

# Which water?

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Assessment description	Category
Children identify and describe water use and investigate how water from different sources can affect plant growth.	Written
	<b>Technique</b>
	Guided experimental investigation
Context for assessment	Alignment
<p>The Earth’s resources, including water, are used in a variety of ways. Society is becoming aware of how water quality can impact upon its uses. This assessment provides opportunities for children to investigate how different water sources affect plant growth.</p> <p>The assessment provides opportunities for students to demonstrate science inquiry skills such as:</p> <ul style="list-style-type: none"> <li>• making predictions</li> <li>• conducting investigations</li> <li>• processing and analysing data and information</li> <li>• evaluating.</li> </ul>	<p><i>Australian Curriculum v5.0</i>, Year 2 Science Australian Curriculum content and achievement standard <a href="http://www.australiancurriculum.edu.au">www.australiancurriculum.edu.au</a>, ACARA — Australian Curriculum, Assessment and Reporting Authority</p> <p>Year 2 Science standard elaborations: <a href="http://www.qsa.qld.edu.au/downloads/p_10/ac_sci_yr2_se.pdf">www.qsa.qld.edu.au/downloads/p_10/ac_sci_yr2_se.pdf</a></p>
	<b>Connections</b>
	<p>This assessment can be used with the QSA Australian Curriculum resource titled <i>Year 2 year level plan — Science exemplar</i> available at: <a href="http://www.qsa.qld.edu.au/downloads/p_10/ac_science_yr2_plan.doc">www.qsa.qld.edu.au/downloads/p_10/ac_science_yr2_plan.doc</a></p>
	<b>Definitions</b>
	<p><b>Guided investigation:</b> Children and teachers collaborate to develop a planned course of action. In addition to the evidence collected in the Student booklet an observation record could be used to support the gathering of evidence.</p>
In this assessment	Assessment materials
<ul style="list-style-type: none"> <li>• Teacher guidelines</li> <li>• Student booklet</li> <li>• Task-specific standards — continua</li> <li>• Task-specific standards — matrix</li> <li>• Teacher PowerPoint</li> <li>• Assessment resource — Class recording table</li> <li>• Assessment resource — Investigation method</li> <li>• Assessment resource — Scientific inquiry process</li> </ul>	<p>The list below assumes each group carries out the investigation for only one water sample. Teachers may choose to have each group carry out the investigation for all water samples.</p> <p>Per group:</p> <ul style="list-style-type: none"> <li>• a flat container e.g. saucer, plate</li> <li>• cotton wool or a kitchen sponge</li> <li>• 3–4 soaked bean seeds</li> <li>• samples of ‘tank water, grey water, bore water and river water’ as per the recipes and safety notes in the Assessment resource — Investigation method</li> <li>• a medicine glass.</li> </ul>

# Teacher guidelines

## Identify curriculum

Content descriptions to be taught		
Science Understanding	Science as a Human Endeavour	Science Inquiry Skills
<p><b>Earth and space sciences</b></p> <ul style="list-style-type: none"> <li>Earth's resources, including water, are used in a variety of ways <a href="#">ACSSU032</a></li> </ul>	<p><b>Use and influence of science</b></p> <ul style="list-style-type: none"> <li>People use science in their daily lives, including when caring for their environment and living things <a href="#">ACSHE035</a></li> </ul>	<p><b>Questioning and predicting</b></p> <ul style="list-style-type: none"> <li>Respond to and pose questions, and make predictions about familiar objects and events <a href="#">ACSIS037</a></li> </ul> <p><b>Planning and conducting</b></p> <ul style="list-style-type: none"> <li>Participate in different types of guided investigations to explore and answer questions, such as manipulating materials, testing ideas, and accessing information sources <a href="#">ACSIS038</a></li> <li>Use informal measurements in the collection and recording of observations, with the assistance of digital technologies as appropriate <a href="#">ACSIS039</a></li> </ul> <p><b>Processing and analysing data and information</b></p> <ul style="list-style-type: none"> <li>Use a range of methods to sort information, including drawings and provided tables <a href="#">ACSIS040</a></li> <li>Through discussion, compare observations with predictions <a href="#">ACSIS214</a></li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>Compare observations with those of others <a href="#">ACSIS041</a></li> </ul> <p><b>Communicating</b></p> <ul style="list-style-type: none"> <li>Represent and communicate observations and ideas in a variety of ways such as oral and written language, drawing and role play <a href="#">ACSIS042</a></li> </ul>

### General capabilities (GCs) and cross-curriculum priorities (CCPs)

This assessment may provide opportunities to engage with the following GCs and CCPs. Refer also to the Resources tab on the P–10 Science Curriculum and Assessment page:

[www.qsa.qld.edu.au/yr2-science-resources.html](http://www.qsa.qld.edu.au/yr2-science-resources.html)



**Numeracy**



**ICT capability**



**Sustainability**

### Achievement standard

This assessment provides opportunities for students to demonstrate the following highlighted aspects.

By the end of Year 2, students describe changes to objects, materials and living things.

They identify that certain materials and resources have different uses and describe examples of where science is used in people's daily lives.

Students pose questions about their experiences and predict outcomes of investigations. They use informal measurements to make and compare observations. They follow instructions to record and represent their observations and communicate their ideas to others.

Source: ACARA, The Australian Curriculum v5.0, [www.australiancurriculum.edu.au](http://www.australiancurriculum.edu.au)

## Sequence learning

### Suggested learning experiences

This assessment leads on from the learning experiences outlined in the QSA's Year 2 Science Year level plan. The knowledge, understanding and skills developed in the exemplar unit will prepare children to engage in this assessment:

- See unit overview – Year 2 Science exemplar (Good to grow)  
[www.qsa.qld.edu.au/downloads/p\\_10/ac\\_science\\_yr2\\_unit\\_overview.doc](http://www.qsa.qld.edu.au/downloads/p_10/ac_science_yr2_unit_overview.doc)

### Adjustments for needs of learners

To make adjustments, teachers refer to learning area content aligned to the student's chronological age, personalise learning by emphasising alternate levels of content, general capabilities or cross-curriculum priorities in relation to the chronological age learning area content. The emphasis placed on each area is informed by the student's current level of learning and their strengths, goals and interests. Advice on the process of curriculum adjustment for all students and in particular for those with disability, gifted and talented or for whom English is an additional language or dialect are addressed in *Australian Curriculum — Student Diversity* materials.

For information to support students with diverse learning needs, see:

- Queensland Studies Authority materials for supporting students with diverse learning needs  
[www.qsa.qld.edu.au/10188.html](http://www.qsa.qld.edu.au/10188.html)
- Australian Curriculum Student Diversity  
[www.australiancurriculum.edu.au/StudentDiversity/Overview](http://www.australiancurriculum.edu.au/StudentDiversity/Overview)
- The *Melbourne Declaration on Educational Goals for Young Australians*  
[www.mceecdya.edu.au/mceecdya/melbourne\\_declaration,25979.html](http://www.mceecdya.edu.au/mceecdya/melbourne_declaration,25979.html)
- The *Disability Standards for Education* [www.ag.gov.au](http://www.ag.gov.au).

