# Year 5 Assessment Rubrics

PrimaryConnections® Linking science with literacy

## Year 5 Achievement Standard

By the end of Year 5, students classify substances according to their observable properties and behaviours. They explain everyday phenomena associated with the transfer of light. They describe the key features of our solar system. They analyse how the form of living things enables them to function in their environments. Students discuss how scientific developments have affected people's lives and how science knowledge develops from many people's contributions.

Students follow instructions to pose questions for investigation, predict what might happen when variables are changed, and plan investigation methods. They use equipment in ways that are safe and improve the accuracy of their observations. Students construct tables and graphs to organise data and identify patterns. They use patterns in their data to suggest explanations and refer to data when they report findings. They describe ways to improve the fairness of their methods and communicate their ideas, methods and findings using a range of text types.

| Organisers | CONTENT DESCRIPTIONS | ACHIEVEMENT STANDARD | EVIDENCE | LEVEL OF ACHIEVEMENT | | |
|---|---|---|---|---|---|---|
| | | | | BELOW ACHIEVEMENT STANDARD | AT ACHIEVEMENT STANDARD | ABOVE ACHIEVEMENT STANDARD |
| **SCIENCE UNDERSTANDING** | | | | | | |
| **Biological sciences** | Living things have structural features and adaptations that help them to survive in their environment (ACSSU043) | Analyses how the form of living things enables them to function in their environments | *Desert survivors*<br>'Choosing monkeys' (Resource sheet 11) | • Recalls simple observations of adaptations of different species living in desert environments | • Identifies adaptations of different species living in desert environments | • Uses claims and evidence to explain how the adaptations of different species enables them to survive in desert environments |

AC The Achievement standard and Content descriptions are sourced from the Australian Curriculum.

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| | | | | BELOW ACHIEVEMENT STANDARD | AT ACHIEVEMENT STANDARD | ABOVE ACHIEVEMENT STANDARD |
| **SCIENCE UNDERSTANDING** | | | | | | |
| Chemical sciences | Solids, liquids and gases have different observable properties and behave in different ways (ACSSU077) | Classifies substances according to their observable properties and behaviours | *What's the matter?*<br>'Matter cards' (Resource sheet 7) | • Lists the observable properties of solids, liquids and gases | • Describes the observable properties of solids, liquids and gases | • Explains in detail the observable properties and behaviours of solids, liquids and gases |

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| | | | | BELOW ACHIEVEMENT STANDARD | AT ACHIEVEMENT STANDARD | ABOVE ACHIEVEMENT STANDARD |
| **SCIENCE UNDERSTANDING** | | | | | | |
| Earth and space sciences | The Earth is part of a system of planets orbiting around a star (the sun) (ACSSU078) | Describes the key features of our solar system | *Earth's place in Space*<br>Dialogue | • Describes simple ideas without supporting evidence that the Earth is part of a solar system | • Identifies that the Earth is part of a solar system orbiting the Sun | • Provides claims supported with evidence about the Earth and its place in the solar system |
| Physical sciences | Light from a source forms shadows and can be absorbed, reflected and refracted (ACSSU080) | Explains everyday phenomena associated with the transfer of light | *Light shows*<br>'My thoughts' (Resource sheet 1) | • Displays non-scientific ideas about the behaviour of light | • Describes how shadows are formed<br>• Describes that light can be absorbed, reflected and refracted | • Uses scientific ideas about the behaviour of light with detailed explanations |

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| | | | | BELOW ACHIEVEMENT STANDARD | AT ACHIEVEMENT STANDARD | ABOVE ACHIEVEMENT STANDARD |
| **SCIENCE AS A HUMAN ENDEAVOUR** | | | | | | |
| Nature and development of science | Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena (ACSHE081) | Discusses how science involves posing questions, organising data and using patterns in their data to suggest explanations | • *Desert survivors*<br>• *What's the matter?*<br>• *Earth's place in space*<br>• *Light shows* | Recalls that science involves posing questions, organising data and suggesting explanations | Discusses how science involves posing questions, organising data and using patterns in their data to suggest explanations | Has a detailed Understanding of how science involves posing questions, organising data and using patterns in their data to suggest explanations |
| | Important contributions to the advancement of science have been made by people from a range of cultures (ACSHE082) | Discusses how science knowledge develops from many people's contributions | • *Desert survivors*<br>• *What's the matter?*<br>• *Earth's place in space*<br>• *Light shows* | Suggests how different cultures have contributed to the development of science knowledge | Discusses how science knowledge develops from many people's contributions | Has a detailed Understanding of how different cultures have contributed to the development of science knowledge |

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| **SCIENCE AS A HUMAN ENDEAVOUR** | | | | | | |
| **Use and influence of science** | Scientific Understandings, discoveries and inventions are used to solve problems that directly affect people's lives (ACSHE083)<br><br>Scientific knowledge is used to inform personal and community decisions (ACSHE217) | Discusses how scientific developments have affected people's lives | • *Desert survivors*<br>• *What's the matter?*<br>• *Earth's place in space*<br>• *Light shows* | Makes suggestions about how scientific developments have affected people's lives | Discusses how scientific developments have affected people's lives | Describes in detail where scientific developments have affected people's lives and in the wider world to influence their actions |

