

Year 4 Assessment Rubrics

Year 4 Achievement Standard

By the end of Year 4, students apply the observable properties of materials to explain how objects and materials can be used. They use contact and non-contact forces to describe interactions between objects. They discuss how natural and human processes cause changes to the Earth's surface. They describe relationships that assist the survival of living things and sequence key stages in the life cycle of a plant or animal. They identify when science is used to ask questions and make predictions. They describe situations where science understanding can influence their own and others' actions.

Students follow instructions to identify investigable questions about familiar contexts and predict likely outcomes from investigations. They discuss ways to conduct investigations and safely use equipment to make and record observations. They use provided tables and simple column graphs to organise their data and identify patterns in data. Students suggest explanations for observations and compare their findings with their predictions. They suggest reasons why their methods were fair or not. They complete simple reports to communicate their methods and findings.

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 life cycles (ACSSU072)	Describes and sequences key stages in the life cycle of a plant or animal	<i>Plants in action</i> ‘Plant life stages jumble’ (Resource sheet 1)	<ul style="list-style-type: none">• Provides simple observations of the stages of the life cycle of a flowering plant• Lists the sequence of the plant life cycle• Lists easily identifiable conditions that help plants to grow	<ul style="list-style-type: none">• Describes and explains the relationships between the stages and processes of the life cycle of a flowering plant• Recognises that the stages in a plant’s life form a cycle rather than a linear sequence• Describes conditions plants require for growth	<ul style="list-style-type: none">• Provides extended information about the sequence of events and processes of the life cycle of a flowering plant• Has a detailed understanding of the life cycle of a plant• Explains in detail the conditions plants require for growth

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 life cycles (ACSSU072)	Describes relationships that assist the survival of living things and sequence key stages in the life cycle of a plant or animal	<i>Friends or foes?</i> ‘Tomato troubles’ (Resource sheet 1) ‘How does it grow?’ (Resource sheet 2)	<ul style="list-style-type: none">Identifies that bees help flowering plants growIdentifies that ants help plants disperse seedsLists the life stages of a flowering plant	<ul style="list-style-type: none">Describes the interactions between flowering plants, bees and antsDescribes the process of pollination and seed dispersalExplains the stages in the life cycle of a flowering plant	<ul style="list-style-type: none">Explains in detail the relationship between flowering plants and insects, and how this is beneficial to bothProvides extended information about the process of pollination and seed dispersalIndependently constructs and explains in detail each stage of a flowering plant’s life cycle
	Living things, including plants and animals, depend on each other and the environment to survive (ACSSU073)					

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

Organisers	CONTENT DESCRIPTIONS	ACHIEVEMENT STANDARD	EVIDENCE	LEVEL OF ACHIEVEMENT		
				BELOW ACHIEVEMENT STANDARD	AT ACHIEVEMENT STANDARD	ABOVE ACHIEVEMENT STANDARD
SCIENCE UNDERSTANDING						
Chemical sciences	Natural and processed materials have a range of physical properties; These properties can influence their use (ACSSU074)	Applies the observable properties of materials to explain how objects and materials can be used	<i>Material world</i> ‘Material matters’ (Resource sheet 9)	<ul style="list-style-type: none">• Lists the properties and uses of everyday properties• Identifies simple observations of the properties and uses of a material	<ul style="list-style-type: none">• Describes the properties and uses of everyday properties• Explains why the properties of a material make it suitable for a particular use	<ul style="list-style-type: none">• Uses scientific terminology to describe properties and uses of materials• Explains in detail, using scientific terminology, why the properties of a material make it suitable for a particular use

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

Organisers	CONTENT DESCRIPTIONS	ACHIEVEMENT STANDARD	EVIDENCE	LEVEL OF ACHIEVEMENT		
				BELOW ACHIEVEMENT STANDARD	AT ACHIEVEMENT STANDARD	ABOVE ACHIEVEMENT STANDARD
SCIENCE UNDERSTANDING						
Chemical sciences	Natural and processed materials have a range of physical properties; These properties can influence their use (ACSSU074)	Applies the observable properties of materials to explain how objects and materials can be used	<i>Package it better</i> Report	<ul style="list-style-type: none">• Makes simple observations of how their package meets design criteria• Identifies properties and uses of materials• Describes the performance of their package	<ul style="list-style-type: none">• Analyses feedback to evaluate their package against design criteria• Explains how properties of materials influence their use• Describes reasons for the performance of their package	<ul style="list-style-type: none">• Explains, justifies and proposes ways to improve their package against design criteria• Demonstrates a detailed understanding of the properties and uses of materials in design• Explains and justifies the criteria for choosing the materials used for their package, and relates this to its performance

