

## WARM-UP

Work in pairs to discuss the questions and think about the answers.

1. Write down two things you know about rivers.
  - 
  -
2. Where do you think a river begins? Explain your answer.
3. Where do you think a river ends? Explain your answer.
4. Do you think rivers look the same from beginning to end? Explain your answer.
5. What do you think people use rivers for?

## 1. THE WATER CYCLE

**Aim:** how water circulates continually between the ocean, the atmosphere and the land, and a closer look at how the rainwater reaches rivers;

The scientific name for the water cycle is the **hydrological cycle**. The **water cycle** is a system that circulates non-stop between the ocean, the atmosphere and the land. Water is constantly moving around the earth and its atmosphere. The total amount of water on the earth always remains the same. The amount of

water taken out of the ocean through evaporation is exactly the same as the amount washed in by rivers. All water eventually lands up in the ocean.

### PROCESSES

**Activity 1:** Match-up these terms (in **bold**) and definitions (in *italics*):

1. **Evaporation:**
2. **Transpiration:**
3. **Precipitation:**
4. **Infiltration:**
5. **Run-off:**
6. **Condensation:**

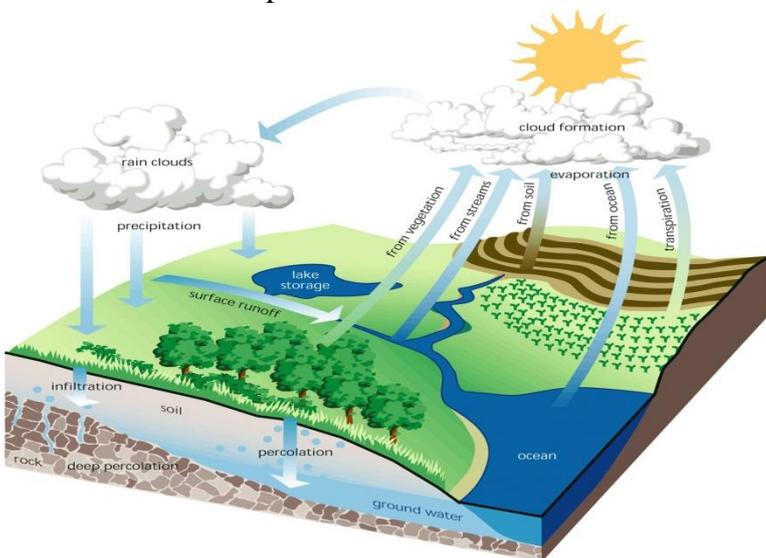


Fig. 2.2 – The hydrologic cycle. The transfer of water from precipitation to surface water and ground water, to storage and runoff, and eventually back to the atmosphere is an ongoing cycle.  
In Stream Corridor Restoration: Principles, Processes, and Practices (1998).  
Interagency Stream Restoration Working Group (15 federal agencies)(FISRWG).

- *water that soaks into the soil and rocks and then forms part of the groundwater;*
- *liquid water that is given off by plants;*
- *water that reaches rivers and flows towards the sea;*
- *water vapour changes into liquid;*
- *liquid water changes to water vapour;*
- *water falling from the atmosphere as rain, hail, snow, sleet, frost or dew;*

But what happens to the precipitation when it reaches the earth?

Well, it could:

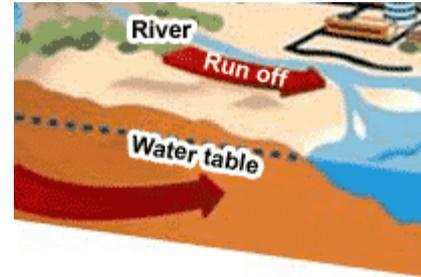
- be taken up by plant roots;
- soak into the soil and rocks;

This is called infiltration. This water forms part of the groundwater. Groundwater is stored in rocks as part of the water table.