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| **SCIENCE INQUIRY SKILLS** | | | | | | |
| **Questioning and predicting** | With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be (ACSIS231) | Follows instructions to pose questions for investigation and predicts what might happen when variables are changed | *Elaborate* phase in:<br>• *What's the matter?* | Suggests questions for investigation and predicts what might happen in an investigation, without supporting evidence | Follows instructions to pose questions for investigation and predicts what might happen when variables are changed | Asks pertinent and investigable questions and predicts the outcomes of investigations, supported with detailed evidence based on their knowledge and experiences |

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| **SCIENCE INQUIRY SKILLS** | | | | | | |
| **Planning and conducting** | With guidance, plan appropriate investigation methods to answer questions or solve problems (ACSIS086) | Plans investigation methods | *Elaborate* phase in:<br>• *Light shows*<br>• *What's the matter?* | Follows procedures to plan an investigation | Plans investigation methods | Demonstrates a detailed Understanding of how to conduct science investigations to respond to questions |
| | Decide which variable should be changed and measured in fair tests and accurately observe, measure and record data, using digital technologies as appropriate (ACSIS087) | Predicts what might happen when variables are changed | *Elaborate* phase in:<br>• *Light shows*<br>• *What's the matter?* | Lists ideas on variables in fair tests | Predicts what might happen when variables are changed | Identifies variables, articulates why a test is fair or not and predicts what might happen when variables are changed |
| | Use equipment and materials safely, identifying potential risks (ACSIS088) | Uses equipment in ways that are safe and improve the accuracy of their observations | *Elaborate* phase in:<br>• *What's the matter?*<br>• *Desert survivors* | Follows guidelines on how to safely use equipment to make and record observations | Uses equipment in ways that are safe and improve the accuracy of their observations | Independently uses equipment safely to accurately record their observations |

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| **SCIENCE INQUIRY SKILLS** | | | | | | |
| **Processing and analysing data and information** | Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies as appropriate (ACSIS090) | Constructs tables and graphs to organise data and identify patterns | *Elaborate* phase in:<br>• *What's the matter?*<br>• *Desert survivors* | Follows simple procedures to use provided tables and simple column graphs | Constructs tables and graphs to organise data and identify patterns | Independently constructs tables and simple column graphs to organise data and identify and analyse patterns |
| | Compare data with predictions and use as evidence in developing explanations (ACSIS218) | Uses patterns in their data to suggest explanations and refer to data when they report findings | *Elaborate* phase in:<br>• *What's the matter?*<br>• *Desert survivors* | Suggests reasons for findings that are obvious and follow explicitly from evidence | Uses patterns in their data to suggest explanations and refer to data when they report findings | Applies scientific concepts and knowledge and constructs claims based on evidence to explain findings and compare findings with predictions |

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|---|---|---|---|---|---|---|
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| **SCIENCE INQUIRY SKILLS** | | | | | | |
| **Evaluating** | Suggest improvements to the methods used to investigate a question or solve a problem (ACSIS091) | Describes ways to improve the fairness of their methods | *Elaborate* phase in:<br>• *Light shows*<br>• *Desert survivors* | Demonstrates non-scientific ideas of a fair investigation | Describes ways to improve the fairness of their methods | Articulates why a test is fair or not and suggests ways to improve the investigation |
| **Communicating** | Communicate ideas, explanations and processes in a variety of ways, including multi-modal texts (ACSIS093) | Communicates ideas, methods and findings using a range of text types | *Elaborate* phase in:<br>• *Earth's place in Space* | Presents a limited report on findings | Communicates ideas, methods and findings using a range of text types | Completes extended reports using claims and evidence to communicate their methods and findings |

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**GLOSSARY**

| | |
|---|---|
| **Describe** | Give an account of characteristics or features. |
| **Identify** | Establish or indicate who or what someone or something is. |
| **Considered** | Formed after careful thought. |
| **Apply** | Use, utilise or employ in a particular situation. |
| **Explain** | Provide additional information that demonstrates Understanding of reasoning and/or application. |
| **Sequence** | Arrange in order. |
| **Familiar** | Previously encountered in prior learning activities. |
| **Discuss** | Talk or write about a topic, taking into account different issues and ideas. |
| **Compare** | Estimate, measure or note how things are similar or dissimilar. |