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

Organisers	CONTENT DESCRIPTIONS	ACHIEVEMENT STANDARD	EVIDENCE	LEVEL OF ACHIEVEMENT		
				BELOW ACHIEVEMENT STANDARD	AT ACHIEVEMENT STANDARD	ABOVE ACHIEVEMENT STANDARD
SCIENCE UNDERSTANDING						
Earth and space sciences	Earth’s surface changes over time as a result of natural processes and human activity (ACSSU075)	Discusses how natural and human processes cause changes to the Earth’s surface	<i>Beneath our feet</i> Map Report	<ul style="list-style-type: none">Describes simple ideas about weathering and erosionDescribes non-scientific ideas of how the landscape might change over time	<ul style="list-style-type: none">Identifies things that cause landscapes to change, including weathering, erosion and human activityDescribes how the landscape might change over time	<ul style="list-style-type: none">Provides extended information about the processes that cause landscapes to changeDemonstrates skills in showing patterns of weathering and erosion that cause the landscape to change
Physical sciences	Forces can be exerted by one object on another through direct contact or from a distance (ACSSU076)	Use contact and non-contact forces to describe interactions between objects	<i>Smooth moves</i> Annotated diagram	<ul style="list-style-type: none">Describes non-scientific ideas of different forces and motionDescribes simple ideas about forces and how they actRequires help with the representation of arrows in force-arrow diagrams	<ul style="list-style-type: none">Identifies and describes different forces and motionExplains that forces can act through direct contact or at a distanceRepresents different-sized forces using different arrow lengths	<ul style="list-style-type: none">Explains scientific ideas, with evidence, about different forces and motionHas a detailed understanding of forces and how they act in different situationsExplains and represents the use of force-arrow diagrams

Organisers	CONTENT DESCRIPTIONS	ACHIEVEMENT STANDARD	EVIDENCE	LEVEL OF ACHIEVEMENT		
				BELOW ACHIEVEMENT STANDARD	AT ACHIEVEMENT STANDARD	ABOVE ACHIEVEMENT STANDARD
SCIENCE AS A HUMAN ENDEAVOUR						
Nature and development of science	Science involves making predictions and describing patterns and relationships (ACSHE061)	Identifies when science is used to ask questions and make predictions	<ul style="list-style-type: none">Plants in actionFriends or foes?Material worldPackage it betterBeneath our feetSmooth moves	Identifies that science involves asking questions and making predictions	Identifies when science is used to ask questions and make predictions	Provides a detailed understanding of when science is used to ask questions and make predictions
Use and influence of science	Science knowledge helps people to understand the effect of their actions (ACSHE062)	Describes situations where science understanding can influence their own and others’ actions	<ul style="list-style-type: none">Plants in actionFriends or foes?Material worldPackage it betterBeneath our feetSmooth moves	Makes suggestions about where they use science knowledge influence their own and others’ actions	Describes situations where science understanding can influence their own and others’ actions	Describes in detail where people use science understanding in their lives and in the wider world to influence their actions

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

Organisers	CONTENT DESCRIPTIONS	ACHIEVEMENT STANDARD	EVIDENCE	LEVEL OF ACHIEVEMENT		
				BELOW ACHIEVEMENT STANDARD	AT ACHIEVEMENT STANDARD	ABOVE ACHIEVEMENT STANDARD
SCIENCE INQUIRY SKILLS						
Questioning and predicting	With guidance, identify questions in familiar contexts that can be investigated scientifically and predict what might happen based on prior knowledge (AC SIS064)	Follows instructions to identify investigable questions about familiar contexts and predict likely outcomes from investigations	<i>Elaborate</i> phase in: <ul style="list-style-type: none"><i>Plants in action</i><i>Material world</i><i>Smooth moves</i><i>Package it better</i>	Predicts what might happen in an investigation without supporting evidence	Follows instructions to identify investigable questions about familiar contexts and predict likely outcomes from investigations	Asks pertinent and investigable questions and predicts the outcomes of investigations supported with detailed evidence based on their knowledge and experiences
Planning and conducting	Suggest ways to plan and conduct investigations to find answers to questions (AC SIS065)	Discusses ways to conduct investigations	<i>Elaborate</i> phase in: <ul style="list-style-type: none"><i>Beneath our feet</i>	Suggests ways to conduct investigations	Discusses ways to conduct investigations	Demonstrates a detailed understanding of how they can conduct science investigations to respond to questions