Or it could:

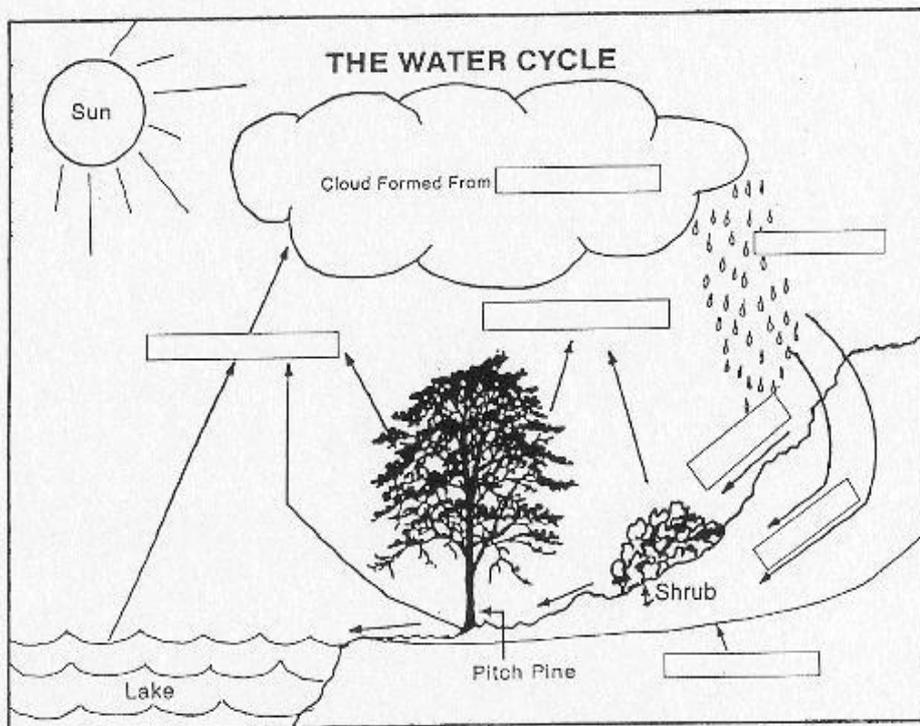
- remain frozen and be stored as ice as part of an ice sheet or glacier.
- stay on the earth's surface in a river or a lake.

Water that reaches rivers will flow towards the sea. This is called surface run-off.



**Activity 2:** Now, let's have a go at creating our own water cycle!

- Look at the terms to the right of the diagram and write them in the appropriate box so that the water cycle makes sense.



### Terms

1. Condensation
2. Infiltration
3. Run-off
4. Precipitation
5. Evaporation
6. Water table
7. Transpiration

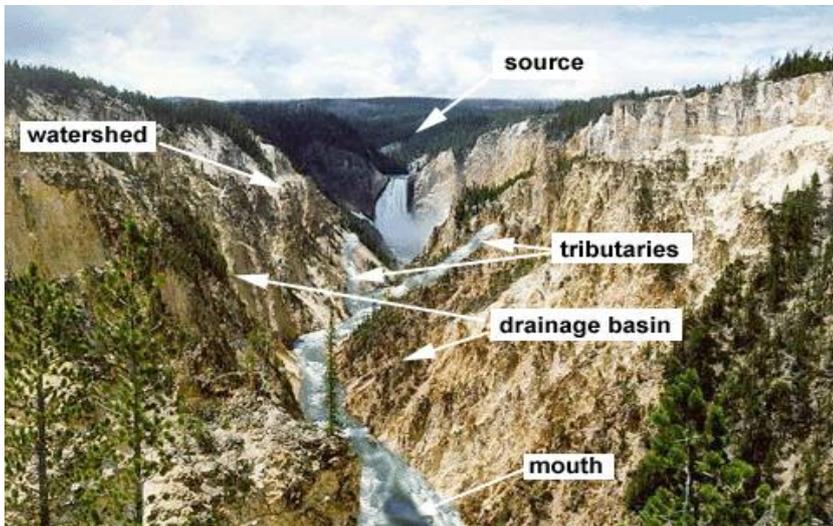
## 2. DRAINAGE BASIN

- Aims:** - be able to define the terms relating to a drainage basin;  
- be able to identify the features of a drainage basin;

All rivers begin as a small trickle high up in the mountains. The beginning of the river, in a highland area, is known as the *source*. As the river flows down the mountain, it makes a *channel* that can then flow along. Like anything that is just beginning, this channel is narrow and small at the source. As the river moves downhill and more water flows into the river, the channel will obviously become wider. Many smaller streams can also join together to make a bigger river. We call these smaller streams *tributaries*.