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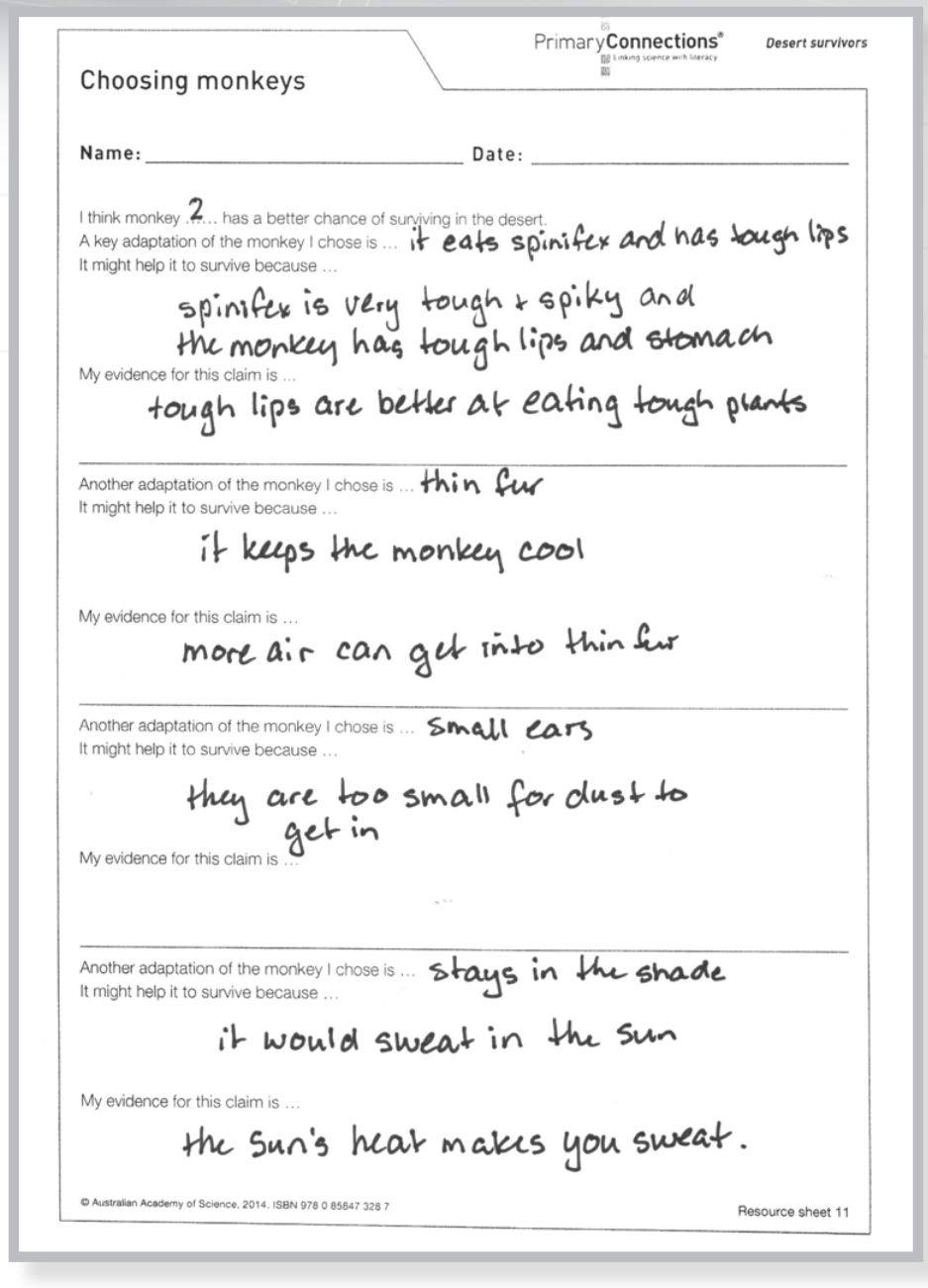
**Disclaimer**
The views expressed herein do not necessarily represent the views of the Australian Government.



PrimaryConnections® Linking science with literacy *Desert survivors*

## Choosing monkeys

**Name:** _____ **Date:** _____

I think monkey 2 has a better chance of surviving in the desert.
A key adaptation of the monkey I chose is … it eats spinifex and has tough lips
It might help it to survive because …

spinifex is very tough + spiky and the monkey has tough lips and stomach

My evidence for this claim is …

tough lips are better at eating tough plants

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Another adaptation of the monkey I chose is … thin fur
It might help it to survive because …

it keeps the monkey cool

My evidence for this claim is …

more air can get into thin fur

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Another adaptation of the monkey I chose is … small ears
It might help it to survive because …

they are too small for dust to get in

My evidence for this claim is …

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Another adaptation of the monkey I chose is … stays in the shade
It might help it to survive because …

it would sweat in the sun

My evidence for this claim is …

the sun's heat makes you sweat.

