CARBON RESERVOIR

#1

Carbon is found in the atmosphere in the form of carbon dioxide (CO_2) gas.

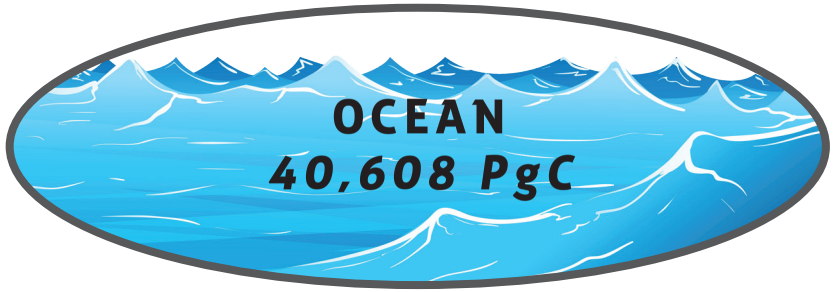
Cut a string 102 cm long, and tie the ends together to create a circle.
Circle area ≅ 829 cm^2

This represents the amount of carbon in the atmosphere.

Scale:
1 cm^2 = 1 Pg Carbon

CARBON RESERVOIR

#1



Carbon is found in the ocean in the forms of dissolved carbon dioxide (CO_2) gas, called carbonic acid, and carbon ions.

Cut a string 714 cm long, and tie the ends together to create a circle.
Circle area ≅ 40,608 cm^2

This represents the amount of carbon in the ocean.

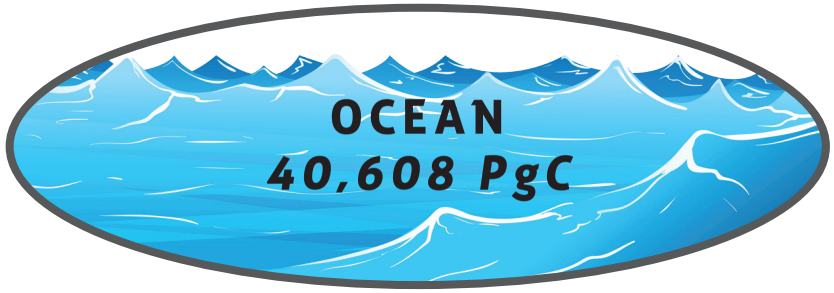
Scale:
1 cm^2 = 1 Pg Carbon

TASK CARDS

TASK CARDS

CARBON CYCLE

#2



Carbon leaves the ocean through gas exchange with the atmosphere. When there is more carbon dioxide (CO_2) in the water than in the air above it, CO^2 is released from the ocean surface. On a much longer time scale, carbon from marine organisms, such as zooplankton and algae, in the ocean is transformed to fossil fuel reserves during the formation of oil.

Thrower 1: Every 15 seconds, give 1 carbon to the Atmosphere and say

Ocean Release

Thrower 2: Every 90 seconds, give 1 carbon to Fossil Fuel Reserves and say

Fossil Fuel Formation

CARBON CYCLE

#2

Carbon leaves the atmosphere through photosynthesis and ocean absorption. In photosynthesis, plants absorb carbon dioxide (CO_2) from the atmosphere and use light energy from the sun to make glucose (chemical energy). The ocean absorbs carbon through gas exchange; CO_2 dissolves in water and is absorbed by the ocean.

Thrower 1: Every 10 seconds, give 1 carbon to Vegetation and say

Photosynthesis

Thrower 2: Every 15 seconds, give 1 carbon to the Ocean and say

Ocean Absorption

#1

CARBON RESERVOIR

VEGETATION

Plants take in carbon through photosynthesis and create glucose. Plants and animals use glucose for energy and to build carbohydrates, storing carbon.

Cut a string 81 cm long, and tie the ends together to create a circle.
Circle area ≅ 520 cm^2

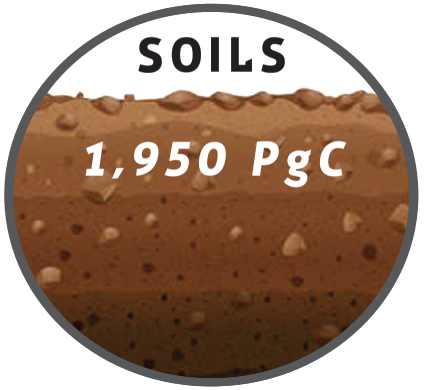
This represents the amount of carbon in vegetation.