As a river flows from its source to its mouth, it passes through three different stages. We call these *stages*:

- the upper stage
- the middle stage
- the lower stage



*mouth*, in a lowland area.

Each stage has its own characteristics and features that make it stand out from the other stages.

The point where two rivers join is called the *confluence*. The entire area of land into which a river and its tributaries drain is called a **drainage basin** or **catchment area**. The high-lying area, like a mountain, that separates one drainage basin from another is called a *watershed*. The river will continue to flow downstream until it flows into the sea. We say that the river ends at the

**Activity 3:** Use your knowledge to fill in the answers.

**Drainage basin**

|               |           |                |               |   |
|---------------|-----------|----------------|---------------|---|
| confluence    | watershed | mouth          | steepest area | area where most <b>deposition</b> is likely to take place |
| flattest area | tributary | drainage basin | source        |   |

1

2

3

4

5

6

7

8

9

**Activity 4:** Complete these tasks (NOTEBOOK).

- 1) Explain what the source of a river is.
- 2) Where is this source usually found?
- 3) Explain what the mouth of a river is.
- 4) Where is the mouth of a river usually found?
- 5) What is a tributary of a river?

**Activity 5:** Using the words in the table, complete these sentences. Some words may be used more than once.

There is\_ \_ \_ \_ erosion and deposition in a straighter \_ \_ \_ \_ system than in a very \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ river. In the meandering river, the \_ \_ \_ \_ \_ of the river changes a lot.

Sometimes the river takes \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ to make ox-bow lakes. There is more \_ \_ \_ \_ \_ and \_ \_ \_ \_ \_ in the meandering river system.

Most erosion occurs on the \_ \_ \_ \_ \_ bend of a meander, because the \_ \_ \_ \_ \_ is travelling the \_ \_ \_ \_ \_ here. Most \_ \_ \_ \_ \_ occurs on the \_ \_ \_ \_ \_ bend of a meander because the water is travelling the \_ \_ \_ \_ \_ here.

|           |         |            |
|-----------|---------|------------|
| shortcuts | river   | course     |
| less      | erosion | deposition |
| slowest   | water   | inside     |
| outside   | fastest | curvy      |

**Activity 6. Man-made/Artificial Features of a River System**

1) Here is a list of some man-made features. Unscramble the letters to name them.

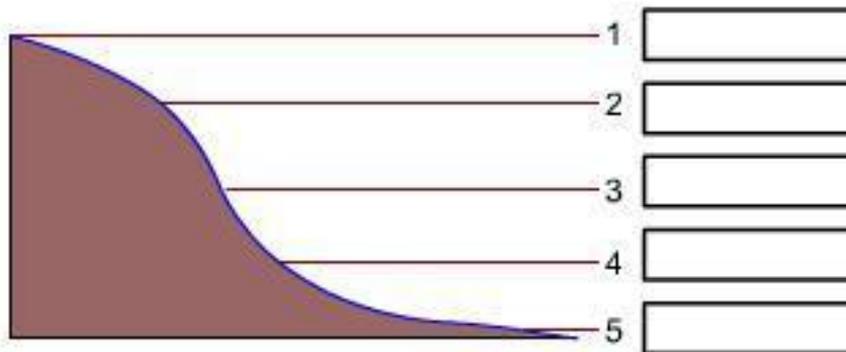
|                   |  |
|-------------------|--|
| A D M             |  |
| R E S O I V R E R |  |
| O C H L           |  |
| R I B D G E       |  |
| T O P R           |  |

2) Write a definition of each of these words. Use a dictionary to help.

