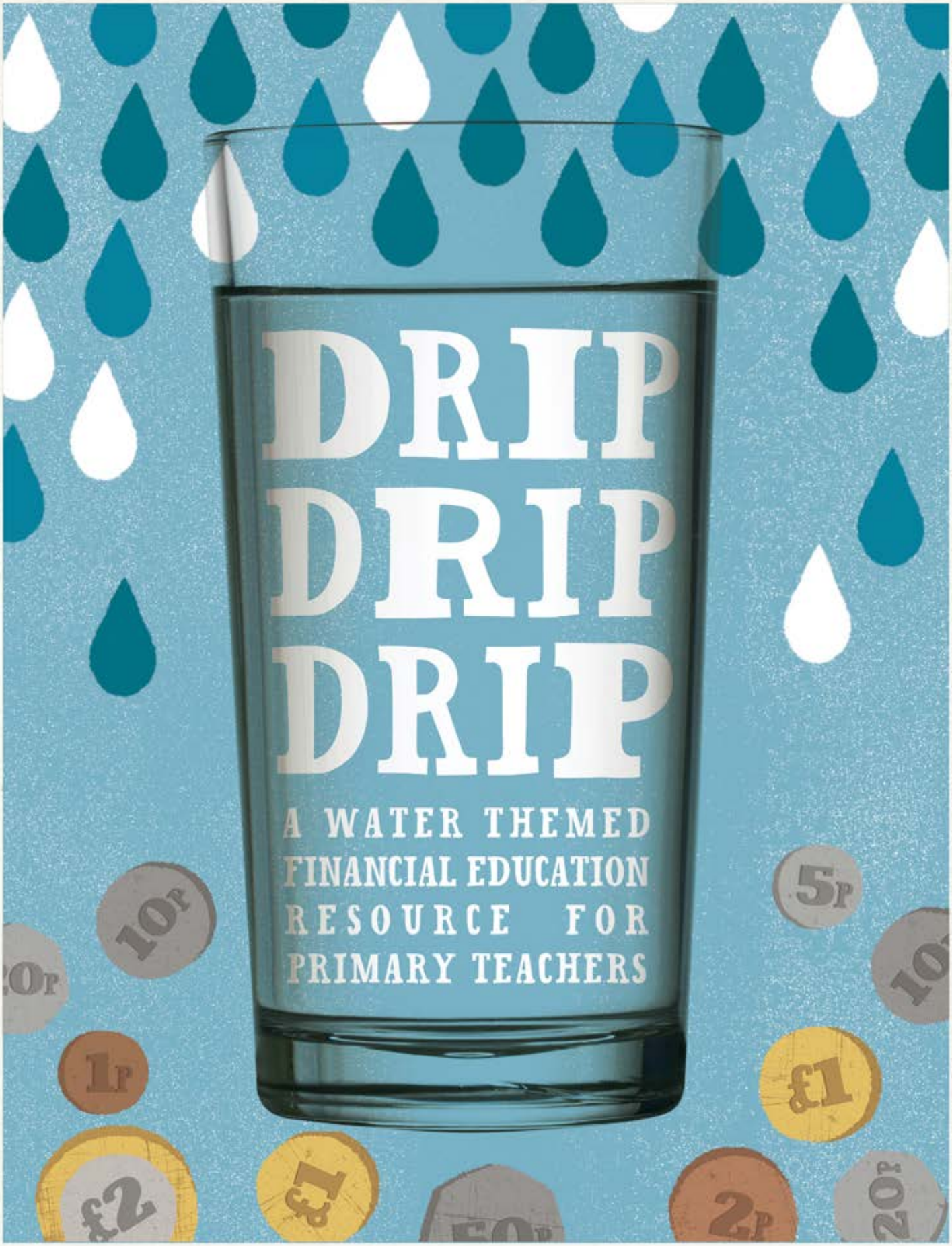

pfeg
Personal Finance
Education Group

Essex Water
a YTL company

INTRODUCTION

WATER IS ONE OF THE MOST BASIC NEEDS IN LIFE – WE USE IT EVERYDAY FOR A RANGE OF ACTIVITIES. SIMILARLY, FOR THE MAJORITY OF PEOPLE, MONEY IS ALSO A DAILY NECESSITY. THE USE OF WATER HAS BOTH AN ENVIRONMENTAL AND FINANCIAL COST.

This resource, produced by **pfeg** and made possible by Wessex Water, aims to explore these links with your primary pupils, making young people aware of the true value of water and the impact that efficient water use can also have on our money.

FINANCIAL EDUCATION

Being financially capable means having the confidence, skills and knowledge we need to manage our money well, now and in the future. The development of financial capability is life-long and includes the ability to adapt our approach to money management in response to changes in our personal and financial circumstances.

Financial education in schools is a planned programme of learning opportunities and experiences designed to increase the financial capability of all pupils, from every social and cultural background. **pfeg**'s Financial Education Planning Frameworks (www.pfeg.org/PlanningFrameworks) set out the key areas of knowledge, skills and attitudes for different age ranges, across four core themes:

- how to manage money;
- becoming a critical consumer;
- managing risks and emotions associated with money; and
- understanding the important role money plays in our lives.

Learning is most effective when teaching contexts;

- focus on financial topics that are meaningful and relevant to children and young people;
- are linked to real life through the use of simulations and case studies; and
- use active learning strategies, not text books or worksheets.

Within primary schools, financial education has proved most successful when integrated with topics already being delivered. This theme based approach to learning allows financial education to be delivered alongside, and provide appropriate contexts for, other curriculum areas. To find out more about developing and delivering financial education within your school why not take a look at **pfeg**'s four planning and teaching videos at www.pfeg.org/planning-teaching.

