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* '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?* '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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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* 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* 'My thoughts' (Resource sheet 1)	• Displays non-scientific ideas about the behaviour of light	• Describes how shadows are formed • 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* • *What's the matter?* • *Earth's place in space* • *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* • *What's the matter?* • *Earth's place in space* • *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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				BELOW ACHIEVEMENT STANDARD	AT ACHIEVEMENT STANDARD	ABOVE ACHIEVEMENT STANDARD
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) Scientific knowledge is used to inform personal and community decisions (ACSHE217)	Discusses how scientific developments have affected people's lives	• *Desert survivors* • *What's the matter?* • *Earth's place in space* • *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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				BELOW ACHIEVEMENT STANDARD	AT ACHIEVEMENT STANDARD	ABOVE ACHIEVEMENT STANDARD
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: • *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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				BELOW ACHIEVEMENT STANDARD	AT ACHIEVEMENT STANDARD	ABOVE ACHIEVEMENT STANDARD
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: • *Light shows* • *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: • *Light shows* • *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: • *What's the matter?* • *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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				BELOW ACHIEVEMENT STANDARD	AT ACHIEVEMENT STANDARD	ABOVE ACHIEVEMENT STANDARD
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: • *What's the matter?* • *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: • *What's the matter?* • *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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				BELOW ACHIEVEMENT STANDARD	AT ACHIEVEMENT STANDARD	ABOVE ACHIEVEMENT STANDARD
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: • *Light shows* • *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: • *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.

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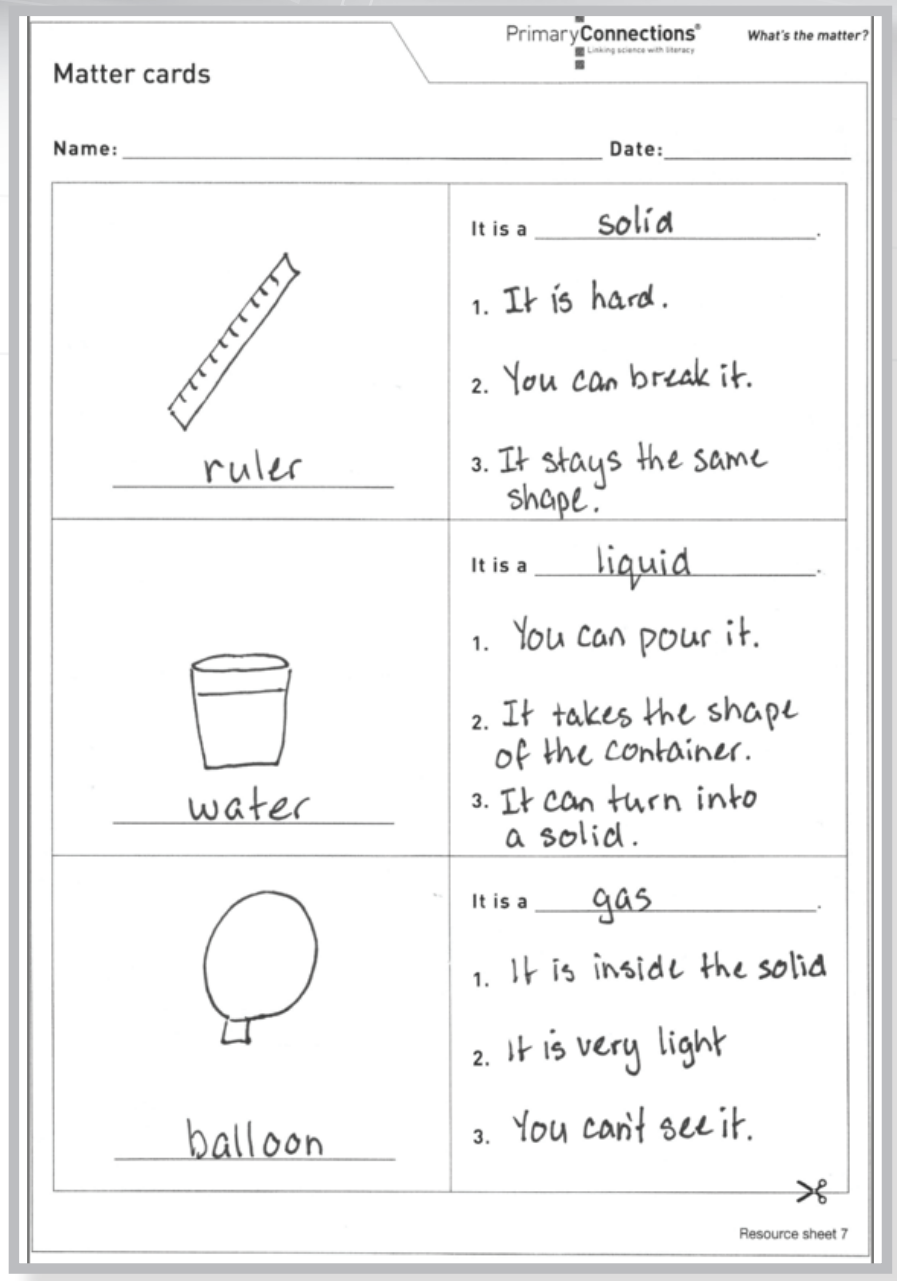
Disclaimer
The views expressed herein do not necessarily represent the views of the Australian Government.



