

Nova's Journey Through the Water Cycle

Learning objective: To describe the water cycle as a continuous process including evaporation, condensation, and precipitation.

Read the passage below carefully. Use your scientific knowledge to answer the questions that follow. Think carefully about the processes Nova observes during her night-time flight.

Nova the barn owl soared silently through the cool night air. Below her, the lake shimmered under the moonlight. Earlier that day, the warm sun had heated the water, turning it into invisible water vapour—a process called evaporation. Nova knew this gas was rising high into the sky. As the vapour reached the chilly upper atmosphere, it cooled down significantly. This cooling caused the gas to turn back into tiny liquid droplets, forming the fluffy clouds that Nova often navigated around. This is known as condensation. When these droplets became too heavy for the clouds to hold, they fell back to the Earth as precipitation, such as rain or sleet. The water eventually gathered in rivers and lakes, ready to start the cycle all over again. Nova blinked her large eyes, fascinated by how the water on our planet is constantly moving and changing state. She realised that the rain falling on the forest tonight might have been part of a vast ocean only a few weeks ago. The cycle is a never-ending journey powered by the sun.

Word bank: evaporation · condensation · precipitation · vapour · accumulation · atmosphere · temperature

1. Identify the two processes mentioned in the text that involve water changing from a gas to a liquid, and from a liquid to a gas. (2 marks)

2. According to the text, what happens to water droplets when they become too heavy for the clouds to hold? (1 mark)

3. Explain why the water vapour turns into liquid droplets as it rises higher into the atmosphere. (2 marks)

4. Infer why Nova describes the water cycle as a 'never-ending journey'. (2 marks)

5. Justify why the sun is essential for the water cycle to continue. What might happen if the Earth stopped receiving sunlight? (3 marks)

Draw: Draw a diagram of the water cycle featuring Nova the owl flying above. Label the stages: Evaporation, Condensation, and Precipitation clearly.



Extension challenge: Compare and contrast the water cycle to a closed system. If you were a droplet of water, write a creative diary entry describing your journey through the cycle. Justify why it is important for humans to protect our water sources based on how the cycle functions.