## Resources

### Online

- The savewater!® Alliance, savewater  
[www.savewater.com.au](http://www.savewater.com.au)
- CSIRO, Education  
[www.csiro.au/Portals/Education.aspx](http://www.csiro.au/Portals/Education.aspx)
- ABC online, Water  
[www.abc.net.au/water](http://www.abc.net.au/water)
- The Queensland Government, Department of Environment and Resource Management, Water: Learn it for life!  
[www.nrm.qld.gov.au/waterwise/education/units/](http://www.nrm.qld.gov.au/waterwise/education/units/)
- The Queensland Government, Department of Environment and Resource Management, Whizzy's Incredible Journey  
[www.nrm.qld.gov.au/waterwise/whizzy/](http://www.nrm.qld.gov.au/waterwise/whizzy/)

### Objects

- The PowerPoint provided in this package provides a visual stimulus for children as they progress through the assessment.

## Develop assessment

### Preparing for the assessment

Learning experiences in preparation for the assessment could include:

#### Developing knowledge and understanding of water as a resource

- Identify the Earth's resources, including water, that are important to a farm.
- Consider what might happen if there was a change in a familiar available resource, including water.
- Ask questions and make predictions and compare observations to predictions.
- Participate in safe, guided investigations.
- Collect and use diagrams and provided tables to record information.
- Represent and communicate observations and ideas using oral and written language and drawings.
- Appreciate how science is used in their everyday lives.
- Create a water words word bank (e.g. river, lake, ocean, clean, clear, murky, fresh, stagnant, salt, flowing, polluted).
- Continue to add to word bank throughout the unit/assessment.
- Discuss how plants use water.
- Explore the story of water from rain to tap and all of the places it could go along the way by discussing and modelling the movement of water across landscapes, e.g. down a grassy slope or down a concrete path and identifying all the things that water could collect along the way.
- Identify real-life situations where newly-acquired science knowledge is currently being applied or may be applied in the future.

### Developing science inquiry skills

- Practise making reasoned predictions about the natural and physical world.
- Use labelled diagrams to show the set-up of an activity.
- Work with class members and the teacher to plan and conduct fair tests using 'Cows Moo Softly' elements of Change — Measure — Same.
- Support students to collect data, and record observations.
- Practise using informal measurements.
- Discuss as a class any data collected as a class in order to compare observations with predictions.
- Reflect as a class on observations and suggest reasons why things happen.
- Support students to communicate ideas using a simple report format.

## Implementing

### Prior to implementation

Prior to implementing the assessment the teacher will need to:

- trial the bean seeds to make sure they will germinate
- soak the seeds overnight prior to the investigation
- gather or mix the water samples and test to see what volume of water is needed to soak the cotton wool or sponge that the seeds will germinate on (*Assessment resource — Investigation methods* includes water sample recipe suggestions, equipment list and investigation method.
- consider storage and handling safety.
- **Note:** *Assessment resource — Investigation methods* includes suggestions for simulating:
  - chemically polluted river water
  - bore water with high salinity
  - grey water with detergent residue.

### Section 1. Farmer Sam's farm

#### Student role

- Participate in a discussion about the purpose of the assessment.
- Clarify your understanding of the investigation question (if necessary).
- Look at the main features of the map where Farmer Sam lives (see PowerPoint and Student booklet).
- Identify and describe water uses at the farm.
- Discuss aspects of the different types of water and safe handling of the water types.

#### Teacher role

- Use the PowerPoint to guide the children through the assessment and set the backdrop for the investigation (PowerPoint slide 3–4).
- Present the investigation question, clarifying children's understanding of this where necessary.
- Discuss with the class the main features of the map of Farmer Sam's map (PowerPoint slide 5).  
[Note: the slide has an initial image then a click-through-reveal of the different water sources on the map.]
- Discuss aspects of the different types of water and safe handling of the water types.
- Monitor children as they identify and describe water uses at the farm. (PowerPoint slide 7).

## Implementing

### Section 2. Making a prediction

#### Student role

As a class:

- discuss the four sources of water shown on the map of the farm
- make a list of all of the materials that could be in a water sample from each source and discuss how to safely work with the water samples
- brainstorm words that could be used to describe the water samples.

Individually:

- look at the map the class table and your own table to predict which water will be the best for growing beans.
- write your prediction and explain why you think it is the best for growing beans.

#### Teacher role

- Discuss with the class what might be found in each of the water sources on the farm.
- Use PowerPoint slide 8 to guide the class to complete the class table with this information (see *Assessment resource — Class recording table*, which can be enlarged to pin on the wall).
- Monitor children as they complete their individual tables.
- Monitor children as they complete their predictions. Explain the importance of providing an explanation (reason) for their answers (PowerPoint slide 7).

### Section 3. Planning and conducting the investigation

#### Student role

- Participate in a class discussion about the features of the investigation.
- As a class, plan the investigation to test the question: Which water is the best for growing beans?
- Fill in the investigation planner.
- Follow the directions and set up the investigation with your group members.
- Everyday record your observations in your *Student booklet* about how high the bean plant has grown.
- Continue to water the plants as directed by your teacher.

#### Teacher role

- Lead the class in a discussion on the features of the investigation and the best way to carry out the investigation including safety.
- Model how to complete the investigation planner (PowerPoint slide 11).
- Using your knowledge of the children's personalities and abilities, place students in groups.
- Provide all the required equipment and materials.
- Give the children directions for setting up the investigation, ensuring all children understand how the equipment is to be assembled.
- Monitor safe practices during the investigation.
- Model how to record observations (PowerPoint slide 12).
- Supervise the children watering plants.

### Section 4. Explaining your results

#### Student role

- Use the scale in Section 3 of the Student booklet to rate how well the plants grew for each of the types of water.
- Clarify your understanding of the questions in the *Student booklet* (if necessary).
- Answer the questions in the *Student booklet* and use the evidence from your observations to explain your decision.
- Compare your observations with your prediction.

#### Teacher role

- Discuss with the class how to use the rating scale (PowerPoint slide 15).
- Discuss with the class how to use the rating scale to support the decision they make about the best water to use for growing beans and how to compare observations with predictions (PowerPoint slide 16).

## Make judgments

When making judgments about the evidence in student responses to this assessment, teachers are advised to use the task-specific standards provided. The development of these task-specific standards has been informed by the Queensland Year 2 standard elaborations.

See [www.qsa.qld.edu.au/downloads/p\\_10/ac\\_sci\\_yr2\\_se.doc](http://www.qsa.qld.edu.au/downloads/p_10/ac_sci_yr2_se.doc)

### *The Queensland standard elaborations for Science*

The Queensland Year 2 standard elaborations for Science is a resource to assist teachers to make consistent and comparable evidence-based A to E (or equivalent) judgments. It should be used in conjunction with the Australian Curriculum achievement standard and content descriptions for the relevant year level.

The Queensland Science standard elaborations provide a basis for judging *how well* students have demonstrated what they know, understand and can do using the Australian Curriculum achievement standard.

The Australian Curriculum achievement standards dimensions of Understanding and Skills are used to organise the Queensland Science standard elaborations. Understanding and Skills in Science are organised as Understanding dimension and Skills dimension.

The valued features of Science drawn from the achievement standard and the content descriptions for Understanding dimension and Skills dimension are organised as:

- Science Understanding
- Science as a Human Endeavour
- Questioning and predicting
- Planning and conducting
- Processing and analysing data and information
- Evaluating and communicating.

### *Task-specific standards*

Task-specific standards give teachers:

- a tool for directly matching the evidence of learning in the student response to the standards
- a focal point for discussing student responses
- a tool to help provide feedback to students.