PrimaryConnections® Linking science with literacy What's the matter?

Matter cards

Name: _____ Date: _____

ruler

It is a solid.

1. It is hard.
2. You can break it.
3. It stays the same shape.

water

It is a liquid.

1. You can pour it.
2. It takes the shape of the container.
3. It can turn into a solid.

balloon

It is a gas.

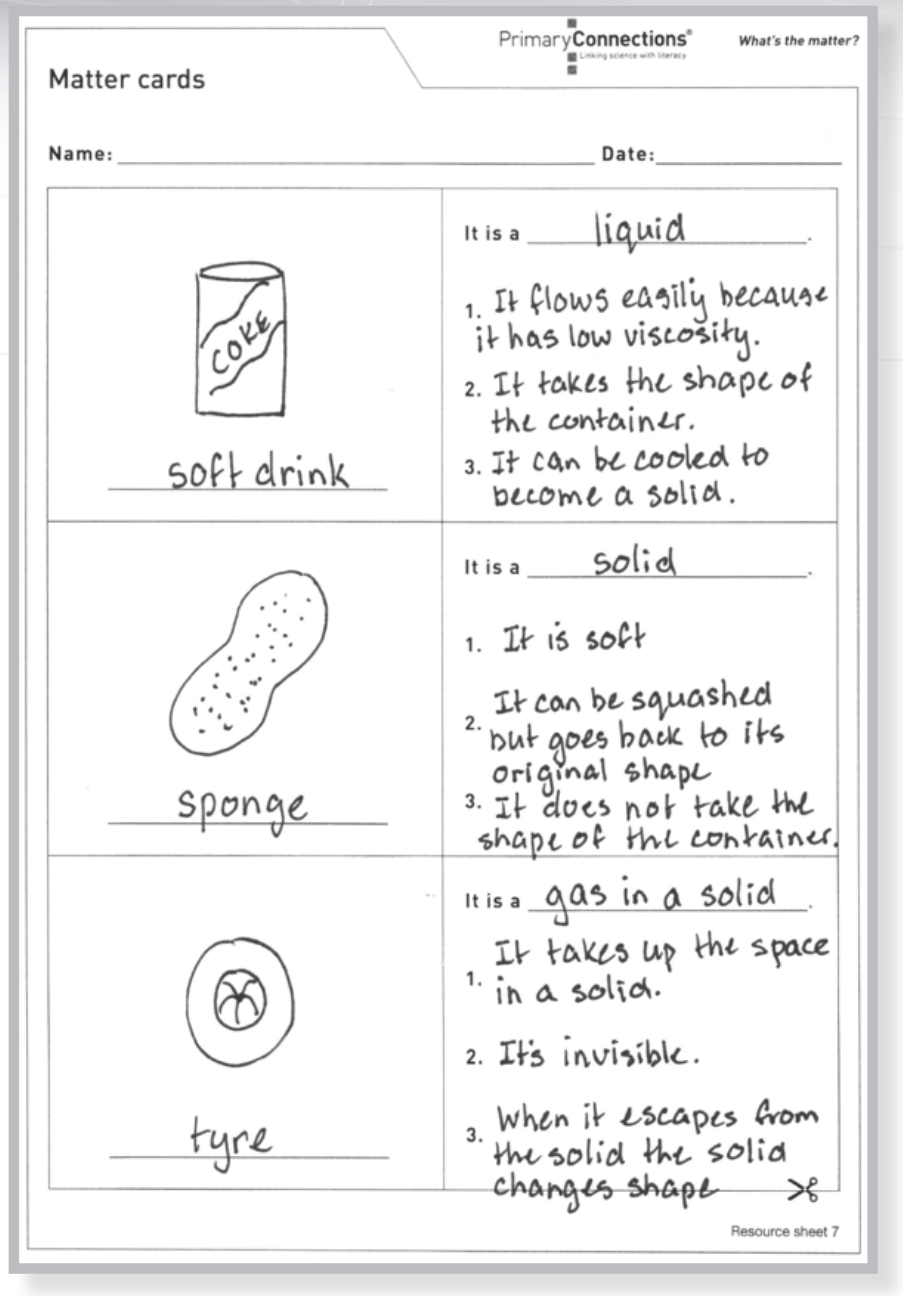
1. It is inside the solid
2. It is very light
3. You can't see it.

