

# Year 5 Assessment Rubrics

## 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	<i>Desert survivors</i> ‘Choosing monkeys’ (Resource sheet 11)	<ul style="list-style-type: none"><li>Recalls simple observations of adaptations of different species living in desert environments</li></ul>	<ul style="list-style-type: none"><li>Identifies adaptations of different species living in desert environments</li></ul>	<ul style="list-style-type: none"><li>Uses claims and evidence to explain how the adaptations of different species enables them to survive in desert environments</li></ul>

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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	<i>What's the matter?</i> ‘Matter cards’ (Resource sheet 7)	<ul style="list-style-type: none"><li>Lists the observable properties of solids, liquids and gases</li></ul>	<ul style="list-style-type: none"><li>Describes the observable properties of solids, liquids and gases</li></ul>	<ul style="list-style-type: none"><li>Explains in detail the observable properties and behaviours of solids, liquids and gases</li></ul>

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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	<i>Earth's place in Space</i> Dialogue	<ul style="list-style-type: none"><li>Describes simple ideas without supporting evidence that the Earth is part of a solar system</li></ul>	<ul style="list-style-type: none"><li>Identifies that the Earth is part of a solar system orbiting the Sun</li></ul>	<ul style="list-style-type: none"><li>Provides claims supported with evidence about the Earth and its place in the solar system</li></ul>
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	<i>Light shows</i> 'My thoughts' (Resource sheet 1)	<ul style="list-style-type: none"><li>Displays non-scientific ideas about the behaviour of light</li></ul>	<ul style="list-style-type: none"><li>Describes how shadows are formed</li><li>Describes that light can be absorbed, reflected and refracted</li></ul>	<ul style="list-style-type: none"><li>Uses scientific ideas about the behaviour of light with detailed explanations</li></ul>

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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	<ul style="list-style-type: none"><li>Desert survivors</li><li>What's the matter?</li><li>Earth's place in space</li><li>Light shows</li></ul>	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	<ul style="list-style-type: none"><li>Desert survivors</li><li>What's the matter?</li><li>Earth's place in space</li><li>Light shows</li></ul>	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)	Discusses how scientific developments have affected people's lives	<ul style="list-style-type: none"><li>• <i>Desert survivors</i></li><li>• <i>What's the matter?</i></li><li>• <i>Earth's place in space</i></li><li>• <i>Light shows</i></li></ul>	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
	Scientific knowledge is used to inform personal and community decisions (ACSHE217)					

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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 (AC SIS231)	Follows instructions to pose questions for investigation and predicts what might happen when variables are changed	<i>Elaborate</i> phase in: <ul style="list-style-type: none"><li><i>What's the matter?</i></li></ul>	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	<i>Elaborate</i> phase in: <ul style="list-style-type: none"><li><i>Light shows</i></li><li><i>What's the matter?</i></li></ul>	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	<i>Elaborate</i> phase in: <ul style="list-style-type: none"><li><i>Light shows</i></li><li><i>What's the matter?</i></li></ul>	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	<i>Elaborate</i> phase in: <ul style="list-style-type: none"><li><i>What's the matter?</i></li><li><i>Desert survivors</i></li></ul>	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	<i>Elaborate</i> phase in: <ul style="list-style-type: none"><li><i>What's the matter?</i></li><li><i>Desert survivors</i></li></ul>	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	<i>Elaborate</i> phase in: <ul style="list-style-type: none"><li><i>What's the matter?</i></li><li><i>Desert survivors</i></li></ul>	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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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	<i>Elaborate</i> phase in: <ul style="list-style-type: none"><li><i>Light shows</i></li><li><i>Desert survivors</i></li></ul>	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	<i>Elaborate</i> phase in: <ul style="list-style-type: none"><li><i>Earth's place in Space</i></li></ul>	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

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

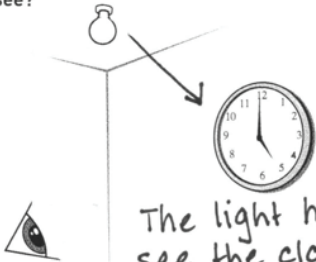
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Light shows

### My thoughts

Use drawings and words to show what you think about these questions.

1. How does light help us to see?



The light helps us to see the clock.

Use arrows to show your answer

2. How does light travel and how far does it travel?

Light travels very fast and in straight lines.

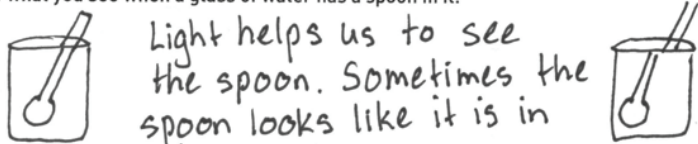
3. What is a shadow?

