# Nova’s Atmospheric Adventure: A Year 5 Assessment on the Water Cycle

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

Read each question carefully. Use your scientific knowledge to provide clear and accurate explanations. Where calculations or logical reasoning are required, show your working clearly.

Nova the barn owl is perched high in the old oak tree, watching the early morning mist rise from the meadow. She notices how the dew on the leaves seems to disappear as the sun climbs higher. As the temperature rises, Nova wonders how the water moves from the ground to the clouds and back again, keeping the meadow lush and green.

*Word bank: evaporation · condensation · precipitation · transpiration · collection · vapour · atmosphere · solar energy*

**1. Nova watches water turn into invisible vapour. Name this process and explain the role of solar energy in making it happen. (2 marks)**

**2. Define 'transpiration' in your own words. Why is this process essential for plants living in the meadow? (2 marks)**

**3. Describe how clouds are formed. Use the term 'condensation' in your response. (2 marks)**

**4. Compare and contrast two different forms of precipitation. Why might one form occur in winter while another occurs in summer? (4 marks)**

**5. Explain why the water cycle is considered a 'closed system'. What might happen to the Earth's environment if the Sun's energy were significantly reduced? (4 marks)**

**6. A farmer needs to water his crops. He spends £12.50 on a water collection barrel. If he collects 500 litres of rainwater over a month, calculate the cost per litre. Justify why collecting rainwater is a sustainable practice for the environment. (3 marks)**

**7. Imagine you are a single droplet of water. Write a creative account of your journey through the water cycle. You must mention at least four stages of the cycle and describe the physical changes you experience as your state of matter changes. (5 marks)**

**8. Evaluate the impact of deforestation on the water cycle. How does removing trees affect the local precipitation levels? (3 marks)**

**Draw: Draw a detailed, labelled diagram of the water cycle, ensuring you include the Sun, a mountain, a river, and clouds. Annotate your drawing to show where evaporation and condensation occur.**

*Extension challenge: Total: /25. Consider this: If the Earth's average temperature continues to rise due to climate change, how will this accelerate the water cycle? Predict the consequences for regions that already experience heavy rainfall versus those that suffer from drought.*