Task-specific standards are not a checklist; rather they are a guide that:

- highlights the valued features that are being targeted in the assessment and the qualities that will inform the overall judgment
- specifies particular *targeted aspects* of the curriculum content and achievement standard
- aligns the valued feature, task-specific descriptor and assessment
- allows teachers to make consistent and comparable on-balance judgments about student work by matching the qualities of student responses with the descriptors
- clarifies the curriculum expectations for learning at each of the five grades (A–E or the early years equivalent)
- shows the connections between what students are expected to know and do, and how their responses will be judged and the qualities that will inform the overall judgment

- supports evidence-based discussions to help students gain a better understanding of how they can critique their own responses and achievements, and identify the qualities needed to improve
- encourages and provides the basis for conversations among teachers, students and parents/carers about the quality of student work and curriculum expectations and related standards.

### Task-specific valued features

Task-specific valued features are the discrete aspects of the valued features of Science targeted in a particular assessment and incorporated into the task-specific standards for that assessment. They are selected from the Queensland Science standard elaborations valued features drawn from the Australian Curriculum achievement standard and content descriptions.

Task-specific valued features for this assessment		
The following identifies the valued features for this assessment and makes explicit the understandings and skills that students will have the opportunity to demonstrate. This ensures that the alignment between what is taught, what is assessed and what is reported is clear.		
Australian Curriculum achievement standard dimensions	Queensland standard elaborations valued features	Task-specific valued features
Understanding dimension	Science understanding	Describes uses of water on Farmer Sam's farm <b>Section 1: Farmer Sam's farm</b>
	Questioning and predicting	Makes a prediction when responding to the investigation question: which water is the best for growing beans? <b>Section 2: Making a prediction</b>
Skills dimension	Planning and conducting	Safely participates in the investigation to collect and record observations <b>Section 3: Planning and conducting the investigation</b>
	Processing and analysing data and information	Uses the provided scale to: sort the observations about bean growth identify which water was best for growing beans compare observations to predications <b>Section 4: Explaining your results</b>
	Evaluating and communicating	Communicates observations and ideas in a variety of ways (class discussions, short responses, tables, scales) <b>Sections 1, 2, 3,4</b>

Australian Curriculum Year 2 Science	Which water?	Teacher guidelines
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The task-specific standards for this assessment are provided in two models using the same task-specific valued features:

- a matrix
- a continua

### **Matrix and Continua**

Task-specific standards can be prepared as a matrix or continua. Both the continua and the matrix:

- use the Queensland standard elaborations to develop task-specific descriptors to convey expected qualities in student work – A to E or equivalent
- highlight the same valued features from the Queensland standard elaborations that are being targeted in the assessment and the qualities that will inform the overall judgment
- incorporate the same task-specific valued features i.e. make explicit the particular understanding / skills students have the opportunity to demonstrate for each selected valued feature
- provide a tool for directly matching the evidence of learning in the student response to the standards to make an on-balance judgment about student achievement
- assist teachers to make consistent and comparable evidence-based A to E or equivalent judgments.

#### **Continua**

The continua model of task-specific standards uses the dimensions of the Australian Curriculum achievement standard to organise task-specific valued features and standards as a number of reference points represented progressively along an A–E continuum. The task-specific valued features at each point are described holistically. The task-specific descriptors of the standard use the relevant degrees of quality described in the Queensland standard elaborations.

Teachers determine a position along each continuum that best matches the evidence in the students' responses to make an on-balance judgment about student achievement on the task.

The continua model is a tool for making an overall on-balance judgment about the assessment and for providing feedback on task specific valued features.

#### **Matrix**

The matrix model of task-specific standards uses the structure of the Queensland standard elaborations to organise the task-specific valued features and standards A to E. The task-specific descriptors of the standard described in the matrix model use the same degrees of quality described in the Queensland standard elaborations.

Teachers make a judgment about the task-specific descriptor in the A to E (or equivalent) cell of the matrix that best matches the evidence in the students' responses in order to make an on-balance judgment about how well the pattern of evidence meets the standard.

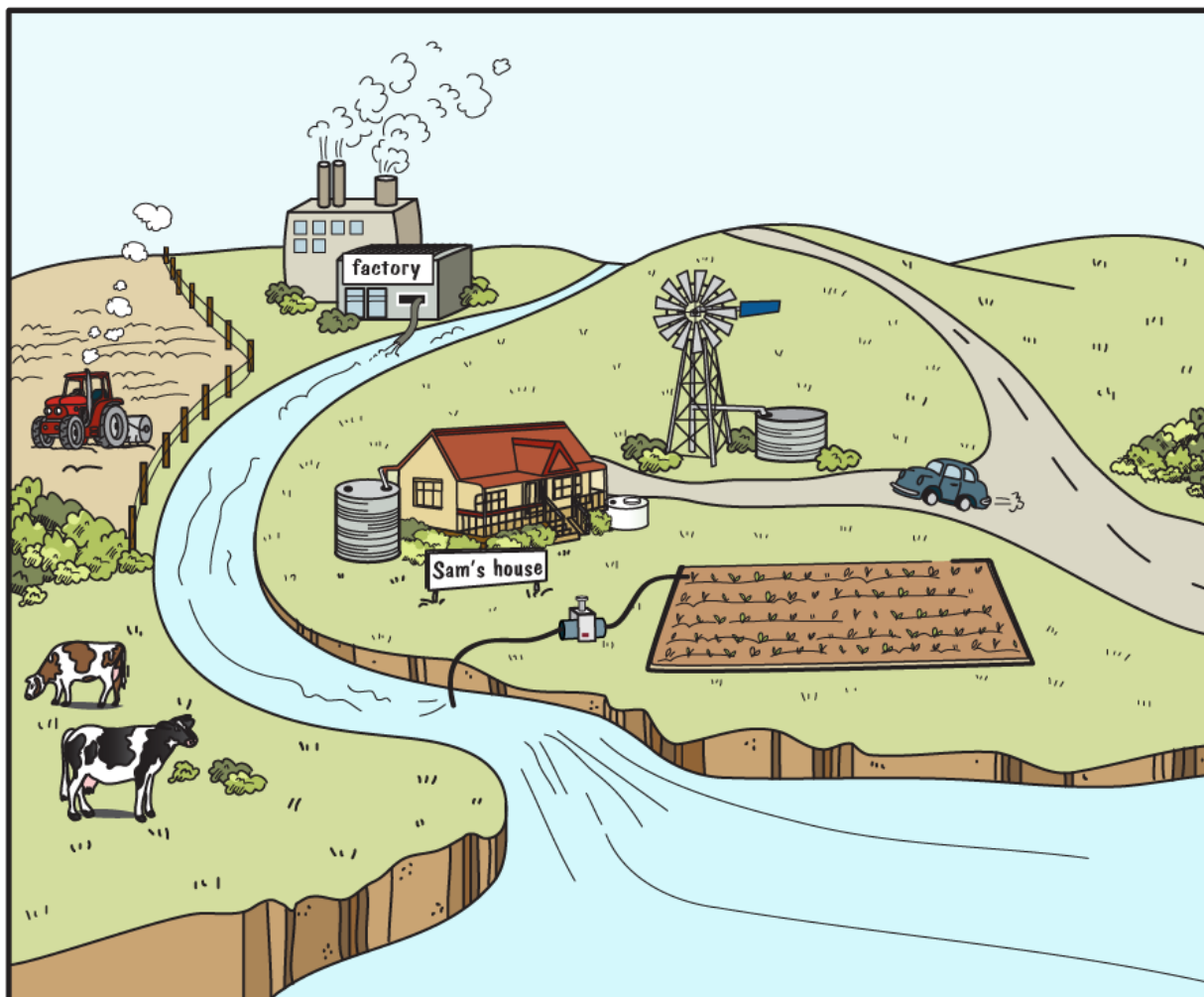
The matrix is a tool for making both overall on-balance judgments and analytic judgments about the assessment. Achievement in each valued feature of the Queensland standard elaboration targeted in the assessment can be recorded and feedback can be provided on the task-specific valued features.