When delivering any form of financial education there are certain areas of sensitivity to be aware of. Discussions around any personal income, such as pocket money, can prove very divisive, and any direct comparisons between pupils should be avoided. There are also faiths which have certain rules regarding the use of money and finance, such as Islamic Sharia Law, and in these cases it is always useful to check the content of sessions with parents or carers to ensure they are appropriate.

ABOUT THE ACTIVITIES

The eight activities within this resource have been designed to require as little preparation time as possible, and should be able to integrate into any appropriate lesson plan. Timings have been provided as a guide to each of the activities; however these are only a guide and can be reduced or extended according to the time you have available.

The number of accompanying Resource Sheets have been limited to just two to save on reprographic costs. **Resource Sheet 1** is a generic resource used in many of the activities, and it may be advantageous to print and laminate a number of sets in order that they can be used over again for different activities.

ACTIVITY SUMMARY

The table below gives a brief overview of the full content of the resource. This allows an 'at a glance' approach for all of the activities, summarising the focus they contain in relation to water and personal finance education, as well as an indication of their age appropriateness.

ACTIVITY TITLE	WATER FOCUS	FINANCIAL FOCUS	AGE APPROPRIATENESS
1. NEEDS AND WANTS ASSOCIATED WITH WATER	Assessing the priority of our everyday water uses	Beginning to appreciate that we cannot always have everything we need or want	5 to 7
2. WHICH WATER?	The value of tap water compared to bottled water	Making money related choices	5 to 7
3. HOW DO WE PAY FOR IT?	How households are billed for the water they use and dispose of	Understanding and recognising a water bill, and the methods which can be used to pay	7 to 11
4. COST OF SUPPLYING CLEAN WATER	Where our water comes from and what goes into making it clean and safe	Developing a sense of 'value for money'	7 to 11
5. REDUCING YOUR WATER BILL	Ways to reduce water consumption in the home	Making financial savings and how those savings could be used	7 to 11
6. IT'S JUST A LITTLE LEAK	The small leaks we can have in the home can contribute to a huge amount of water loss across the UK	Making future financial plans for unexpected events	9 to 11
7. WATER AND ENERGY	In using water we often forget that we are also using energy to heat it	Making informed financial decisions	9 to 11
8. WATER AROUND THE WORLD	Access to clean fresh water varies significantly across the world	Introducing the concept of charitable giving	9 to 11

CALL-OUT INFO

THROUGHOUT THE RESOURCE THERE ARE NUMEROUS CALL-OUTS CONTAINING WATER RELATED STATS AND FACTS. THESE COULD BE USED TO SUPPORT THE ACTIVITIES FROM THE RESOURCE, OR INDEPENDENTLY. MANY PROVIDE THE OPPORTUNITY FOR DISCUSSION, FURTHER INVESTIGATION AND EXTENSION.

Links

To aid in planning, each of the eight activities are accompanied by relevant curriculum links within mathematics and science (from September 2014). These illustrate the curriculum areas that certain activities, or parts of activities, support.

In addition to these curriculum areas the financial themes from **pfeg**'s Planning Framework (download a copy from www.pfeg.org/PlanningFrameworks) have also been highlighted, identifying where certain financial knowledge, skills and attitudes are incorporated. The links are all displayed in the water glass on the second page of each activity.

Homework suggestions

Homework task suggestions have been added to provide practical activities that could be completed in the home environment. The use of the homework tasks emphasises the fact that responsibility regarding water use and, in turn, its cost, is shared between the water company and the customer.

Many of the homework tasks actively involve other members of the family within the home. This promotes the messages regarding water conservation and appropriate use to the whole family, as well as involving others in financial discussions. Money and finance is so often not discussed openly within the home, and in doing so this helps to reinforce class based learning and develop independent attitudes.

ABOUT WESSEX WATER

Wessex Water is the regional water and sewerage company serving an area of the south west of England, covering 10,000 square kilometres including Dorset, Somerset, Bristol, most of Wiltshire and parts of Gloucestershire and Hampshire.

We are delighted to be working with **pfeg** on this resource which will benefit our future customers to not only manage their money better but also their water use.

Affordable bills are a top priority for customers and around 7% of our customers struggle to pay their water bills. Through our award winning tap assistance programme we offer customers a range of schemes and low rate tariffs to help them afford their ongoing water charges or repay their debt along with practical help to reduce water and energy use.

But we also want to help prevent customers from falling into difficulty in the first place which is why we launched our Money Matters Awards in May 2013. We are currently supporting a variety of financial literacy and money management projects across our region helping young and vulnerable people.

ABOUT PFEG

pfeg (Personal Finance Education Group) is the UK's leading organisation helping schools to plan and teach children and young people how to manage their money now and in the future. A registered charity, it values its independence and integrity.

pfeg is the most trusted, independent provider of knowledge, support and resources for anyone teaching children and young people about money. Its mission is to ensure that all young people leaving school are equipped with the confidence, skills and knowledge they need in financial matters to take part fully in society.

Additional information and support

- Visit Wessex Water's education website at www.wessexwater.co.uk/education/index.aspx for further water related activities, videos etc
- Use **pfeg**'s ASKpfeg service for any questions you may have about financial education – www.pfeg.org/ASKpfeg
- Visit **pfeg**'s resource bank for loads more resources to help you teach about money – www.pfeg.org/resources

ACTIVITY 1

NEEDS AND WANTS ASSOCIATED WITH WATER

Aim

By the end of the activity pupils will:

- Appreciate the difference between 'needs' and 'wants'
- Begin to prioritise 'needs' and 'wants'
- Know that money can often be a limiting factor in achieving all 'needs' and 'wants'

Age appropriateness

This activity has been aimed at pupils aged 5 to 7; however it could be adapted or differentiated for other ages and abilities.