Shadows are formed behind objects where light can't reach.

4. What happens when light from a torch hits

- black card? It stops the light and makes a shadow.
- a mirror? The mirror reflects the light and we can see a reflection of the torch in the mirror.

5. Draw what you see when a glass of water has a spoon in it.



Light helps us to see the spoon. Sometimes the spoon looks like it is in two parts.

## Year 5 Work samples

### Light shows

### Summative Assessment of Science Understanding

Below Achievement Standard

## My thoughts

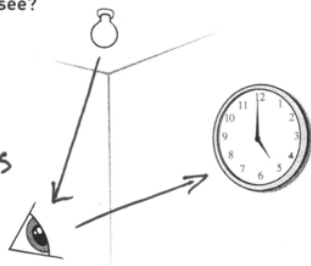
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Light shows

Use drawings and words to show what you think about these questions.

1. How does light help us to see?

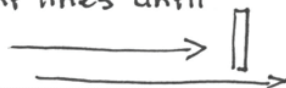
Light travels from the light bulb to our eyes and helps us to see the clock.



Use arrows to show your answer

2. How does light travel and how far does it travel?

Light travels in straight lines until it hits an object.



3. What is a shadow?

A shadow is formed when an object blocks the light.



4. What happens when light from a torch hits

• black card? A black card is opaque so the card will block the torch light.

• a mirror?

A mirror has a shiny, smooth surface so it reflects the light.

5. Draw what you see when a glass of water has a spoon in it.



The light is refracted (bent) when it passes through the air and water.

Resource sheet 1

## Year 5 Work samples

### Light shows

### Summative Assessment of Science Understanding

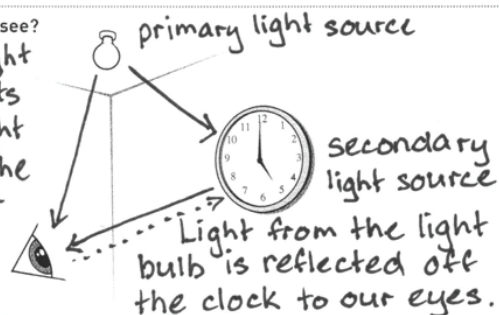
### At Achievement Standard

## My thoughts

Use drawings and words to show what you think about these questions.

1. How does light help us to see?

The electric light bulb gives out its own light. Light travels from the light bulb to our eyes and helps us to see.



Use arrows to show your answer

2. How does light travel and how far does it travel?

Light travels in straight lines until it hits an object. When it hits an object it is reflected, transmitted or absorbed.

3. What is a shadow?

A shadow is a dark shape that is created when an opaque object blocks out light. Shadows are formed because light does not go around objects.

4. What happens when light from a torch hits

- black card? A black card is opaque so the card will block the light. Because it is dark it also absorbs some light.
- a mirror? A mirror has a smooth, shiny surface so it reflects light. It reflects light so well that we can see an object placed in front of it.

5. Draw what you see when a glass of water has a spoon in it.



This is called refraction. This happens when a beam of light passes through air and water and bends the light so our eyes seem the spoon in the water in a different place to the spoon in the air.

Resource sheet 1

## Year 5 Work samples

### Light shows

### Summative Assessment of Science Understanding

Above Achievement Standard

## Planning and conducting

PrimaryConnections® Linking science with literacy			Light shows
<b>Shadow height investigation planner</b>			
Name: _____		Date: _____	
Other members of your team: _____			
What are you going to investigate?	What do you predict will happen? Why?		
We are going to investigate how high the shadow of the torch will be.	I think the further away the torch the smaller the shadow will be		
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?	
We are going to change the torch's position	We are going to measure the shadow	We are going to keep the ruler and where the glue stick is	
Change only one thing	What would the change affect?	Which variables will you control?	
Describe how you will set up your investigation.	What equipment will you need?		
We will turn on the torch and put it in different places to see the shadow	We will need a torch and a glue stick		
Use drawings if necessary	Use dot points		
Write and draw your observations in your science journal			

## Year 5 Work samples

### Light shows

### Summative Assessment of Science Inquiry Skills

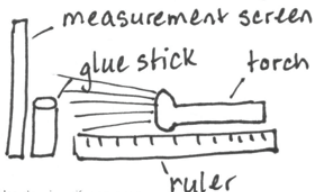
### Below Achievement Standard

## Evaluating

Evaluating the investigation
What challenges did you experience doing this investigation?
There were no problems.
How did you, or could you, overcome them?
How could you improve this investigation? (fairness/accuracy)
By measuring more accurately.