Resource sheet 7

Year 5 **Work samples**

What's the matter?
Summative Assessment of Science Understanding

Below Achievement Standard



PrimaryConnections® Linking science with literacy *What's the matter?*

Matter cards

Name: _____ Date: _____

soft drink

It is a liquid.

1. It flows easily because it has low viscosity.
2. It takes the shape of the container.
3. It can be cooled to become a solid.

sponge

It is a solid.

1. It is soft
2. It can be squashed but goes back to its original shape
3. It does not take the shape of the container.

tyre

It is a gas in a solid.

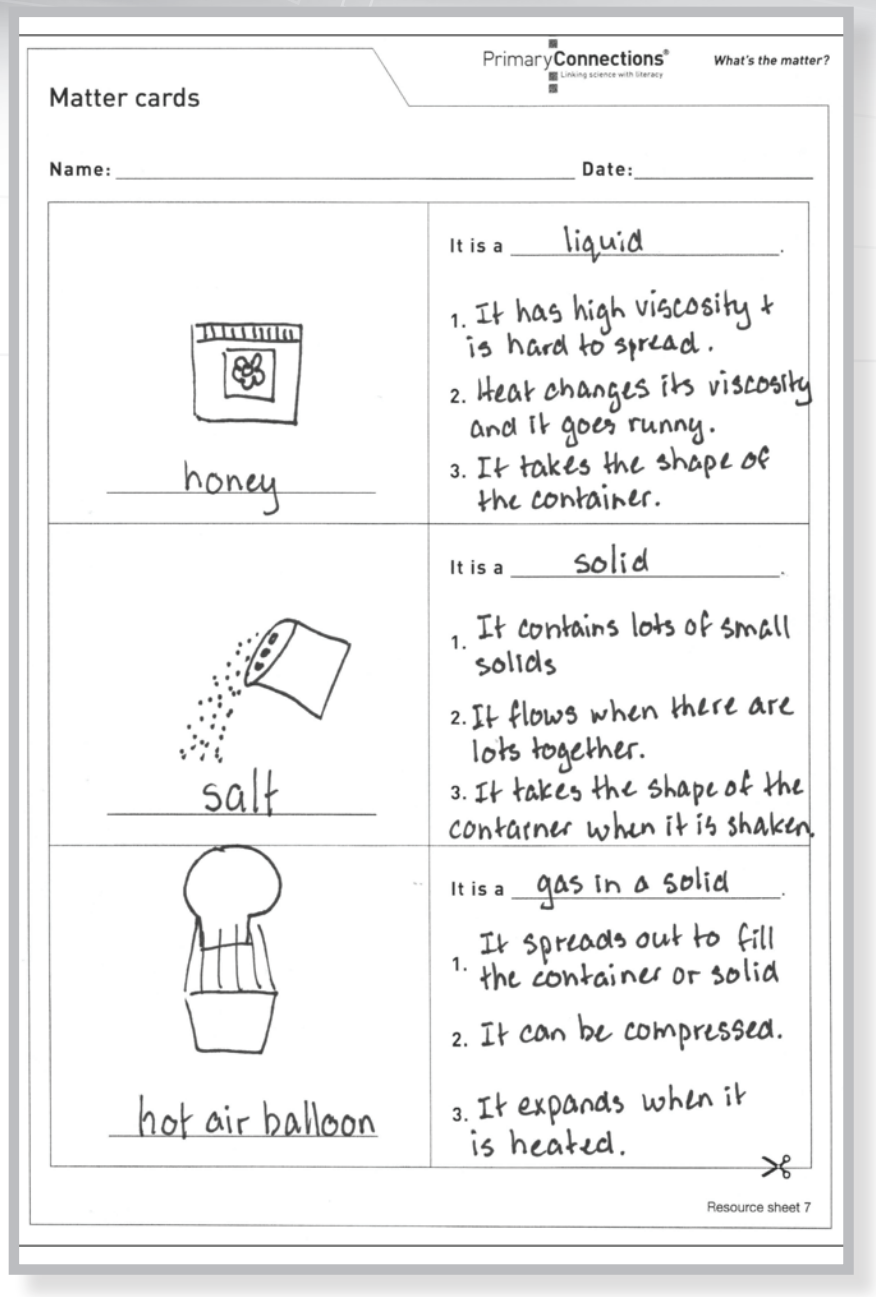
1. It takes up the space in a solid.
2. It's invisible.
3. When it escapes from the solid the solid changes shape

