

## Year 2 Science

### How much rain?

#### **Australian Curriculum links: Year 2 Science**

People use science in their daily lives, including when caring for their environment and living things (ACSHE035)

#### **Sustainability cross-curriculum priority**

In this lesson sequence, students participate in a puzzle hunt in the school grounds to find letter clues that lead to the location of a special gift (a rain gauge) related to water. Students then make rain gauges and record rainfall in the school grounds with both the hand-made and commercial rain gauges.

### **Session 1      Puzzle hunt**

#### **Equipment**

For the class

- a commercial rain gauge wrapped as a gift
- other water-related objects such as a tap, showerhead, trigger nozzle, water bottle, raincoat, picture of Whizzy the waterdrop, umbrella or piece of water pipe (optional)
- A3 map of the school grounds
- seven clue cards concealed at various water-related locations around the school

For each student

- post-it notes
- clipboard, paper and pencil

#### **Preparation**

Obtain a commercial rain gauge that students will use throughout the unit, and wrap the gauge as a gift. Find other water-related objects or images to include with the rain gauge. Objects might include a tap, showerhead, trigger nozzle, water bottle, raincoat, a picture of Whizzy the waterdrop, umbrella or piece of water pipe.

Obtain or draw a map of the school grounds showing water-related places where the clues will be hidden. Places might include a water cooler, tree, hose, rainwater tank, sink, and water meter. Ensure that the final clue is a tree, because students won't necessarily think of a tree as a water-related place unless they have additional clues.

Arrange to hide the clue cards and gift prior to the lesson and inform other staff members about the puzzle hunt so that clue cards remain in place until the activity is completed. Prepare clue cards that the class will follow to find the gift. Clue cards could include the number of paces between water points, landmarks close to the water point, description of features such as 'the place where we get water to have a drink after sport', 'where teachers

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make a cup of coffee', 'the big shady tree where we shelter from the sun' or 'the hose in the school vegetable garden'. Each clue card needs a letter from the word 'measure' on the back of it. Prepare a clipboard for each student. Strong card could be used.

Enlarge the waterdrop shape (Resource 1) to A3 size to use in Lesson step 10 and prepare shapes with the following questions as headings:

- What do we use water for?
- Where do we use water?
- How can we use water wisely?
- Where does water come from?
- Where does rain come from?
- How can we save water?
- What else do we know about fresh water?

Decide whether step 10 will be done as a whole class or as a group activity and prepare accordingly. The waterdrops with questions will be added to the display wall.

## Lesson steps

1. Write the word 'vital' on the whiteboard and explain to the students that they will be learning about something vital – which means essential for life.
2. Brainstorm things that students think are vital – including food, air, shelter and water – and record students' responses. Depending on students' responses, it may be necessary to discuss things students suggest are vital but that they could survive without if they had to.
3. Explain to students that they will be learning about water. Give each student three post-it notes and ask them to write or draw an idea about water on each post-it note.
4. Ask students to share their ideas with the class and to place their post-it notes on the whiteboard. You might decide to group students' ideas according to the headings on the waterdrops that are introduced after the puzzle hunt, without explaining how you are grouping the ideas. Students could suggest how the words have been grouped to create an affinity diagram.

Note: An affinity diagram is a tool that organises ideas and data and can be used to organise student ideas after brainstorming. The basic method is to:

1. Record one idea per post-it note.
2. Group ideas that seem to be related until all the post-it notes have been grouped.
5. Show the students the map of the school and explain that they will be going on a puzzle hunt in the school grounds to find something special that they can use during the unit of work. Distribute the A3 map and clipboards to students.
6. Begin with the first clue. As students reach each clue, they mark it on the map so they can retrace their journey. They can refer to the map throughout the unit. Ask students to write or draw the clue on their clipboard sheet and to think about why the clue has been included in the puzzle hunt. The final clue should be found near the tree. Collect the clue cards at each location to use in step 7.
7. When the gift – the rain gauge – is discovered, take it to the classroom and discuss what it is and how it is used.
8. Rearrange the letters on the clue cards to make the word 'measure', and discuss the meaning of the word in the context of the rain gauge.