Timings

45 minutes

Preparation

You may want to cut out the images in **Resource Sheet 1** prior to the lesson

Actions

- Introduce the activity by asking the pupils to provide their thoughts on what we use water for. These could be collected verbally, or through a draw and write activity using paper or whiteboards. Collate a summary of pupil's answers.
- Discuss with pupils which of the uses on the list they think is most important. These may be different for different pupils. In each case try to find out the reason for their decision.
- Hand out the images in **Resource Sheet 1**. All of the images show different ways in which we use water. Briefly compare the uses in the images to the list the children came up with previously – how many had they already mentioned?
- Ask the pupils to work in pairs to separate the images into two piles – one showing the uses we 'need' water for and one for those showing the uses we might 'want' water for. Discuss with pairs the decisions they made.

more on next page

THE AVERAGE UK HOUSEHOLD PAY MORE FOR TAKING WASTE WATER AWAY FROM THEIR HOME THAN THEY DO FOR THE FRESH WATER COMING IN (£186 FOR PROVIDING FRESH WATER AND £202 FOR TAKING AWAY SEWAGE)

IN MANY AFRICAN COUNTRIES PEOPLE SURVIVE ON LESS THAN 20 LITRES OF WATER EVERY DAY

Links

pfeg Planning Framework

- ✓ I can explain the difference between needs and wants
- ✓ I am beginning to understand that we might not always be able to have the things we want or need
- ✓ I know I will have to prioritise between needs and wants

Mathematics

- ✓ identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least (Yr1)
- ✓ ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity (Yr2)

Science

- ✓ identifying and classifying (Yr1 &2)
- ✓ using their observations and ideas to suggest answers to questions (Yr1 &2)
- ✓ find out about and describe the basic needs of animals, including humans, for survival (water, food and air) (Yr2)

actions continued

- Now, using all of the images, ask pupils to order them according to their priority – with the most important at the top and least important at the bottom. In most cases all of the 'needs' will be placed at the top and the 'wants' at the bottom. Discuss this fact with the group and explain that it is important that we have the things we 'need' before we begin thinking about those things we 'want'.
- Explain that there are many other 'needs' and 'wants' that we may have beyond water. Ask pupils to give suggestions of other 'needs' and 'wants', and reinforce that it is important that we meet our 'needs' before thinking about our 'wants'. You may also wish to discuss the fact that very often we cannot fulfil all of our 'wants', and have to make choices between them.

Homework suggestion

Take a copy of the images in **Resource Sheet 1** home over the weekend. Try to find five of the different uses of water going on in your home. Draw your own picture of each of the five uses and record for each whether the use is a 'need' or a 'want'.

ACTIVITY 2

WHICH WATER?

Aim

By the end of the activity pupils will:

- Begin to understand the concept of value for money
- Have considered how small changes can help save money

Age appropriateness

This activity has been aimed at pupils aged 5 to 7; however it could be adapted or differentiated for other ages and abilities.

Timings

45 minutes

Preparation

For this activity you will need:

- Enough images of the tap water and bottled water from **Resource Sheet 1** for one for each pupil
- A paper cup for each pupil
- A large bottle of bottled water (placed in a jug marked A)
- Tap water (placed in a jug marked B)

70% OF THE EARTH IS COVERED IN WATER, BUT ONLY 3% IS FRESH WATER THAT CAN BE USED TO DRINK. AROUND 2% OF THIS IS IN THE POLAR ICECAPS, LEAVING 1% THAT CAN BE USED BY LIVING THINGS.

Actions

- Show the pupils a bottle of mineral water and a glass of tap water. Ask them what is in each of them. They'll answer water, so the next question is – what is the difference? There may be a variety of answers including; the cost, the ability to carry it around and the taste.
- Give each pupil an image of the glass of tap water and one of the bottle of mineral water from **Resource Sheet 1**. Tell the children that they are going to be given a choice of which one they would rather drink. Allow them a few minutes to discuss in talk partners which one they would choose and their reasons for doing so. Once complete they should bring the image of which one they would prefer to drink up to the front of the class.
- Review the cards that have been brought to the front. Feedback how many of the group said they would prefer the tap water and how many the bottled water. Ask some of the pupils to explain why they made the decision they did, and discuss these with the group.

