Dŵr Cymru
Welsh Water

Suitable for ages
6–11

Water Efficiency

Teaching and Learning Pack

Welcome to Dŵr Cymru's Water Efficiency Education Pack

This pack is designed to support teachers in guiding pupils through engaging, hands-on activities that explore water use, conservation, and efficiency.

This pack supports the new curriculum in Wales and includes links to Literacy and Numeracy Framework (LNF) skills. The links to the Areas of Learning and Experience, Literacy and Numeracy Framework, Digital Competency Framework and Four Core Purposes are referenced on page 3 and 4.

Pack overview

This resource offers a range of activities to help pupils understand the importance of water efficiency, both locally and globally. With Dŵr Cymru, pupils will learn about the essential role water plays in our lives, and practical ways to reduce waste.

Learning objectives

Through this pack, pupils will:

- Identify everyday water uses and discuss ways to reduce waste.
- Conduct simple water use investigations, including measuring and calculating.
- Explore water-saving methods in different household areas, from the bathroom to the garden.
- Compare water use in Wales with other parts of the world.

Contents

Curriculum links

Areas of Learning and Experience (AoLE)

Science and Technology AoLE

Strand
The world around us, supporting sustainable futures

Link
Pupils explore water's role in natural systems, the importance of conservation, and human impacts on water resources. Activities include a water diary, water detective estimations, and the dripping tap investigation.

Mathematics and Numeracy AoLE

Strand
Understanding quantities, comparisons, and data representation

Link
Activities include daily water usage comparisons, the water audit, and problem-solving questions help pupils develop estimation, measurement, and data analysis skills - linking mathematics with real-world water issues.

Humanities AoLE

Strand
Environmental impact and sustainability

Link
Activities include the Eco-Schools scavenger hunt, reflections on practical workshops, and research tasks help pupils to develop their understanding of the environment, encouraging informed global citizenship.

Health and Wellbeing AoLE

Strand
Physical health and mental well-being

Link
The program emphasises water as essential for health, hygiene, and wellbeing - supporting habits for a healthy lifestyle. Activities include the water diary and home water audit foster self-awareness of daily water use.

Literacy and Numeracy Framework (LNF)

Literacy Skills

Oracy
Class discussions, reflections, and group reflections foster speaking and listening skills as pupils share and evaluate water-saving ideas.

Reading
Comprehension worksheets relating to Dŵr Cymru water efficiency and leakage engineers and informational texts strengthen pupils' abilities to locate, interpret, and understand key details.

Writing
The creation of water-saving posters, reflections, and research tasks promote purposeful writing, encouraging pupils to articulate water efficiency concepts creatively and persuasively.

Numeracy Skills

Estimation and calculation
Activities such as household water usage, the dripping tap investigation, and daily water usage comparisons involve basic arithmetic and data analysis.

Problem-solving
Maths based questions and real-world scenarios around water efficiency encourage pupils to apply numeracy in practical contexts.

Curriculum links

Digital Competence Framework (DCF)

Digital Research and Information Literacy
Pupils practice finding and evaluating online information about water facts, developing skills in digital literacy, critical evaluation, and responsible internet use.

Data Handling
Pupils encouraged use digital tools (such as spreadsheets or data apps) to log and analyse water usage, deepening their understanding of how technology can support environmental goals.

Curriculum for Wales 4 Purposes

Ambitious, capable learners
By engaging in research, estimation, and investigative tasks, pupils develop critical thinking and problem solving skills, particularly through estimating and fact-checking their own assumptions.

Ethical, informed citizens
Activities such as the Eco-Schools scavenger hunt, research into Dŵr Cymru, and home water audits encourage pupils to consider the impact of their actions on local and global communities, fostering awareness and responsibility.

Healthy, confident individuals
Through a focus on water as a resource for health, pupils develop practical habits to support well-being and understand the personal impact of sustainable choices.

Enterprising, creative contributors
Designing posters, completing research, and proposing water-saving solutions in a "water-wise room-by-room" task encourage creative contributions toward a sustainable future.

Teacher guidance

Dŵr Cymru quiz

What do you already know?

This quiz helps assess pupils' knowledge about water use, conservation, and Dŵr Cymru's role. It introduces key concepts for upcoming water efficiency and eco-awareness activities.

Teacher tips

Discuss answers to reinforce understanding and prepare for later activities.

Answers

1. b) Cleans and provides drinking water

   c) Cleans wastewater
2. Example answers:
   - To protect the environment
   - To help during droughts
   - To help future generations
   - To reduce energy use
   - To make sure we have enough to go around
   - To save money
3. A full bath
4. Example answers:
   - Turn the tap off when brushing your teeth
   - Take shorter showers
   - Fix leak in taps and toilets
   - Use a bucket to wash the car instead of a hose
   - Collect rainwater for watering the plants
   - Wash the dishes in a bowl in the sink
   - Have a shallower bath
5. 6-8 cups
6. True
7. Man-made
8. United States of America
9. True
10. True

Worksheet

Dŵr Cymru quiz

What do you already know?

1. **Circle the two main jobs Dŵr Cymru does:**

   a) Teaching swimming lessons

   b) Cleans and provides drinking water

   c) Cleans wastewater

   d) Sells bottled water to supermarkets

2. **Name one reason we should save water:**

   .....

3. **Which one uses more water? Circle your answer:**

   a) A 5 minute shower

   b) A full bath

4. **Name one way we could save water at home:**

   .....

5. **How many cups of water should we drink every day?**

   .....

6. **True or false: a dripping tap could waste up to 16 litres per day?**

   ◯ True ◯ False

7. **Are reservoirs man-made lakes or naturally formed lakes? Circle your answer:**

   a) Man-made

   b) Naturally formed

8. **Which country uses the most amount of water, per person? Circle your answer.**

   a) Wales

   b) Australia

   c) United States of America

9. **True or false: most of the water on planet Earth is salt water?**

   ◯ True ◯ False

10. **True or false: we cannot create new water?**

    ◯ True ◯ False

Reflecting on water use

In this reflection activity, pupils will work independently and collaboratively to identify various ways water is used in daily life. This task encourages critical thinking about water's role in various activities and promotes awareness of the importance of water conservation.

Teacher tips

- Facilitate group discussions to encourage sharing and expand on pupils' ideas.
- Connect to future lessons on water efficiency and conservation efforts.

