.

Supports the evaluation and proposal of hypotheses with valid interpretations of evidence. Gives a reasoned opinion about climate change and its effects based on a thorough analysis of the evidence.

Offers a valid opinion about climate change and its effects based on an incomplete analysis of the evidence. Uses evidence to evaluate or propose a credible hypothesis.

Offers an opinion based on a minimal consideration of the evidence, with some confusion of concepts or misinterpretation of evidence.

**Investigating**  
Used evidence to partially evaluate and propose hypotheses. The opinion offered about global warming was based on a partial consideration of the evidence.

Writes chemical formulas with correct ratios and balances chemical equations. Energy diagrams correctly identify all energy forms and illustrate all transfers and transformations, including waste heat.

Correctly identifies reactants and products in word equations. Chooses correct chemical symbols and writes most chemical formulas with correct ratios. Energy diagrams identify and illustrate most energy transfers and transformations.

**Knowledge and understanding**  
Used correct word equations and balanced chemical equations to explain combustion of carbon and methane. Energy diagrams illustrated some energy forms and transfers but did not show all steps, arrows or waste heat.

Consistently and accurately interprets data and evidence to justify valid conclusions and predictions.

Uses data and evidence to explain some valid conclusions and plausible predictions.

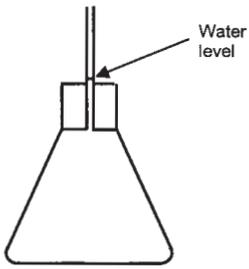
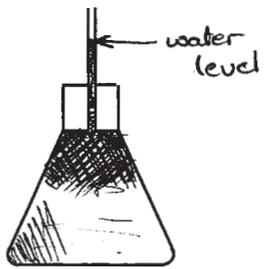
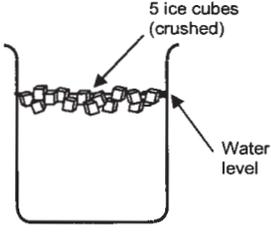
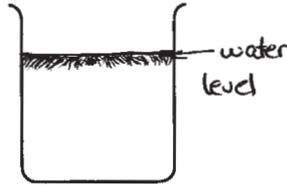
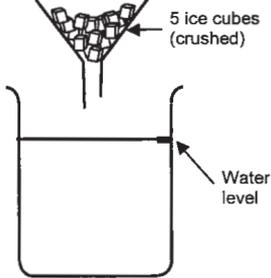
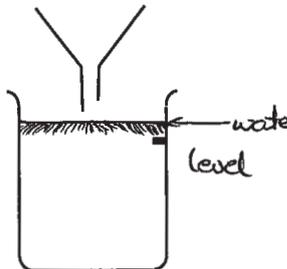
Draws overall conclusion.

**Investigating**  
Used data and evidence to explain valid predictions and conclusions, though some responses lacked detail (e.g. Questions 2 and 5).

# C sample: Response 2

## Recording sheet

### Modelling the effect of global warming on sea levels

		<b>Observations</b> Draw the water level after warming or melting
<p><b>Experiment 1:</b> <b>Warming of the oceans</b> Modelled by warming water in a flask.</p>	<p>Before warming</p> 	<p>After warming</p> 
<p><b>Experiment 2:</b> <b>Warming of floating sea ice</b> Modelled by melting ice floating in a beaker of water.</p>	<p>Before warming</p> 	<p>After warming</p> 
<p><b>Experiment 3:</b> <b>Warming of ice on land</b> Modelled by melting ice above a beaker of water.</p>	<p>Before warming</p> 	<p>After warming</p> 