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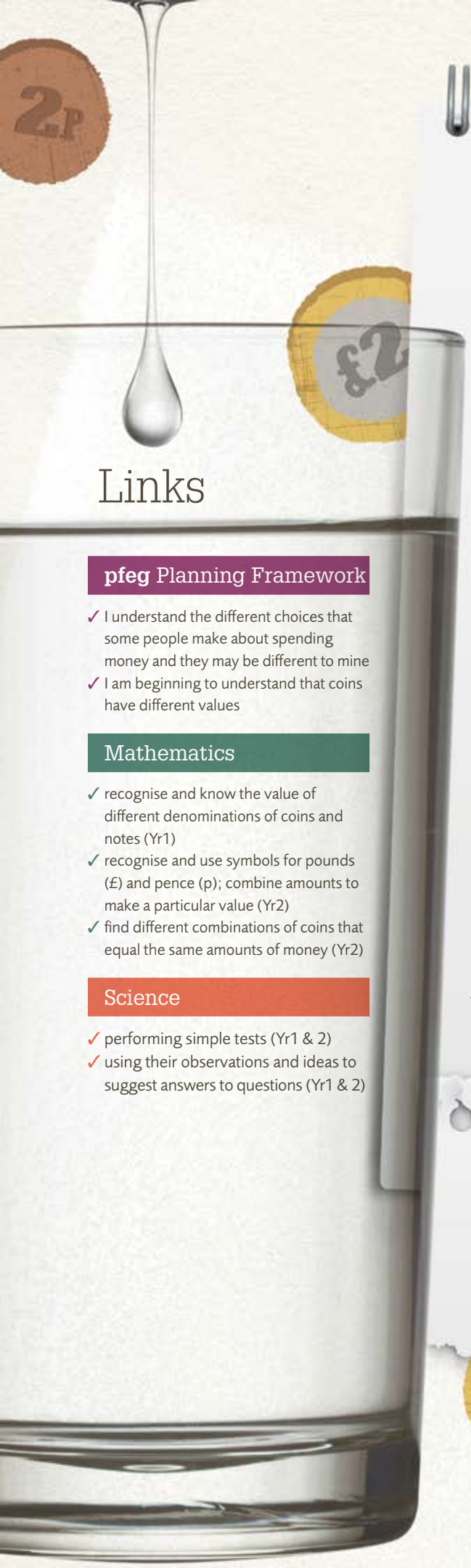

Links

pfeg Planning Framework

- ✓ I understand the different choices that some people make about spending money and they may be different to mine
- ✓ I am beginning to understand that coins have different values

Mathematics

- ✓ recognise and know the value of different denominations of coins and notes (Yr1)
- ✓ recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value (Yr2)
- ✓ find different combinations of coins that equal the same amounts of money (Yr2)

Science

- ✓ performing simple tests (Yr1 & 2)
- ✓ using their observations and ideas to suggest answers to questions (Yr1 & 2)

actions continued

- Display on the board that the tap water costs far less than 1 pence per litre, and the bottled water costs approximately 40 pence per litre[1]. This may be an opportunity to highlight the difference using real coins. The pupils could explore different ways of making 40p, compared with only one way of making 1p. Do those who chose bottled water still feel it is worth it?
- Explain that the pupils are now going to take part in a taste test to see if they can tell the difference between bottled mineral water and tap water. Give every pupil a paper cup and explain that they will be given two drinks – A and B. They will need to decide which they like best and whether A or B is the tap water or mineral water. Firstly (pouring from a jug to disguise its origin) pour a small amount of bottled water into everyone's cup and let them drink it. Ask them to think about the taste. Do the same with the tap water and then explain that the children must now choose their favourite. Take a group vote on who would choose the first cup and then who would choose the second cup.
- Reveal the answer – the first tasted was the bottled water and the second was the tap water. Discuss the balance of the vote. Did more pupils vote for the bottled water or the tap water?
- Consider the savings to be made by drinking tap water compared to bottled water. Based on the cost per litre you could have 200 litres of tap water for the same price as one litre of bottled water. Does this change any of the pupils' minds? Discuss the fact that many families only have a set amount of money they can spend each week – this is called their budget. Drinking tap water instead of buying bottled water may only make a small difference, but it can help families save a little bit of their budget for the things they really need.

[1] Source: IRI, Major Multiples, 01.02.14 40p per litre via www.naturalhydrationcouncil.org.uk

Homework suggestion

Design a poster or a leaflet which tells people why they should drink tap water. Include as many reasons for drinking tap water as you can.

ACTIVITY 3

HOW DO WE PAY FOR IT?

Aim

By the end of the activity pupils will:

- Have looked at two types of water bill and understand that you can be charged for what you use, or based on water rates
- Know that a water bill consists of two parts; one for the fresh water we receive and another for the waste water which is taken away
- Be aware of the main ways that people can pay for goods and services

Age appropriateness

This activity has been aimed at pupils aged 7 to 11; however it could be adapted or differentiated for other ages and abilities.

Timings

45 minutes

Preparation

Enough copies of **Resource Sheet 2** for pupils to share in pairs.

Actions

- Tell the pupils to imagine that they are going to have lunch in a cafe or restaurant. They would order the food, eat the food and what else would they need to do before they left? The children should come up with – 'pay for it'. Ask them how you would know how much to pay? They may well come up with the idea that you get given a bill.
- Divide the group in half and explain that they are both going out to eat. One half will only be eating a little, and the other half will be eating a lot. What difference do they think this will make to the bill? Explore their reasons. Hopefully they will make the link between the more you eat the higher the bill will be.
- Give out the water bill extracts in **Resource Sheet 2** and explain that just like the food that was ordered in a restaurant, the water we use also has to be paid for. Explain that the amount you pay can be worked out in two ways:
  - Metered reading – based on the amount of water you use
  - Water rates – a fixed amount based on the size of your home

Having a water meter means that you pay for exactly what you use, but water rates means that the amount you pay is based on an estimate of how much water is used in a home, depending on its size. Which method do the pupils think is fairest? Why?

more on next page

actions continued

- Explain that the bill in **Resource Sheet 2** shows that there are two charges. One is the charge for the fresh water provided to the home. The other is for the waste water that is taken away. Which do the pupils think is the higher of the two costs – providing clean water or taking away the waste? Taking away the waste is usually more expensive, mainly because of all of the work that has to be done to get the water clean enough to send back into the water system (an average water bill for the year is £388. £186 is for providing fresh water, and £202 is for taking away and treating the waste water).
- Using the bill extracts in **Resource Sheet 2** read out the different ways that customers are able to pay their bill. This covers payment methods such as cash, debit and credit cards, direct debit and payments online. Ask the pupils if they have heard of any of these before? Discuss the meaning of cash, debit and credit cards, direct debits and online payment. Explain that these different ways to pay can be used for many purchases that adults make, not just water.