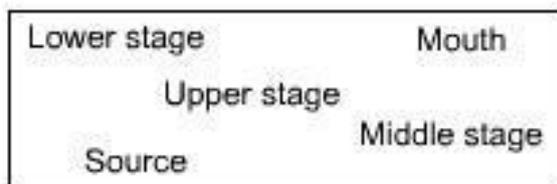
**3. A RIVER'S PROFILE**

**Activity 7.**

If we were to draw a simple profile of a river from its source to its mouth, it would look like this:



In other words, the diagram is showing what the path of the river would look like from the side.



## 4. UK'S RIVERS

As a consequence of so many hills, Britain is rich in waterways. A lot of towns and villages stand on a river, a fact obvious from their names; some of the places are quite famous, others are less known: *Stratford upon-Avon*, *Stockton-on-Tees*, *Stoke-on-Trent* and many others.

**Activity 8.** Search on the internet to fill in the chart with information about the UK's rivers. (suggested site: [http://en.wikipedia.org/wiki/Longest\\_rivers\\_of\\_the\\_United\\_Kingdom](http://en.wikipedia.org/wiki/Longest_rivers_of_the_United_Kingdom))

| River  | Length (km) | Country | Rank |
|--------|-------------|---------|------|
| Severn |             |         |      |
| Trent  |             |         |      |
| Thames |             |         |      |
| Tyne   |             |         |      |
| Clyde  |             |         |      |
| Dee    |             |         |      |

### THE THAMES

**LISTENING 1.** Listen and fill in the gaps.

For centuries, the River Thames has been at the \_\_\_\_\_ of English life. From its source, in the Cotswolds, right down to the city of \_\_\_\_\_ and beyond, the river flows through more than \_\_\_\_\_ miles of beautifully historic countryside and iconic cityscape. Once, one of the country's principal \_\_\_\_\_ routes, the river is now as \_\_\_\_\_ as it's ever been, a heaven for \_\_\_\_\_ and for those who just want to enjoy one of the world's most beautiful \_\_\_\_\_. If you don't own a \_\_\_\_\_, there are plenty of places to hire them for a few hours, a day or much longer. The river is \_\_\_\_\_ from the Thames \_\_\_\_\_ right up to the Lachlade, Gloucestershire, the non-tidal stretches divided into reaches<sup>1</sup> by well-maintained and easily operated locks<sup>2</sup>. Take a trip on the Thames and you'll be on the company of a whole family of fellow-boaters, those taking the river at their leisure and those looking for a bit more of excitement.

Off the water, the Thames is just as absorbing, interesting and \_\_\_\_\_ with the walking, the Thames path along its \_\_\_\_\_, dining in one of the river's excellent \_\_\_\_\_ restaurants or simply watching the world go by. The river Thames has something for everyone. Whether you're \_\_\_\_\_ a day trip or a full family holiday, to find out more about the river Thames, give it a visit [thames.co.uk/boating](http://thames.co.uk/boating). (Discover the River Thames.)

**TASK 2.** Watch the video about the Thames and answer the following questions: (source: National Geographic) Link: <http://video.nationalgeographic.com/video/kids/people-places-kids/uk-thamesriver-kids/>

1. When did the Thames become one of Europe's most polluted rivers?
2. When were the British Houses of Parliament evacuated and why?
3. What did Victorian engineer, Joseph Bazalgette, do? Was his work effective later? Why (not)?

<sup>1</sup> pl. straight part of a river between two bends;

<sup>2</sup> A **lock** is a device for raising and lowering boats between stretches of water of different levels on river and canal [waterways](#). Locks are used to make a [river](#) more easily navigable, or to allow a [canal](#) to take a reasonably direct line across land that is not level.

4. Why is most of the old network still in use today?
5. What does the sewage<sup>3</sup> cause?
6. How has the Thames become much cleaner than it was 50 years ago? Which are the consequences?