## Use feedback

<p><b>Feedback to students</b></p>	<p>Evaluate the information gathered from the assessment to inform teaching and learning strategies. Focus feedback on the child's personal progress and the next steps in the learning journey.</p> <p>The task-specific standards for this assessment can be used as a basis for providing feedback to students.</p> <p>Offer feedback that:</p> <ul style="list-style-type: none"> <li>• acknowledges the knowledge and skills they are using</li> <li>• supports children to identify areas where they need to improve</li> <li>• maximises the children's opportunities to succeed in the assessment by providing feedback on investigations carried out during the term.</li> </ul> <p>Specifically about:</p> <ul style="list-style-type: none"> <li>– making reasoned predictions</li> <li>– accurately collecting and recording observations</li> <li>– using observations to give reasoned explanations for findings</li> <li>– involves students in the process by providing opportunities to ask follow-up questions</li> </ul> <ul style="list-style-type: none"> <li>• provides support for children to find ways to improve their science inquiry skills, e.g. Can you find another way to ... ? How else could you ... ?</li> <li>• encourages children to work towards improving outcomes, e.g. You have found two things that could be in the tank water. Can you think of others?</li> <li>• focuses on each student's personal progress relative to their previous achievements</li> <li>• identifies the characteristics of a high quality response that aligns with the descriptors in the Task-specific standards.</li> </ul>
<p><b>Resources</b></p>	<p>For guidance on providing feedback, see the professional development packages titled:</p> <ul style="list-style-type: none"> <li>• <i>About feedback</i> <a href="http://www.qsa.qld.edu.au/downloads/p_10/as_feedback_about.doc">www.qsa.qld.edu.au/downloads/p_10/as_feedback_about.doc</a></li> <li>• <i>Seeking and providing feedback</i> <a href="http://www.qsa.qld.edu.au/downloads/p_10/as_feedback_provide.doc">www.qsa.qld.edu.au/downloads/p_10/as_feedback_provide.doc</a></li> </ul>

# Which water?

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**Identify and describe water use and investigate how water from different sources can affect plant growth.**

**You will:**

- identify and describe ways in which water is used
- record information about different sources of water
- predict which source of water will be best for growing beans
- participate in a guided investigation
- record observations using informal measurements
- compare observations with your predictions and with observations made by others.

## Section 1. Farmer Sam's farm

Farmer Sam heard that you and your classmates are good scientists. Now she wants your help.

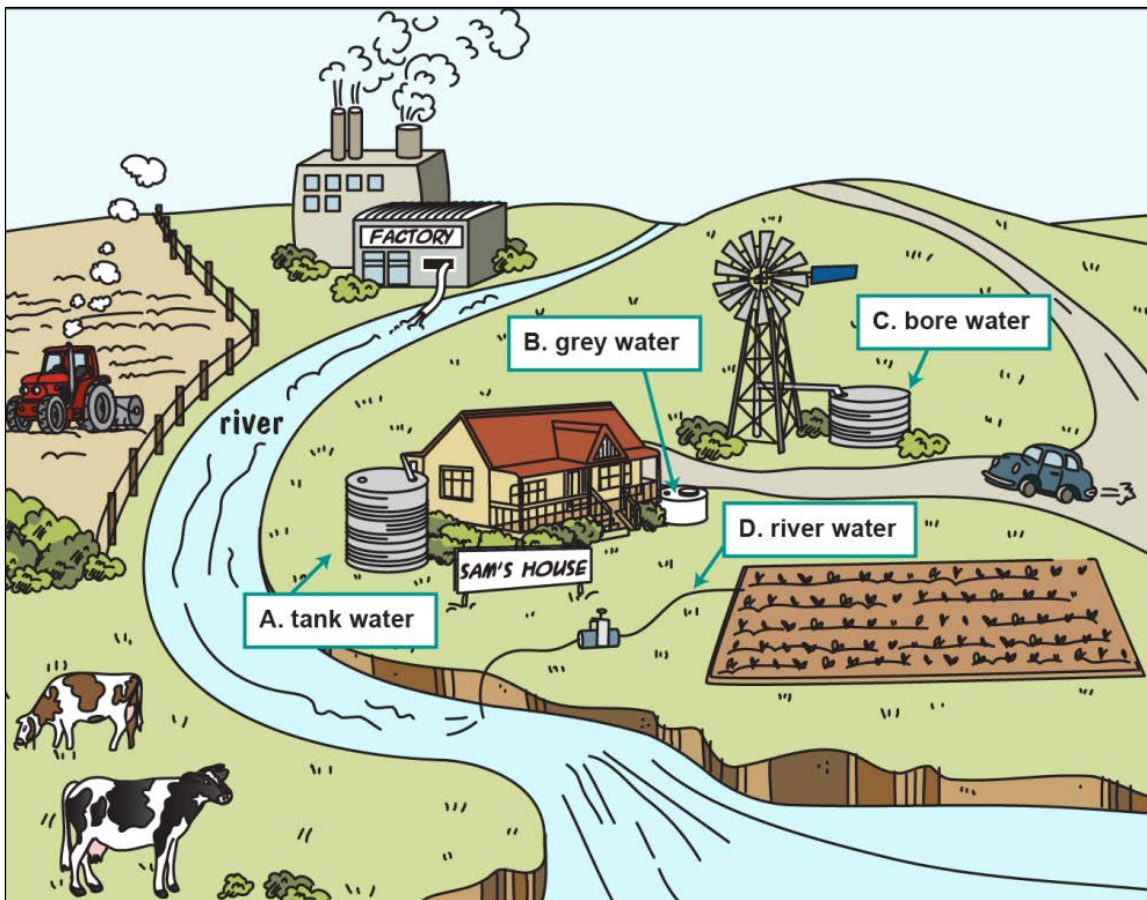
She knows you can use water to grow plants.

She wants to grow a crop of beans.

She can get water from four different places on the farm.

Sam needs your help to investigate this question:

### Which water is the best for growing beans?



## Section 2. Making a prediction

Look at the map of Farmer Sam's farm and find the places where water is used.

Choose one place where water is used and complete the table below.

Where is water used?	Describe how is it used
	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>

### Making a prediction





Look at the map of Farmer Sam's farm.

Discuss with the class what might be found in a water sample from each place.

Record this information in the class table that your teacher will pin up on the wall.

Use the class table to add things to your list in your table below.

You are going to use your list to help make a prediction about which water will be best for growing beans.

Water sample	What could be in it?	Water sample	What could be in it?
<b>A. tank</b> 	<p>Is it safe?</p>	<b>C. bore</b> 	<p>Is it safe?</p>
<b>B. grey</b> 	<p>Is it safe?</p>	<b>D. river</b> 	<p>Is it safe?</p>

Predict which water will be the best for growing beans. Look at your table and the map of Farmer Sam's farm to help your thinking.