Homework suggestion

Find out whether the water you use at home is charged by the meter or using water rates. Try to compare your charge with that of five others in your class.

THE COSTS OF THE ENERGY USED TO HEAT THE WATER YOU USE FOR EACH SHOWER IS MORE THAN THE COST OF THE WATER USED (ENERGY 15P, WATER 10P)

Links

pfeg Planning Framework

- ✓ I know that cash is only one way of paying for goods and services
- ✓ I know I need to check and keep financial information e.g. bills, bank statements

Mathematics

- ✓ recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value (Yr2)

Science

- ✓ using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions (Yr3 & 4)

ACTIVITY 4

COSTS OF SUPPLYING CLEAN WATER

Aim

By the end of the activity pupils will:

- Have an understanding of the water cycle and where the water we use in our homes comes from
- Begin to appreciate the costs to the water companies of providing clean and safe water to our homes

Age appropriateness

This activity has been aimed at pupils aged 7 to 11; however it could be adapted or differentiated for other ages and abilities.

Timings

45 minutes

Preparation

For this activity you will need:

- A4 plain paper
- Calculators (optional)

Actions

- Ask pupils where they think the water we get through our taps comes from. Explain that it is all part of something called the water cycle. Water from the seas and oceans evaporates into the atmosphere when heated by the sun. This forms clouds. Eventually the clouds will drop the water they contain as rain. The rain collects in reservoirs, underground stores, called aquifers, and rivers. The water we need is taken from these sources and cleaned before being moved into the fresh water network that delivers it to your tap. Any waste water that leaves a home is treated to make it safe for the environment and emptied back into the rivers. These flow back to the sea, and the cycle begins again.
- If time allows, the Met Office have developed a practical experiment to create a working model of a water cycle. This could be set up to help explain the processes involved in the water cycle. The info sheet can be found at www.metoffice.gov.uk/education/kids/things-to-do/experiments/water-cycle
- Help pupils to draw a diagram of the water cycle on an A4 piece of paper. Once complete they should write any of the steps that might cost a water company money in providing households with clean water and taking away waste water. Ideas could include; building a reservoir, pumping the water along the pipes, employing people to work for the water company, the cost of chemicals for treating the water, and the cost of energy used by the water company. Discuss the ideas with the group. Explain that all of the costs have to be included in what we all pay for our water.
- Draw a picture of a bath on the board and write 15p in the middle. Explain that this is the approximate cost of water used for a bath (based on 75 litres of water being used). Ask pupils to work in pairs to calculate how much it would cost to have a bath every day for a week (£1.05). You could extend this to work out how much that costs per year (£54.75).
- Discuss what else pupils could buy with £1.05. Take some ideas, and assess how realistic the answers are. Compare the costs of a bath everyday with that of a four minute shower every day. A four minute shower uses approximately 32 litres of water and costs 6.5p. Ask the pupils to work out how much a four minute shower every day would cost (45.5p), and compare it to the cost of a bath.

THE AVERAGE WATER BILL ACROSS THE WHOLE OF THE UK IS £388 PER YEAR.

Links

pfeg Planning Framework

- ✓ I know some different ways of keeping track of my money
- ✓ I know that some things are better 'value for money' than other things

Mathematics

- ✓ solve problems, including missing number problems, involving multiplication and division… (Yr3)
- ✓ solve simple measure and money problems involving fractions and decimals to two decimal places. (Yr4)

Science

- ✓ setting up simple practical enquiries, comparative and fair tests (Yr3 & 4)
- ✓ observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) (Yr4)
- ✓ identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. (Yr4)

Practical extension

This is a practical experiment that could help demonstrate part of the process of making rainwater clean enough to drink. It could be conducted as a teacher demonstration or with the pupils working in small groups.

Equipment: bottle(s) of 'dirty' water, beaker, filter funnel, filter paper, kitchen cloth, tea towel

- In advance prepare enough small bottles of water for your needs and add some soil and small stones to each.
- If the pupils are conducting the experiment give each group one of the bottles containing dirty water.
- Place the filter funnel into the beaker and put the tea towel across the top of the filter funnel
- Carefully pour the dirty water into the tea towel covered filter funnel. The water will drip through into the beaker.
- Once complete the water should be a little clearer. Repeat, pouring the water from the beaker through the filter funnel with the kitchen cloth over the top into the bottle.
- Complete one last time, pouring the water from the bottle through the filter funnel with filter paper inside it into the beaker.
- The water in the beaker should now be far cleaner than the 'dirty water' that was started with.

Please note that whilst the water looks cleaner, it is not clean enough to drink – pupils should be advised not to drink the water at any stage of the process.

The holes in the materials used as a filter get progressively smaller, and as such, they filter smaller and smaller particles out of the water, making it appear cleaner.

There is an alternative practical activity on water filtration in the Wessex Water resource 'All about water' – www.wessexwater.co.uk/WorkArea/DownloadAsset.aspx?id=8943 on page 18.

Homework suggestion

Ask pupils to produce a story of the journey of a drip of water. This could be a written story, a comic strip or even a poem, song or rap. Allow them to be imaginative about where a drip of water may travel. They may find it useful to explore the water cycle further to give them some ideas.

