



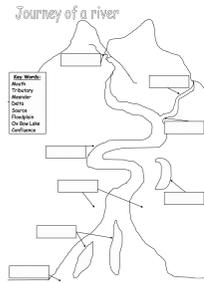
Flow

From humble beginnings, the river flows down the mountain and into the sea. Have you ever pulled on your wellies and waded right in? How deep does it go and how fast does it travel? What soil types can be found by the river? Which animals make their homes there? Let's get down to the river bank and find out, if at the moment we can't for real, let's travel there in our imagination and through photos and videos. Now hop on an imaginary boat and travel some of the world's most majestic rivers – the Ganges, the Thames, the Amazon and Nile – and keep a journal as you follow their course. Time to investigate. As part of the local news team, it's your task to track down the source of some mystery pollution. Where did it come from and who is to blame? Let's meander through the world of rivers, taking a dip into their watery world.

Activity 1

Learning Intention: Finding out about the features of a river.

What do you already know about the features of rivers? Use the words in the box to complete the diagram.

**Print/ copy and complete the sheet: Journey of a river**

You can also find this worksheet at the bottom of this document..

Try to do this without looking anything up yet - you'll be surprised what you already know.

Now that you have had a go, take a look at the attached pictures and diagrams and see if you can work out which features are which, then correct your sheet in a different colour.

Challenge: Create a memory game, by printing or copying the information on the diagrams then mix them up and see how quickly you can match the definition to the word.

Activity 2

Learning Intention To use the internet to find information.

To create a presentation to explain the formation of one of the features of a river. Take a look at the BBC bitesize website:

<https://www.bbc.co.uk/bitesize/guides/zyt9q6f/revision/5>

Choose one of these features: an oxbow lake, a meander, a V-shaped valley, a waterfall or interlocking spurs. Now prepare a two-minute presentation that describes how your chosen feature is formed. You could make an information poster (using any of the pictures from yesterday), a 2D diagram with labels or a 3d model of your feature using items from the recycling at home. **If you choose to create a 3D model of your chosen feature, I recommend you use any material you can find in the home (empty cereal box, tissue, kitchen paper towel, cooked spaghetti makes great meanders...) if you have a garden, use soil, sand, gravel, rocks, moss, twigs...**

As you will be explaining, don't forget to use the word "because".

Show your presentation to someone at home (siblings or parents) and ask an adult to take a photo of your presentation and send it to us. We would love to see your work.

Activity 3

Learning Intention: To retrieve information and identify the features of a river during its different stages.

Read the following text (it can be found at the end of this file together with the ordering and statements sheets).



The Journey of a River

Introduction

All rivers follow a similar journey, beginning of their source and ending at their mouth or delta, where they reach the sea or the ocean. Rivers change the land as they flow and through it, through a number of processes, creating features along the bank, transportation (moving sediment) and deposition (dropping sediment). Each of these processes happens more at some stages of a river's journey and less during other parts of its journey. Read on to find out all about the various stages of how a river moves through its journey!

Young River - Upper course

The river begins at its source, which is usually high up in hills or mountains. For example, the River Severn begins in the Plynlimon. Some rivers begin with a spring where water bubbles up from underground, whereas some begin as a small stream formed from snowmelt or melting ice or snow. To begin with, the river does not have much power. However, many rivers in the upper course are usually shallow and narrow. The river is usually straight as it flows in a narrow channel in the rocks that it flows over. Although the river is shallow, its speed means that it is powerful enough to create rocks and to transport sediment (bits of rock and soil). Other rivers will have waterfalls in their upper course, where water cascades over the edge of a rock and falls through the air. As it flows, it cuts a shallow valley through the land by eroding either rocks, such as sandstone, more easily than hard rocks, such as granite.

Middle course

In the middle course the river widens, deepens and flows more slowly. Although it can take very slow and wide in the middle, it still has great power and continues to transport sediment. Because of the sediment that it is carrying, the river may now look brown and muddy. The river is still straight but starts to meander (curve back and forth). The river starts to meander (curve) because of the erosion that it is doing on the outside of the river. The river starts to meander (curve) because of the erosion that it is doing on the outside of the river. The river starts to meander (curve) because of the erosion that it is doing on the outside of the river.

of these meanders, the river flows more quickly, hence the bank on the outside of the meander is eroded more quickly than the bank on the inside of the meander. Some of the sediment from this erosion will fall to the river bed, some of it will be transported further down river and some of the river's sediment is deposited on the inside bank of the meander, where the water is travelling more slowly. When a lot of sediment is deposited on the inside bank, an earthen bank can be formed. Usually with trees, an earthen bank will disappear as it does not make a firm edge. Fresh sediment is deposited as it flows up with sediment.

