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	*Plants in action* 'Plant life stages jumble' (Resource sheet 1)	• 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	• 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	• 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

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						
Biological sciences	Living things have life cycles (ACSSU072) Living things, including plants and animals, depend on each other and the environment to survive (ACSSU073)	Describes relationships that assist the survival of living things and sequence key stages in the life cycle of a plant or animal	*Friends or foes?* 'Tomato troubles' (Resource sheet 1) 'How does it grow?' (Resource sheet 2)	• Identifies that bees help flowering plants grow • Identifies that ants help plants disperse seeds • Lists the life stages of a flowering plant	• Describes the interactions between flowering plants, bees and ants • Describes the process of pollination and seed dispersal • Explains the stages in the life cycle of a flowering plant	• Explains in detail the relationship between flowering plants and insects, and how this is beneficial to both • Provides extended information about the process of pollination and seed dispersal • Independently constructs and explains in detail each stage of a flowering plant's life cycle

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	*Material world* 'Material matters' (Resource sheet 9)	• Lists the properties and uses of everyday properties • Identifies simple observations of the properties and uses of a material	• Describes the properties and uses of everyday properties • Explains why the properties of a material make it suitable for a particular use	• 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	*Package it better* Report	• Makes simple observations of how their package meets design criteria • Identifies properties and uses of materials • Describes the performance of their package	• 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	• 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

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						
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	*Beneath our feet* Map Report	• Describes simple ideas about weathering and erosion • Describes non-scientific ideas of how the landscape might change over time	• Identifies things that cause landscapes to change, including weathering, erosion and human activity • Describes how the landscape might change over time	• Provides extended information about the processes that cause landscapes to change • Demonstrates 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	*Smooth moves* Annotated diagram	• Describes non-scientific ideas of different forces and motion • Describes simple ideas about forces and how they act • Requires help with the representation of arrows in force-arrow diagrams	• Identifies and describes different forces and motion • Explains that forces can act through direct contact or at a distance • Represents different-sized forces using different arrow lengths	• Explains scientific ideas, with evidence, about different forces and motion • Has a detailed understanding of forces and how they act in different situations • Explains and represents the use of force-arrow diagrams

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 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	• *Plants in action* • *Friends or foes?* • *Material world* • *Package it better* • *Beneath our feet* • *Smooth 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	• *Plants in action* • *Friends or foes?* • *Material world* • *Package it better* • *Beneath our feet* • *Smooth 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

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 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 (ACSIS064)	Follows instructions to identify investigable questions about familiar contexts and predict likely outcomes from investigations	*Elaborate* phase in: • *Plants in action* • *Material world* • *Smooth moves* • *Package it better*	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 (ACSIS065)	Discusses ways to conduct investigations	*Elaborate* phase in: • *Beneath our feet*	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

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 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	*Elaborate* phase in: • *Beneath our feet*	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
Processing and analysing data and information	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	*Elaborate* phase in: • *Plants in action* • *Friends or foes?* • *Beneath our feet* • *Smooth moves*	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
	Compare results with predictions, suggesting possible reasons for findings (ACSIS216)	Suggests explanations for observations and compare their findings with their predictions	*Elaborate* phase in: • *Plants in action* • *Material world* • *Smooth moves*	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

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 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	*Elaborate* phase in: • *Plants in action* • *Material world*	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	*Elaborate* phase in: • *Beneath our feet* • *Friends or foes?*	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

AC 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.

