

Water: a precious resource

Science (Environment)

KS3

Overview

Lesson objectives

- ◆ To learn what we use water for and how much we use
- ◆ To appreciate what a precious resource water is and how its availability affects people's lives around the world
- ◆ To find out about ways to conserve water

Learning outcomes

- ◆
- ◆ Analysing information and making reasoned decisions
- ◆ Working as part of a group
- ◆

Materials required

- ◆ Worksheets (see resources)

Activity details

Introduction	Discuss the vital importance of water in our lives. What do we use it for in our personal lives? How is it used in agriculture and industry? Show students the pie charts and get them to join up the correct labels and segments.	Resources: UK water usage pie chart; global
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Activity details cont.

Main activity	Use the second worksheet to get pupils to put to themselves in a developing world setting: it now takes them an hour and a half to collect 20 litres of water from a water source 3km away from their house and, as this is now their closest water source, they must collect all their water this way. Get them to work out how long it will take them every day to carry the water they currently use. Do they have enough time to do this everyday? Can they minimise their water consumption to reduce this time? Would they be willing to live like this? Ask pupils to write their final water consumption on the board. Discuss the different water-saving measures students have come up with. Make a list of ones that they can reasonably implement in their lives.	
Plenary	Then talk about the difference between our water consumption here in the UK compared with that of Mrs Boateng in Ghana (whose details are given on Worksheet 2). Talk about why our situation is so different to hers and discuss ways Mrs Boateng's water problems could be relieved.	

Resources

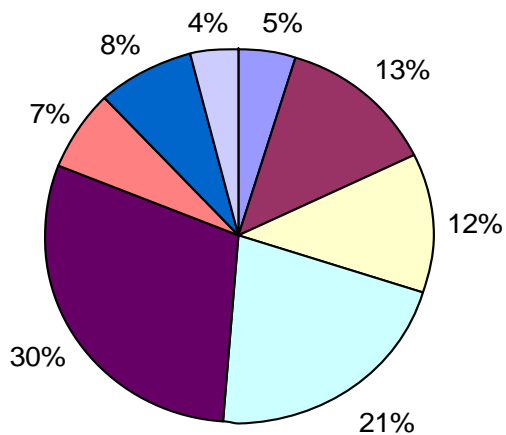
- ◆ *Worksheet 1: How much water is used for different activities?*¹
- ◆ *Answer Sheet 1: How much water is used for different activities?*¹
- ◆ *Worksheet 2: How do you get water?*
 - ◇ Information sheet
 - ◇ Question sheet
- ◆ *Answer Sheet 2: How do you get water?*

¹ Data taken from Waterwise (www.waterwise.org.uk) and Office for National Statistics (www.statistics.gov.uk)

How much water is used for different activities?

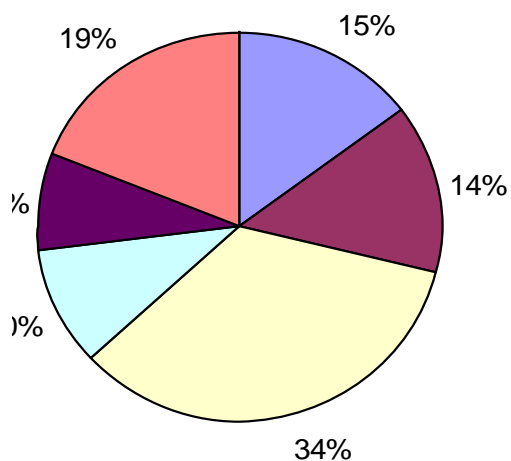
Match up the uses with their corresponding pie chart segments.

UK Household Water Use



- Washing – showers
- Drinking
- Clothes washing
- Toilet flushing
- Washing – baths and taps
- Other
- Washing up
- Outdoor

UK Total Water Use

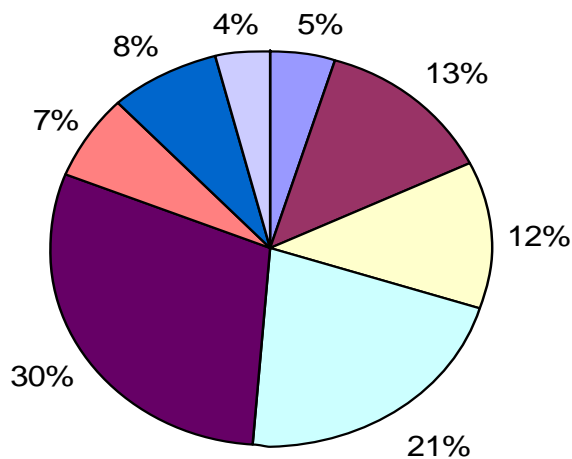


- Agriculture & fisheries
- Domestic
- Industry
- Leaks
- Services
- Electricity & gas production

How much water is used for different activities?

