

WATER CRISIS 2

Whether or not you have plenty of water where you live it is interesting to see how we use water in our homes.

Cape Town in the 2018 dry season has a serious water shortage and water is rationed to 50 litres per person per day, as shown in this poster.

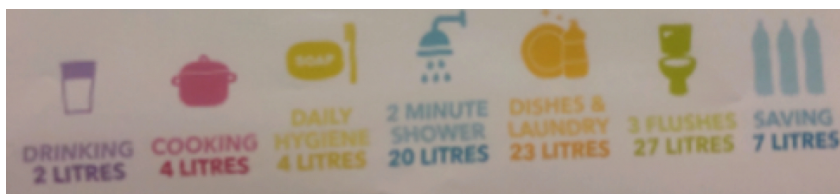


What does the poster tell you? What is the angle for each sector in this pie chart.

Draw a double bar chart to compare this data to the earlier allocation of 87 litres per person per day.

Investigate how your household uses water at home and try to estimate the quantities used per person per day. If possible try to find some data about rainfall and water usage in your home area.

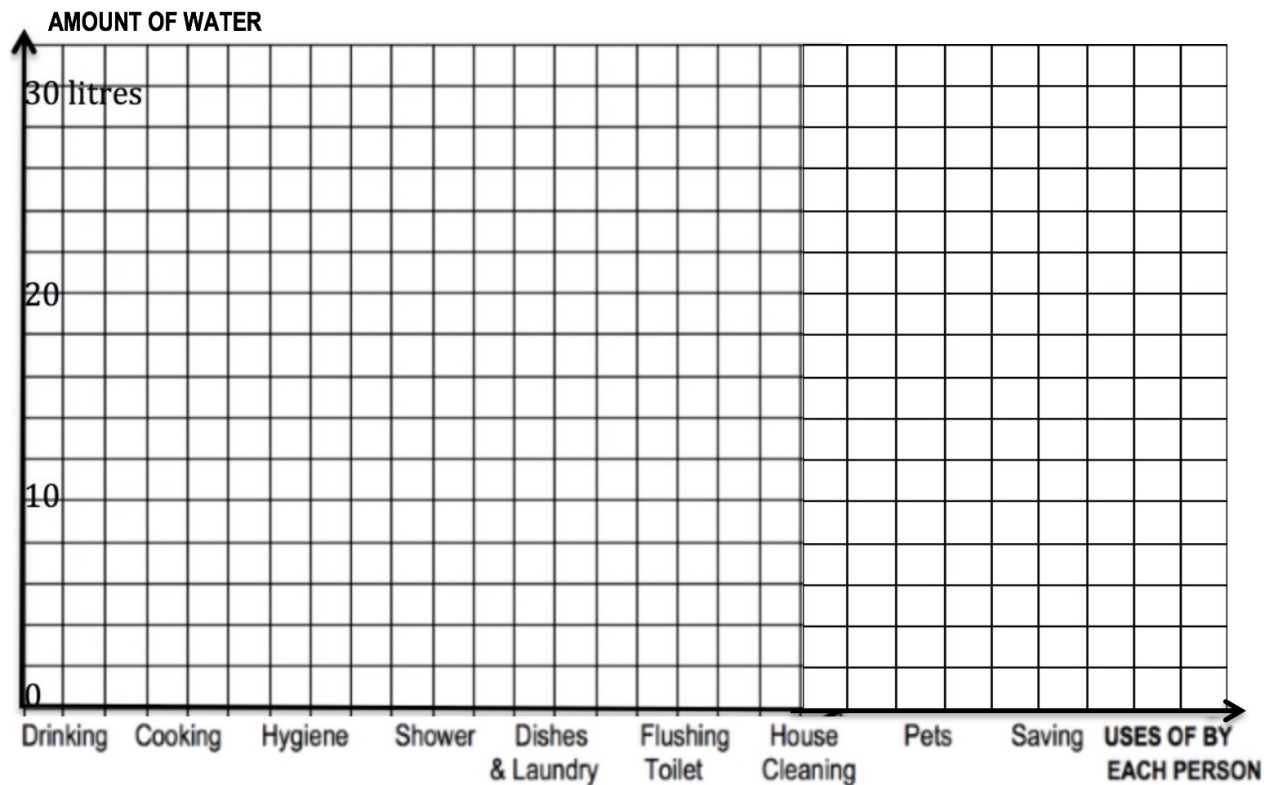
Earlier advice about the ration of 87 litres per person per day.



HELP

To work out the angles in the pie chart write the quantities as fractions (fiftieths) of 360°.

Plot 2 sets of bars in different colours on the grid below, one for the 87 litre water allocation as given in the coloured strip above and the other for the 50 litre allocation as given in the pie chart. Don't forget to include a key to the bar chart.