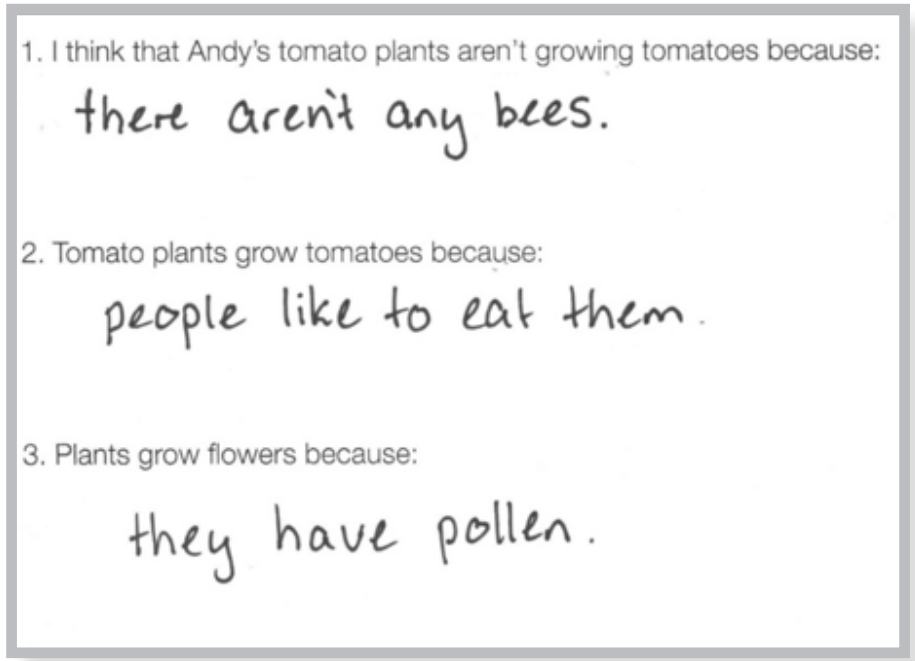
Acknowledgements
Primary**Connections** is supported by the Australian Government.

Year 4 **Work samples**

Friends or foes?
Summative Assessment of Science Understanding

Below Achievement Standard

'Tomato troubles' (Resource sheet 1)



1. I think that Andy's tomato plants aren't growing tomatoes because:

there aren't any bees.

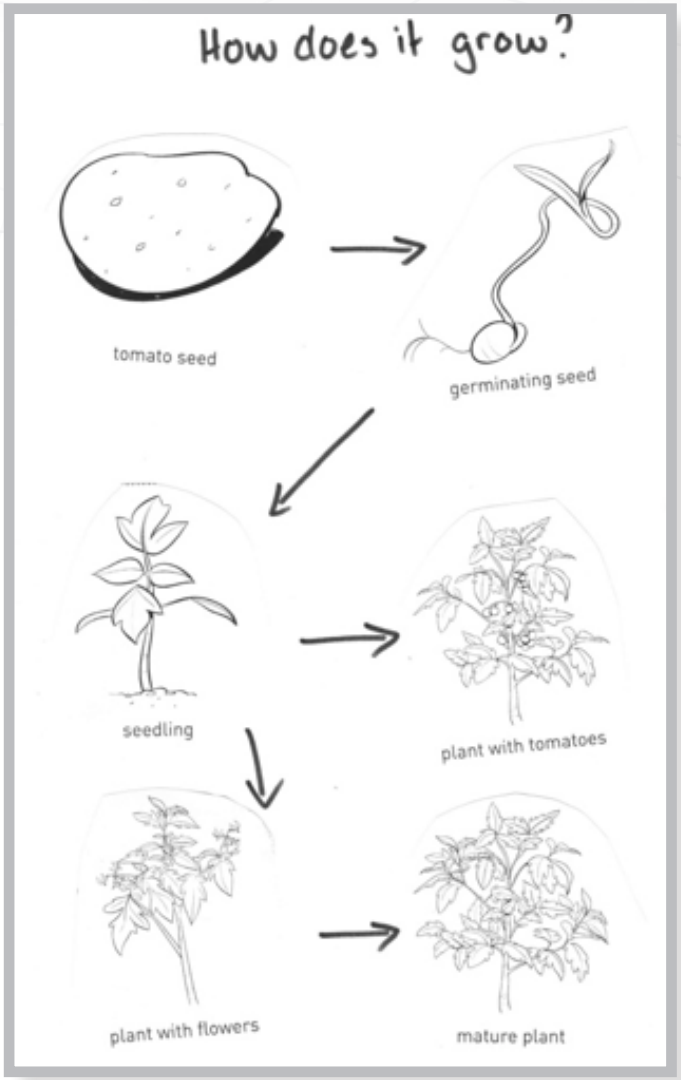
2. Tomato plants grow tomatoes because:

people like to eat them.