Answers

- Brushing our teeth
- Washing our hands
- Flushing the toilet
- Drinking it
- Bath
- Shower
- Watering plants
- Cooking
- Washing the car
- Kettle

Reflecting on water use

Brushing my teeth

Record all the ways that we use water at home or in school.

(We have done the first one for you)

Home water efficiency audit

In this home audit activity, pupils will observe and record their family's water habits, such as turning off the tap while brushing teeth or choosing a shower over a bath.

This activity encourages awareness of personal water use and conservation opportunities.

Teacher tips

Discuss class findings
After pupils complete the audit, facilitate a class discussion to compare common habits and highlight areas where water-saving practices could be improved.

Encourage family engagement
Suggest that pupils discuss the audit with family members to promote water-saving habits at home.

Connect to real-life impact
- Reinforce that small changes in water habits can make a big difference.
- Opportunity to incorporate data handling activities.

Home water efficiency audit

Ask a family member to help answer the following questions to see how you and your family use water at home.

Do you...	Yes	No
turn the tap off when brushing your teeth?	☐	☐
put a plug in the basin when washing or shaving?	☐	☐
have a dual flushing toilet?	☐	☐
shower for 4 minutes or less?	☐	☐
wash vegetables in a bowl rather than a running tap?	☐	☐
wash dishes in a bowl rather than a dishwasher?	☐	☐
wait for a full load before turning the dishwasher on?	☐	☐
use the 'half load' setting on your washing machine when you need to?	☐	☐
fill your kettle with just the amount of water you need?	☐	☐
choose to shower instead of a bath?	☐	☐
water your garden in the evening instead of the heat of the day?	☐	☐
use rain water from a water butt to water your garden?	☐	☐
use a watering can rather than a hosepipe to water your garden?	☐	☐
use a bucket and sponge rather than a hose to clean the car?	☐	☐
fix dripping taps immediately?	☐	☐

Teacher guidance

Water detectives

In this activity, pupils will estimate how much water various household items (like a washing machine or shower) use.

The goal is to help pupils develop an initial awareness of water usage in the home before they learn the actual figures in the next activity.

Teacher tips

Encourage reasoned estimates
Have pupils think about which items they believe use the most water, fostering critical thinking about daily water usage.

Discuss initial thoughts
After estimating, ask pupils to share their reasoning.
This can reveal interesting perceptions about water use.

Prepare for the next activity
Let pupils know they'll soon compare their guesses with actual water usage figures, which can prompt curiosity and engagement.

Worksheet

Water detectives
Estimating your homes' water usage

Let's estimate how much water is used for each activity.

Once we've made our guesses, we'll reveal what activities account for most water.

Estimation versus actual

In this activity, pupils will compare their water usage estimates from the previous task with the actual water usage of household items. They will then complete a simple maths exercise to calculate the difference between their estimates and the actual figures, strengthening numeracy and awareness of actual water use.

Teacher tips

Facilitate a comparison discussion
Encourage pupils to reflect on any surprising differences between their estimates and the actual data.

Maths connection
Guide pupils through calculating the differences to reinforce estimation and subtraction skills.

Reinforce awareness
Highlight how this knowledge can support better choices around water usage.

Answers

Activity	Actual usage*
A running tap per minute	10 litres
Drinking water per day per person	2 litres (6-8 cups)
A shower per minute	15 litres
A washing machine	80 litres
A dishwasher on eco mode	15 litres
One toilet flush	6–9 litres
A full bath	80 litres
A full kettle	2 litres
Hose pipe per minute	15 litres
A full watering can	10 litres

*Approximate figures depending on several factors e.g. size of bath.

Average household water usage

Teacher guidance

Water usage diary

For this homework task, pupils will track their household water usage over a few days, including the number of toilet flushes, minutes spent in the shower, and other daily activities. This diary encourages pupils to observe their water habits closely and begin to understand their personal and family water footprint.

Teacher tips

Promote consistent tracking
Encourage pupils to be as accurate as possible in recording each instance to get a realistic picture of daily water use.

Reflect on usage
In class, discuss patterns they noticed and any surprising findings.

Set up goals
Use the diary results to prompt pupils to consider small changes they could make to reduce their water use.

Worksheet

Homework task
My water usage diary

For the next day, keep a water diary to keep track of how much water you use at home. Fill in your results below.

Toilet

Number of times		Amount per flush		Total usage
	x	9 litres	=	litres

Power shower

Minutes		Amount per minute		Total usage
	x	15 litres	=	litres

Bath

Number of times		Amount per bath		Total usage
	x	80 litres	=	litres

Washing hands

Number of times		Amount per time		Total usage
	x	5 litres	=	litres

Washing machine

Number of times		Amount per time		Total usage
	x	80 litres	=	litres

Dishwasher

Number of times		Amount per time		Total usage
	x	15 litres	=	litres

Drinking

Number of glasses		Amount per glass		Total usage
	x	¼ of a litre	=	litres

Add up your total usage to get a rough daily amount	Total usage	litres

Daily water usage

Wales versus the world

In this activity, pupils will compare the average daily water usage in Wales with that of other countries worldwide. This task aims to develop pupils' understanding of global water disparities and encourages them to think critically about water use and efficiency at a global scale.

Teacher tips

Facilitate discussion
Encourage pupils to consider why water usage may vary between countries, covering factors like climate, lifestyle, and access to water.

Highlight efficiency
Discuss how regions with high water usage, like Wales, might reduce consumption and why it's important.

Connect to empathy
Foster a global perspective by discussing how limited water access impacts people in countries with low water availability.

Answers

1. A 5-minute shower (5 x 7 litres per minute)

   + one load of a washing machine (80 litres)

   + two toilet flushes (2 x 9 litres)

   + a running tap for one minute (9 litres)

   + one full kettle (8 litres)

   =150 litres (35 +80+18+9+8=150)

4. These countries are hotter and experience less consistent rainfall. They may also use water for different purposes

Worksheet

Question sheet

Daily water usage – Wales versus the world

1. **Complete the calculation below to work out how many litres an average person in Wales uses every day.**

   A 5-minute shower + one load of a washing machine + two toilet flushes + a running tap for one minute + 1 full kettle = ...

2. **How many people live in your household?** .....

3. **Multiply the number of people in your household by 150 litres**

   Calculation ..... people x 150 litres = ...