I think the ..... water will be best for growing beans.

I think this because .....


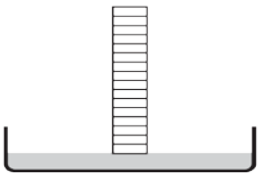
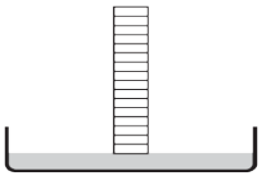
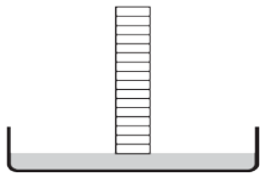
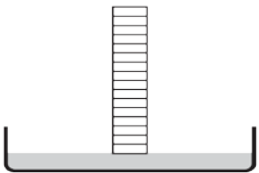
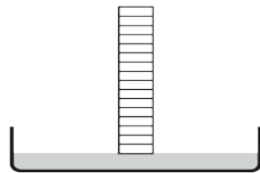

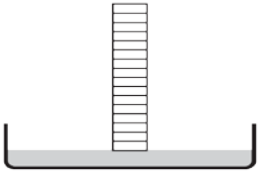
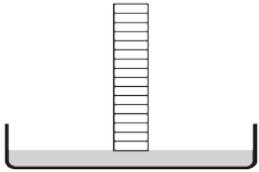
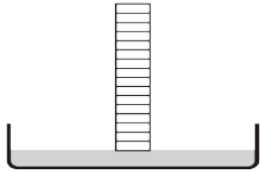
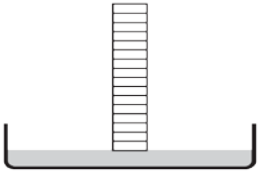
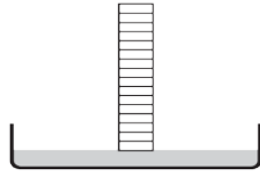

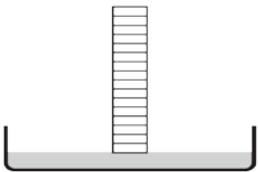
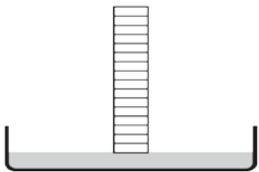
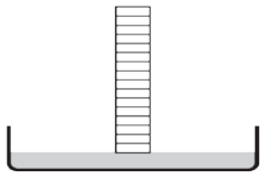
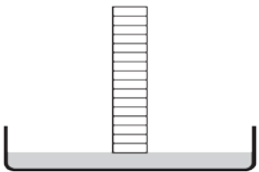
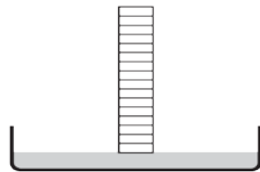

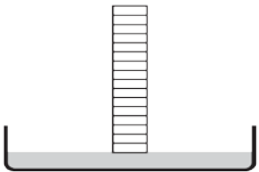
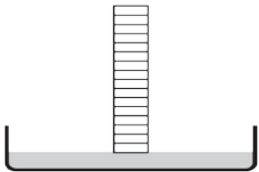
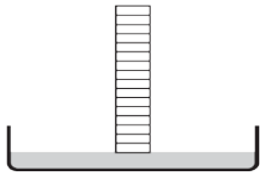
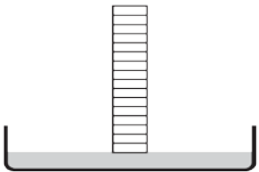
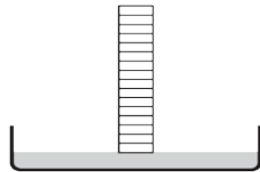
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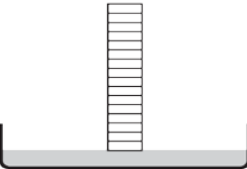
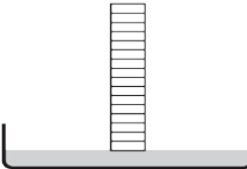
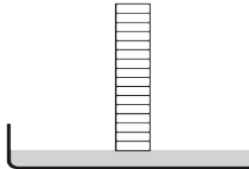
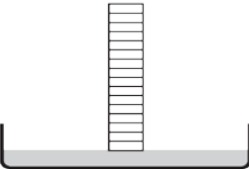
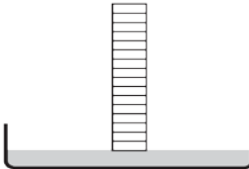

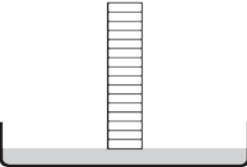
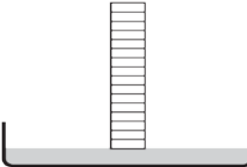
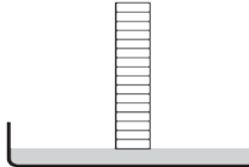
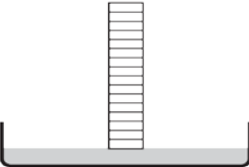


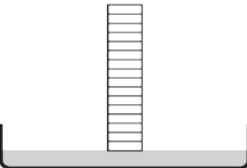

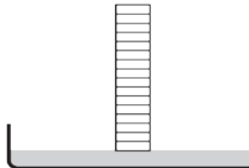
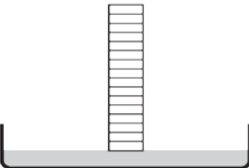


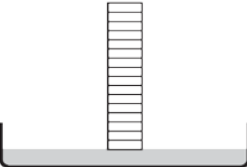
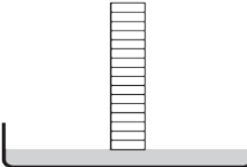
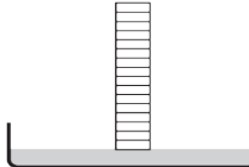
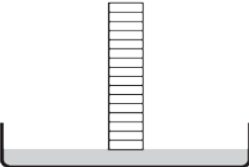
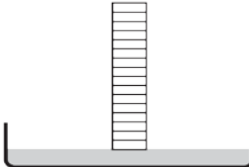
## Section 3. Planning and conducting the investigation

Work as a class to complete the investigation planner.

Investigation planner		
Investigation question:  <i>Which water is the best for growing beans?</i>		
Equipment and materials:		
What will change when doing the investigation?	What will be measured when doing the investigation?	What will stay the same when doing the investigation?
When doing the investigation we will change:	When doing the investigation we will measure:	When doing the investigation we will keep these things the same:

Follow your teacher's instructions to do the investigation. Each day check the bean seeds and show how much they have grown in the table below.

Water sample	Day 1	Day 2	Day 3	Day 4	Day 5
<b>A. tank</b> 					
<b>B. grey</b> 					
<b>C. bore</b> 					
<b>D. river</b> 					

Water sample	Day 8	Day 9	Day 10	Day 11	Day 12
<b>A. tank</b> 					
<b>B. grey</b> 					
<b>C. bore</b> 					
<b>D. river</b> 					



## Section 4. Explaining your results

Use the scale below to compare how well the beans grew in each type of water.

The image shows four bean plants in pots, each labeled "good" at the top and "poor" at the bottom. Below the pots are four boxes labeled A, B, C, and D, each with an illustration of a water source: A. tank water (barrel), B. grey water (drum), C. bore water (windmill), D. river water (pump).