NEXT

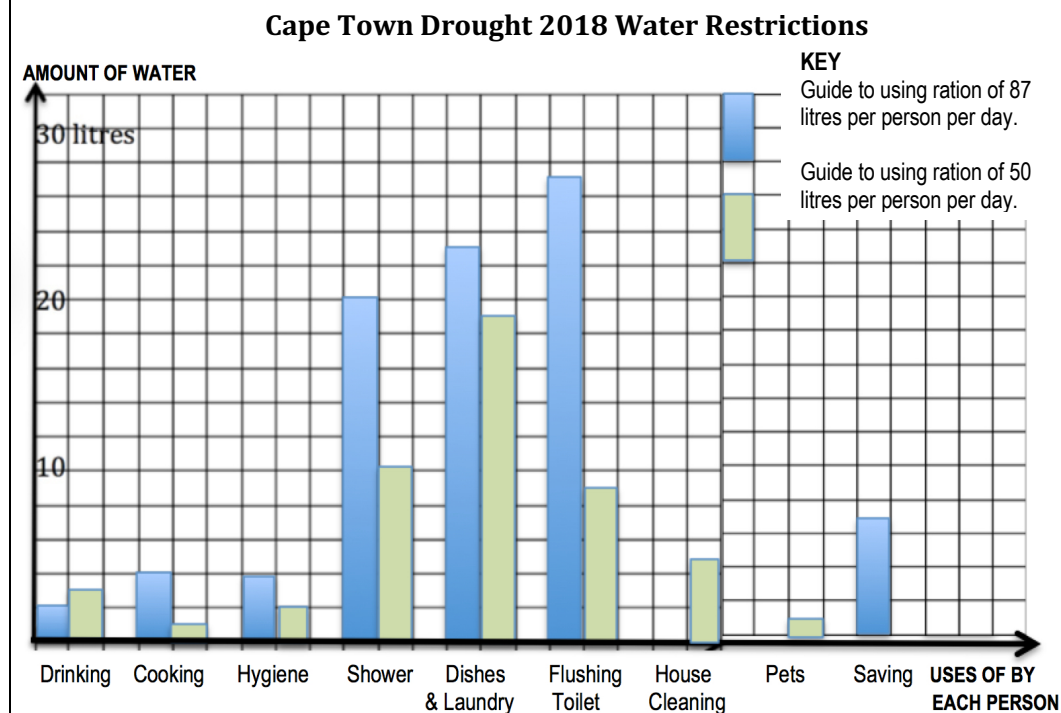
Write a brief report on the 2018 Cape Town Water Crisis and the emergency measures taken suitable for a newspaper or magazine in another country.

Do some research on the internet to find out about ways of producing drinking water from sea water and the advantages and disadvantages of the process.

NOTES FOR TEACHERS

SOLUTION

The angles in the pie chart are cooking 7.2° , pets 7.2° , teeth and hands 14.4° , drinking 21.6° , house cleaning 36° , dishwashing 64.8° , flushing 64.8° , shower 72° , laundry 72° .

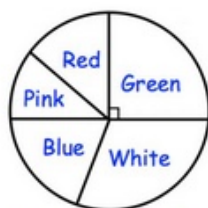


Diagnostic Assessment

This should take about 5–10 minutes.

- Write the question on the board, say to the class:
“Put up 1 finger if you think the answer is A, 2 fingers for B, 3 fingers for C and 4 fingers for D”.
- Notice how the learners responded. Ask a learner who gave answer A to explain why he or she gave that answer and DO NOT say whether it is right or wrong but simply thank the learner for giving the answer.
- Then do the same for answers B, C and D. Try to make sure that learners listen to these reasons and try to decide if their own answer was right or wrong.
- Ask the class again to vote for the right answer by putting up 1, 2, 3 or 4 fingers. Notice if there is a change and who gave right and wrong answers.** It is important for learners to explain the reason for their answer otherwise many learners will just make a guess.
- If the concept is needed for the lesson to follow, explain the right answer or give a remedial task.

The pie chart shows the colours of 20 balls.
 How many blue balls are there?



A
5

B
72

C
6

D
4

Correct answer is D, that is 4 blue balls because the number is just under one quarter of 20.

A. This is one quarter of the pie chart representing 5 green balls

B. This is the angle of the blue sector but the question asks for the number of blue balls.

C. This is more than one quarter and could be the number of white balls.

<https://diagnosticquestions.com>

Why do this activity?

This activity relates to a real situation and to understanding why everyone in Cape Town should be careful not to waste water. Learners are asked to interpret the graphs that they see on posters, on TV and in newspapers and to answer questions and discuss the data.

Learning objectives

In doing this activity students will have an opportunity to:

- draw a simple bar graph;
- analyse data by answering questions related to data categories;
- summarise data verbally and in short written paragraphs.