It may fall from the sky, but a lot of work and care goes into supplying your taps. In Wales, we have access to a plentiful supply of clean water. However, in some less developed countries average water usage can be as low as 9 litres of water per day. That is the equivalent to a single flush of a toilet here in Wales.

However, there are also countries that use more water than the average person in Wales.

An average person in Sydney, Australia uses 200 litres per day.

An average person in California, America uses 310 litres per day.

4. **Why do you think these regions use more than Wales?**

.....

.....

Research task

Fill in the facts

In this activity, pupils will use school iPads or Chromebooks to research and fill in the blanks of various water-related facts. This task enhances their research skills, encourages information literacy, and reinforces the importance of water in various contexts, from health to the environment.

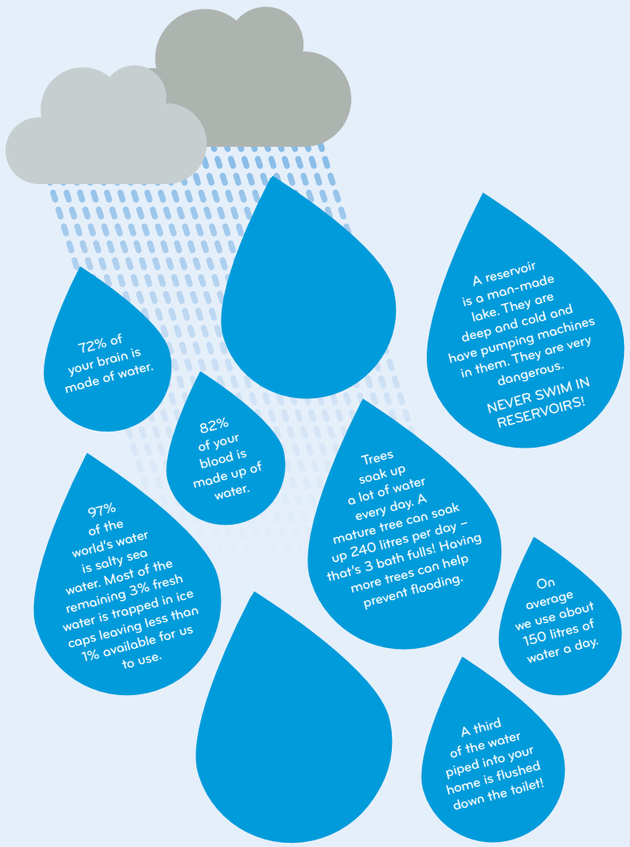
Teacher tips

Introduce research skills
Review effective search techniques with pupils to help them find accurate information quickly.

Encourage collaboration
Allow pupils to work in pairs or small groups to foster discussion and shared learning.

Discuss findings
After completing the task, bring the class together to share interesting facts they discovered, reinforcing the connection between research and understanding water's role in our lives.

Answers
Watery facts

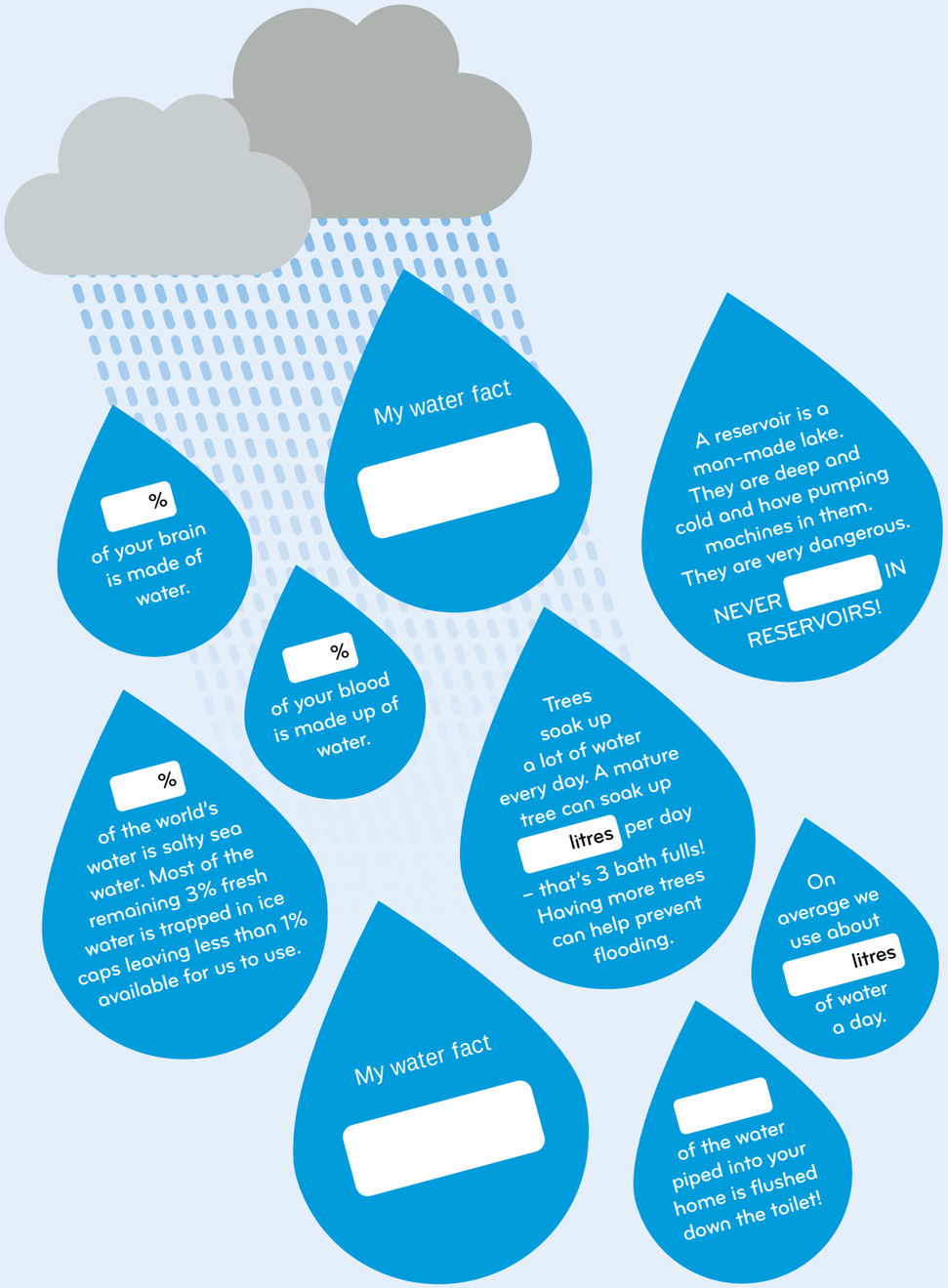


Research task

Fill in the blanks

Worksheet

Use the computer or iPads to find the answers to these watery facts. Fill in the blanks on your sheet with what you discover.