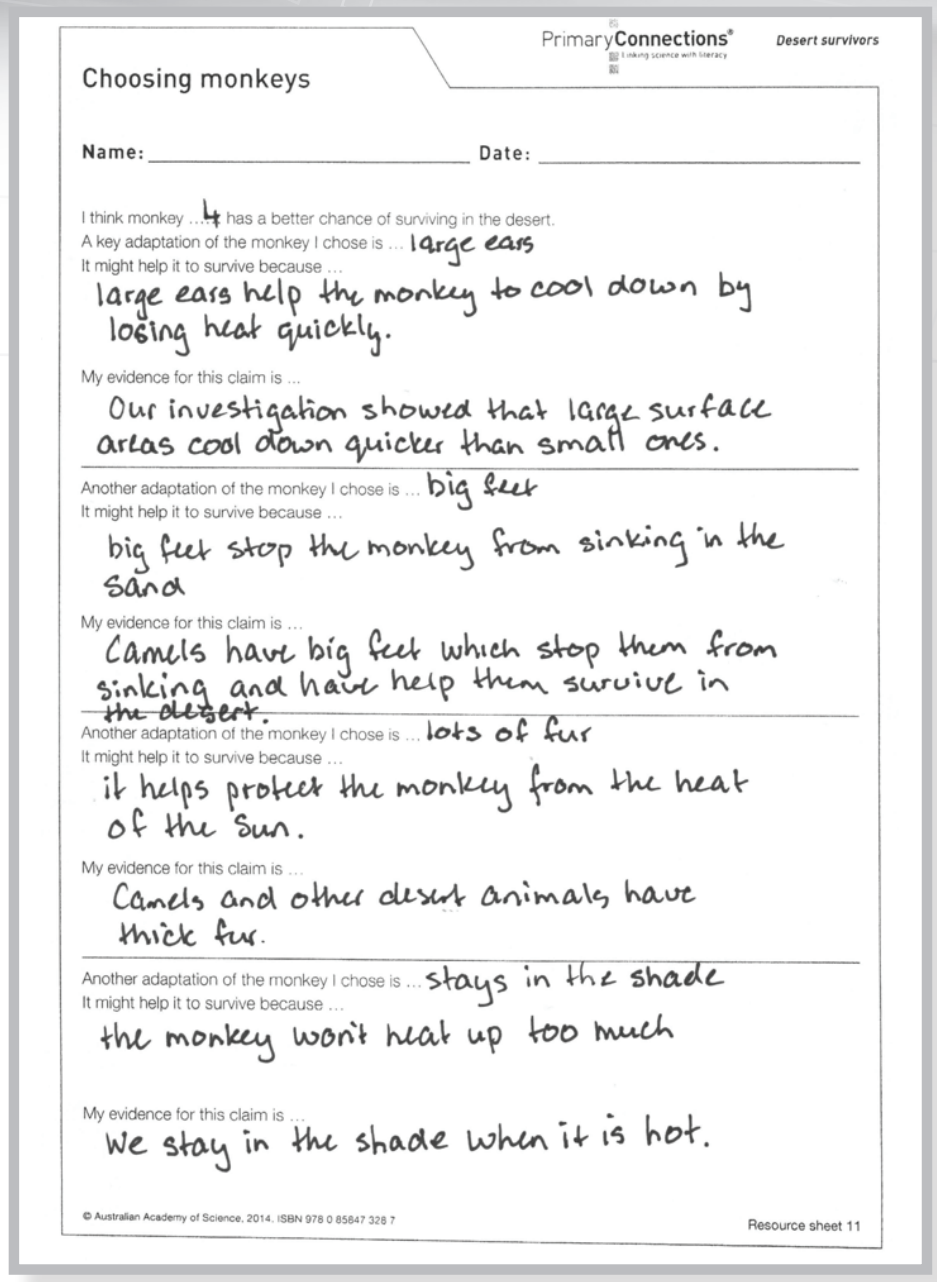


Resource sheet 11

# Year 5 **Work samples**

## *Desert survivors*
## Summative Assessment of Science Understanding

**Below Achievement Standard**



PrimaryConnections® Linking science with literacy *Desert survivors*

## Choosing monkeys

**Name:** _____ **Date:** _____

I think monkey ...4... has a better chance of surviving in the desert.
A key adaptation of the monkey I chose is ... large ears
It might help it to survive because ...
large ears help the monkey to cool down by losing heat quickly.

My evidence for this claim is ...
Our investigation showed that large surface areas cool down quicker than small ones.

Another adaptation of the monkey I chose is ... big feet
It might help it to survive because ...
big feet stop the monkey from sinking in the sand

My evidence for this claim is ...
Camels have big feet which stop them from sinking and have help them survive in ~~the desert.~~

Another adaptation of the monkey I chose is ... lots of fur
It might help it to survive because ...
it helps protect the monkey from the heat of the sun.

My evidence for this claim is ...
Camels and other desert animals have thick fur.

Another adaptation of the monkey I chose is ... stays in the shade
It might help it to survive because ...
the monkey won't heat up too much