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

Organisers	CONTENT DESCRIPTIONS	ACHIEVEMENT STANDARD	EVIDENCE	LEVEL OF ACHIEVEMENT		
				BELOW ACHIEVEMENT STANDARD	AT ACHIEVEMENT STANDARD	ABOVE ACHIEVEMENT STANDARD
SCIENCE INQUIRY SKILLS						
Planning and conducting	Safely use appropriate materials, tools or equipment to make and record observations, using formal measurements and digital technologies as appropriate (ACSIS066)	Safely uses equipment to make and record observations	<i>Elaborate</i> phase in: <ul style="list-style-type: none"><i>Beneath our feet</i>	Follows guidelines on how to safely use equipment to make and record observations	Safely uses equipment to make and record observations Uses formal measurements and digital technologies as appropriate	Independently uses equipment safely to make and record observations using formal measurements and digital technologies, as appropriate
	Use a range of methods including tables and simple column graphs to represent data and to identify patterns and trends (ACSIS068)	Uses provided tables and simple column graphs to organise their data and identify patterns in data	<i>Elaborate</i> phase in: <ul style="list-style-type: none"><i>Plants in action</i><i>Friends or foes?</i><i>Beneath our feet</i><i>Smooth moves</i>	Follows simple procedures to use provided tables and simple column graphs	Uses provided tables and simple column graphs to organise their data and identify patterns in data	Independently constructs tables and simple column graphs to organise data
Processing and analysing data and information	Compare results with predictions, suggesting possible reasons for findings (ACSIS216)	Suggests explanations for observations and compare their findings with their predictions	<i>Elaborate</i> phase in: <ul style="list-style-type: none"><i>Plants in action</i><i>Material world</i><i>Smooth moves</i>	Suggests reasons for findings that are obvious and follow explicitly from evidence	Suggests explanations for observations and compare their findings with their predictions	Applies scientific concepts and knowledge, and constructs claims based on evidence to explain findings and compare findings with predictions

Organisers	CONTENT DESCRIPTIONS	ACHIEVEMENT STANDARD	EVIDENCE	LEVEL OF ACHIEVEMENT		
				BELOW ACHIEVEMENT STANDARD	AT ACHIEVEMENT STANDARD	ABOVE ACHIEVEMENT STANDARD
SCIENCE INQUIRY SKILLS						
Evaluating	Reflect on the investigation, including whether a test was fair or not (ACSIS069)	Suggests reasons why their methods were fair or not	<i>Elaborate</i> phase in: <ul style="list-style-type: none"><i>Plants in action</i><i>Material world</i>	Demonstrates non-scientific ideas of a fair investigation	Suggests reasons why their methods were fair or not	Identifies variables and articulates why a test is fair or not, and suggests ways to improve the investigation
Communicating	Represent and communicate ideas and findings in a variety of ways such as diagrams, physical representations and simple reports (ACSIS071)	Completes simple reports to communicate their methods and findings	<i>Elaborate</i> phase in: <ul style="list-style-type: none"><i>Beneath our feet</i><i>Friends or foes?</i>	Presents a limited report on findings	Completes simple reports to communicate their methods and findings	Completes extended reports using claims and evidence to communicate their methods and findings

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

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

PrimaryConnections is supported by the Australian Government.

Disclaimer

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

My package

What did you choose as a fragile gift and why?

The fragile gift that I chose was an egg because it breaks easily.

What design criteria did your package need to meet?

My package needed to be strong.

Why did you design the package the way that you did?

I used bubble wrap and a strong box.

What have you learned about selecting materials for making things?