ACTIVITY 5

REDUCING YOUR WATER BILL

Aim

By the end of the activity pupils will:

- Be able to estimate the daily water usage and costs in their own home
- Consider ways in which water usage and cost can be reduced, without impacting on needs
- Explore the payback period of some water saving devices

Age appropriateness

This activity has been aimed at pupils aged 7 to 11; however it could be adapted or differentiated for other ages and abilities.

Timings

45 minutes

Preparation

For this activity you will need:

- Enough copies of the cards in **Resource Sheet 1** for one set for each pair
- Calculators
- IT facilities (if playing the online game)

Actions

- Using the cards in **Resource Sheet 1** ask pupils to work in pairs to identify all of those which might be used in their home during a typical day. As they do this write on the board the following average usage volumes:
  - Flushing a toilet – 9 litres
  - Showering – 50 litres
  - Cleaning teeth – 6 litres
  - Washing machine – 50 litres
  - Dishwasher – 15 litres
  - A bath – 75 litres
  - Drinking – 2 litres per day
  - Cooking (washing veg / boiling rice or pasta) – 2 litres
- Explain that some of the uses they have identified may happen more than once during the course of a day. For example if there are three people in the house they may have a shower each. Taking this into account ask pupils to work out what they estimate their daily household water usage to be. Once complete remind pupils that the water usage figures they have used are an average, and that some households may use more or less water for the same functions.
- Given that water costs approximately 0.2 pence per litre ask the pupils to work out how much their estimated water usage costs per day are. Once one day has been worked out, ask them to use this to find out the costs for a week and for a year (365 days).

more on next page

Links

pfeg Planning Framework

- ✓ I can make comparisons between prices when deciding what is best 'value for money'
- ✓ I understand why we should all be critical consumers, but that the choices we make about money will also be affected by income, commitments, values and culture

Mathematics

- ✓ identify, represent and estimate numbers using different representations (Yr3)
- ✓ estimate, compare and calculate different measures, including money in pounds and pence (Yr4)
- ✓ use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling (Yr5)
- ✓ recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal (Yr5)

Science

- ✓ using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions (Yr3 & 4)

actions continued

- Now explain that they are going to be given the challenge of reducing the cost of their water bill by 10%. Once the volume of water they need to save each day has been calculated they should look at how the savings could be made from their daily usage. Discuss with the group how difficult or easy they found reducing their water bill by just 10%.
- Explain that there are a number of water saving devices that can be used to reduce the amount of water needed for everyday uses, such as baths, taps, toilet flushing and showering. Display the savings each of these can make:
  - BathBouy (28 litres per bath)
  - Save a Flush (12 litres every day – based on 10 flushes per day)
  - ShowerSave (30 litres per day)

  To find out more about each of these products you can visit the Save Water Save Money website (www.savemoneysavewater.co.uk) which sells each of them.

  Explain that BathBouys cost around £10 to buy. Set pupils the following challenge:

  'If you had a bath every day how long would it take for you to make the saving in water used to recover the cost of buying the BathBouy in the first place (remember water costs 0.2 pence per litre)?'

  Answer – It should take just under 179 days to make the saving of £10. This is called the payback period. After this the device is saving you money.
- Discuss the fact that many of the water companies actually provide these water saving devices for free to their customers. This means that water usage and cost can be lowered without the worry of having to buy the device in the first place.
- If time allows and IT facilities exist you may want to let pupils have a go at an online game in which the challenge is to reduce the families water usage: www.thewaterfamily.co.uk/index2_content.html

Homework suggestion

Carry out an audit, either at home or at school, of any areas where water, and money, could be saved using any water saving devices that you know of. Try to give details of how much water could be saved and what this means in terms of money saved.

ACTIVITY 6

IT'S JUST A LITTLE LEAK

Aim

By the end of the activity pupils will:

- Consider the cost of minor leaks over long periods of time
- Explore the savings that could be made by fixing minor leaks in the home, and what could then be done with the money saved

Age appropriateness

This activity has been aimed at pupils aged 9 to 11; however it could be adapted or differentiated for other ages and abilities.

Timings

30 minutes

Preparation

For this activity you will need:

- Calculators

Actions

- Ask the pupils how they would keep their money safe if they went to the shops. Would they put money in a pocket they knew they had a hole in? Why not? They will probably respond with the fact that the money might fall out.
- Explain that having a leaking pipe or tap at home is just the same. The water that is being lost will end up costing the householder money. Set pupils the following challenge and ask them to work in pairs to solve it:

  'A tap is leaking at the rate of 2 litres of water every hour. The average cost of water is 0.2p per litre.'

  - How much water would be lost over 1 day, 30 days, 150 days and 365 days (1 year)?
  - What would the cost of that lost water be over 1 day, 30 days, 150 days and 365 days?
- Over the year the cost in lost water could be around £35. Ask pupils to discuss in pairs what they would do with £35. Take feedback from the pairs and note the balance between spending and saving.
- Explain that the cost of a washer to fix a leaking tap is around 20p – a very small amount that could save you £35 each year. How many of the group would choose to buy the washer and fix the leak? What if you needed a plumber to replace the washer? They would charge around £50 to come out and do the work.

more on next page

IN AMERICA THE AVERAGE PERSON USES 570 LITRES OF WATER EVERY DAY.