3. Plants grow flowers because:

they have pollen.

'How does it grow?' (Resource sheet 2)



Year 4 **Work samples**

Friends or foes?
Summative Assessment of Science Understanding

At Achievement Standard

‘Tomato troubles’ (Resource sheet 1)

1. I think that Andy’s tomato plants aren’t growing tomatoes because:

they need bees to help the flowers pollinate

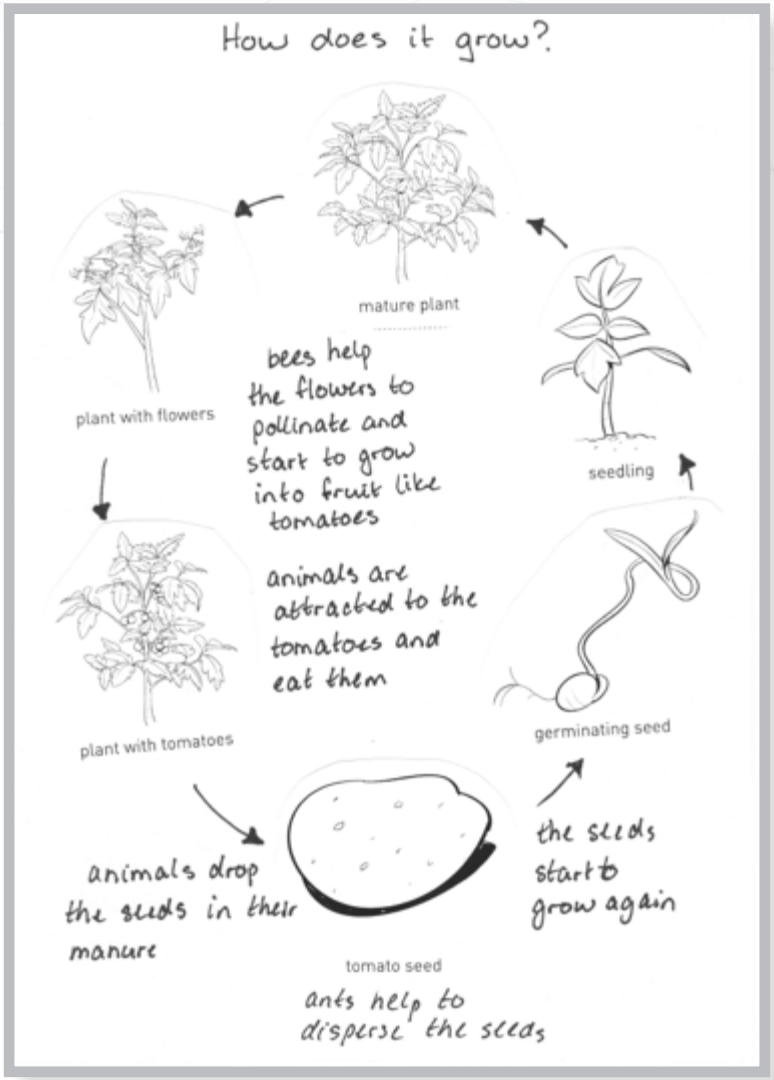
2. Tomato plants grow tomatoes because:

The tomatoes have seeds in them so they can grow more tomato plants.

3. Plants grow flowers because:

flowers have pollen in them which flowers need to make seeds. Bees help the flowers pollinate.

