

Nova's Atmospheric Adventure: Mastering the Water Cycle

Learning objective: To describe and explain the processes of the water cycle, including evaporation, condensation, precipitation, and collection.

Read each question carefully and use your scientific knowledge to provide detailed explanations. Remember to use the vocabulary provided to support your answers.

Nova the barn owl is observing the world from high above. She watches as the morning sun warms the surface of the local lake, turning liquid water into an invisible gas. Higher up in the cooler air, she spots wispy clouds forming. Later, she observes raindrops falling onto the forest floor, where they gather in streams and travel back towards the sea, ready to begin the journey all over again.

Word bank: Evaporation · Condensation · Precipitation · Collection · Water vapour · Atmosphere · Transpiration

1. Nova notices that the lake level seems to drop slightly on a very hot day. Using the term 'evaporation', explain why this happens and where the water molecules go. (2 marks)

2. Explain the role of temperature in the process of 'condensation'. How does this process lead to the formation of clouds? (2 marks)

3. Compare and contrast 'evaporation' and 'precipitation'. How are these two processes opposite in terms of the state of water? (2 marks)

4. Justify why the water cycle is described as a 'cycle' rather than a 'linear process'. What might happen if the sun's energy were removed from the Earth's system? (3 marks)

5. If a puddle disappears after a rainstorm, has the water vanished forever? Justify your answer using your knowledge of the conservation of matter. (2 marks)

Draw: Draw a detailed diagram of the water cycle. Include labels for evaporation, condensation, precipitation, and collection. Add a small drawing of Nova the owl watching the process from a tree.



Extension challenge: Design an experiment to prove that plants release water vapour into the atmosphere (transpiration). Write a step-by-step method and predict what you would observe inside a sealed plastic bag placed over a leafy branch.