Problem solving with water

In this activity, pupils will solve word problems related to water usage and efficiency. This task helps them apply their maths skills to real-world scenarios, reinforcing the connection between mathematics and environmental awareness.

Teacher tips

Encourage critical thinking
Encourage pupils to read each problem carefully and identify the key information needed to solve it.

Discuss strategies
Discuss various approaches to solving the problems, including estimation and calculation methods.

Connect to real-life contexts
After solving the problems, encourage pupils to share how the scenarios relate to their own water use and the importance of being water efficient.

Answers

Problem solving sheet 1

1. 50
2. 190
3. 140
4. 560
5. 245
6. 315
7. 640
8. 4200
9. a) 24
   b) 168
10. a) 70
    b) 490
    c) 196

Problem solving sheet 2

1. 1323
2. 882
3. 700
4. 245, 560, 315
5. 140, 14
6. 4
7. 2700
8. 6570
9. 1840
10. 285kg
    255kg

Problem solving with water
Worksheet 1

1. A large bucket holds 10 litres of water. If Rhys uses 1 bucket of soapy water, and 4 buckets of clean water, how many litres of water does he use altogether to clean his car?

2. A running hosepipe uses 9 litres of water a minute. Sam is washing his car using 1 bucket of soapy water (10 litres) and a hosepipe. He doesn't turn the hose off when he's not using it, so the water runs down his drive. He takes 20 minutes to wash his car. How much water has he used?

3. Look at your answers from questions 1 and 2.
   How much more water has Sam used compared with Rhys?

4. A bath uses about 80 litres of water. If Megan has a bath every day, how much water does she use in one week?

5. Joe has a shower every day. A 5 minute shower uses about 35 litres of water.
   How many litres of water does Joe use in one week?

6. Look at your answers from questions 4 and 5.
   How much more water does Megan use compared with Joe?

7. One cycle in Vikki's washing machine uses 80 litres. If the washing machine is used twice on Saturday and once every day of the week, how many litres of water are used in one week?

8. A water meter records that a family of four has used 600 litres of water in one day. How much water would the family use in one week?

9. Laura leaves the tap running when she brushes her teeth. Because the tap is running quite slowly she doesn't think it will waste much water.
   The tap is using 6 litres per minute and she brushes her teeth for two minutes.

   a) How much water will Laura waste if she brushes her teeth morning and night?

   b) Can you work out how much water Laura would waste over a whole week?

10. Emily has a 10 minute shower that uses 7 litres of water per minute.

    a) How many litres will she use for one shower?

    b) How many litres would she use if she has a shower every day of the week?

    c) If she had a shower every day that was 4 minutes long, how much water would she use in the shower in one week?

Worksheet

Problem solving
Worksheet 2

1. A standard toilet uses 9 litres of water per flush. In one family the toilet was flushed 21 times in one day. How many litres of water would be flushed down the toilet in one week?

2. Look at your answer to question 1. If the toilet had a Hippo bag in the cistern it would save 3 litres of water per flush. Work out how many litres of water the family would use to flush the toilet if they fitted a Hippo bag.

3. Molly waters her garden using a 10 litre watering can. If she uses 5 cans full of water each evening, and she waters her garden for a fortnight, how much water does she use?

4. Ben has five showers in one week and Kyle has five baths. If the shower uses 35 litres of water and the bath uses 80 litres of water, work out how much water each boy uses and the difference between them.

5. Jac's hosepipe uses 560 litres of water an hour. If he waters his garden for 15 minutes, how many litres of water will he use? A watering can holds 10 litres of water, how many watering cans would Jac have used to do the same amount of watering?

6. A water meter records that a family uses 824 litres of water each day. If each person is using 206 litres of water, how many people live in the family?

7. Jamie has forgotten to turn off his sprinkler and has gone out for the afternoon. His sprinkler uses 600 litres of water an hour. Jamie turned the sprinkler on at 1pm and returned home at 5:30pm and turned off his sprinkler. How much water has the sprinkler used?

8. In a rural village in Uganda, Dembe walks to the water pump every day before school. It takes him an hour to get there. It then takes another hour to walk home. Dembe started doing this on his 6th birthday. Today he is 12. Work out how many hours he has spent carrying water.

9. Dembe's friend Mbaba is 15. She carries a 20 litre container of water from the same water pump. She collects water once a day. Work out how much water she collects in August, September and October.

10. 1 litre of water weighs 1kg. Work out the weight of 3 baths (80 litres per bath) and 5 flushes of the toilet (9 litres per flush). If Jess weighs 30kg, how much more does the water weigh?

Teacher guidance

Water-saving poster

In this activity, pupils will create a poster that highlights the water-saving strategies they identified in the previous 'Waterwise: room by room' task.

This creative project allows pupils to express their understanding of water conservation visually while reinforcing the importance of taking action.

Teacher tips

Encourage creativity
Allow pupils to use various materials and techniques, such as drawings, diagrams, and slogans, to make their posters engaging and informative.

Focus on key messages
Remind pupils to include clear and actionable water-saving tips that they discovered for each room in their homes.

Display and discuss
Plan a display of the posters in the classroom or school to raise awareness about water conservation and encourage other pupils to adopt these practices.

Pupil instructions

Worksheet

Create a water-saving home poster

Now that you've thought of great ways to save water, it's time to use those ideas to make your own water-saving home poster.

1. Draw a house with different rooms. Include a bathroom, kitchen, laundry room, and garden. You can also add other rooms if you want.
2. In each room, draw the water-saving ideas you came up with. For example, in the bathroom, you could promote taking shorter showers or in the garden, show a rainwater collection system.
3. Make your poster colourful and creative to show how important it is to save water.
4. When you're finished, share your poster with the class and explain the water-saving tips you've included in each room.