Lower course - Old River

In its lower course the river is nearing its final destination the sea or the ocean. During its lower course, the river is at its widest and slowest. The river now has lost energy. Erosion is slow, the sediment that it has been carrying. Sediment can form islands and the river can split into smaller channels. Where silt and sand are formed in the way it flows as a delta. Where the fresh water of the river starts to mix with the salty water of the sea is known as an estuary. Deltas and estuaries can form mudflats, which can be exposed when the tide goes out and can be submerged when the tide is in. Mudflats can be important feeding grounds for wading birds and other wildlife. Large ships can use the estuary to get to the river from the sea or the ocean. Because of the sediment build-up, it can be necessary to dredge the sediment out of the river, so that these large ships can continue to use it.

Summary

Rivers begin at high points in hills or mountains and are then joined by other streams and rivers at confluences. A river has three main stages: upper course, middle course and lower course. As rivers travel they become slower, wider and deeper. When they flow more quickly, they transport more sediment, when they travel more slowly, they deposit the sediment. About all rivers and their journey by reaching a sea or estuary.

Note: if there are words in this text you are unsure of the meaning, then have the COURAGE to go and look it up in a dictionary or google it. Review what you have learnt so far and complete the attached sheet. Using the statements given, cut them out or re-write them in the correct columns

Name: _____ Date: _____

Identify the Features of a river during its different stages

Upper course	Middle course	Lower course

The river is at its widest	The river is at its narrowest	The river is wider, but not at its widest
The river travels through its floodplains	The river reaches the sea	The river is beginning in hills / mountains
The river is at its highest altitude	The river is at sea level	The river is getting closer to sea level
The river is at its most fast flowing	The river is slowing down	The river is at its slowest
Erosion on the outside of meanders and deposition on the inside of them	The river mostly erodes and transports	The river deposits it remaining sediment

The statements are not in order, you will need to read them one at a time and decide in which column to place them. There are 5 statements in each column.