Resource sheet 7

Year 5 **Work samples**

What's the matter?
Summative Assessment of Science Understanding

At Achievement Standard



PrimaryConnections® Linking science with literacy — What's the matter?

Matter cards

Name: _____ Date: _____

honey

It is a liquid.

1. It has high viscosity & is hard to spread.
2. Heat changes its viscosity and it goes runny.
3. It takes the shape of the container.

salt

It is a solid.

1. It contains lots of small solids
2. It flows when there are lots together.
3. It takes the shape of the container when it is shaken.

hot air balloon

It is a gas in a solid.

1. It spreads out to fill the container or solid
2. It can be compressed.
3. It expands when it is heated.

Resource sheet 7

Year 5 **Work samples**

What's the matter?
Summative Assessment of Science Understanding

Above Achievement Standard

Planning and conducting

PrimaryConnections® Linking science with literacy — *What's the matter?*

Balloon investigation planner

Team members' names: _____ **Date:** _____

What are you trying to find out?

What are you going to investigate?	What do you predict will happen? Why?
What happens when we put the bottle in the water?	The balloon will inflate
Can you write it as a question?	Give scientific explanations for your prediction

To make this a fair test what things (variables) are you going to:

Change?	Measure?	Keep the same?
how much water the bottle is in	the balloon	the balloon the bottle the water
Change only one thing	What would the change affect?	Which variables will you control?

What equipment will you need?	What are you going to do?
• a balloon • a bottle • warm water	Put the bottle in the water and watch the balloon.
Use dot points	Use drawings if necessary

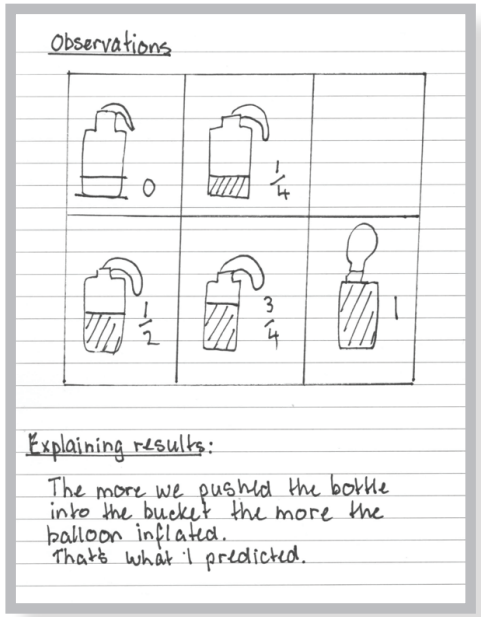
Resource sheet 6

Year 5 **Work samples**

What's the matter?
Summative Assessment of Science Inquiry Skills

Below Achievement Standard

Processing and analysing data and information



Planning and conducting

PrimaryConnections® Linking science with literacy — What's the matter?

Balloon investigation planner

Team members' names: _____ **Date:** _____

What are you trying to find out?