Let's see how we can make every room a water-saving space!

Waterwise: room by room

In this activity, pupils will analyse each room in their homes and contemplate ways to save water. This task encourages critical thinking about water usage in different contexts and promotes practical solutions for conservation.

Teacher tips

Guide room analysis
Encourage pupils to consider various aspects of each room, such as bathrooms, kitchens, and laundry areas, discussing specific water usage in each space.

Promote creative solutions
Challenge pupils to think creatively about how to reduce water use, such as using less water for showers or fixing leaks.

Share ideas
After reflecting, have pupils share their suggestions with the class, fostering a collaborative environment focused on water conservation.

Room by room answers

Bathroom
- Turn the tap off when brushing teeth/washing hands
- Shorter showers
- Baths less frequently
- Shallower baths
- Fixing leaks
- Water saving devices in the shower, bath or toilet

Kitchen
- Using a bowl to wash the dishes
- Dishwasher on eco mode
- Run full loads of the dishwasher

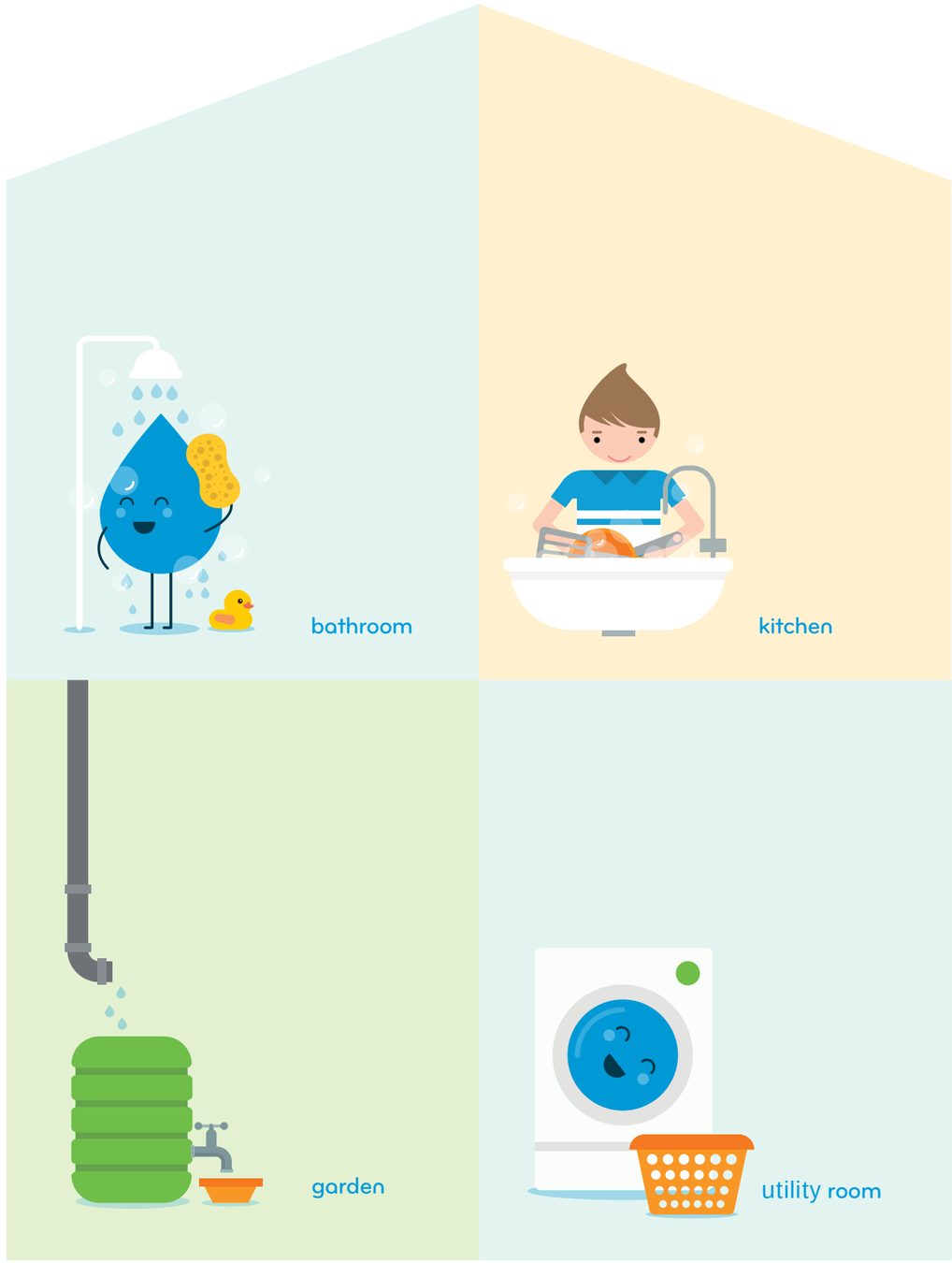
Utility room
- Run full loads of the washing machine
- Eco mode

Garden
- Water the plants early or late at night
- Use a water butt
- Use a watering can instead of a hose
- Bucket to wash the car instead of a hose
- Avoid sprinklers

Worksheet

Waterwise: room by room activity

Look at the different rooms and write down the ways we could save water in each one.



Saving water at home and school

In this activity, pupils will learn about the Cartref Team and their role in helping homes save water by providing and installing water-saving devices, like efficient shower heads. After an introduction to the devices, pupils will complete maths questions based on real-world water savings, such as calculating reductions in water usage when using specific devices.

Teacher tips

Introduce the cartref team
Explain the cartref team's mission to help households save water through practical solutions, like shower heads, tap inserts, and Save-a-flush bags.

Discuss each device
Briefly describe how each device works and its impact on water savings. This gives context to the maths problems.

Maths practice with real-world application
Guide pupils through the water-saving calculations, emphasising that the skills they're using relate directly to practical, everyday water efficiency efforts.

Encourage discussion
After the maths questions, discuss why water-saving devices matter and how small adjustments at home can lead to significant savings over time.

Answers

1. 32

2. 90

3. 10

4. 3

5. Precise and controlled watering to prevent wastage.

Additional questions
Answers should show evidence of thinking and reasoning skills.