# C sample: Response 2

## Section 1: Interpreting evidence

1. Use your recorded observations from *Modelling the effect of global warming on sea levels* to complete Table 1.

Table 1

Global warming event	Effect on sea level (circle your prediction)	Use the observations from the modelling experiments to support your prediction.
<p><b>Warming of water in the oceans</b></p> <ul style="list-style-type: none"> <li>The oceans cover about two thirds of the Earth's surface.</li> </ul>	<p style="text-align: center;"> <input checked="" type="radio"/> rise  <input type="radio"/> fall  <input type="radio"/> no effect                 </p>	<p style="text-align: center;">                     water expands when heated                 </p>
<p><b>Warming of ice in the Arctic Ocean</b></p> <p>The Arctic <u>ocean</u> is</p> <ul style="list-style-type: none"> <li>about twice the size of Australia</li> <li>mostly covered by floating ice about 3 metres thick.</li> </ul>	<p style="text-align: center;"> <input type="radio"/> rise  <input type="radio"/> fall  <input checked="" type="radio"/> no effect                 </p>	<p style="text-align: center;">                     ice melts and takes space of displaced water so everything remains the same                 </p>
<p><b>Warming of ice in Antarctica</b></p> <p>The <u>continent</u> of Antarctica is</p> <ul style="list-style-type: none"> <li>about twice the size of Australia</li> <li>covered with a layer of ice about 2 kilometres thick.</li> </ul>	<p style="text-align: center;"> <input checked="" type="radio"/> rise  <input type="radio"/> fall  <input type="radio"/> no effect                 </p>	<p style="text-align: center;">                     ice melting from on land will add to that in water and increase the water levels                 </p>

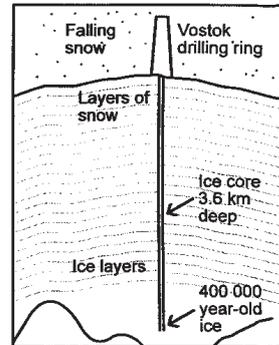
# C sample: Response 2

Use the evidence below to answer questions 2 to 5.

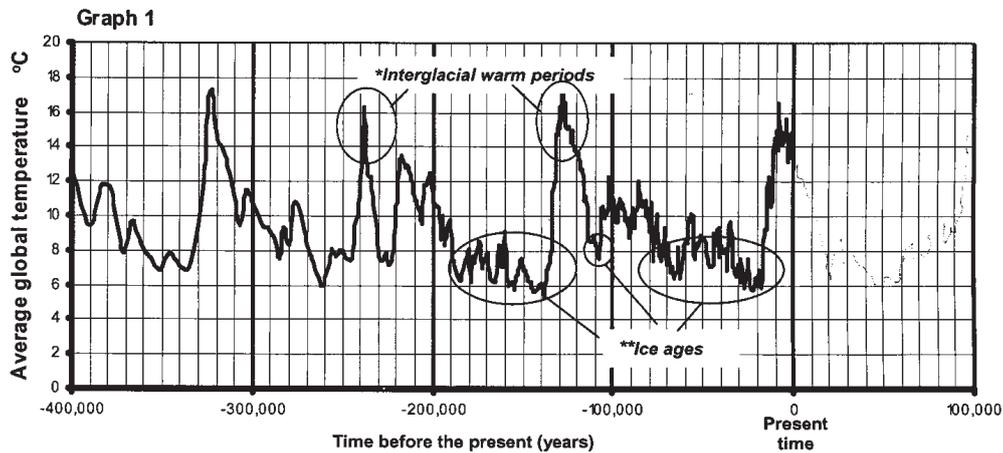
In 1995, scientists at Vostok Station in Antarctica drilled down 3.6 kilometres and retrieved ice cores containing air bubbles which have become trapped in snow over the past 400 000 years.

By analysing the air in the bubbles, scientists were able to calculate the <sup>†</sup>average global temperature over the past 400 000 years.

<sup>†</sup>average global temperature is the mean temperature of the air at the Earth's surface



Graph 1 shows the results of this investigation.



\*\*Ice ages refer to times when the polar ice caps expanded and much of the northern hemisphere was covered in ice.  
 \*Interglacial warm periods are warm times between ice ages

2. Describe how the average global temperature has varied over the past 400 000 years.

.....Temperature has risen and fallen with approximately  
 ..one high and one low per every 100,000 years.....

## C sample: Response 2

3. Use any patterns in the graph to predict how the temperature might change in the next 20 000 years. Explain.

The temperature seems to have peaked already and is most likely to decrease over the next 20,000 years.

4. Describe how sea levels may have changed over the past 20 000 years. In your answer, refer to Graph 1 and your answers to question 1.

Sea levels will have increased due to a higher temperature and water expansion and also from melted ice on land.

Aboriginal stories record that the Moreton Bay islands were once part of the mainland, but long ago, water filled all the low areas, separating Stradbroke, Moreton and the other islands from the mainland.

5. Archaeological evidence shows that Aboriginal people have lived in Australia for over 50 000 years. Does the evidence from Graph 1 and the modelling experiments support these Aboriginal stories? Explain.

