

01.04 Water and Carbon Cycles

Student Name:

Part 1: The Water Cycle

1. Sketch a diagram that traces the path of water in the water cycle for each scenario. In your diagram, label the processes that are occurring to move the water along the cycle. You may create the sketch using paint tools.

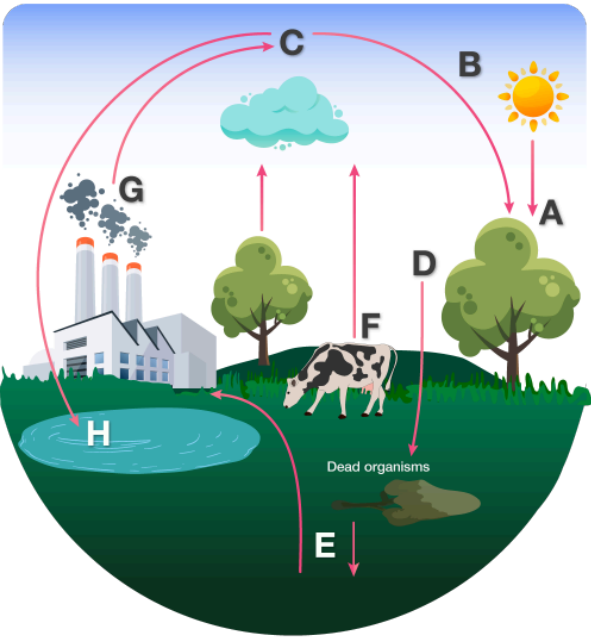
Scenario	Diagram
Rainwater to groundwater	
Ground water to clouds	

2. Arid regions do not receive much rainfall throughout the year. Sometimes the communities rely on water from other locations, such as water that is diverted from rivers and streams. Use your understanding of the water cycle to **explain** how three processes in the cycle would be affected by the reduced precipitation in arid regions.

Part 2: The Carbon Cycle

1. Using the image, identify four locations where carbon is cycling in the environment. Describe the cycle, the form carbon exists as, and what it becomes.

Note: a model is done for you, but it is not correct as it does not relate to this image. This is to assist you with phrasing your answers.



Location	Path of Carbon
K	Carbon is in the ground as biomass. It will be extracted and become atmospheric carbon.

Answer the following questions in complete sentences.

2. Describe the role of chlorophyll in photosynthesis.

3. Explain how photosynthesis and aerobic respiration are part of the carbon cycle. Include their chemical equations in your response.

4. Mining companies are attempting to mine the ocean floor to harvest precious metals within the seafloor sediment. **Explain** how this extraction of ocean floor sediment will impact the carbon cycle and ultimately impact the concentration of carbon dioxide in the atmosphere.

5. Mangroves forests are considered an important carbon sink. **Describe** what carbon sinks are and the impact of humans removing the mangroves has on the carbon cycle.

6. Consider the scenarios below. **Explain** how they will affect the rate of photosynthesis.

Scenario	Impact on the rate of photosynthesis
Volcanoes release volcanic ash into the atmosphere blocking sunlight.	
Groundwater wells for irrigation dry out, reducing water for crops.	
Concentration of CO ₂ in the atmosphere increases.	