Saving water at home and school

Meet the Cartref Team

The Cartref Team from Dŵr Cymru is a group of friendly colleagues who help families and schools learn how to save water. They visit homes and schools for free, bringing special tools to help people save water. This can include things like fixing leaky taps, putting in devices to save water in showers and toilets, and giving advice on how to use less water in the garden.

Let's explore some of the tools they could install to save water:

1. Shower heads
A special shower head reduces the water flow from 15 litres per minute to 7 litres per minute.

Question:
Approximately how much water would you save in a 4-minute shower with this shower head?

(Hint: First, find how much water each shower head uses in 4 minutes, then subtract to find the difference.)

2. Shower timers
Using a 4-minute sand timer helps people take shorter showers. Changing from a 10-minute shower to a 4-minute shower can save a lot of water.

Question:
If a 10-minute shower uses 150 litres of water, how much water does a 4-minute shower use with a regular shower head (15 litres per minute)?

(Hint: Multiply the flow rate by the time for each shower.)

3. Flush bags
These bags go inside the toilet and save about 1 litre of water each time you flush.

Question:
If a household flushes 10 times in one day, how much water do they save by using the flush bag?

(Hint: Multiply the water saved per flush by the number of flushes.)

4. Tap aerators
Tap aerators mix air with water, reducing the water flow by half.

Question:
If a tap usually uses 6 litres of water per minute, how much water does it use per minute with an aerator?

(Hint: Divide the regular flow rate by 2. Round up to the nearest whole number.)

5. Hose guns
A hose gun has a trigger that stops water flow when it's not being used.

Question:
Why do you think a hose gun could save water compared to a regular hose?

Additional questions

a) Which tool do you think will save the most water and why?

b) If you used all these tools every day, would you save a little or a lot of water? Why?

c) Why is it important to save water?

d) Can you think of other ways to save water at home?

e) Share your ideas with a friend or family member!

Create your own 'Cartref' handout

In this creative activity, pupils will design a handout to encourage households to book a visit from the Dŵr Cymru Cartref Team of water efficiency engineers. This task allows pupils to apply their understanding of water-saving devices and their benefits, while practicing persuasive writing and design skills.

Teacher tips

Encourage key messages
Remind pupils to highlight the benefits of Cartref visits, such as saving water and reducing bills.

Focus on persuasion
Guide pupils to use persuasive language and eye-catching design to make the handout appealing.

Share and display
Consider displaying the handouts around school to promote water-saving awareness.

See the examples below:

Create your own Cartref handout

Now that you know all about the innovative ways the Cartref Team from Dŵr Cymru helps us save water, it's time to put that knowledge to work!

Imagine you are part of the Cartref Team, and your job is to make a handout that encourages families and schools to book a free water-saving visit.

What should you include in your handout?

Think about what people need to know:

Who the Cartref Team is
Explain that the Cartref Team are water-saving experts who help people reduce water waste for free.

Why saving water is important
You could add some reasons, like helping the environment or making sure there's enough water for everyone.

The tools they use
Choose a few of the water-saving tools you've learned about (like shower timers, tap aerators, or hose guns) and explain how they help save water.

How a visit can help
Let people know that the Cartref Team can visit their homes or schools to install these tools, fix small leaks, and give tips on saving water.

How to sign up
Encourage people to sign up for a Cartref visit and start saving water.

Make it eye-catching!
Add some creativity to your handout:

- Use bright colours, big titles, and pictures of the water-saving tools.
- Add a fun slogan like "Save water with Cartref – Every drop counts!"
- Make it friendly and welcoming so people are excited to learn more.

When you're finished, share your handout with your class to help spread the word about the Cartref Team and their water-saving mission!

Eco-Schools scavenger hunt and action plan

Year 3 and Year 4 research task

This Eco-Schools task focuses on water efficiency as part of the broader Eco-Schools programme, helping pupils explore the importance of water efficiency in creating a more sustainable school environment. The activities align with Eco-Schools goals by fostering practical environmental awareness and encouraging actionable steps within the school and at home.

Teacher tips

Introduce Eco-Schools goals
Explain the Eco-Schools programme, emphasising how water efficiency supports sustainability and eco-friendly practices within the school.

Encourage practical conservation
Have pupils reflect on specific water-saving actions they can apply within the school, such as checking for leaky taps, conserving water in restrooms, and creating water-saving reminders.

Integrate water efficiency activities
Link the Eco-Schools task to other classroom activities, such as water audits, water diaries, and research tasks on water usage. This reinforces practical skills, like observation, data collection, and problem-solving.

Create eco-committees
Encourage pupils to form groups or committees to monitor and promote water efficiency around the school, supporting a hands-on approach to environmental responsibility.

Celebrate and display
Showcase pupil ideas, posters, and findings in a central school location to inspire others and increase visibility for the Eco-Schools programme.

Eco-Schools scavenger hunt and action plan

Scavenger hunt

Task: Divide pupils into small groups and give each group a list of eco-friendly practices to look for around the school. Their mission is to check off any that they find and note any areas that could use improvement.

Scavenger hunt list examples:

- **Recycling bins**
  Are there recycling bins in classrooms, hallways, and the lunch area?
- **Water-saving devices**
  Check for taps that automatically shut off or signs reminding pupils to turn off the tap.
- **Energy-saving features**
  Look for light switches turned off in empty rooms or energy-saving light bulbs.
- **Green spaces**
  Note any green spaces, gardens, or trees around the school.
- **Waste reduction**
  Are there compost bins or initiatives to reduce food waste?

Reflection questions

After the hunt, each group reflects on:

- Which eco-friendly practices are already in place?
- What could be improved to make the school eco-friendlier?

Eco-action plan

Goal: Each group selects one area from the scavenger hunt list that could be improved and discusses an "Eco-action plan."

Eco-action plan steps:

- **Identify the problem**
  Describe the eco-friendly practice they'd like to improve.
- **Consider solutions**
  Think of at least two ways they could make this area eco-friendlier (e.g. adding signs to save water, creating a water-saving superhero character for reminders, or starting a recycling challenge).
- **Create a simple proposal**
  Write or draw a simple proposal explaining their chosen improvement and how it could help the school move closer to the next Eco-Schools award.

Sharing and voting

Presentation
Each group presents their eco-action plan to the class, explaining the problem they noticed, their solution, and how it helps achieve Eco-Schools goals.