‘How does it grow?’ (Resource sheet 2)



Year 4 **Work samples**

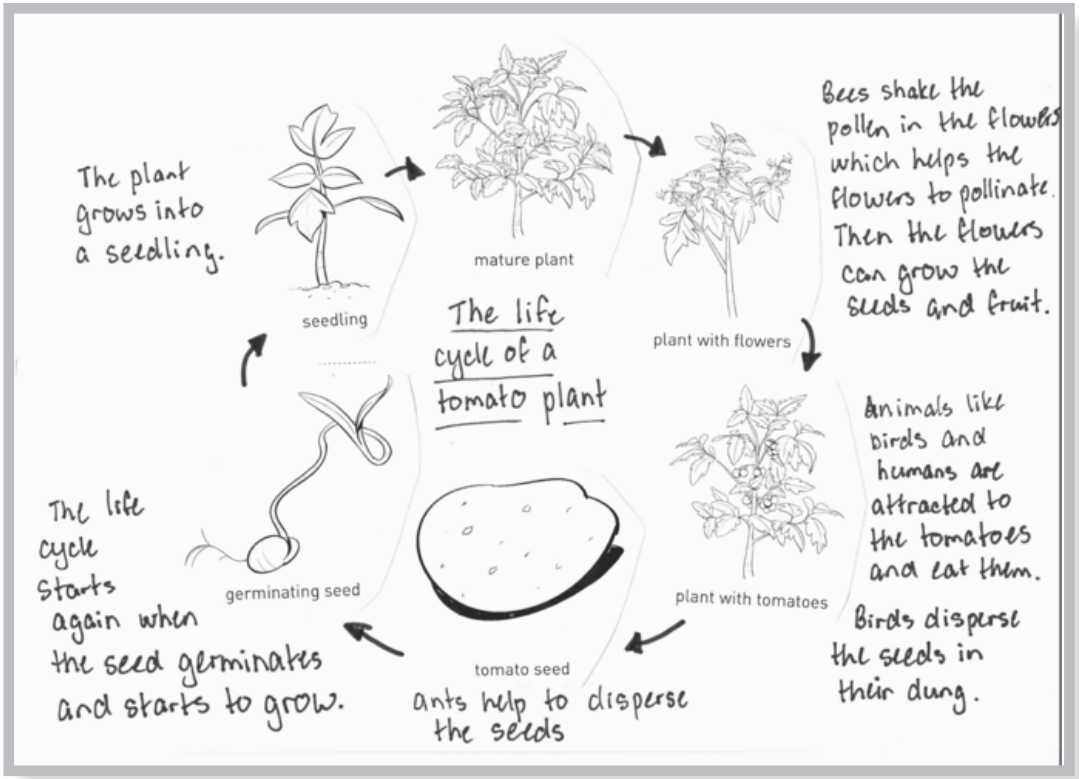
Friends or foes?
Summative Assessment of Science Understanding

Above Achievement Standard

‘Tomato troubles’ (Resource sheet 1)

1. I think that Andy's tomato plants aren't growing tomatoes because:
there are no bees to shake the pollen in the flowers so that they can pollinate and grow seeds so that tomatoes can grow.
2. Tomato plants grow tomatoes because:
animals like to eat tomatoes. They eat them and disperse the seeds in their droppings somewhere else and then more tomatoes can grow.
3. Plants grow flowers because:
flowers have pollen in them which helps seeds to grow. Flowers have to be pollinated by insects like bees.

‘How does it grow?’ (Resource sheet 2)



Year 4 **Work samples**

Friends or foes?
Summative Assessment of Science Inquiry Skills

Below Achievement Standard

Processing and analysing data and information

Seed	Wind test (How far did it go?)	Water test (Did it float or sink?)	Hook test (Did it stick or fall off?)	Digestion (From a fruit?)	Bursting (From a pod?)
1 grass seed	25		stick		
2 tomato	2	Yes	Yes	Yes	
3					
4					
5					
6					

Processing and analysing data and information

Explaining results:

Seed 1: We claim that it travels by animals
because hooks

Seed 2: We claim that it travels by animals
because eat it

Seed 3: We claim that it travels by animals
because eat it

Seed 4: We claim that it travels by wind
because blows

Seed 5: We claim that it travels by animals
because animals

Seed 6: We claim that it travels by socks
because sticks

Communicating

How do plants and animals help each other?