Generic competences (some suggestions, select from list or write your own)

In doing this activity students will have an opportunity to:

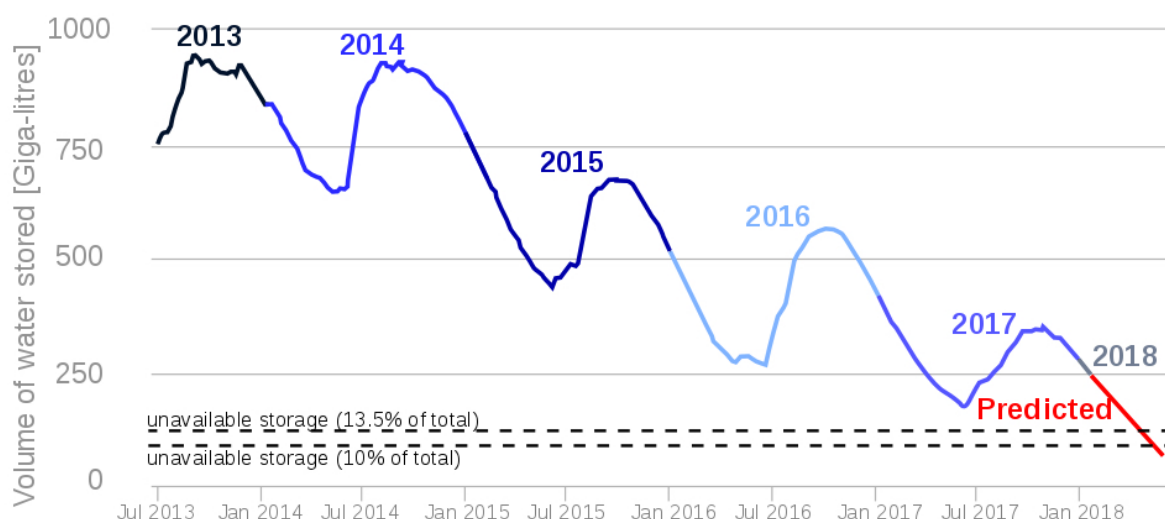
- **think mathematically and flexibly**, reason logically and relate the data available to solving a real life problem;
- **visualize** and develop images to represent concepts and situations;
- **research**, evaluate, select, organise, analyse, and interpret information;
- **develop life skills and appreciation of the need for consideration for others** - showing social responsibility – and acting for the good of the community.

Suggestions for teaching

Take a bottle or jug that holds 1 litre into the lesson to show learners how much water this is and also a mug.

If possible obtain a poster or make a large copy of the poster shown on page 1 and show it to the class.

Ask learners to say what the pie chart shows. Ask questions about why they think there is a problem.



Show learners the graph of the water stored in the dams that supply water to Cape Town and ask them to explain why the graph has the shape with peaks and troughs. If learners do not say anything about rainfall and drought and climate change introduce these concepts.

Then give the learners a copy of the grid on page 1 (or draw it on the board and ask learners to copy it onto squared paper). Ask learners to draw a double bar graph from the data.

Key questions

- Have you labelled the axes on your graph?
- Look at the 10, 20 and 30 litres marks on the vertical scale, how many litres does each square on the grid show?
- Why do you think it is a good idea to have a space between each bar?
- Do you think everyone in the city has taps, running water and flush toilets in their homes?
- Can you think of ways your household could save water?
- How many mugs of tea or coffee can you make with 2 litres?
- Look at this picture. Why do you think the people in this household stand in the baby bath to have a shower? What do you think they use the shower water for?



Follow up

See the activity Drinking Water <https://aiminghigh.aimssec.ac.za/grades-6-to-10-drinking-water/>

Note: The Grades or School Years specified on the AIMING HIGH Website correspond to Grades 4 to 12 in South Africa and the USA, to Years 4 to 12 in the UK and up to Secondary 5 in East Africa. New material will be added for Secondary 6. The mathematics taught in Year 13 (UK) and Secondary 6 (East Africa) is beyond the school curriculum for Grade 12 SA. For resources for teaching A level mathematics see <https://nrich.maths.org/12339>

	Lower Primary or Foundation Phase Age 5 to 9	Upper Primary Age 9 to 11	Lower Secondary Age 11 to 14	Upper Secondary Age 15+
South Africa	Grades R and 1 to 3	Grades 4 to 6	Grades 7 to 9	Grades 10 to 12
USA	Kindergarten and G1 to 3	Grades 4 to 6	Grades 7 to 9	Grades 10 to 12
UK	Reception and Years 1 to 3	Years 4 to 6	Years 7 to 9	Years 10 to 13
East Africa	Nursery and Primary 1 to 3	Primary 4 to 6	Secondary 1 to 3	Secondary 4 to 6