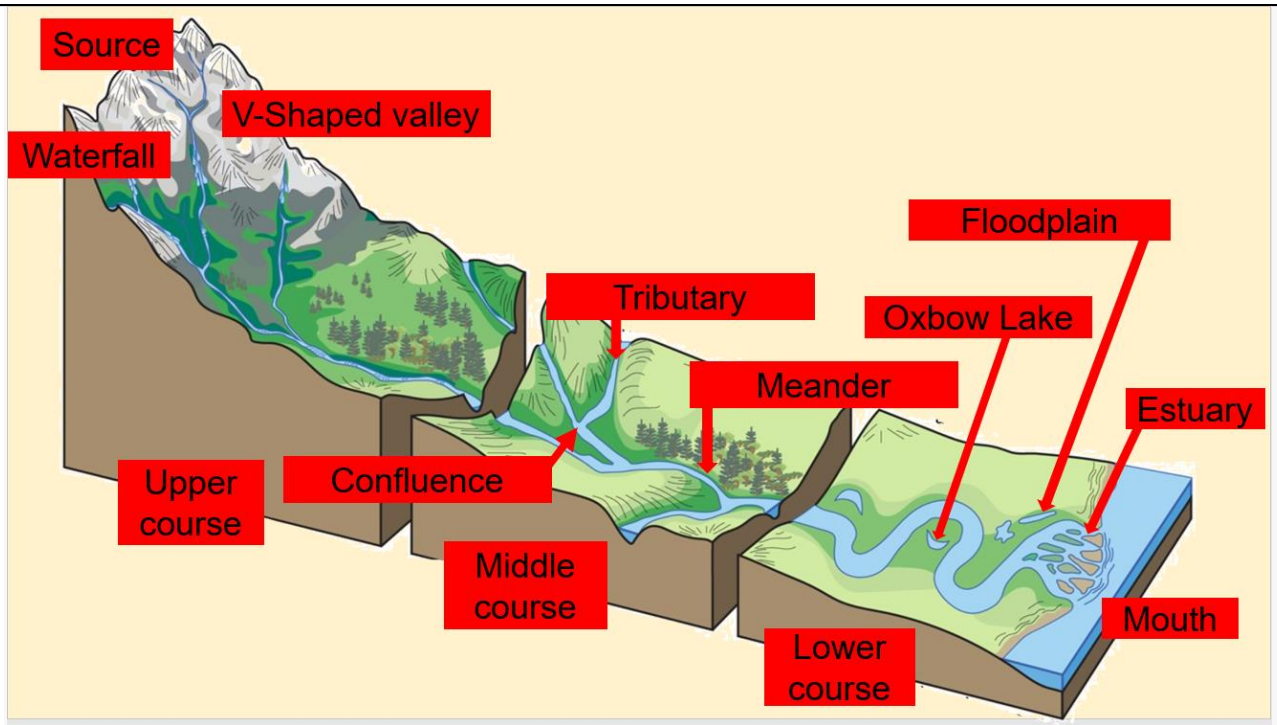
Year 8 – Geography – Autumn 2023

How can river management schemes be used to balance the human and physical environments?

Key Knowledge	
1	**The Water Cycle** The water cycle is the continuous movement of water on, above, and below the Earth's surface. Key processes in the water cycle: evaporation, condensation, precipitation, and transpiration. Water evaporates from oceans, lakes, and rivers, forms clouds, and returns to the Earth as rain or snow.
2	
3	**Cross and Long Profiles of a River** Cross profile: A view of a river's shape from side to side. Long profile: A view of a river's shape from its source to its mouth. Cross profiles vary from V-shaped in the upper course to U-shaped in the lower course. Long profiles show changes in gradient (steepness) from the source to the mouth.
4	**Meanders and Oxbow Lakes** Meanders are curved bends in a river. Oxbow lakes form when meanders cut off, leaving a crescent-shaped lake. Oxbow lakes are the result of erosion and deposition.