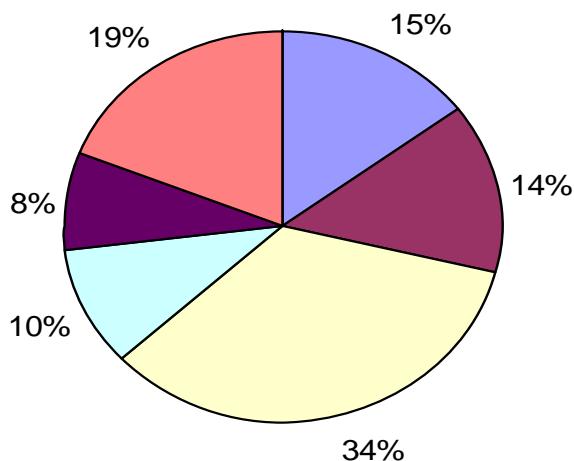
Match up the uses with their corresponding pie chart segments.

UK Household Water Use



Washing – showers: **12%**
 Drinking: **4%**
 Clothes washing: **13%**
 Toilet flushing: **30%**
 Washing – baths and taps: **21%**
 Other: **5%**
 Washing up: **8%**
 Outdoor: **7%**

UK Total Water Use



Agriculture & fisheries: **15%**
 Domestic: **19%**
 Industry: **14%**
 Leaks: **10%**
 Services: **8%**
 Electricity & gas production: **34%**

How do you get your water?

How do you get your water in the **UK**? Water is **collected, cleaned** and **piped** around the country so that you can turn on a **tap** at home and there it is. But what if that wasn't the case?

Let's meet **Mrs Boateng**. She lives in a remote village in **Boku** in **northern Ghana** with her **husband** and their **four children**. Her husband **farms** a small plot of land near their house where he grows **vegetables** and keeps some **goats**. He grows enough to **feed his family** and, if the harvest's been really good, he sometimes has some left over which Mrs Boateng then **sells at market**. The money they earn at the market goes towards paying the **school fees** for his children. The Boateng's two youngest children are still in school but the older ones have left school in order to **help at home**. Kofi, 16, helps his father farm the land whilst Ama, 13, helps her mother with her tasks.



Mrs Boateng and Florence **work hard** everyday: they must **collect firewood** for cooking, **prepare the meals**, keep the **house clean** and, most importantly, **collect water**. Their nearest source of water is a small **spring** about **3km** from their house, which they get to by walking along narrow dirt paths. In the **rainy season** these paths can get **muddy** making them hard to walk down. Luckily the spring is reliable though and provides them with water all year round, even in the **dry season**. When Mrs Boateng was a child, the water source her family relied on often used to **dry up**, forcing her mother to walk to a lake which was further away and **very polluted**. Mrs Boateng is grateful that the village where she lives now has such a **reliable water source**.

It takes Mrs Boateng and Florence about **30 minutes** to walk to the spring, **20 minutes** to get to the front of the queue and fill their containers, and **40 minutes** to walk home again. The trip home takes longer because of the heavy loads they are each carrying. In one trip Mrs Boateng can carry **20 litres of water** (which weighs 20kg) but Florence can only manage **15 litres** (15kg). Because collecting water is hard for the Boatengs, they use it very carefully, **not wasting any**. On most days the family uses just **70 litres** of water between the 6 of them and their goats.

1. How long does Mrs Boateng and Florence spend collecting water each day?
2. If you lived in the Boateng's village and had to walk to the same spring 3km away to collect your water, how long would it take you to collect the amount of water you currently use everyday?
3. Do you have enough time to do this everyday? What would you give up doing in order to free up time to collect water?
4. What could you do to reduce the amount of water you use every day? Can you reduce it to an amount which you could collect in a reasonable time period?
5. How much water do each of the Boateng's use every day? Could you get by on that amount?

ANSWERS/IDEAS FOR DISCUSSION POINTS

1. How long do Mrs Boateng and Florence spend collecting water each day?

About 3 hours

2. If you lived in the Boateng's village and had to walk to the same spring 6km away to collect your water, how long would it take you to collect the amount of water you currently use everyday?

The average person in the UK uses 150 litres of water every day. This amount would take someone able to carry 20kg at a time 12 hours to collect!

3. Do you have enough time to do this everyday? What would you give up doing in order to free up time to collect water?

4. What could you do to reduce the amount of water you use every day? Can you reduce it to an amount which you could collect in a reasonable time period?

Ways to reduce water:

- **take short showers rather than long showers or baths**
- *buy a modern toilet or put a "hippo" brick in the cistern of your existing toilet to reduce the amount of water used in each flush*
- *reuse grey water – e.g. use your shower or laundry water to flush the toilet or water the garden*
- **keep a jug of tap water in the fridge so that you don't need to run the tap for a while to get really cold water from it**
- **wash up in a bowl of water rather than under a running tap**
- **wash fruit and veg in a bowl rather than under a running tap**
- **switch off the tap whilst brushing your teeth**
- *add aerators to taps – these add water to the flow so that the volume of water flowing out appears the same as before but some of the water's actually been replaced by air*

*(Ideas in **bold** are ones that are simple for pupils to implement at home at little or no expense)*

5. How much water do each of the Boateng's use every day? Could you get by on that amount?

After the goats' water has been taken into account, each member of the Boateng family uses about 10 litres of water per day.