Class vote
As a class, vote on one or two action plans to focus on as a school project. Discuss how these ideas could help the school on its journey toward an Eco-Schools award.

Follow-up activity

Water efficiency superstars
Once an action plan is chosen, pupils can be "Water efficiency superstars" by tracking their progress, celebrating small achievements, and reporting on their water-saving results to help the school reach its Eco-Schools goals.

Worksheet

Comprehension text for pupils

Dŵr Cymru: our saving water campaign

Dŵr Cymru works hard every day to bring clean water to homes, schools, and businesses all over Wales. We need water to drink, cook, wash, and play. However, Dŵr Cymru wants to help encourage people to use the water they need, but not waste it.

Every drop of water is important, and being water efficient could help save money on bills, protect the environment, and ensure sufficient water supply, especially during periods of high demand or dry weather.

How does Dŵr Cymru save water?

Dŵr Cymru has many clever ways to save water. They work hard to repair pipes as quickly as possible to stop leaks, so water isn't lost before it gets to our homes. They also visit homes to help fix leaky loos and carry out water efficiency audits, free of charge. They also visit schools to teach children how to save water by turning off taps when brushing teeth and using a full load when washing clothes.

What can we do to save water at home?

Here are some easy ways to save water at home:

1. Turn off the tap while brushing your teeth.
2. Take shorter showers instead of long baths.
3. Collect rainwater in the garden to water plants.
4. Only use the washing machine or dishwasher when they're full.

Each small action can help save lots of water!

Comprehension questions for pupils

Worksheet

1. Why is water important for us? Circle the correct answer

a) It's fun to splash

b) We use it to drink, wash, and cook

c) It makes things wet

2. What does Dŵr Cymru do to save water before it reaches homes?

.....

3. Why should people in Wales save water even though it rains a lot?

.....

4. List two ways Dŵr Cymru can help customers to save water.

.....

.....

5. Name one way to save water in the bathroom and one way in the garden.

.....

.....

These activities are linked to the Dŵr Cymru school outreach workshops.
To book a school visit from the team, visit **dwrcymru.com/education**

Dripping tap investigation

In this hands-on investigation, pupils will measure how much water a dripping tap wastes over a set period. This activity provides a concrete demonstration of how small water leaks can add up to significant waste, highlighting the importance of fixing leaks as a simple conservation practice.

Teacher tips

Encourage observation
Have pupils carefully observe and measure water collection over time, emphasising accuracy.

Discuss results
After measuring, discuss the potential impact if this dripping continued for a day, a week, or a month to illustrate cumulative waste.

Connect to conservation
Reinforce that fixing small leaks is an easy and effective way to save water.

Conclusion

Discuss as a class how even a small drip can waste a lot of water over time. Encourage pupils to think of ways to save water and the importance of fixing leaks.

This investigation will help pupils understand the real impact of a simple leak and reinforce the idea of water efficiency.

Top tip

Did you know that a leaking toilet can waste up to 8,000 litres of water a day! Suggest to your pupils, if they think they have a leaking toilet to let their parents or guardians know, as Dŵr Cymru have a scheme on their website where they can fix leaky toilets free of charge.

dwrcymru.com/cartref

Worksheet

Dripping tap investigation

How much water can a dripping tap waste?

Let's investigate how much water a dripping tap wastes and understand why it's important to stop leaks.

Equipment needed:
- Tap
- Small container or cup
- Litre jug
- Timer
- Calculator

Instructions

1. **Set up the drip**
   Place the container under a tap. Slowly turn the tap on so that it's dripping, with about one drip every second.

2. **Start timing**
   Using the timer, measure how much water collects in 1 minute.

3. **Measure the water**
   After 1 minute, pour the water from the container into the measuring jug to find out how much water has been collected.

4. **Record the results**
   Write down the amount of water collected in 1 minute below:

   .....ml per minute

5. **Calculate how much would drip in an hour**
   Use your 1-minute measurement to figure out how much water would drip in an hour (multiply by 60) and record below:

   .....ml per hour

6. **Calculate how much would drip in a whole day**
   Multiply your 1-hour measurement by 24

   .....ml per day

7. **Convert your ml measurement into litres**
   Take your ml per day measurement and divide by 1,000 (because there are 1,000ml in a litre)

   ..... litres wasted per day for a dripping tap

8. **Discuss your findings**
   - How much water did the dripping tap waste in a day?
   - Why do you think it's important to fix a dripping tap?
   - What could we do with the water that would be wasted?

These activities are linked to the Dŵr Cymru school outreach workshops. To book a school visit from the team, visit **dwrcymru.com/education**

Practical workshop reflection

In this reflection activity, pupils will complete a worksheet to summarise what they learned from a hands-on session. They will answer questions about water-saving items, such as Hippo bags, and identify various household items along with their water usage. This task encourages pupils to consolidate their learning and think critically about practical ways to save water.

Teacher tips

Encourage thoughtful responses
Remind pupils to think back to the practical session and consider what surprised them or stood out as useful information.

Promote recall of key facts
Have pupils identify specific items they learned about, along with their water-saving potential, to reinforce memory and understanding.

Discuss practical applications
Use this reflection as a chance to discuss how they might use these water-saving items at home and how small changes can make a big difference.

Answers

1. A hippo bag is a water saving device fitted into the cistern which saves water for the next flush.
2. a) 5 litres
   b) 2-3 litres
   c) 9 litres
   d) 6 litres
   e) 54 litres
   f) 36 litres
   g) 18 litres

Kitchen items and usage

- Tap: 9 litres per minute
- Eco mode dishwasher: 15 litres
- Washing the dishes in the sink: 12 litres
- Washing the dishes in a bowl: 8 litres
- Washing machine: 80 litres
- Kettle: 2 litres

Bathroom items and usage

- 4 minute shower: 28 litres
- 5 minute shower: 35 litres
- 5 minute power shower: 80 litres
- Bath: 80 litres
- Leaving the tap on when brushing your teeth: 9 litres per minute
- Brushing your teeth with a cup: half a litre
- Toilet flush without a hippo bag: 9 litres
- Toilet flush with hippo bag: 6 litres

Garden items and usage

- Watering can: 10 litres
- Watering the garden with a hose: 9 litres per minute
- Cleaning a car with a hose pipe: 9 litres per minute
- Sprinkler: 500-1,000 litres per hour
- Water butt: 0 litres

4. Examples may include: communication, listening, thinking, number, reading, team-working, problem solving, planning, leadership, co-operation.