9. Display the map of the school grounds with the clues and route marked on it and ask students why they think each clue was included in the puzzle hunt. Add students' ideas to the post-it notes from steps 3 and 4 and display on the whiteboard.
10. Display the waterdrop shapes with questions on the display wall and ask students to help sort the post-it notes onto the waterdrops. Ask students to explain how they decided which post-it note belongs on a waterdrop.
11. Review students' initial ideas about 'vital' water and add any new ideas suggested by students.

## **Session 2      Making a rain gauge**

### **Equipment**

For the class

- commercial rain gauge (from the puzzle hunt)
- rainfall figures for a particular location for a twenty-four hour period
- permanent marker
- bottle rain gauge – 500 mL (i.e. pre-made sample bottle)
- 30 cm ruler
- clear adhesive tape

For each group

- plastic bottle, about 500 mL, with flat base if possible
- 'Making a rain gauge' resource sheet (Resource 2)
- 30 cm ruler or 'Rainfall measuring strip' (Resource 3)
- 'Rainfall recording sheet' (Resource 4)
- one permanent marker
- piece of modelling clay
- clear adhesive tape
- insulation tape to cover cut edges of bottles

### **Preparation**

Cut plastic bottles at the place where the top begins to taper so that the top section can be inverted like a funnel into the bottle. A variety of bottles could be used as rain gauges to emphasise the necessity of using a standard means of measuring the amount of rain collected, so that data are accurate and can be compared fairly. Alternatively, if resources and time are limited, construct one bottle gauge for the class. Place tape on cut sections to protect students from sharp edges.

If you can't source a flat-bottomed plastic bottle, pour about two or three centimetres of sand or small pebbles into the bottle. Pour in enough water so that the water level is just above the level of the sand. (You may need to alter the instructions in Resource 2.)

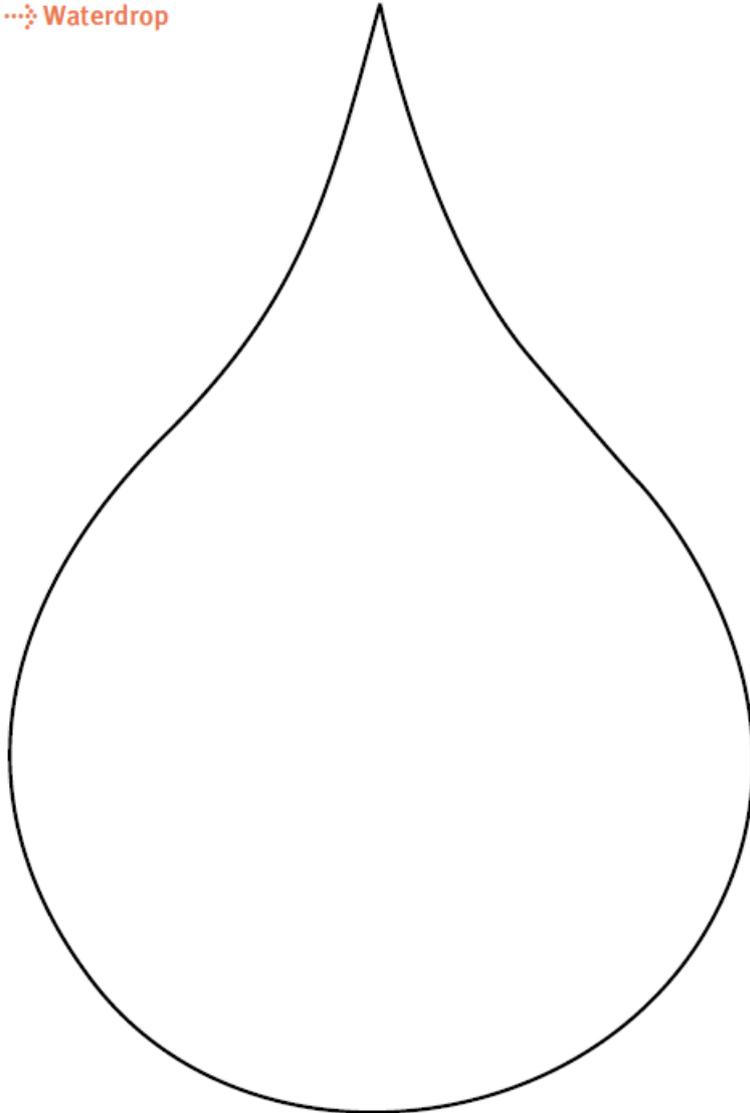
Decide how you will stabilise the bottle. Decide on an open, convenient and safe location to place the rain gauges.