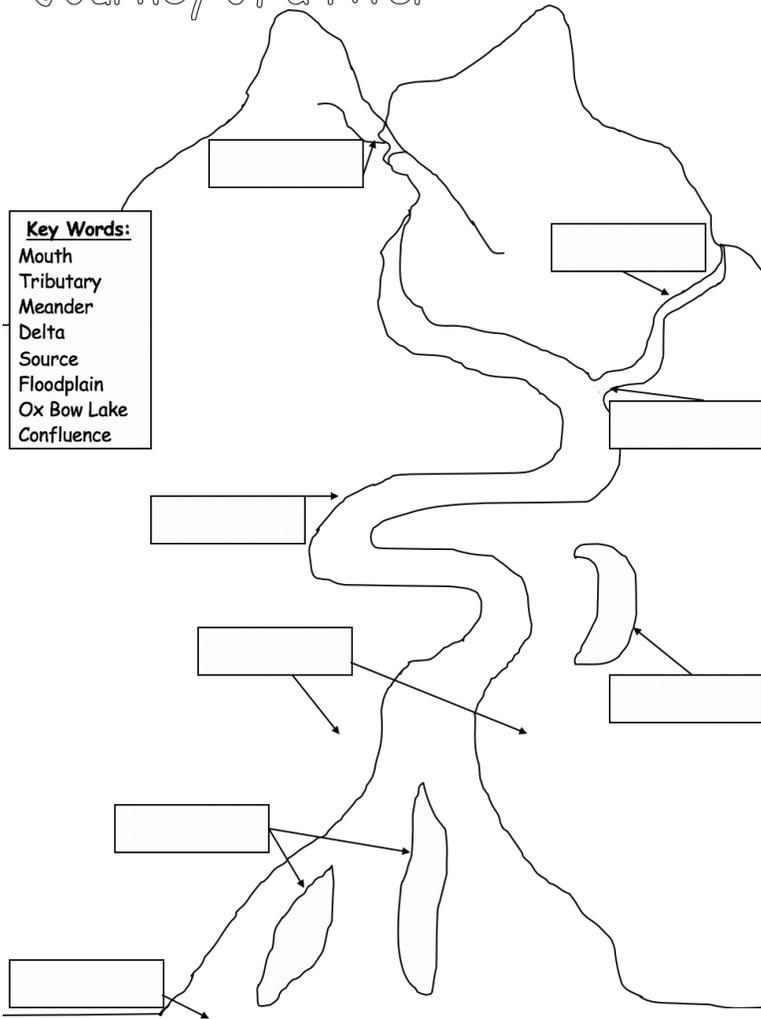
Activity 4

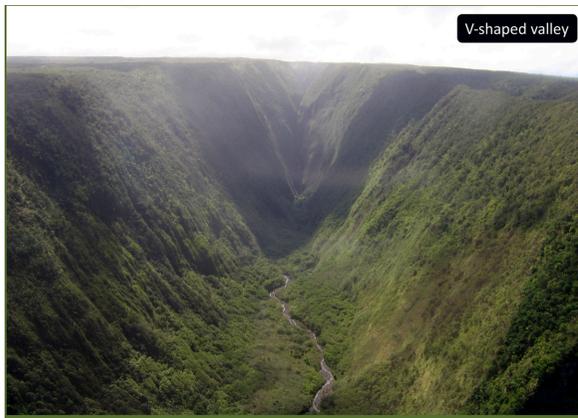
Learning Intention: To review our knowledge of rivers. Create a quiz of 10 or more questions on the features of a river. Make it as easy or tricky as you want. You can use pictures or part of a photo; complete a sentence where you we have to find; give a definition or a couple of clues and the player has to work out

leave blank space for the word what the word is. You can use www.quizlet.com to create a quiz that you then can share with us.



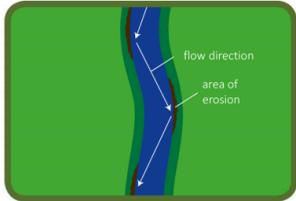
Journey of a river







Meander



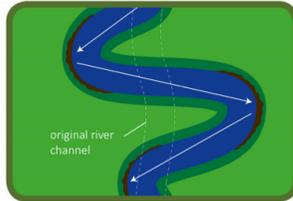
1. The river begins to curve when fast-flowing water starts to erode the riverbank.



2. As the riverbank erodes on the outside of each bend, mud and silt are deposited on the inside of each bend.

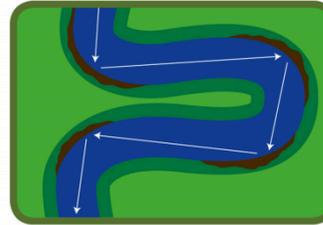


3. As time passes, the meander grows.

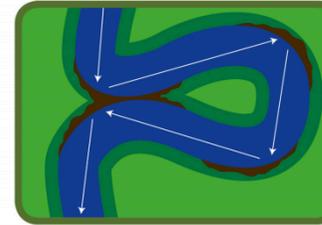


4. The river now twists and turns through the landscape and looks very different from when the process started.

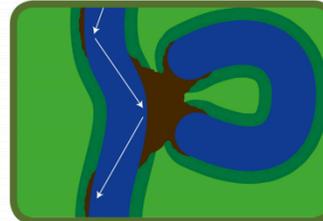
Oxbow lake



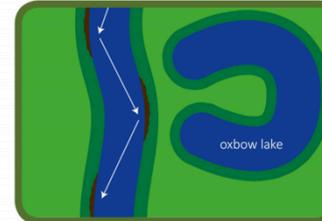
1. A large meander forms in a river.



2. When the meander gets large enough, the river bends back on itself until the two riverbanks are almost touching.



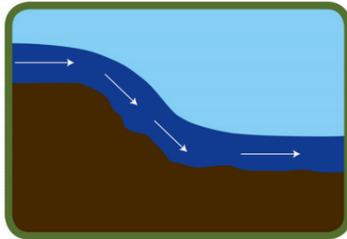
3. Eventually, the water breaks through the riverbanks and the river becomes straighter again.