Practical workshop reflection

Now you've received a practical, hands-on workshop all about water efficiency, let's take some time to reflect on what you have learnt.

1. Explain what a Hippo bag is and how it helps save water.

.....

2. Calculating water savings.
   In the workshop, you learnt about water usage with and without a Hippo Bag.

a) How much water does a Hippo Bag hold?

b) How much water does a Hippo Bag save?

c) How much does a toilet flush without a Hippo Bag use?

d) How much water does a toilet flush with a Hippo Bag use?

e) If we went to the toilet 6 times a day using a toilet without a Hippo bag, how much water would be use?

f) If we went to the toilet 6 times a day using a toilet with a Hippo bag, how much water would we use?

g) So, how much water could be saved in a day using a Hippo bag (e take away f)?

3. In the second part of the workshop, we explored the different items that use water in our homes. Write down one item from each of the three categories and how much water that item uses.

	Name of item	Water usage
Kitchen		
Bathroom		
Garden		

4. List the skills you and your team used during the workshop

.....

.....

.....

Water Battle reflection

In this activity, pupils reflect on a water efficiency workshop where they played Water Battle, an interactive game on iPads and completed a "spot the difference" exercise between two homes (one water-efficient and one not). They will answer questions based on the game, reinforcing the water-saving techniques they learned.

Teacher tips

Encourage attention to detail

Remind pupils to look closely for small differences between the two homes in the "spot the difference" exercise, reinforcing specific water-saving practices.

Connect game learning to real life

Ask pupils to reflect on what they learned in the game and how those lessons apply to water efficiency in their own homes.

Discuss key facts

After they complete the reflection, go over the answers together, reinforcing the importance of each water-saving tip highlighted in the game.

Following the quiz includes a parent guide to download and play the game at home with prompts to encourage discussion of progress in class.

Water Battle quiz answers

1. False
Some leaks inside our houses are hidden, so it's worth looking closely, such as in the bowl of your toilet!

2. True
Although having a water meter improves our insight into how much water we use, most UK homes do not have a water meter installed.

3. False
Watering the leaves doesn't do much good, try to water as close to the soil as possible.

4. True
It is nice to be clean, but we can easily achieve this in under 4 minutes. Get a shower timer to time how long you spend in the shower and to figure out a way you can reduce the time.

5. True
A water butt is a great way to collect rainwater for use in the garden and it's free water, costs us nothing!

6. False
Only fill the kettle with the water you need, otherwise this wastes water and electricity.

7. True
Don't leave the tap running when brushing your teeth. Turning off the tap while brushing could save approximately 6,000 litres of water a year.

8. True
Using a washing up bowl in your sink can cut your usage significantly.

Wattle Battle quiz

Worksheet

1. If you had a leak in your home, you would easily notice it. True or False?

   ◯ True ◯ False

2. Most homes in the UK do not have a water meter installed. True or False?

   ◯ True ◯ False

3. It is usually good to water the leaves of your plant as well as on the soil. True or False?

   ◯ True ◯ False

4. Knocking a minute off your shower will save about 10 litres each time and will also cut your energy bills too. True or False?

   ◯ True ◯ False

5. Water butts can hold and collect up to 200 litres of rainwater which means that this is free water for use in the garden. True or False?

   ◯ True ◯ False

6. We should fill our kettles all the way to the top even if we only need to use a little bit. True or False?

   ◯ True ◯ False

7. When brushing our teeth we should turn our tap off as this will allow us to save 18L of water each time. True or false?

   ◯ True ◯ False

8. We should try and use a washing up bowl or plug when doing the washing up. True or False?

   ◯ True ◯ False

Worksheet

Water Battle reflection

As you've received our practical 'Water Battle' session, let's take some time to reflect on what you have learnt. Can you spot the different ways these two teams use water differently and circle good ways to save water.

Spot the difference

Which house is the most water efficient A or B?

Worksheet

Home task
Water Battle

Following our brief introduction to Water Battle in school, we'd love for pupils to download the game and start playing!

Dear Parents/Guardians,

Today your child has joined us in a digital water efficiency lesson. In the lesson we played 'Water Battle' a free educational game for mobile and tablet.

We invite you and your child to play Water Battle at home.

What is Water Battle?

Water Battle helps children understand the importance of water conservation by turning it into a fun and educational game, it teaches children the value of using water wisely and the positive impact it can have for generations to come.

Who is this app designed for?

Children ages 6-13
Designed with a younger audience in mind, the app is played by children, who help small creatures survive in a world threatened by water whilst teaching young minds about responsible water usage and water saving techniques.

Parents and guardians
Participate alongside your child, earn points and track the progress of your child's journey.

How is Water Battle played?

The aim of the app is for children to earn points by completing levels, while their parents or guardians participate by logging household water consumption.

Parents or guardians can also earn points, helping their children progress faster, by making small adjustments to their daily water habits.

Together, families learn about sustainable water use, earn more points, and work toward winning the Water Battle.

Scan the QR code to **download the Water Battle app today**.

Google Play App Store

grendel games

Dŵr Cymru Welsh Water

dwrcymru.com/cartref

Worksheet

Dŵr Cymru quiz

What do you remember about water efficiency?

Now that we've completed our learning pack, let's take a quiz to see how much we've learned about water efficiency.

1. **Circle the two main jobs Dŵr Cymru does:**

a) Teaching swimming lessons

b) Cleans and provides drinking water

c) Cleans wastewater

d) Supplies bottled water to homes

2. **Name one reason we should save water:**

.....

3. **Which one uses more water? Circle your answer:**

a) A 5-minute shower

b) A full bath

4. **Name one way we could save water at home:**

.....

5. **How many cups of water should we drink every day?**

.....

6. **True or false: a dripping tap could waste up to 16 litres per day?**

◯ True ◯ False

7. **Are reservoirs human-made lakes or naturally formed lakes? Circle your answer.**

a) Human-made

b) Naturally formed

8. **Which country uses the most amount of water? Circle your answer.**

a) Wales

b) Australia

c) United States of America

9. **True or false: most of the water on planet Earth is salt water?**

◯ True ◯ False

10. **True or false: we cannot create new water?**

◯ True ◯ False

Dŵr Cymru
Welsh Water