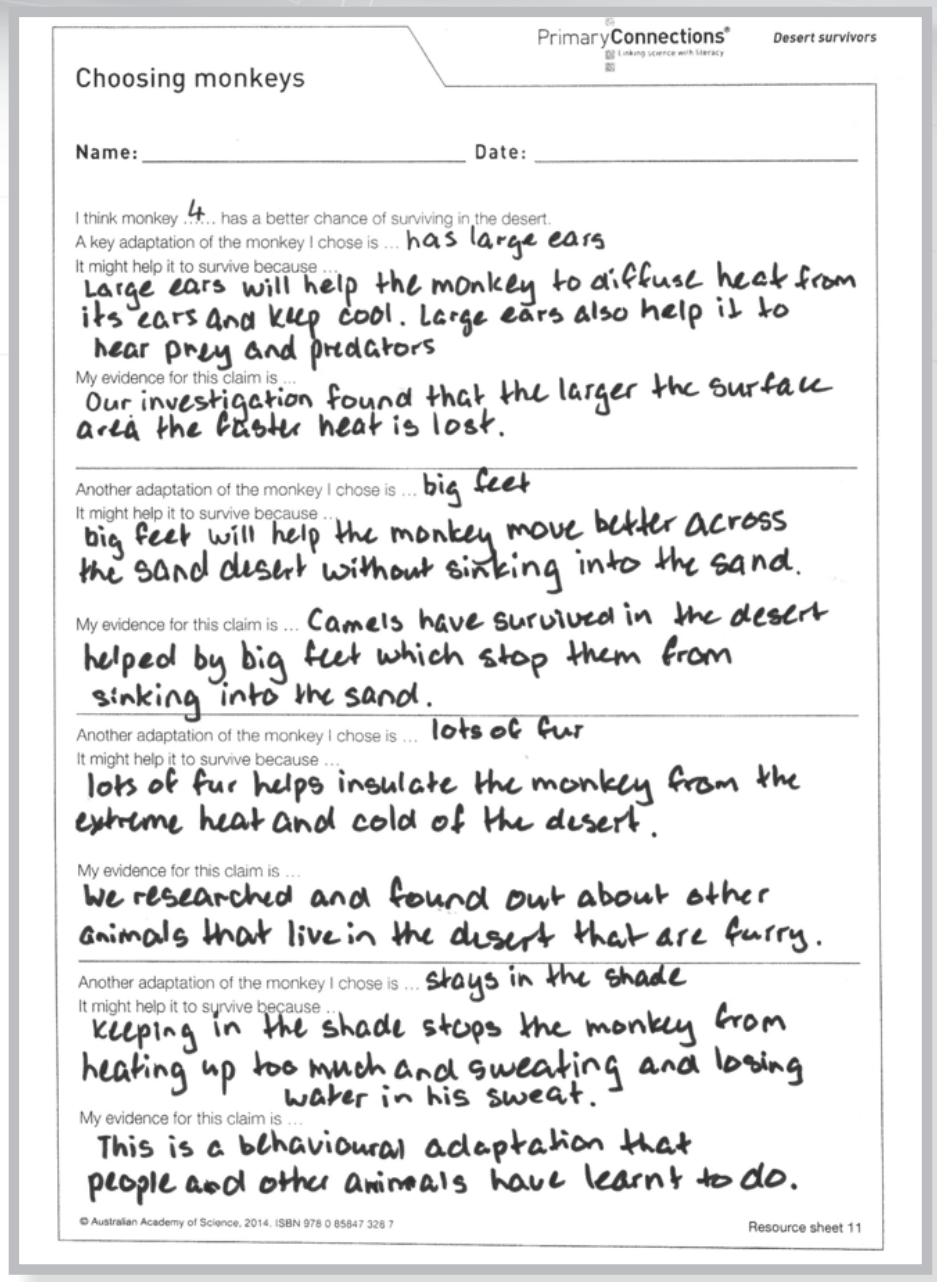
My evidence for this claim is ...
We stay in the shade when it is hot.


Resource sheet 11

# Year 5 **Work samples**

## *Desert survivors*
## Summative Assessment of Science Understanding

**At Achievement Standard**



PrimaryConnections® Linking science with literacy — Desert survivors

## Choosing monkeys

**Name:** _____ **Date:** _____

I think monkey 4 has a better chance of surviving in the desert.
A key adaptation of the monkey I chose is ... has large ears
It might help it to survive because ...
Large ears will help the monkey to diffuse heat from its ears and keep cool. Large ears also help it to hear prey and predators
My evidence for this claim is ...
Our investigation found that the larger the surface area the faster heat is lost.

Another adaptation of the monkey I chose is ... big feet
It might help it to survive because ...
big feet will help the monkey move better across the sand desert without sinking into the sand.
My evidence for this claim is ... Camels have survived in the desert helped by big feet which stop them from sinking into the sand.

Another adaptation of the monkey I chose is ... lots of fur
It might help it to survive because ...
lots of fur helps insulate the monkey from the extreme heat and cold of the desert.
My evidence for this claim is ...
we researched and found out about other animals that live in the desert that are furry.

Another adaptation of the monkey I chose is ... stays in the shade
It might help it to survive because ...
keeping in the shade stops the monkey from heating up too much and sweating and losing water in his sweat.
My evidence for this claim is ...
This is a behavioural adaptation that people and other animals have learnt to do.