I have learned that materials help you make things.

Year 4 **Work samples**

Package it better

Summative Assessment of Science Understanding

Below Achievement Standard

My package

What did you choose as a fragile gift and why?

The fragile gift that I chose was a book. I chose this gift because it is not waterproof and needs to be in a package that will protect it from getting wet.

What design criteria did your package need to meet?

My package needed to be waterproof so the package had to be made from plastic which is waterproof.

My package needed to protect the edges of the book from getting damaged.

Why did you design the package the way that you did?

I used plastic bubble wrap to wrap the book to make it waterproof.

I designed a box that was made out of strong cardboard to protect the edges of the book from getting damaged.

What have you learned about selecting materials for making things?

I have learned that materials are important when you are designing a package because each material does a different job they need to protect it.

Year 4 Work samples

Package it better

Summative Assessment of Science Understanding

At Achievement Standard

My package

What did you choose as a fragile gift and why?

The fragile gift that I chose was a porcelain cup. I chose this gift because porcelain is very brittle just like glass. Porcelain is also not very strong as it will break if it is compressed or squashed. The surface of porcelain is very smooth.

What design criteria did your package need to meet?

My package did not need to be waterproof as porcelain is not affected by water so the package could be made out of cardboard.

My package needed to be able to be protected from impact if it was dropped or if something heavy was put on it and squash it.

Why did you design the package the way that you did?

I used bubble wrap to wrap the plate in as the air in the bubbles helps to protect the plate from impact.

I designed a box that was made out of strong cardboard and used triangle shapes in the cardboard as triangles are the strongest shape.

I designed a box so that the plate could fit just inside the box so it couldn't move around in the box and break.

I used strong tape to hold the bubble wrap and the box together to add more strength to the package.

What have you learned about selecting materials for making things?

I have learned that the materials that you choose to make things need to match the properties and the purpose of what you are making. You need to think about if the object is waterproof, strong or brittle and what the shape is of the object and choose materials that suit the object.

Year 4 Work samples

Package it better

Summative Assessment of Science Understanding

Above Achievement Standard

Questioning and predicting

Evaluation question: Will the package safely deliver the gift?

Criteria	Tests
<p>What criteria should the packages meet?</p> <p><i>It should be waterproof.</i></p>	<ul style="list-style-type: none"> • How can you fairly evaluate the packages against these criteria? • Describe the test. • Explain reasons for your test choices. <p><i>I will wet it.</i></p>

Year 4 **Work samples**

Package it better **Summative Assessment of Science Inquiry Skills**

Below Achievement Standard

Questioning and predicting

Evaluation question: <u>Will the package safely deliver the gift?</u>	
<p>Criteria What criteria should the packages meet?</p> <p>The package should be waterproof.</p>	<p>Tests</p> <ul style="list-style-type: none"> • How can you fairly evaluate the packages against these criteria? • Describe the test. • Explain reasons for your test choices. <p>I will test how waterproof the package is by spraying it with water. If the package gets wet and soggy then it is not waterproof.</p>

Year 4 **Work samples**

Package it better **Summative Assessment of Science Inquiry Skills**

At Achievement Standard

Questioning and predicting

Evaluation question: <u>Will the package safely deliver the gift?</u>	
<p>Criteria</p> <p>What criteria should the packages meet?</p> <p>The package should be waterproof.</p>	<p>Tests</p> <ul style="list-style-type: none"> • How can you fairly evaluate the packages against these criteria? • Describe the test. • Explain reasons for your test choices. <p>The package might be rained on when it is being delivered so I will test it by spraying it with water which is like being rained on.</p> <p>I won't dunk it in water because the package wouldn't be dropped into water while it is being delivered so that test wouldn't be suitable.</p>

Year 4 Work samples

Package it better Summative Assessment of Science Inquiry Skills

Above Achievement Standard

Student Self-Assessment

Package it better **Year 4 Chemical sciences**

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 properties and uses of objects			
Science as a Human Endeavour	I can see that science is about asking questions and making predictions			
	I can see where my science knowledge helps me make changes in my actions			
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 use centimetres when I measure things			
	I can record my observations in a table			
	I can make a column 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			
	I can make a report about my claims and evidence from my investigation and share it with others			

2