What are you going to investigate?	What do you predict will happen? Why?
What happens to the balloon when we change the level of the warm water that the balloon is in?	The more the bottle is in the water the more the balloon will inflate.
Can you write it as a question?	Give scientific explanations for your prediction

To make this a fair test what things (variables) are you going to:

Change?	Measure?	Keep the same?
the level of water that the bottle is in	how much the balloon inflates	- the balloon - the water temperature - the bottle
Change only one thing	What would the change affect?	Which variables will you control?

What equipment will you need?	What are you going to do?
• 1 balloon • 1 bottle • warm water • 1 bucket	Put the bottle into the water ¼, ½ and ¾ of the way and then the whole of the way. We will observe how much the balloon inflates.
Use dot points	Use drawings if necessary

Resource sheet 6

Year 5 **Work samples**

What's the matter?
Summative Assessment of Science Inquiry Skills

At Achievement Standard

Processing and analysing data and information

Observations:

Amount of bottle submerged	Inflation of bottle
0	
¼	
½	
¾	
whole bottle	

Results:
The more we submerged the bottle into the water the more the balloon inflated. This result matched my prediction.
I think that as the air warmed up in the bottle the air expanded and went into the balloon.

Planning and conducting

PrimaryConnections® Linking science with literacy — *What's the matter?*

Balloon investigation planner

Team members' names: _____ **Date:** _____

What are you trying to find out?

What are you going to investigate? (Can you write it as a question?)
What happens to the balloon size when we change the amount of the bottle is submerged in the water?

What do you predict will happen? Why? (Give scientific explanations for your prediction)
The more the bottle is submerged the more the balloon will inflate because are expands when it is heated and will slowly inflate the balloon.

To make this a fair test what things (variables) are you going to:

Change? (Change only one thing)
the amount of the bottle that is submerged in the water

Measure? (What would the change affect?)
observe the inflation of the balloon

Keep the same? (Which variables will you control?)
- the balloon
- the bottle
- the temperature of the water
- the amount of water

What equipment will you need? (Use dot points)
1 balloon
1 bottle
1 bucket
warm water

What are you going to do? (Use drawings if necessary)
Submerge the bottle in the warm water $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ and then the whole bottle. We will observe the balloon and how much it inflates.

Resource sheet 6

Year 5 **Work samples**

What's the matter?
Summative Assessment of Science Inquiry Skills

Above Achievement Standard

Processing and analysing data and information

Observations:

Amount of bottle submerged	Inflation of bottle
0	
$\frac{1}{4}$	
$\frac{1}{2}$	
$\frac{3}{4}$	
whole bottle	

Explaining results:

The more we submerged the bottle the more the balloon inflated. My prediction was correct. The balloon inflated slowly as the gas inside the bottle heated up and expanded and spread into the balloon. The gas was trapped inside the balloon which is a solid. As the gas heated up it expanded and spread out and filled up the shape of the balloon.

Student Self-Assessment

What's the matter? **Year 5 Chemical 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 describe the observable properties of solids, liquids and gases			
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

What's the matter? **Year 5 Chemical sciences**

(This checklist is designed to be used in conjunction with the Assessment Rubric for the *What's the matter?* unit)

PrimaryConnections® Linking science with literacy

Date: _____

	Science Understanding	**Science as a Human Endeavour**			**Science Inquiry Skills**							
	Classifies substances according to their observable properties and behaviours	Identifies when science is used to ask questions and make predictions	Discusses how science knowledge develops from many people's contributions	Discusses how scientific developments 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 methods	Communicates ideas, methods and findings using a range of text types
Example: Student A	AAS		AS		AS		AAS	AS		AS		

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

What's the matter? **Year 5 Chemical sciences**

(This checklist is designed to be used in conjunction with the Assessment Rubric for the *What's the matter?* unit)

PrimaryConnections® Linking science with literacy

Date: _____

	Science Understanding	**Science as a Human Endeavour**			**Science Inquiry Skills**							
	Classifies substances according to their observable properties and behaviours	Identifies when science is used to ask questions and make predictions	Discusses how science knowledge develops from many people's contributions	Discusses how scientific developments 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 methods	Communicates ideas, methods and findings using a range of text types
Example: Student A	AAS		AS		AS		AAS	AS		AS		

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
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