## Lesson steps

1. Review the ideas from the previous lesson and remind students about the special gift they found on the puzzle hunt. Ask students what they already know about rain gauges and measuring rainfall and why it is important to find out about the amount of rainfall. Add students' ideas to the display wall.
2. Ask students to share experiences about measuring and recording rainfall and the use of rainfall data in the media, including weather reports, maps with rainfall figures, and maps showing weather predictions.
3. Show the students a pre-made plastic bottle rain gauge and the commercial rain gauge and ask students to discuss the similarities and differences between the two gauges.
4. Provide materials for each group to construct a rain gauge. Students work in groups and follow a procedural text to construct a rain gauge 'Making a rain gauge' resource sheet (Resource 2).
5. Ask students to suggest where they should place the rain gauges and how they can record the amount of rainfall so that it is easy to compare the amount of rain collected in the bottle gauge with the amount collected in the class gauge. Discuss why the rain gauge should be placed in an open area.
6. Refer to the map of the school from the previous lesson for possible locations, and discuss the advantages and disadvantages of suggested places. Mark the position of the class rain gauges on the map of the school.
7. Show the students a 'Rainfall recording sheet' (Resource 4) and discuss how to use it to record rainfall data.
8. Set up the commercial rain gauge and bottle rain gauges and begin a recording sheet for each rain gauge. Allocate time each day – at the same time if possible – for students to read and record the amount of water in each gauge. Discuss the reasons why it is important to read the rain gauge at the same time each day.
9. Add new vocabulary, additional ideas and further questions to the display wall.  
Optional: Students make and use their own rain gauge at home.

## Resource 1 Waterdrop

Waterdrop



## Resource 2 Making a rain gauge

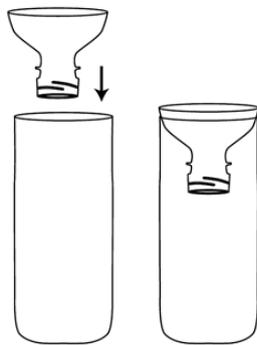
### > Making a rain gauge

#### Materials

- 500 mL flat-bottomed plastic bottle with the top cut off
- top of the bottle to use as a funnel
- waterproof clear tape
- ruler or laminated measuring strip
- permanent marker

#### What to do

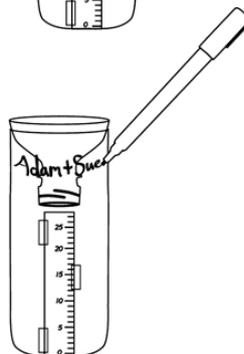
1. Place the funnel in the top of the bottle.



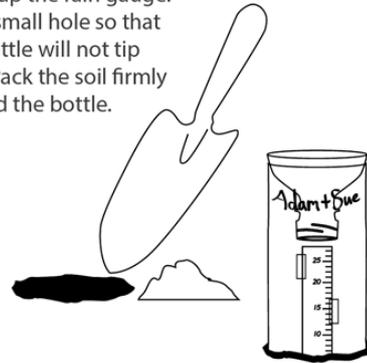
2. Tape the ruler to the side of the bottle, making sure that the '0' on the ruler is level with the base of the bottle.



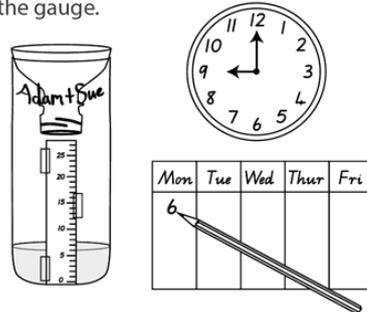
3. Use a permanent marker to write your names on the gauge.



4. Decide on an open place to set up the rain gauge. Dig a small hole so that the bottle will not tip over. Pack the soil firmly around the bottle.



5. Check the rain gauge at the same time each day and record how much water is in the gauge.



6. Empty the gauge each day after the amount of water is recorded.



## Resource 3 Rainfall measuring strip

[Resource 3 CS2866 p13]

