

# Year 4 Mathematics

## Water use survey

### Australian Curriculum links:

#### Year 4 Mathematics

Construct suitable data displays, with and without the use of digital technologies, from given or collected data. Include tables, column graphs and picture graphs where one picture can represent many data values (ACMSP096).

#### Sustainability cross-curriculum priority

In this lesson, students gather data about their different uses of water during the school day using water tickets. They use the water tickets to create a column graph showing the frequency of each water use for the class. Students explore how they can use water more efficiently at school and at home.

## Equipment

For the class

- column graph chart to display class results
- [Bucket loads of savings poster](#)

For each student

- one sheet of water tickets (resource 1)
- bag to store unused tickets and two clips to hold the tickets

## Lesson steps

### First session of the day

1. Ask students how they use water at school. Record their ideas: these could include drinking water, flushing the toilet, washing their hands. Choose one water use (e.g. drinking water) and ask them to estimate how many times they might use water this way in a school day. Discuss how they can gather more accurate data about their water use at school.
2. Explain that one way to gather more accurate data about student water use at school is to conduct a survey. To do this, students will record each time they use water for a particular purpose i.e. drinking, washing hands, flushing the toilet.
3. Water tickets are useful for gathering this data. Display an example of a water ticket on the board (resource 1) and show how to draw a circle around the water use. If their water use is not listed on the ticket they need to write it under the 'other' category and circle it. Explain that they will complete a new water ticket each time they use water.

<sup>1</sup> © Australian Curriculum, Assessment and Reporting Authority (ACARA) 2010 to present, unless otherwise indicated. This material was downloaded from the Australian Curriculum website ([www.australiancurriculum.edu.au](http://www.australiancurriculum.edu.au)) (Website) (accessed [insert date]) and [was][was not] modified. The material is licensed under CC BY 4.0 (<https://creativecommons.org/licenses/by/4.0>). Version updates are tracked on the 'Curriculum version history' page ([www.australiancurriculum.edu.au/Home/CurriculumHistory](http://www.australiancurriculum.edu.au/Home/CurriculumHistory)) of the Australian Curriculum website.

ACARA does not endorse any product that uses the Australian Curriculum or make any representations as to the quality of such products. Any product that uses material published on this website should not be taken to be affiliated with ACARA or have the sponsorship or approval of ACARA. It is up to each person to make their own assessment of the product, taking into account matters including, but not limited to, the version number and the degree to which the materials align with the content descriptions and achievement standards (where relevant). Where there is a claim of alignment, it is important to check that the materials align with the content descriptions and achievement standards (endorsed by all education Ministers), not the elaborations (examples provided by ACARA)



- 
4. Give students their water ticket sheet and the bags, clips or pegs they will use to store unused tickets. Ask them to put an identifying mark (name or initials) on every ticket, cut the sheet into single tickets, then collect them together using the bag, peg or clip.
  5. Explain that the students should use water as normal and stress that it is especially important that they continue to drink regularly throughout the day. Additional tickets can be issued if required.
  6. Ask students to make a prediction of which water use will have the most water tickets and record it in their journals. Share these predictions orally around the class.
  7. Students begin by filling out tickets for any water use between their arrival at school and now. Clip the marked tickets together and place in their bag.
  8. As water is used and after each break, students fill out a ticket showing what the water was used for and put them in their bag.

### **Last session of the day**

9. Explain that students will tally the results of their survey. Demonstrate how to use tally marks to count the water tickets in each category, if necessary.
10. To analyse the data, divide the class into groups and distribute a batch of the water tickets to each group.
11. Ask each group to choose a recorder for their data. The recorder needs to make a list of the water uses on the tickets in their journal.
12. The other members sort the tickets by water use marked and tally the number for each water use. They identify any 'other' water uses recorded on the tickets.
13. The recorder for each group writes down the total number of tickets for each water use.
14. Explain that each group will make a column graph from these tickets. Ask students to suggest what they will need to make a column graph (e.g. two lines that meet as axes, a title, tickets glued into columns, numbers, labels on the columns). Draw an example of a 'water use' column graph on the board modelling the key features.
15. Students can simply line up their water tickets in a column for each use on the floor or the desktops. Alternatively, they could create a column graph by sticking the water tickets on a large sheet of paper, drawing and labelling the axes and adding a title.
16. As a class, collate the water use data from the recorders in a table and draw a column graph showing the frequency of water use for the whole class. Encourage students to think about essential and non-essential uses of water. For instance, you could ask 'If the school water supply was halved for the day because of Council works, how could we change our water use?'
17. Refer to the prediction made at the start of this activity. Ask students how accurate their prediction was. Students draw a conclusion from this activity based on the evidence. For instance, if students identified the evidence: 'We used up a lot of water tickets flushing toilets', the conclusion would be: 'Flushing toilets uses a lot of water in this school'. Ask them to suggest other factors they might need to consider, such as how much water is used for each activity. Students write their conclusions and evidence in their journals.
18. Students discuss how water usage could be reduced at school and at home. For example, the amount of water used in toilet flushing could be reduced by installing dual flush toilets. Display the 'Bucket loads of savings' poster or distribute the brochure. Ask students to identify other water saving ideas they can use at home.