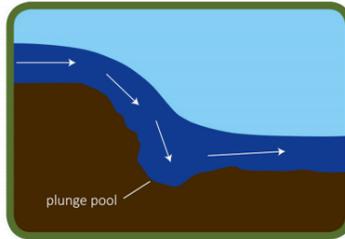
4. The meander is now cut off from the river and becomes a separate lake.



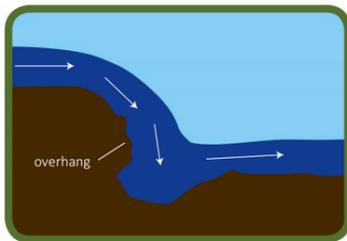
Waterfall



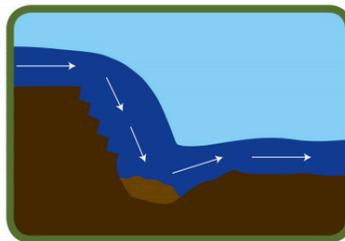
1. When the path of a river reaches a steep slope or hill, the water flows down to the lower level over a section of rapids.



2. The power of the falling water erodes the rock at the bottom of the slope, creating a plunge pool.

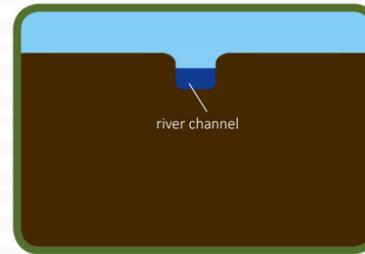


3. Over time, the plunge pool gets larger, and the water cuts into the rock at the back of the pool, making an overhang.

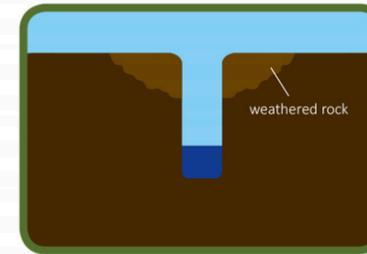


4. The overhang eventually gets too heavy and falls into the plunge pool, creating a steeper drop and turning the rapids into a waterfall.

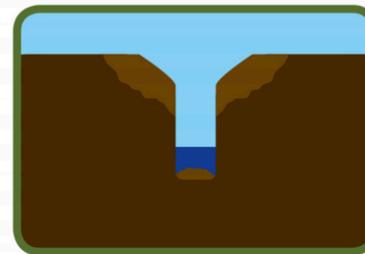
V-shaped valley



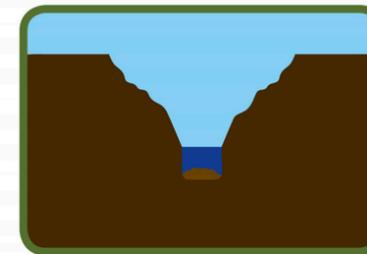
1. As a river flows, it cuts a channel into the rock below it. Over time, this channel gets deeper, creating a valley.



2. The rocks at the top of the valley are weakened by the wind, rain and ice. This is known as weathering.



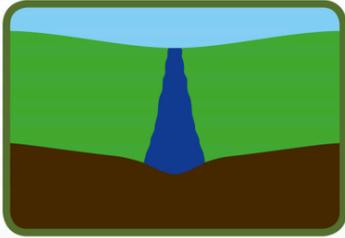
3. The weathered rock begins to break off and fall down the slope towards the river.



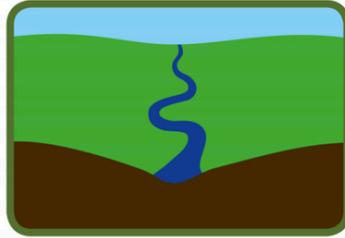
4. As the weathering of the valley top continues, more rocks break off to make a steep, V-shaped valley.



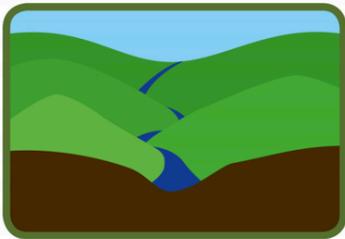
Interlocking spurs



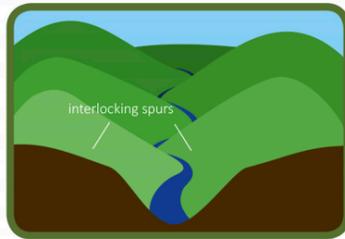
1. Interlocking spurs are formed in the same way as a V-shaped valley, when the river cuts its way through the rock.