## Planning and conducting

PrimaryConnections® Linking science with literacy			Light shows
<b>Shadow height investigation planner</b>			
Name: _____		Date: _____	
Other members of your team: _____			
What are you going to investigate?  What happens to the height of the shadow when we change the distance from the torch to the glue stick?		What do you predict will happen? Why?  The nearer the torch to the glue stick, the taller the shadow because the beam of light from the torch becomes larger.	
<small>Can you write it as a question?</small>		<small>Give scientific explanations for your prediction</small>	
To make this a fair test what things (variables) are you going to:			
Change?  The distance from the glue stick	Measure?  The height of the shadow	Keep the same? <ul style="list-style-type: none"> <li>• The position of the glue stick</li> <li>• The torch</li> <li>• The angle of the torch</li> <li>• the glue stick</li> </ul>	
<small>Change only one thing</small>	<small>What would the change affect?</small>	<small>Which variables will you control?</small>	
Describe how you will set up your investigation.  		What equipment will you need? <ul style="list-style-type: none"> <li>• measurement screen</li> <li>• torch</li> <li>• ruler</li> <li>• glue stick</li> </ul>	
<small>Use drawings if necessary</small>		<small>Use dot points</small>	
Write and draw your observations in your science journal			
Resource sheet 9			

## Year 5 Work samples

### Light shows

### Summative Assessment of Science Inquiry Skills

#### At Achievement Standard

### Evaluating

<b>Evaluating the investigation</b>
What challenges did you experience doing this investigation?  We found it hard to measure the shadow because there was too much light in the room.
How did you, or could you, overcome them?  By doing the investigation in a darker area like in the storeroom.
How could you improve this investigation? (fairness/accuracy)  By using torches that have a strong light so it would make a darker shadow.

## Planning and conducting

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Light shows

### Shadow height investigation planner

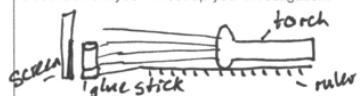
Name: \_\_\_\_\_ Date: \_\_\_\_\_

Other members of your team: \_\_\_\_\_

<p>What are you going to investigate?</p> <p>What happens to the height of the glue stick's shadow when we change the distance of the torch from the glue stick?</p> <p>Can you write it as a question?</p>	<p>What do you predict will happen? Why?</p> <p>The nearer the torch the bigger the shadow, the further the torch the smaller the shadow because the angle of the torch light changes</p> <p>Give scientific explanations for your prediction</p>
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To make this a fair test what things (variables) are you going to:

<p>Change?</p> <p>The distance of the torch from the glue stick</p> <p>Change only one thing</p>	<p>Measure?</p> <p>The height of the glue stick's shadow</p> <p>What would the change affect?</p>	<p>Keep the same?</p> <ul style="list-style-type: none"> <li>• the position of the glue stick</li> <li>• the angle of the torch</li> <li>• the position of the ruler</li> </ul> <p>Which variables will you control?</p>
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<p>Describe how you will set up your investigation.</p>  <p>We will place the torch next to the ruler and change the distance and measure the shadow</p> <p>Use drawings if necessary</p>	<p>What equipment will you need?</p> <ul style="list-style-type: none"> <li>• a measurement screen</li> <li>• a torch</li> <li>• a ruler</li> <li>• a glue stick</li> </ul> <p>Use dot points</p>
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Write and draw your observations in your science journal

Resource sheet 9

## Year 5 Work samples

### Light shows

### Summative Assessment of Science Inquiry Skills

### Above Achievement Standard

### Evaluating

### Evaluating the investigation

What challenges did you experience doing this investigation?

We had problems measuring the shadows as there were two shadows - a lighter one and a darker one.

How did you, or could you, overcome them?

We tried a different torch with a stronger beam and that worked better.

How could you improve this investigation? (fairness/accuracy)

I think if everyone used the same type of torch then it would be easier to compare our results.

# Student Self-Assessment

## Light shows Year 5 Physical 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 how light from a source forms shadows and can be absorbed, reflected and refracted			
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			



*Light shows* **Year 5 Physical sciences**

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

Date: \_\_\_\_\_

[illegible]

<b>BAS – Below Achievement Standard</b>	This indicates that the student has a limited understanding of the concept and/or skill
<b>AS – At Achievement Standard</b>	This indicates that the student has a good understanding of the concept and/or skill
<b>AAS – Above Achievement Standard</b>	This indicates that the student has a detailed understanding of the concept and/or skill

*Light shows* **Year 5 Physical sciences**

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

Date: \_\_\_\_\_

[illegible]

<b>BAS – Below Achievement Standard</b>	This indicates that the student has a limited understanding of the concept and/or skill
<b>AS – At Achievement Standard</b>	This indicates that the student has a good understanding of the concept and/or skill
<b>AAS – Above Achievement Standard</b>	This indicates that the student has a detailed understanding of the concept and/or skill