Which water was the best for growing beans?

.....

Why was it the best water for growing beans?

.....

.....

.....

Look at your prediction in Section 1. Now look at your results in Section 3.

Was your prediction correct? (Circle one)

Yes / No

# Which water?

Name .....

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**Purpose of assessment:** Identify how water is used and investigate how water from different sources can affect plant growth.

Understanding and Skills				
Science Understanding	Science Inquiry Skills			
<p><b>Section 1: Farmer Sam's farm</b> Describes uses of water on Farmer Sam's farm</p>	<p><b>Section 2: Making a prediction</b> Makes a prediction when responding to the investigation question: which water is the best for growing beans?</p> <p><b>Section 3: Planning and conducting the investigation</b> Safely participates in the investigation to collect and record observations</p>	<p><b>Section 4: Explaining your results</b> Uses the provided scale to sort the observations about bean growth, identify which water was best for growing beans and compare observations to predictions</p>	<p><b>Sections 1, 2, 3, 4: Evaluating and communicating</b> Communicates observations and ideas in a variety of ways (class discussions, short responses, tables, scales)</p>	
<p>Clear description of how water is used on the Farmer Sam's farm</p> <p>Identification of where water is used on the Farmer Sam's farm</p> <p>Directed identification of where water is used on the Farmer Sam's farm</p>	<p>Makes a reasoned prediction about which water is best for growing beans. Safe participation in the investigation to collect and record clearly connected observations about the type of water and growth of the bean seeds</p> <p>Makes a plausible prediction about which water is best for growing beans. Safe participation in the investigation to collect and record observations about the growth of the bean seeds</p> <p>Directed response to the investigation question. Directed safe collection and/or recording of observation about the growth of the bean seeds</p>	<p>Use of the provided scale to clearly compare how well the beans grew in each type of water, identify which water was best for growing beans and compare observations to predictions</p> <p>Use of information collected during the investigation to compare how well the beans grew in each type of water, identify which water was best for growing beans and compare observations to predictions</p> <p>Directed use of the provided scale to compare how well the beans grew in each type of water and/or compare observations to predictions</p>	<p>Clear and purposeful communication of observations and ideas about water use on the farm and which type of water is best for growing beans</p> <p>Communication of observations and ideas about water use on the farm and which type of water is best for growing beans</p> <p>Directed communication of observations and ideas about water use on the farm and which type of water is best for growing beans</p>	<p>A P</p> <p>M C</p> <p>W W</p> <p>E X</p> <p>B A</p>
Australian Curriculum Year 2 Science	Which water?		Task-specific standards — continua	

# Which water?

Name .....

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**Purpose of assessment:** Identify how water is used and investigate how water from different sources can affect plant growth.

			Applying (AP)	Making connections (MC)	Working with (WW)	Exploring (EX)	Becoming aware (BA)
Understanding dimension	Science Understanding	<b>Section 1: Farmer Sam’s farm</b> Description of the uses of water on Farmer Sam’s farm	Clear description of how water is used on Farmer Sam’s farm	Description of how water is used on Farmer Sam’s farm	Identification of where water is used on Farmer Sam’s farm	Guided identification of where water is used on Farmer Sam’s farm	Directed identification of where water is used on Farmer Sam’s farm
	Questioning and predicting	<b>Section 2: Making a prediction</b> Makes a prediction when responding to the investigation question: which water is the best for growing beans?	Makes a reasoned prediction about which water is best for growing beans	Makes an informed prediction about which water is best for growing beans	Makes a plausible prediction about which water is best for growing beans	Guided making of a prediction about which water is best for growing beans	Directed response to the investigation question
Skills dimension	Planning and conducting	<b>Section 3: Planning and conducting the investigation</b> Safe participation in the investigation to collect and record observations	Safe participation in the investigation to collect and record clearly connected observations about the type of water and growth of the bean seeds	Safe participation in the investigation to collect and record connected observations about the type of water and growth of the bean seeds	Safe participation in the investigation to collect and record observations about the growth of the bean seeds	Guided safe collection and recording of observations about the growth of the bean seeds	Directed safe collection and/or recording of observations about the growth of the bean seeds

			Applying (AP)	Making connections (MC)	Working with (WW)	Exploring (EX)	Becoming aware (BA)
Skills dimension	Processing and analysing data and information	<p><b>Section 4: Explaining your results</b></p> <p>Use of provided scale to:</p> <ul style="list-style-type: none"> <li>compare the observations about bean growth</li> <li>identify which water was best for growing beans</li> <li>compare observations to predictions</li> </ul>	<p>Use of the provided scale to clearly:</p> <ul style="list-style-type: none"> <li>compare how well the beans grew in each type of water</li> <li>identify which water was best for growing beans</li> <li>compare observations to predictions</li> </ul>	<p>Use of the provided scale to:</p> <ul style="list-style-type: none"> <li>compare how well the beans grew in each type of water</li> <li>identify which water was best for growing beans</li> <li>compare observations to predictions</li> </ul>	<p>Use of information collected during the investigation to:</p> <ul style="list-style-type: none"> <li>compare how well the beans grew in each type of water</li> <li>identify which water was best for growing beans</li> <li>compare observations to predictions</li> </ul>	<p>Guided use of the provided scale to:</p> <ul style="list-style-type: none"> <li>compare how well the beans grew in each type of water</li> <li>identify which water was best for growing beans</li> <li>compare observations to predictions</li> </ul>	<p>Directed use of the provided scale to compare how well the beans grew in each type of water and/or compare observations to predictions</p>
	Evaluating and Communicating	<p><b>Sections 1, 2, 3, 4</b></p> <p>Communication of observations and ideas in a variety of ways (class discussions, short responses, tables, scales)</p>	<p>Clear and purposeful communication of observations and ideas about water use on the farm and which type of water is best for growing beans</p>	<p>Clear communication of observations and ideas about water use on the farm and which type of water is best for growing beans</p>	<p>Communication of observations and ideas about water use on the farm and which type of water is best for growing beans</p>	<p>Guided communication of observations and ideas about water use on the farm and which type of water is best for growing beans</p>	<p>Directed communication of observations and ideas about water use on the farm and which type of water is best for growing beans</p>

# Which water?

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## Investigation method

This method has been developed with limited resources required — each group carries out the investigation for only one water sample but will need to access others set up in order to record observations for all water samples.

Teachers may choose to have each group carry out the investigation for all water samples.

## Materials and Equipment





Per group:

- a flat container for placing seeds on e.g. saucer, plate
- cotton wool or a kitchen sponge for growing seeds on
- 3–4 soaked bean seeds
- samples of “tank water, grey water, bore water and river water” **as per the recipes below**
- a medicine glass for measuring the sample of water.

## Prior to implementation

Prior to implementing the assessment the teacher will need to:

- soak the seeds overnight prior to the investigation
- test to see what volume of water is needed to soak the cotton wool or sponge that the seeds will germinate on
- mix the water samples as per the recipes below.