Yes, with cooler temperatures, water levels would not have been so high and also with the ice age, it would have allowed passage on foot to Moreton Bay.

## C sample: Response 2

6. Does the evidence presented in Graphs 2 and 3 support the following hypothesis? Explain.

“The Earth is becoming warmer due to increased amounts of carbon dioxide in the atmosphere”

Generally the temperature has increased with an increase in CO<sub>2</sub> emissions so in my opinion it would be partially correct.

7. Offer a different hypothesis to explain the evidence presented in Graph 2 and Graph 3.

“CO<sub>2</sub> emissions are further increasing/aiding the rise in temperature.”

This statement would be more correct as the above states that one is a cause of the other but the drops in temperature are not explained.

## C sample: Response 2

### Section 2: Applying knowledge to form an opinion

Since the Industrial Revolution of the 1800s, human activity has been contributing significant amounts of CO<sub>2</sub> into the atmosphere.

For example, heating water for use in homes can produce CO<sub>2</sub>.

Most people in Australia choose to use electric, gas or solar hot water systems.

Use the information given below to answer questions 8 to 14.

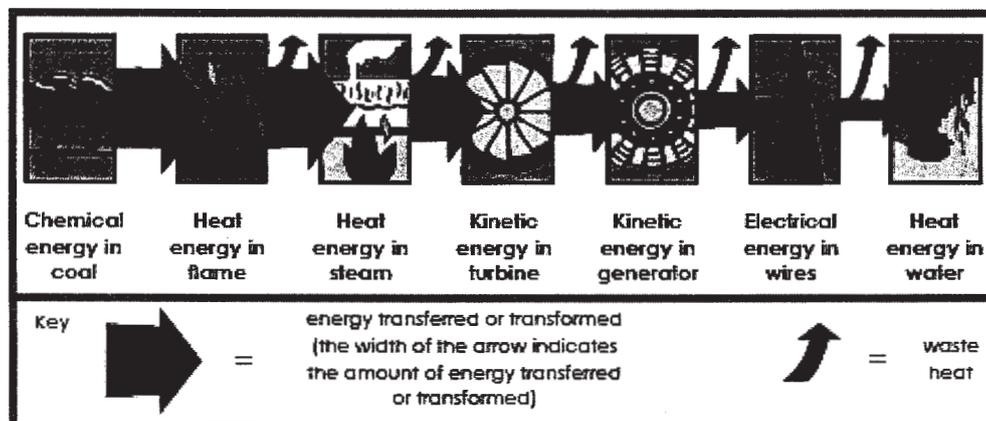
#### Electric hot water systems

Most of Australia's electricity is generated by burning coal (carbon) which combines with oxygen from the air, producing carbon dioxide.

The heat from burning coal boils water, producing steam to drive turbine-powered generators which produce electricity (electrical energy). Electrical energy is transmitted in wires to the electric hot water system in our homes. The electric element in the hot water system heats the water.

Energy Diagram 1 shows the energy changes that occur when electricity from a coal-fired power station is used to heat water in an electric hot water system at home.

Energy diagram 1: An electric hot-water system



8. Write a word equation for the burning of coal (carbon).

... coal (carbon) + oxygen → carbon dioxide ...

Use chemical symbols to write a balanced equation for the burning of coal.

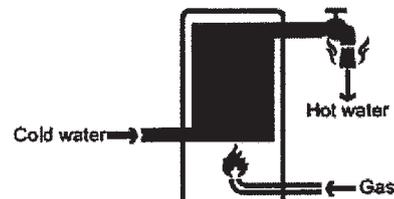
...  $C + O_2 \rightarrow CO_2$  ...