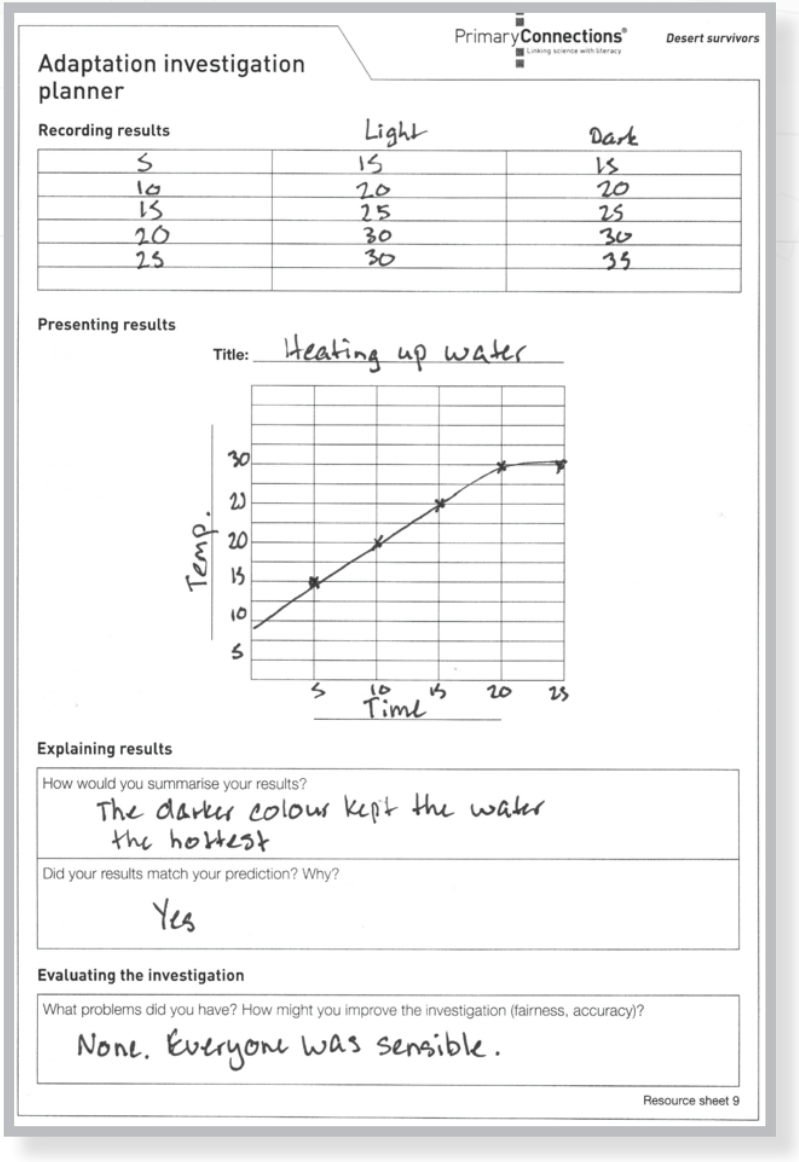

Resource sheet 11

# Year 5 **Work samples**

## *Desert survivors*
## Summative Assessment of Science Understanding

**Above Achievement Standard**

Processing and analysing data and information



PrimaryConnections® Linking science with literacy *Desert survivors*

## Adaptation investigation planner

**Recording results**

| | Light | Dark |
|---|---|---|
| 5 | 15 | 15 |
| 10 | 20 | 20 |
| 15 | 25 | 25 |
| 20 | 30 | 30 |
| 25 | 30 | 35 |
| | | |

**Presenting results**

Title: Heating up water



**Explaining results**

How would you summarise your results?

The darker colour kept the water the hottest

Did your results match your prediction? Why?

Yes

**Evaluating the investigation**

What problems did you have? How might you improve the investigation (fairness, accuracy)?

None. Everyone was sensible.