2. Some rocks are harder for the river to cut through, so the water flows around them instead.



3. The meandering river continues to cut its channel down through the softer rock, but the harder rock remains where the river bends.



4. Over time, a V-shaped valley is formed but with interlocking spurs of land matching the meanders in the river.



The Journey of a River



Introduction

All rivers follow a similar journey, beginning at their source and ending at their mouth, or delta, where they reach the sea or the ocean. Rivers change the land as they flow over and through it, through a number of processes: erosion (wearing away the land), transportation (moving sediment) and deposition (dropping sediment). Each of these processes happens more at some stages of a river's journey and less during other parts of its journey. Read on to find out all about the various stages of rivers and how rivers change throughout their journeys!

Young River - Upper course



Mountains

The river begins at its source, which is usually high up in hills or mountains; for example, the River Ganges begins in the Himalayas. Some rivers begin with a spring (when water bubbles up from underground), whereas some begin as a small stream formed from rainwater or melting ice or snow. To begin with, the river does not have much power. However many small tributaries join it at confluences, meaning that it quickly gathers momentum and is powerful enough to carve out a narrow channel in the rocks that it flows over. Although the river is shallow, its speed means that it is powerful enough to erode rocks and to transport sediment (bits of rock and soil). Often rivers will have waterfalls in their upper course, where water cascades over the edge of a rock and falls through the air. As it travels, it cuts a v-shaped valley through the land by eroding softer rocks, such as sandstone, more easily than hard rocks, such as granite.



Waterfalls

Middle course

In its middle course the river widens, deepens and travels more slowly. Although it can look very slow and calm on its surface, it still has great power and continues to transport sediment. Because of the sediment that it is carrying, the river may look dark brown and murky. At this point, the river will flow through its flood plains (areas that are flooded when the river breaks its banks). When rivers flood fields, they deposit sediment (or silt) on the fields. This makes the fields fertile (good for growing crops on). In addition, the river starts to meander (bend). On the outside

of these meanders, the river flows more quickly; hence the bank on the outside of the meander is eroded more quickly than the bank on the inside of the meander. Some of the sediment from this erosion will fall to the river bed; some of it will be transported further down river and some of the river's sediment is deposited on the inside bank of the meander, where the water is travelling more slowly. When a lot of sediment is deposited on this inside bank, an ox-bow lake can be formed. Usually with time, an ox-bow lake will disappear as it does not receive a fresh supply of water and it fills up with sediment.



Meanders and an ox-bow lake

Lower course - Old River



A delta

In its lower course the river is nearing its final destination: the sea or the ocean! During its lower course, the river is at its widest and slowest. The river now has less energy; therefore it drops the sediment that it has been carrying. Sediment can form islands and the river can split into smaller channels. Where islands and channels form in this way is known as a delta. Where the fresh water of the river starts to mix with the salty water of the sea is known as an estuary. Deltas and estuaries can form mudflats, which can be exposed when the tide goes out and can be submerged when the tide is in. Mudflats can be important breeding grounds for wading birds and other wildlife. Large ships can use the estuary to sail up the river from the sea or the ocean. Because of the sediment build-up, it can be necessary to dredge the sediment out of the river, so that these large ships can continue to use it.



Mudflats

Summary

Rivers begin at high points in hills or mountains and are then joined by other streams and rivers at confluences. A river has three main stages: upper course, middle course and lower course. As rivers travel they become slower, wider and deeper. When they flow more quickly, they transport more sediment; when they travel more slowly, they deposit this sediment. Almost all rivers end their journey by reaching a sea or an ocean.



The river is at its
widest

The river is at its
narrowest

The river is wider, but
not at its widest

The river travels
through its floodplains

The river reaches
the sea

The river is beginning
in hills / mountains

The river is at its
highest altitude

The river is at
sea level

The river is getting
closer to sea level

The river is at its
most fast flowing

The river is slowing
down

The river is at its
slowest

Erosion on the outside of
meanders and deposition
on the inside of them

The river mostly
erodes and transports

The river deposits its
remaining sediment



Name: _____ Date: _____

Identify the features of a river during its different stages

Upper course	Middle course	Lower course