## C sample: Response 2

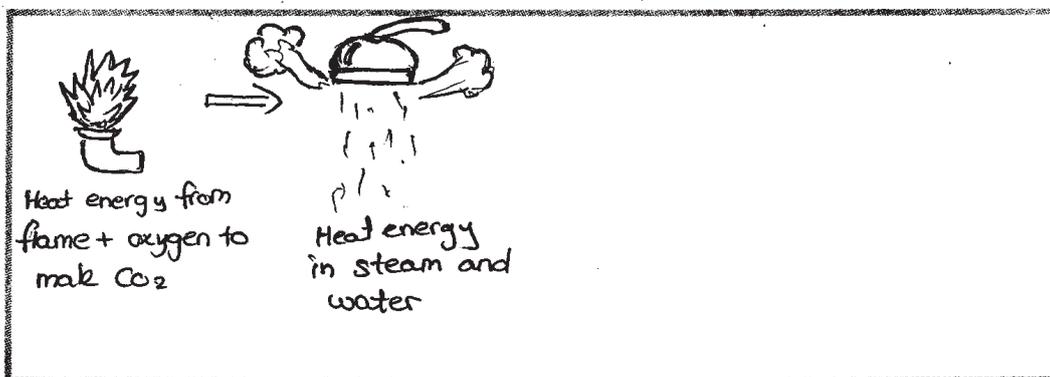
### Gas hot water systems

A gas hot water system heats water by burning gas.

The gas used in a gas hot water system is mostly methane ( $\text{CH}_4$ ). Methane burns by combining with oxygen to produce carbon dioxide and water.



9. Draw a labelled energy diagram below (similar to Energy diagram 1 on page 12) to show the energy changes that occur in a gas hot water system.



10. Write a word equation for the burning of methane.

Methane + oxygen  $\rightarrow$  carbon dioxide + water

Use chemical symbols to write a balanced equation for the burning of methane.

$\text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O}$

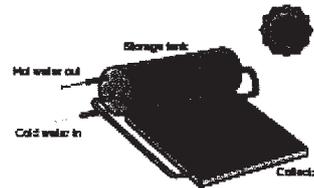
11. Does using a gas hot water system produce more or less  $\text{CO}_2$  than using an electric hot water system? Explain by referring to the energy diagrams.

In my opinion electric hot water uses more because energy from burning coal is lost in more steps than the gas hot water system.

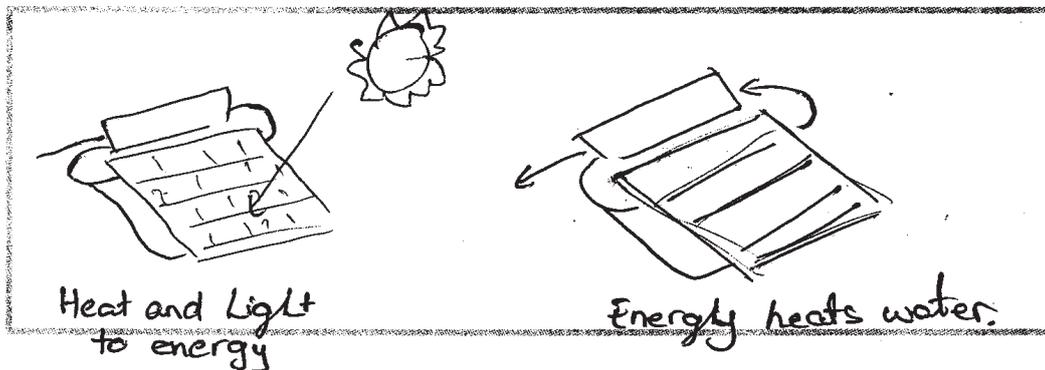
## C sample: Response 2

### Solar hot water systems

A solar hot water system heats water by absorbing heat from the sun



12. Draw a labelled energy diagram for a solar hot water system.



13. Does using a solar hot water system emit CO<sub>2</sub>? Explain.

No, there is no burning and what is used for hot water is energy from the sun turned to heat and electricity.

14. Do your answers to questions 8 to 13 support the following hypothesis? Explain.

"Our energy choices can affect the amount of CO<sub>2</sub> released into the atmosphere."

Yes, it is better to use means by which CO<sub>2</sub> is not emitted or at least means by which less energy is lost through heat.

# C sample: Response 2

“Global temperature changes occur naturally, so there’s nothing we can do about it. Anyway, there’s no problem being a few degrees warmer.”

**15. What is your opinion of the statement above?**

agree      disagree      partially agree      (circle one)

**Justify your opinion by referring to:**

- historic and recent temperature and CO<sub>2</sub> data in questions 2 to 8
- information about energy choices in questions 9 to 13
- your predictions from the model in question 1

I only partially agree because we can see in graphs 2 & 3, CO<sub>2</sub> emissions only slightly increase the global temperature. However, any increase in temperature is potentially dangerous. This is because when the water in the oceans warms up, the sea level rises as shown in Exp 1. Also, if Antarctica starts to melt the sea level will also rise as the water will flow into the ocean.