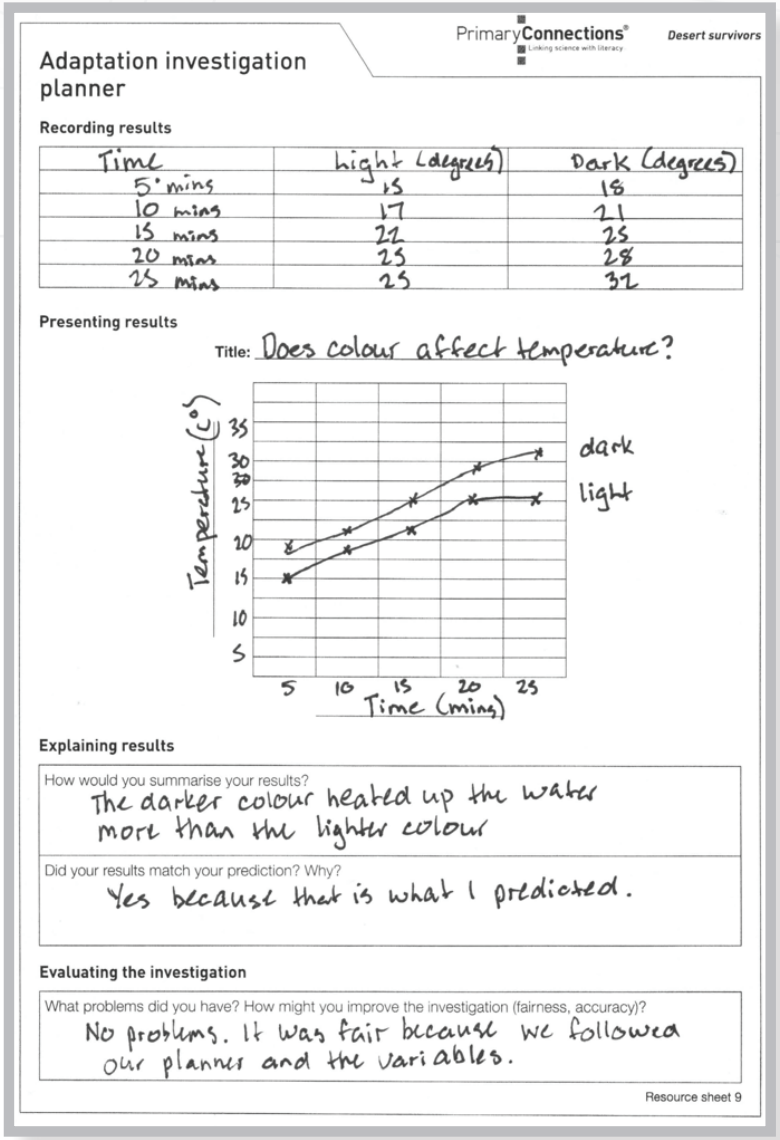
Resource sheet 9

# Year 5 **Work samples**

## *Desert survivors*
## Summative Assessment of Science Inquiry Skills

**Below Achievement Standard**

Processing and analysing data and information



PrimaryConnections® Linking science with literacy — Desert survivors

## Adaptation investigation planner

**Recording results**

| Time | light (degrees) | Dark (degrees) |
|---|---|---|
| 5 mins | 15 | 18 |
| 10 mins | 17 | 21 |
| 15 mins | 22 | 25 |
| 20 mins | 25 | 28 |
| 25 mins | 25 | 32 |

**Presenting results**

Title: Does colour affect temperature?



**Explaining results**

How would you summarise your results?
The darker colour heated up the water more than the lighter colour

Did your results match your prediction? Why?
Yes because that is what I predicted.

**Evaluating the investigation**

What problems did you have? How might you improve the investigation (fairness, accuracy)?
No problems. It was fair because we followed our planner and the variables.