Water sample recipe suggestions	
<p><b>A.</b> tank water</p> 	<ul style="list-style-type: none"> <li>• Collect from a tank in your school or local environment.</li> <li>• Use tap or rain water and allow to stand for several days open to the elements.</li> </ul>
<p><b>B.</b> grey water</p> 	<ul style="list-style-type: none"> <li>• Use water from a washing machine’s waste water.</li> <li>• Mix 1 tablespoon of washing powder with 1 litre of water.</li> <li>• Add a small amount of dirt.</li> </ul>
<p><b>C.</b> bore water</p> 	<ul style="list-style-type: none"> <li>• Try to locate a water sample from a bore that is close to the ocean.</li> <li>• Mix 50 grams of salt to 1 litre of water (5 g:100g)</li> </ul>
<p><b>D.</b> river water</p> 	<ul style="list-style-type: none"> <li>• Create a chemically polluted river water sample by mixing 1 cup of white vinegar into 1L water.</li> </ul>

## Method

1. The night before the experiment place the class set of bean seeds in a bowl that is deep enough to allow them to be covered in water.
2. Add enough warm water to the bowl of beans to ensure they are completely covered.
3. On the day of the investigation guide children to:
  - a. gather their equipment: saucer/plate, cotton wool/sponge, soaked bean seeds
  - b. put the cotton wool/sponge on the saucer/plate and place the bean seeds on top
  - c. use the medicine glass to measure the volume of water needed to soak the cotton wool or sponge that the seeds will germinate on and place it over the seeds.
4. Each day guide children to make and record observations about the bean seed growth and to add water if necessary to the cotton wool or sponge.
5. Repeat step 4 for 12 days.


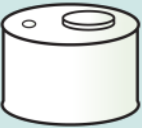
## Note



Discussion about the contents of the different water samples should be had with the children to ensure safe usage in the classroom context and beyond.

# Assessment name

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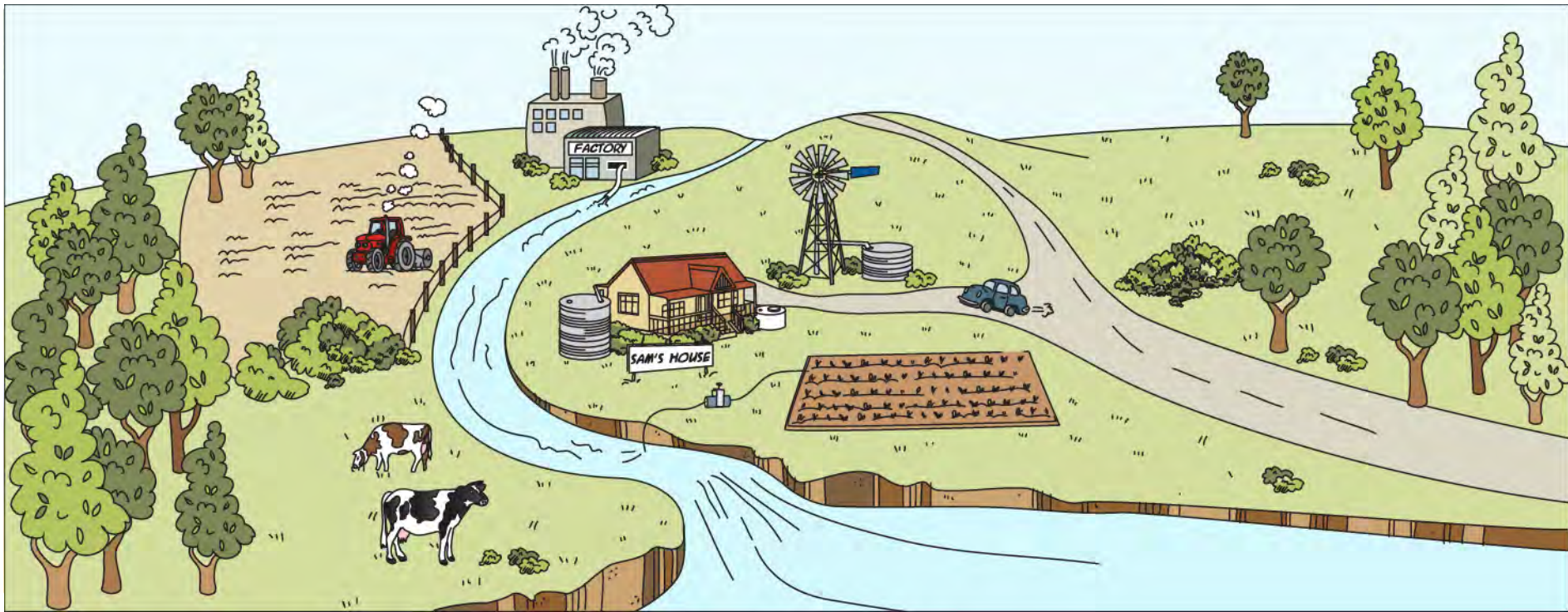
## Class recording table

Water sample	What could be in it?
<b>A. tank</b> 	     Is it safe?
<b>B. grey</b> 	     Is it safe?

Water sample	What could be in it?
<b>C. bore</b> 	     Is it safe?
<b>D. river</b> 	     Is it safe?

# Which water?

## Year 2 Science





# Section 1.

## Farmer Sam's farm

# Farmer Sam's farm



Farmer Sam heard that you and your classmates are good scientists.

Now she wants your help.

# Farmer Sam's farm

She knows you can use water to grow plants.