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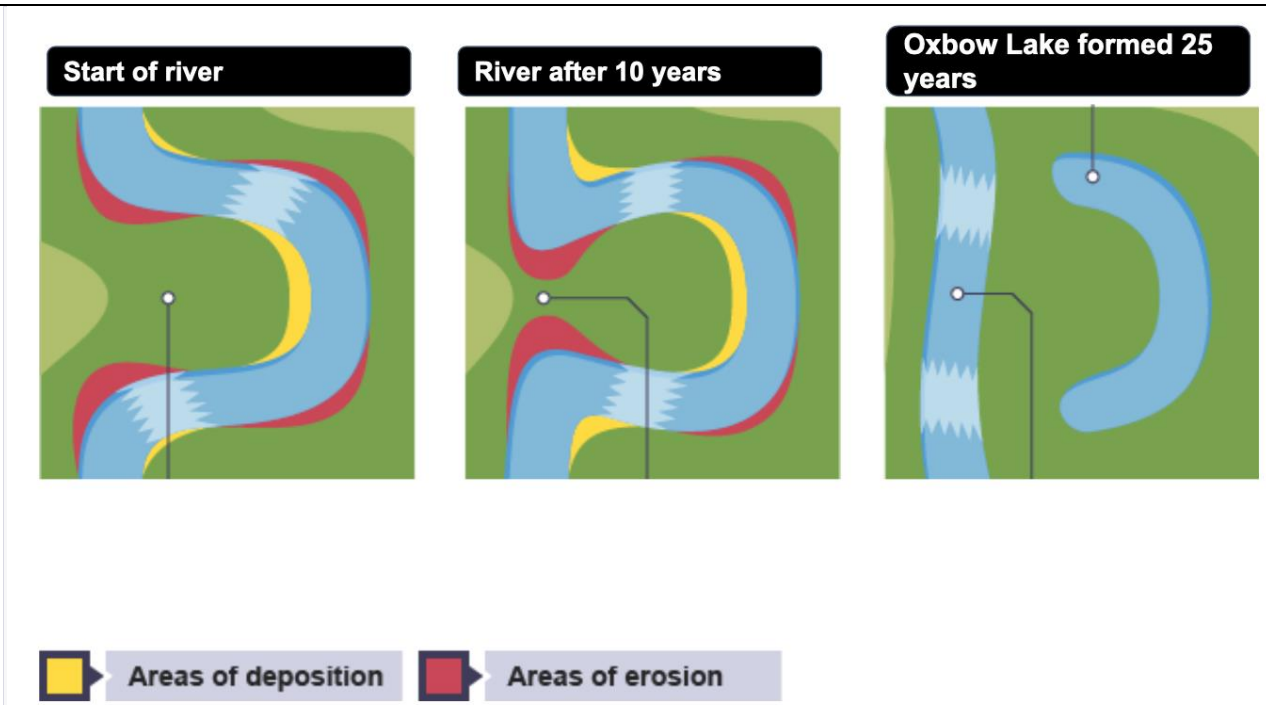
5	
6	**Flood Plains and Estuaries** Flood plains are flat areas near a river that flood during heavy rain or snowmelt. Estuaries are where rivers meet the sea, creating a mix of freshwater and saltwater.
7	**Flood Management** Flood management involves controlling and reducing the impact of floods. Strategies include floodplain zoning, flood defenses (levees, embankments), and flood forecasting. **Hard and Soft Engineering** Hard engineering uses physical structures like dams and levees to control rivers. Soft engineering employs natural processes or ecological methods like wetland restoration and planting trees along riverbanks.
8	**Floodplain Zoning:** Floodplain zoning involves regulating land use and development in flood-prone areas to reduce the risk of damage from floods. **Levees:** Levees are embankments or walls constructed along riverbanks to contain floodwaters within the river channel and protect adjacent areas. **Flood Walls:** Flood walls are vertical barriers made of concrete or other materials designed to prevent floodwater from inundating a specific area.

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9	**Dams and Reservoirs:** Dams and reservoirs are structures built to store excess water during heavy rainfall, reducing downstream flood risk and providing a controlled release of water. **Channelization:** Channelization is the process of modifying or straightening a river's natural course to increase its capacity and control floodwater flow. **Flood Diversion Channels:** Flood diversion channels are artificial waterways designed to redirect floodwaters away from populated areas to less critical regions.
10	**Flood Forecasting and Warning Systems:** Flood forecasting and warning systems use technology and data to predict and provide early warnings about impending floods to communities at risk. **Wetland Restoration:** Wetland restoration involves restoring or creating wetland areas, which act as natural buffers by absorbing floodwaters and reducing flood risk. **Afforestation and Riparian Planting:** Afforestation and riparian planting involve planting trees and vegetation along riverbanks and floodplains to stabilize soil, reduce erosion, and absorb excess water during floods.

Think Like a Geographer – Big Ideas

Earth is the home of human kind

Linking the physical world to human environments

Questions

What is the water cycle, and what are its key processes?	The water cycle is the continuous movement of water on, above, and below the Earth's surface. Key processes include evaporation, condensation, precipitation, and transpiration.
How does a river's cross profile change from the upper course to the lower course?	The cross profile changes from V-shaped in the upper course to U-shaped in the lower course.
Name three features of the upper course of a river.	Rapids, waterfalls, narrow V-shaped valleys.
What causes the formation of oxbow lakes?	Oxbow lakes form when meanders in a river cut off, leaving a crescent-shaped lake.
Define flood plains and estuaries.	Flood plains are flat areas near a river that flood during heavy rain or snowmelt. Estuaries are where rivers meet the sea, creating a mix of freshwater and saltwater.
What is flood management, and name one strategy used in flood management?	Flood management involves controlling and reducing the impact of floods. One strategy is floodplain zoning.

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Differentiate between hard and soft engineering in river management.	Hard engineering uses physical structures like dams and levees. Soft engineering employs natural processes or ecological methods like wetland restoration.
What is the primary difference between the cross and long profiles of a river?	The cross profile shows a river's shape from side to side, while the long profile shows its shape from source to mouth.
Why do meanders form in the middle course of a river?	Meanders form due to erosion and deposition as the river flows through gentler, wider valleys.
How can a river's gradient change along its long profile?	A river's gradient can decrease (become less steep) as it flows from its source to its mouth.