Animals eat seeds. Bees go in flowers. Some seeds have hooks

Year 4 **Work samples**

Friends or foes?
Summative Assessment of Science Inquiry Skills

At Achievement Standard

Processing and analysing data and information

Seed	Wind test (How far did it go?)	Water test (Did it float or sink?)	Hook test (Did it stick or fall off?)	Digestion (From a fruit?)	Bursting (From a pod?)
1 grass seed	30cm	float	stick		
2 pea	2cm	sink	fall off		Yes
3 tomato seed	10cm	float	fall off	Yes	
4 thistle	270cm	float	stick		
5 bean seed	1cm	sink	fall off		Yes
6 burr	15cm	float	stick		

Processing and analysing data and information

Explaining results:

Seed 1: We claim that it travels by animals
because it has hooks

Seed 2: We claim that it travels by bursting
because it bursts and goes away

Seed 3: We claim that it travels by animals
because animals eat fruit seeds

Seed 4: We claim that it travels by the wind
because it can float very far

Seed 5: We claim that it travels by bursting
because it bursts out of the pod

Seed 6: We claim that it travels by animals
because it has lots of spiky hooks.

Communicating

How do plants and animals help each other?

Plants need bees to pollinate their flowers. Bees need the pollen and nectar from flowers to make honey.
Ants need food so they carry seeds to their nest and then the seeds can grow. Dogs carry seeds in their fur.

Year 4 **Work samples**

Friends or foes?
Summative Assessment of Science Inquiry Skills

Above Achievement Standard

Processing and analysing data and information

Seed	Wind test (How far did it go?)	Water test (Did it float or sink?)	Hook test (Did it stick or fall off?)	Digestion (From a fruit?)	Bursting (From a pod?)
1 grass seed	30cm	float	stick		
2 pea	2cm	sink	fall off		Yes
3 tomato seed	10cm	float	fall off	Yes	
4 thistle	270cm	float	stick		
5 bean seed	1cm	sink	fall off		Yes
6 burr	15cm	float	stick		

Communicating

Why plants and animals help each other

Plants and animals are very important to each other. Plants need bees to help their flowers pollinate so they can grow seeds and bees need pollen and nectar to make honey.

Animals such as birds, ant and humans help disperse the seeds away from the parent plant. Birds eat fruit + seeds and disperse seeds in their droppings. Ants carry seeds to their nests. Humans and dogs + cats carry seeds with hooks in their fur or clothes.

Student Self-Assessment

Friends or foes? **Year 4 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 draw and describe the life cycle of a plant or animal			
	I can describe why plants and animals depend on each other			
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			

Achievement Standard Class Checklist

Friends or foes? **Year 4 Biological sciences**

(This checklist is designed to be used in conjunction with the Assessment Rubric for the *Friends or foes?* unit)

PrimaryConnections® Linking science with literacy

Date: _____

	Science Understanding	**Science as a Human Endeavour**		**Science Inquiry Skills**						
	Describes relationships that assist the survival of living things and sequence key stages in the life cycle of a plant or animal	Identifies when science is used to ask questions and make predictions	Describes situations where science understanding can influence their own and others' actions	Follows instructions to identify investigable questions about familiar contexts and predict likely outcomes from investigations	Discusses ways to conduct investigations	Safely uses equipment to make and record observations	Uses provided tables and simple column graphs to organise their data and identify patterns in data	Suggests explanations for observations and compare their findings with their predictions	Suggests reasons why their methods were fair or not	Completes simple reports to communicate their methods and findings
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

Friends or foes? **Year 4 Biological sciences**

(This checklist is designed to be used in conjunction with the Assessment Rubric for the *Friends or foes?* unit)

PrimaryConnections® Linking science with literacy

Date: _____

	Science Understanding	**Science as a Human Endeavour**		**Science Inquiry Skills**						
	Describes relationships that assist the survival of living things and sequence key stages in the life cycle of a plant or animal	Identifies when science is used to ask questions and make predictions	Describes situations where science understanding can influence their own and others' actions	Follows instructions to identify investigable questions about familiar contexts and predict likely outcomes from investigations	Discusses ways to conduct investigations	Safely uses equipment to make and record observations	Uses provided tables and simple column graphs to organise their data and identify patterns in data	Suggests explanations for observations and compare their findings with their predictions	Suggests reasons why their methods were fair or not	Completes simple reports to communicate their methods and findings
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