DRINKING ACTUALLY MAKES UP ONE OF THE LOWEST USES OF WATER FOR AN AVERAGE HOUSEHOLD EACH DAY (4% – AROUND 6 LITRES)

Links

pfeg Planning Framework

- ✓ I am beginning to realise that different people have different attitudes to and feelings about spending and saving money
- ✓ I understand that planning my spending helps me stay in control of my money

Mathematics

- ✓ estimate, compare and calculate different measures, including money in pounds and pence (Yr4)
- ✓ use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling. (Yr5)

actions continued

- Discuss the fact that sometimes you may have to pay out unexpected amounts of money, for things like plumbers fixing a leak, or a builder to fix a roof. It is always useful to try and have some savings to pay for these events. Go back to the feedback pupils gave on what they would do with £35, and explain that it is always good to have a balance between spending and saving. This allows you to buy some of the things you want, but also to have money saved up for those unexpected events.

Homework suggestion

Ask the pupils to find out where their 'stop cock' is within their homes. Ask them to discuss with the adults at home what they would do in the event of a leak within the home and write an action plan for if there ever was a leak.

ACTIVITY 7

WATER AND ENERGY

Aim

By the end of the activity pupils will:

- Understand that some uses of water require it to be heated, and that this has a cost associated with it too
- Be able to compare the cost of water and energy used for different purposes within the home
- Be able to make informed decisions about certain uses of water and energy in the home, taking into account their cost

Age appropriateness

This activity has been aimed at pupils aged 9 to 11; however it could be adapted or differentiated for other ages and abilities.

Timings

45 minutes

Preparation

For this activity you will need:

- Enough of the sets of cards in **Resource Sheet 1** for one set for each small group
- Calculators

Actions

- With pupils working in small groups hand out a set of the cards in **Resource Sheet 1** to each group. Ask them to sort the cards into those in which the water needs to be heated, and those in which it is used cold. It can be quite surprising how often we need to heat water before we use it.
- Explain that in order to heat the water we need to use energy, usually electricity or gas, and these also need to be paid for. This means the cost of a shower or a bath is actually made up of the cost of the water plus the cost of the energy needed to heat it. Usually the cost of heating the water is more than the cost of the water itself.
- Give the pupils the information below. This shows three uses of water which needs to be heated using electricity. The unit of measurement for electricity is a Kilowatt hour (KWh). One Kilowatt hour costs approximately 17.2 pence[2]. Ask pupils to work out the energy cost for each of the three uses (answers are in round brackets) and then compare them to the costs of the water used in each case [shown in square brackets]
  - Shower 3.75KWh (64.50p) [15p]
  - Washing machine 3.50 KWh (60.20p) [15p]
  - Dishwasher 1.125 KWh (19.35p) [5p]

more on next page

- Explain that reducing the time you are in the shower, or setting the eco function on your washing machine or dishwasher not only saves on the amount of water you use, but also saves on the energy you use. As both of these cost money, taking a little care can make big savings.
- Water can also be used to create electrical energy. Hydroelectric energy is created when the force of water leaving a reservoir is used to turn a turbine which generates electricity. This can then be used by local households. So, as the water makes its way to your home it could also be making some of your electricity. Around 2% of the UK's energy is hydroelectric.

[2] Compare My Solar, Electricity Price per kWh (2013) – Comparison of E.ON, EDF, nPower, British Gas, Scottish and SSE, November 2013

Links

pfeg Planning Framework

- ✓ I understand why making informed decisions will help me make the most of the money I spend and save
- ✓ I understand that planning my spending helps me stay in control of my money

Mathematics

- ✓ use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling. (Yr5)
- ✓ solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate (Yr6)

Science

- ✓ identify the effects of air resistance, water resistance and friction, that act between moving surfaces

Homework suggestion

Carry out an audit of your home to find out all of the uses of water you use where the water has to be heated before use. For each one suggest a way of reducing the amount of energy required to heat the water. Remember, over longer periods of time this can save quite a lot of money, so try to make everyone in the house aware of what they can do.

FITTING A WATER SAVING DEVICE IN YOUR TOILET – CISTERN (THE TOILET'S WATER TANK) CAN SAVE AROUND 13 LITRES OF WATER EVERY DAY.

ON AVERAGE A PERSON IN THE UK USES 150 LITRES OF WATER EVERY DAY.

ACTIVITY 8

WATER AROUND THE WORLD

Aim

By the end of the activity pupils will:

- Appreciate that the level of water usage is very different across the world, and some countries have to survive on far less water then we do in the UK
- Know the role that charities play in supporting people in a variety of ways across the world
- Understand the choices that people make in deciding whether to support a charity or not

Age appropriateness

This activity has been aimed at pupils aged 9 to 11; however it could be adapted or differentiated for other ages and abilities.

Timings

45 minutes

Preparation

For this activity you will need:

- Enough of the sets of cards in **Resource Sheet 1** for one set for each small group
- Calculators (optional)

Actions

- Explain that in many parts of the world water is just not available through taps in homes, and some people have to travel for miles, often on foot, to collect water which is far dirtier than ours, and carry it home. The average daily water usage of someone in the UK is 150 litres. The average water usage for someone in Gambia is just 4.5 litres per day! For those more able pupils you could ask them to work out what the percentage of water use in Gambia is compared to the UK (just 3%!). Consider with pupils why there is such a difference.
- Ask the group to discuss in partners how they might use water differently in their own homes if they had to walk five miles each day to collect the water they needed and carry it the same distance back home. Take feedback from pairs and collate their answers. Discuss how different their lives might be with far less water available.
- Give out the cards in **Resource Sheet 1** and ask pupils to work in small groups to decide if they only had 4.5 litres of water every day which of the water uses would they still use. As part of this activity they will have to approximate the water consumption of each of the different uses. Again, take feedback and discuss the reasons for the decisions.
- If possible display the Water Aid website (www.wateraid.org). Explain that this is a charity which raises money to help provide water to communities in countries where there is no clean drinking water in the home. Explain that there are many charities that have been set up to help people all over the world. Ask the pupils how people decide which charities to give money to. Explore the reasons they give.