**LISTENING 2. Listen and fill in the gaps:** (source: BBC)

- A) The Thames Barrier located in \_\_\_\_\_;  
 -ranked \_\_\_\_\_ on the list of the world's largest movable flood barriers;  
 - the flood of \_\_\_\_\_: 300 people \_\_\_\_\_;  
 - became operational in \_\_\_\_\_;  
 - stretches across \_\_\_\_\_ m of the Thames;  
 - the most recent closure: \_\_\_\_\_, due to a large storm surge in the North Sea;  
 - a landmark worth visiting: \_\_\_\_\_
- B) The Thames has provided easy access to the \_\_\_\_\_;  
 - London prides itself on being well defended: \_\_\_\_\_ miles of floodwall and \_\_\_\_\_ barriers;  
 - in \_\_\_\_\_ The Queen opened what was called " the \_\_\_\_\_ in the flood defence crown";  
 - was an \_\_\_\_\_ marvel, the biggest in the world;  
 - without it, the water levels would be at the top of the \_\_\_\_\_;  
 - Environment Agency- runs a project: " \_\_\_\_\_ "→come up with a long-term solution to the growing threat of flooding;  
 - flood defences- getting \_\_\_\_\_;
- The Thames barrier- designed to last up to \_\_\_\_\_; at first, closures expected every \_\_\_\_\_ times a year; today, it closes \_\_\_\_\_ times every year;
- The worst scenario: - by \_\_\_\_\_, it will be closing on almost every tide, it'll be overtopped on some tides;
- \_\_\_\_\_ people left without living and working in the flooding area;
  - over £ \_\_\_\_\_ bil. worth of property;
  - \_\_\_\_\_ underground stations, \_\_\_\_\_ schools, \_\_\_\_\_ hospitals, power stations and an \_\_\_\_\_;
- another threat to London: \_\_\_\_\_ flooding;

## 5. Lakes

**Activity 9.** Match the words with the countries in which they are used.

|              |                  |
|--------------|------------------|
| <i>Lake</i>  | Wales            |
| <i>Loch</i>  | England          |
| <i>lough</i> | Scotland         |
| <i>Llyn</i>  | Northern Ireland |

**SCOTLAND.** *Loch Ness* was formed about 10,000 years ago, when the Ice Age ended. The sides of the loch are very rocky and steep but the bottom of the Loch is flat. It is fed by seven rivers and never freezes. The temperature of the water changes at about 100 feet down in the loch.

*Loch Lomond* deserves a special mention for its wonderful scenery, while *Loch Ness* is a famous place for the largely debated monster which is supposed to live there.

<sup>3</sup> The mixture of waste from the human body and used water that is carried from houses by pipes under the ground.

**ENGLAND.** *Lake District* or **Lake Country** or *Lakeland*- the region is well known for its great natural beauty – it is considered the most beautiful part of England, – the lakes occupying many ice deepened valleys and showing a wonderful variety. The largest lakes are *Windermere*, *Coniston Water*, *Derwent Water* and *Ullswater*.

**NORTHERN IRELAND.** *Lough Neagh* is a vast lake that is formed by volcanic lava.

**Activity 11.** Search on the Internet the necessary information to fill in the chart. (suggested site: [http://en.wikipedia.org/wiki/List\\_of\\_lakes\\_and\\_lochs\\_in\\_the\\_United\\_Kingdom](http://en.wikipedia.org/wiki/List_of_lakes_and_lochs_in_the_United_Kingdom))

| Name        | Location | Area (sq. km) | Max. depth (m) |
|-------------|----------|---------------|----------------|
| Lough Neagh |          |               |                |
| Loch Lomond |          |               |                |
| Loch Ness   |          |               |                |

**DID YOU KNOW?**

- There are over 38,000 km of flood defences in England and Wales.
- Originally, the UK’s river floodplains were covered with trees. These would have slowed down flood water and helped to reduce the flood peaks.

**Activity 12.** Translate into English the following terms:

1. *meandru*
2. *scurgere de suprafata*
3. *baraj*
4. *afluent*
5. *acumulare*
6. *curs superior*

**Activity 10.** Label the following rivers and lakes on the map: *R. Thames, R. Trent, R. Humber, R. Tyne, R. Forth, R. Clyde, R. Severn, Loch Ness, Loch Lomond, Lough Neagh;*