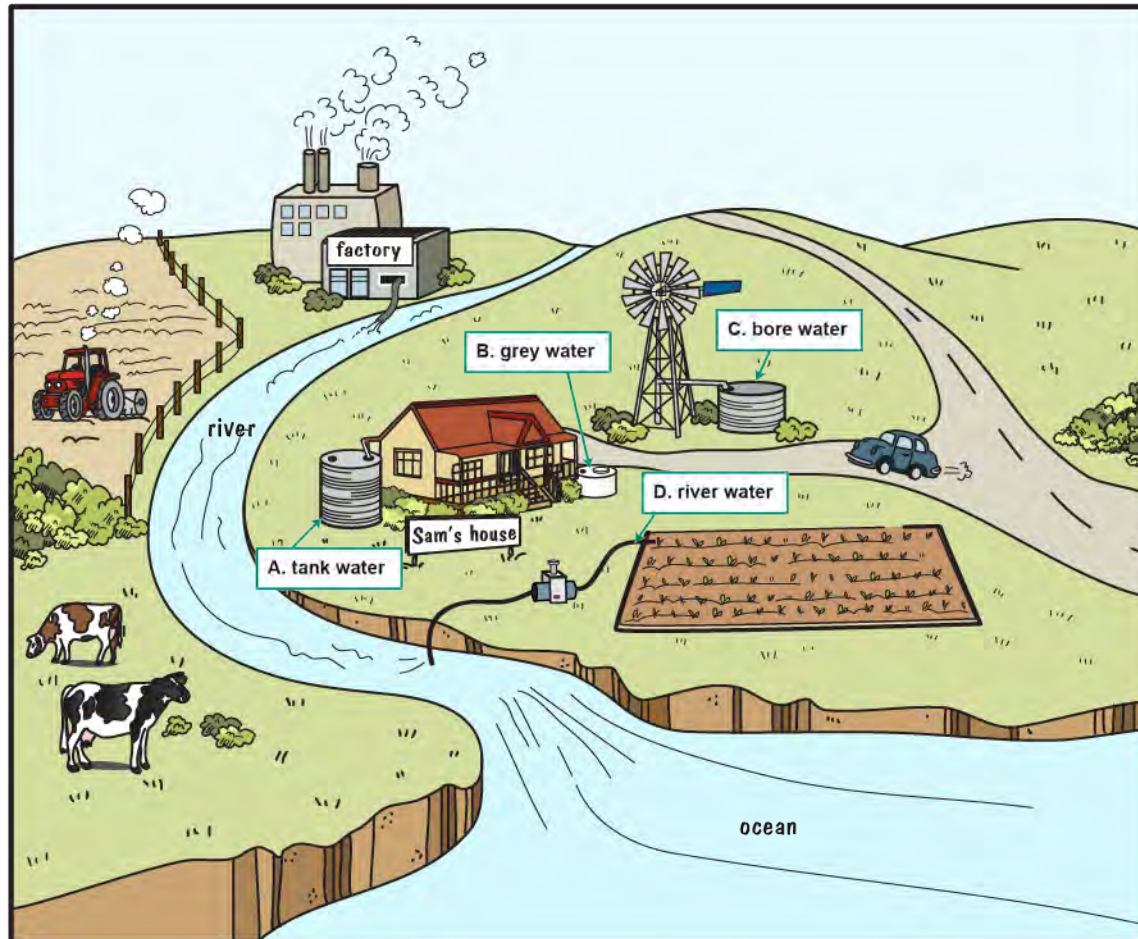


She wants to grow a crop of beans.



# Farmer Sam's farm

Look at the map of Farmer Sam's farm.  
Find four sources of water.



# Farmer Sam's farm

Sam needs your help to investigate this question:

**Which water is the best for growing beans?**



# Section 2.



## Making a prediction

# Water use on Farmer Sam's farm

Where is water used?	Describe how is it used

# List all of the things that could be in a water sample from each source

Water sample	What could be in it?
<b>A. tank</b> 	<p>Is it safe?</p>
<b>B. grey</b> 	<p>Is it safe?</p>

Water sample	What could be in it?
<b>C. bore</b> 	<p>Is it safe?</p>
<b>D. river</b> 	<p>Is it safe?</p>



# Making a prediction

Predict which water will be the best for growing beans.  
Look at your table and the map of Farmer Sam's farm to help your thinking.

I think the ..... water will be best for growing beans.

I think this because

.....  
.....






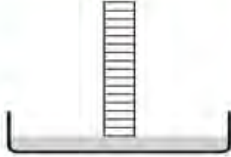


















# **Section 3.**

## **Planning and conducting the investigation**





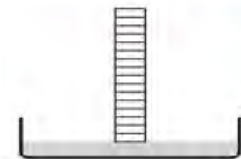



















# Complete the investigation planner

Investigation planner		
Investigation question: <p style="text-align: center;"><b><i>Which water is the best for growing beans?</i></b></p>		
Equipment and materials:		
What will change when doing the investigation?	What will be measured when doing the investigation?	What will stay the same when doing the investigation?
When doing the investigation we will change:	When doing the investigation we will measure:	When doing the investigation we will keep the same:

# Record your observations

Water sample	Day 1	Day 2	Day 3	Day 4	Day 5
<b>A. tank</b> 					
<b>B. grey</b> 					
<b>C. bore</b> 					
<b>D. river</b> 					

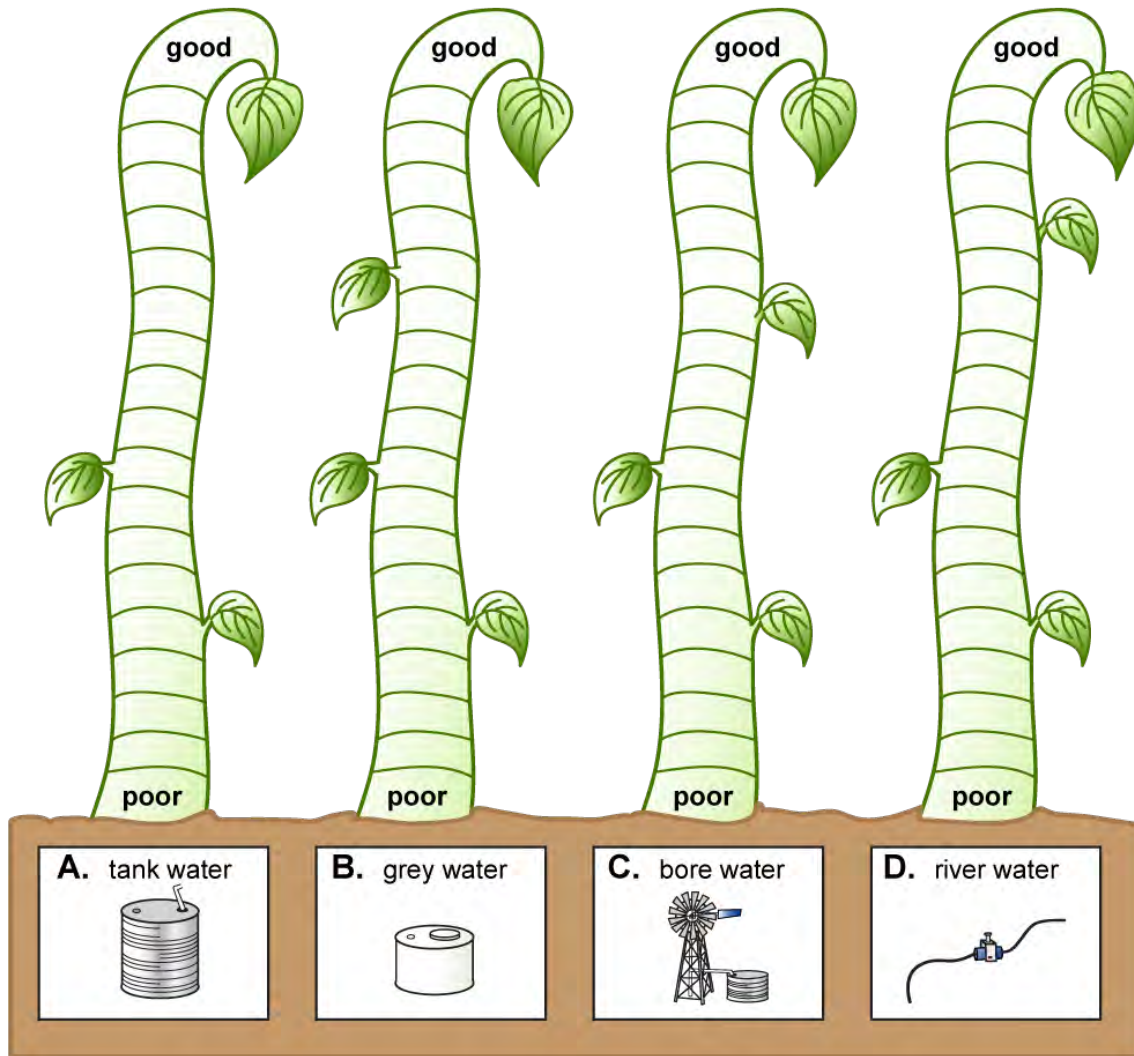
# Record your observations

Water sample	Day 8	Day 9	Day 10	Day 11	Day 12
<b>A. tank</b> 					
<b>B. grey</b> 					
<b>C. bore</b> 					
<b>D. river</b> 					

# Section 4.

## Explaining your results

# Use the scale below to compare how well the beans grew in each type of water



# Compare your observations with your prediction

Which water was the best for growing beans?

.....

Why was it the best water for growing beans?

.....

.....

Look at your prediction in Section 1.

Now look at your findings in Section 3.

Was your prediction correct? (Circle one)    Yes / No