more on next page

actions continued

- Provide the group with the example of a family who have a budget of £200 per week. After paying for their own bills, food for everyone and clothing for anyone who needs it they are usually left with £25. Ask the pupils if they think this family should donate any money to charity, and if they believe they should, then how much of the £25 should they give? Pupils may have different opinions on this, and it may be an opportunity to introduce a piece of persuasive writing in order to argue their case. There are no right or wrong answers, but whether someone donates to charity or not can depend upon their income, level of household expense, values and attitudes.
- Highlight that people give to charities for many different reasons, and often the charity they choose is personal to them. The amount donated to charity will vary depending on the level of 'disposable income' – money that is left after all the necessities have been paid. Some people decide that they do not have enough disposable income to be able to donate to charity. Explain that this is a personal choice and something that may change if the level of disposable income changes.

Homework suggestion

Investigate a charity that you would like to support and produce a leaflet or poster to explain why people should donate money to this charity.

Links

pfeg Planning Framework

- ✓ I am beginning to understand why and how some of the money we earn supports the wider community.
- ✓ I understand why I might or might not want to give money to a charity.

Mathematics

- ✓ solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison (Yr5)

Science

- ✓ identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. (Yr6)

TOILET FLUSHING MAKES UP AN AVERAGE HOUSEHOLD'S LARGEST USE OF WATER EACH DAY (30% – AROUND 45 LITRES)

RESOURCE SHEET 1

more on next page

RESOURCE SHEET 2

A Water Company

MR EXAMPLE
1 ANY HOUSE
ANY STREET
ANY TOWN
ABC 123

The period covered by this bill is: DD/MM/YYYY to DD/MM/YYYY

Property Address: 1 Any House, Any Street, Any Town, ABC 123

ACCOUNT SUMMARY

Balance from last bill (2)	**£XXX.XX**
Water Services	**£XXX.XX**
Sewerage Services	**£XXX.XX**
Current Balance (3)	**£XXX.XX**

Bill No: XXXXXXXXXX. (Please DO NOT quote this number when making payments)

YOUR BILL

A Water Company Billing Services Limited

Page x of x

Customer Number: MXXXXXXXX (1)
Please quote when contacting us

Payment reference number: 20XXXXXXXXXX (4)
Please quote when making payments

Schedule Number:	XX
Date:	DD/MM/YYYY
Tax Point:	DD/MM/YYYY
Account Type:	Metered

If all of your surface water drains to a soakaway you could claim a rebate of around £xx – See the enclosed leaflet for further details.

To contact us and ways to pay - see the back of this bill

If you have problems paying we can help. Please contact us today.

A Water Company VAT reg. No. XXX XXXX XX

Payment Slip — **Bank Giro Credit**

Transcash

158
24

payment reference number: XXXXXXXXXXXXX (4)

Credit account number: 143 0521

Amount due (No fee payable at PO Counter): £ XXX.XX (5)

Cheque **NOT** acceptable at PO Counter

Cashiers stamp and initials

Signature

Date

MR SMITH

HSBC BANK PLC
HEAD OFFICE COLLECTION A/C
A Water Company Billing Services Limited

Sorting code number: 43-05-21

XXXX XXXX XXXX XXXX XXXXX

CASH

CHEQUE

£

Please do not write or mark below this line and do not fold this counter foil

XXXXXXXXXXXX XXXXXXXXXX XXXXXXXXX XX X

1. **Customer number** – please quote the number on your bill whenever you contact the water company.

2. **Balance brought forward** – this includes the balance owed to the water company at the bill date.

3. **Total bill**
   - your total water supply charge
   - your total sewerage charge
   - your total charge this year.

4. **Payment reference number** – please quote the 13 digit payment reference number when making your payment – see ways to pay.

5. **Payment options** – these are explained on the on the right of this page. Unless you have a payment arrangement with us, you can either pay your total bill now or pay it in two half-yearly amounts due on 1 April and 1 October. For uneven totals, the odd penny is added to the first instalment. If you do not pay the first half in April, the total bill has to be paid immediately.

Moving house – if you've moved or are planning to do so please let us know so that we can amend your bill.

Sprinklers – if you are using a sprinkler, you must be on a metered supply.

Meter option – if you want to be charged for the amount of water you use, rather than on the rateable value of your property, you could have a water meter. Most customers can change to a metered supply free of charge. If you apply for a meter and we are unable to fit it, we may be able to offer an alternative charge. Ring 0345 601 5 983 (24 hour answering machine) for a leaflet and application form.

ways to pay

all payment options are free

Direct Debit
Pay monthly by Direct Debit – just complete the enclosed form. There is no charge or discount.

PayPoint
Take your bill and payment in cash to a local PayPoint outlet – see www.paypoint.co.uk

Bank
Pay at your bank with cash, cheque or postal order. Normally no fee is payable at your own bank.

Post office
Fill in the payment slip and take it with your bill and payment in cash to a post office.

Credit or debit card
Pay by credit card or debit card on our automated line 0123 456 7890*. Make sure you have your credit or debit card and this bill to hand.

Post
Write your customer reference number on the back of your cheque and post it with the payment slip to Water company, Water Road, EE4 3RD. Cheques or postal orders should be made payable to BWBSL. Do not send cash or post dated cheques.

Online
Pay online with your debit card or credit card at www.watercompanybill.com and select BWBSL from the drop down list *.

Home/telephone banking
Pay by telephone, TV, PC or remote banking and quote sort code 10-02-30 and account number 98765432*.