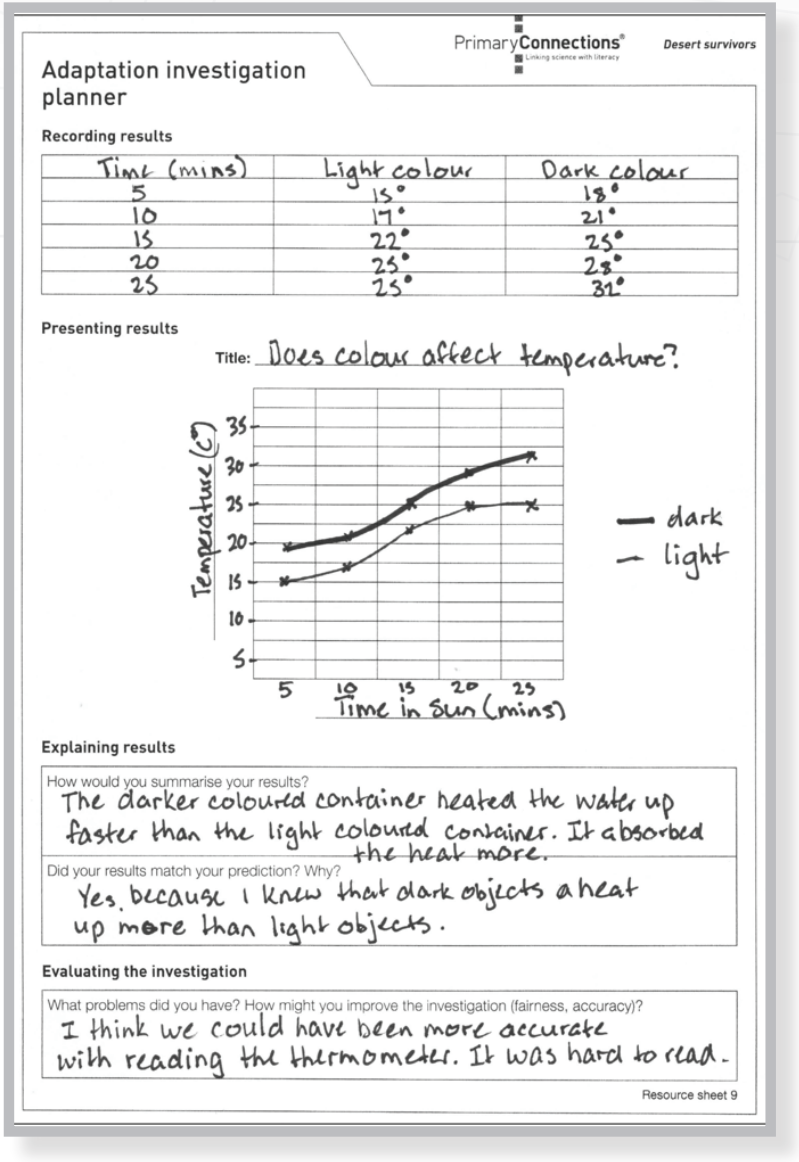
Resource sheet 9

# Year 5 **Work samples**

## *Desert survivors*
## Summative Assessment of Science Inquiry Skills

**At Achievement Standard**

Processing and analysing data and information



PrimaryConnections® Linking science with literacy — *Desert survivors*

## Adaptation investigation planner

**Recording results**

| Time (mins) | Light colour | Dark colour |
|---|---|---|
| 5 | 15° | 18° |
| 10 | 17° | 21° |
| 15 | 22° | 25° |
| 20 | 25° | 28° |
| 25 | 25° | 32° |

**Presenting results**

Title: Does colour affect temperature?



**Explaining results**

How would you summarise your results?
The darker coloured container heated the water up faster than the light coloured container. It absorbed the heat more.

Did your results match your prediction? Why?
Yes, because I knew that dark objects heat up more than light objects.

**Evaluating the investigation**

What problems did you have? How might you improve the investigation (fairness, accuracy)?
I think we could have been more accurate with reading the thermometer. It was hard to read.

Resource sheet 9

# Year 5 **Work samples**

## *Desert survivors*
## Summative Assessment of Science Inquiry Skills

**Above Achievement Standard**

# Student Self-Assessment

*Desert survivors* **Year 5 Biological sciences**

PrimaryConnections® Linking science with literacy

**Name:** _____ **Date:** _____

| Strand | What I can do | I need help to do this | I can do this | I can do this very well |
|---|---|---|---|---|
| **Science Understanding** | I can identify adaptations of different species living in desert environments | | | |
| **Science as a Human Endeavour** | I can describe how different cultures have contributed to the development of science knowledge | | | |
| | I can describe where my science knowledge helps me make changes in my actions | | | |
| | I can describe situations where scientific developments have affected people's lives | | | |
| **Science Inquiry Skills** | I can predict what might happen in an investigation | | | |
| | I can suggest ways to do an investigation | | | |
| | I can identify the variables in an investigation | | | |
| | I can use equipment safely | | | |
| | I can record my observations in a table | | | |
| | I can make a column or line graph | | | |
| | I can find patterns in my graph | | | |
| | I can make claims based on my evidence | | | |
| | I can compare my results with my predictions | | | |
| | I can explain why a test is fair or not | | | |

# Achievement Standard Class Checklist

## *Desert survivors* **Year 5 Biological sciences**

(This checklist is designed to be used in conjunction with the Assessment Rubric for the *Desert survivors* unit)

PrimaryConnections® Linking science with literacy

**Date:** _____

| | **Science Understanding** | **Science as a Human Endeavour** | | | **Science Inquiry Skills** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Analyses how the form of living things enables them to function in their environments | Identifies when science is used to ask questions and make predictions | Discusses how science knowledge develops from many people's contribu-tions | Discusses how scientif-ic develop-ments have affected people's lives | Follows instructions to pose questions for investigation and predicts what might happen when variables are changed | Plans investigation methods | Predicts what might happen when variables are changed | Uses equipment in ways that are safe and improve the accuracy of their observations | Constructs tables and graphs to organise data and identify patterns | Uses patterns in their data to suggest explanations and refer to data when they report findings | Describes ways to improve the fairness of their meth-ods | Communi-cates ideas, methods and findings using a range of text types |
| Example: Student A | AAS | | AS | AS | | AAS | AS | | AS | | | |
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**BAS – Below Achievement Standard** This indicates that the student has a limited understanding of the concept and/or skill
**AS – At Achievement Standard** This indicates that the student has a good understanding of the concept and/or skill
**AAS – Above Achievement Standard** This indicates that the student has a detailed understanding of the concept and/or skill

# Achievement Standard Class Checklist

## *Desert survivors* **Year 5 Biological sciences**

(This checklist is designed to be used in conjunction with the Assessment Rubric for the *Desert survivors* unit)

PrimaryConnections® Linking science with literacy

**Date:** _____

| | **Science Understanding** | **Science as a Human Endeavour** | | | **Science Inquiry Skills** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Analyses how the form of living things enables them to function in their environments | Identifies when science is used to ask questions and make predictions | Discusses how science knowledge develops from many people's contribu-tions | Discusses how scientif-ic develop-ments have affected people's lives | Follows instructions to pose questions for investigation and predicts what might happen when variables are changed | Plans investigation methods | Predicts what might happen when variables are changed | Uses equipment in ways that are safe and improve the accuracy of their observations | Constructs tables and graphs to organise data and identify patterns | Uses patterns in their data to suggest explanations and refer to data when they report findings | Describes ways to improve the fairness of their meth-ods | Communi-cates ideas, methods and findings using a range of text types |
| Example: Student A | AAS | | AS | AS | | AAS | AS | | AS | | | |
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