



Carbon Cycle Activity IB Biology



Different types of Carbon

- Carbon Dioxide Gas
- Dissolved Carbon dioxide
- Carbohydrates (e.g. glucose)
- Hydrogen carbonate ions (CO₃⁻)
- Methane gas

- Peat (organic C rich molecules)
- Hydrocarbons in oil and gas
 - **Corals and Molluscs**
 - Limestone Rocks (Carbonates)

Reservoirs and Processes

Reservoirs

(places where carbon is stored)

- Living Plants
- Living Animals
- Decomposer organisms
- Soils and Organic molecules
- Fossil Fuels
- Sedimentary Rocks
- Corals and Shellfish
- Phytoplankton
- Oceanic Food webs
- Sea water

Processes

(ways of moving carbon from one reservoir to another)

- Photosynthesis
- Respiration
- Decomposition
- Diffusion
- Combustion
- Fossilization
- Feeding
- Erosion of rocks
- Volcanic eruption

Carbon Cycle Diagram

Cut out these labels and stick them to the following diagram



Draw arrows labelled with these processes connecting the carbon reservoirs

Photosynthesis Respiration Decomposition

Diffusion Combustion Fossilization Feeding Erosion of rocks Volcanic eruption Drag and drop the labels then draw on the arrows showing processes to complete the diagram

Carbon Cycle Diagram



Stick on the carbon reservoir labels then draw arrows showing processes to complete the diagram

Carbon Cycle Diagram

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Carbon Cycle Diagram



Carbon Cycle Diagram

One possible solution



Questions

- 1. Name three processes that release carbon dioxide into the atmosphere.
- 2. Name three process which move carbon from one reservoir to another, apart from to and from the atmosphere.
- **3. Describe** the movement of carbon that would happen very quickly (in days) between two or more reservoirs. Include the reservoirs, the processes and the forms of carbon.
- 4. Draw a diagram and describe the movement of carbon though two or more reservoirs that would store carbon for thousands or millions of years.
- 5. A Carbon Sink is a reservoir which absorbs more carbon than it releases. **Suggest** two possible carbon sinks.
- Carbon Flux is the flow of carbon from one reservoir to another and its rate is measured in Gigatonnes of Carbon per year (GtC/yr).
 Suggest the process which has the greatest carbon flux.

Carbon cycle showing carbon flux and carbon reservoir sizes



Questions

1. Outline the processes that release carbon dioxide into the atmosphere from the lithosphere (carbonate rocks).

 Estimate the size of the Carbon Flux from the Biosphere to the Atmosphere which is caused by deforestation and the burning of wood. Give your answer in Gigatonnes of Carbon per year (GtC/yr) and explain how you made the estimate.

Carbon Cycle

A simple oceanic food web.

Crustaceans and Molluscs play an important role in the oceanic carbon sink.



Image courtesy of www.aquaculture.urgent.be.

Questions

1. Explain the two main physical / chemical processes by which carbon dioxide molecules in the air move to the cells of phytoplankton in the ocean.

 A Carbon Sink is a reservoir which absorbs more carbon than it releases.
 Suggest how carbon in the bodies of crustaceans and molluscs is removed from the oceanic food chain to become part of another, slower carbon reservoir.