

Nova's Water Cycle Investigation

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

Nova the barn owl is tracking a droplet of water as it travels around the Earth. Your task is to sequence the stages of the water cycle correctly and then act as a scientist to justify how these changes occur. Read the processes below and place them in the correct order (1-6). Once ordered, use your scientific knowledge to answer the questions about the transitions between states of matter.

Word bank: Evaporation · Condensation · Precipitation · Collection · Water Vapour · Transpiration

1. Sequence these stages by numbering them 1 to 6: [] Water accumulates in oceans and lakes, [] The sun warms water turning it into gas, [] Clouds become heavy and release rain or snow, [] Plants release water vapour into the air, [] Water vapour cools to form clouds, [] Water flows back towards the sea. (2 marks)

2. Explain why the sun is considered the 'engine' of the water cycle. What might happen if the Earth's temperature significantly decreased? (3 marks)

3. Compare and contrast evaporation and condensation. How does the thermal energy of the water particles differ in these two states? (3 marks)

4. Justify why water is described as a 'finite resource' despite the water cycle constantly recycling it. (2 marks)

5. If you were designing a model of the water cycle in a jar, explain why you would need to place it in a sunny spot rather than a dark cupboard. (2 marks)

6. Evaluate the role of transpiration in the water cycle. How does deforestation in a tropical rainforest affect local precipitation levels? (3 marks)

Draw: Draw a diagram of the water cycle, clearly labelling the following: Evaporation, Transpiration, Condensation, Precipitation, and Collection. Include arrows to show the direction of the water's movement.



Extension challenge: Imagine you are a water droplet. Write a short, creative diary entry describing your journey through the cycle. Use precise scientific vocabulary to describe your change in state (e.g., 'I felt my energy increasing as I turned into an invisible gas...').