Scale:
1 cm^2 = 1 Pg Carbon

#1

CARBON RESERVOIR

SOILS



Soil contains carbon in the form of organisms that live in the soil and decomposing organic matter (bits of dead organisms).

Cut a string 156 cm long, and tie the ends together to create a circle.
Circle area ≅ 1,950 cm^2

This represents the amount of carbon in the soil.

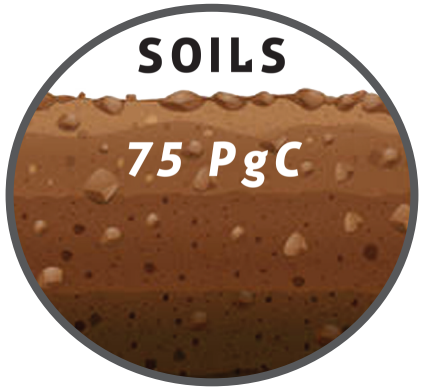
Scale:
1 cm^2 = 1 Pg Carbon

TASK CARDS

TASK CARDS

#2

CARBON CYCLE



Carbon leaves the soil through decomposer respiration. Organic matter in the soil is made up of bits of dead organisms. Decomposers break the organic matter down into smaller parts. Decomposers, like all living things, conduct cellular respiration to produce energy for their cells by taking in glucose and oxygen and releasing water and carbon dioxide (CO_2) into the atmosphere.

Thrower 1: Every 15 seconds, give 1 carbon to the Atmosphere and say

Respiration

#2

CARBON CYCLE

Carbon leaves plants through respiration and decomposition. In cellular respiration, organisms produce energy for their cells (ATP) by taking in glucose (food) and oxygen and releasing water and carbon dioxide (CO_2) into the atmosphere. When living things decompose, they are broken down into small parts, and some carbon remains in the soil as organic matter.

Thrower 1: Every 10 seconds, give 1 carbon to the Atmosphere and say

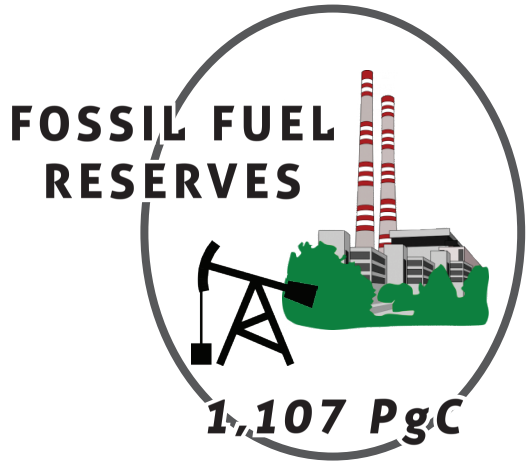
Respiration

Thrower 2: Every 30 seconds, give 1 carbon to the Soil and say

Decomposition

#1

CARBON RESERVOIR



Carbon from ancient plants and animals is stored in the earth as fossil fuels. After the organisms decompose and are buried, heat, pressure, and geologic forces result in the formation of coal and oil.

Cut a string 118 cm long, and tie the ends together to create a circle.
Circle area ≅ 1,107 cm^2

This represents the amount of carbon in fossil fuel reserves.

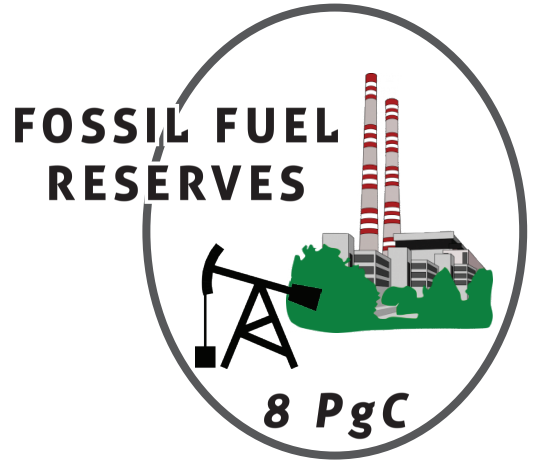
Scale:
1 cm^2 = 1 Pg Carbon

TASK CARDS

TASK CARDS

#2

CARBON CYCLE



Carbon leaves fossil fuel reserves when they are extracted and burned. The burning, or combustion, of fossil fuels releases carbon dioxide into the atmosphere. Fossil fuel combustion has increased as humans have developed the technology to extract fossil fuels and use them in generating energy.

Thrower 1: Every 1 minute, give 1 carbon to the Atmosphere and say

Combustion