



Experiment 1: What are Trees Made of?

Aim:

To introduce students to the important role of trees and forests in the Carbon Cycle

Curriculum Links:

Living Things

Environmental awareness and care

Global Goals/SDG Links:

Goal 3 - Good Health & Wellbeing

Goal 6 - Clean Water & Sanitation

Goal 7 - Affordable and Clean Energy

Goal 11 - Sustainable Cities and Communities

Goal 12 - Responsible consumption and production

Goal 13 - Climate Action

Goal 14 - Life below water

Goal 15 - Life on Land

Skills:

Research; Observing; Recording

Background Information:

This Lesson Plan introduces teachers/facilitators to the connection between Forests & Climate.

Support Sheet 1 provides some background information that will equip you with an understanding of how trees are part of the Carbon Cycle and how they are an important ecosystem resource in reducing the extent and extreme effects of climate change.

This Lesson Plan is accompanied by the **Forests & Climate Power Point Presentation (PPT) Resource**.

This PPT poses 10 questions about Forests and Climate and explains the importance of forests in preventing extreme climate change. The slides are kept simple, with a lot of background information in the notes. The teacher/facilitator can decide how much information is appropriate for the class. For older students the background information document can be used for class discussions.

Please note that the PPT is also available in PDF Format, which can be printed if required.

Equipment:

- ✓ What are trees made of Student Activity Sheet per group
- ✓ Clipboards
- ✓ Pencils
- ✓ Tablet/Camera to record work
- ✓ Tree Swatches to identify your tree
- ✓ Measuring tape



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Forests and Climate



LESSON PLAN

FORESTS &
CLIMATE

Methodology:

1. Go to a big tree in the school grounds, forest or park. Ask students what they think the volume of this tree is i.e. how much space it takes up?
2. Ask students where the tree got its mass. They might say it got it from the soil, ask them why there isn't an equivalent sized hole in the ground?
3. Discuss with students what trees are made of. Explain that through photosynthesis, trees use sunlight to combine carbon dioxide (CO²) from the atmosphere with water and nutrients from the ground to form carbohydrates, which make up the tree's biomass. CO² is taken in at a certain rate and builds the mass of the tree over time.
4. Biomass is a measure of the dry mass of woody and leaf matter in kg. The carbon content of a tree is approximately 50% of its biomass (dry mass). The other 50% is made up of hydrogen, oxygen, nitrogen and other elements.
5. Divide Students into groups of threes.
6. Give equipment to each group and get them to pick a tree in the school grounds and fill in the worksheet.

Useful Links:

LEAF Theme – Forests & Climate:

https://leafireland.org/resources/theme_category/forests-climate/

LEAF International Resources on Climate:

<https://www.leaf.global/our-resources>

Green-Schools & Climate Action:

https://greenschoolsireland.org/resources/theme_category/climate-action/



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Experiment 1: What are Trees Made Of?

Name: _____

Date: _____

Location: _____

Resources per group:

What are Trees Made of Worksheet, Tree ID Swatch, Clipboard, Camera, Pencil, Calculator, Measuring Tape

Methodology:

1. Pick a tree in the school grounds. Use your tree swatch to identify what species of tree it is.

TreeSpecies: _____

2. Measure the circumference of the tree at standard chest height with measuring tape.

Circumference of Tree: _____

3. Calculate the biomass of the tree:

Biomass is dry mass of a tree in kg including roots, trunk, branches and leaves. You can use the conversion table below to approximate the biomass of your tree. Use the nearest value to the circumference of your tree.

Circumference (cm)	Tree dry weight (kg) Biomass
50	106
100	668
150	1,964
200	4,221
225	5,771
250	7,641
275	9,842
300	12,410
325	15,350

Biomass of Tree _____ Kg



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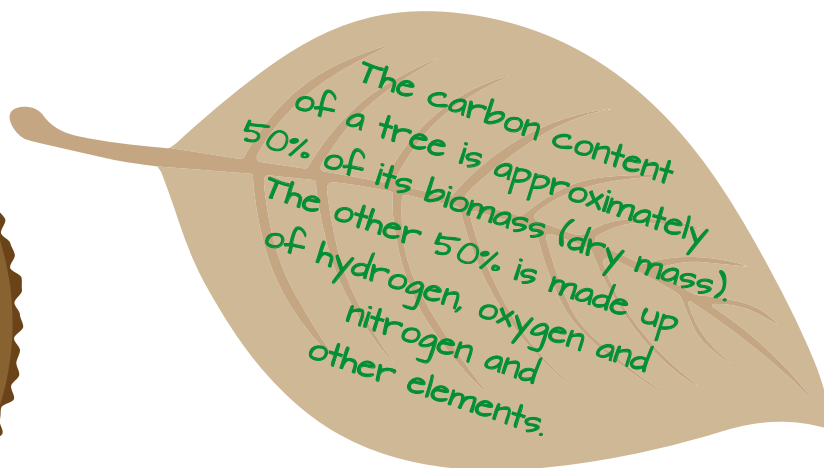
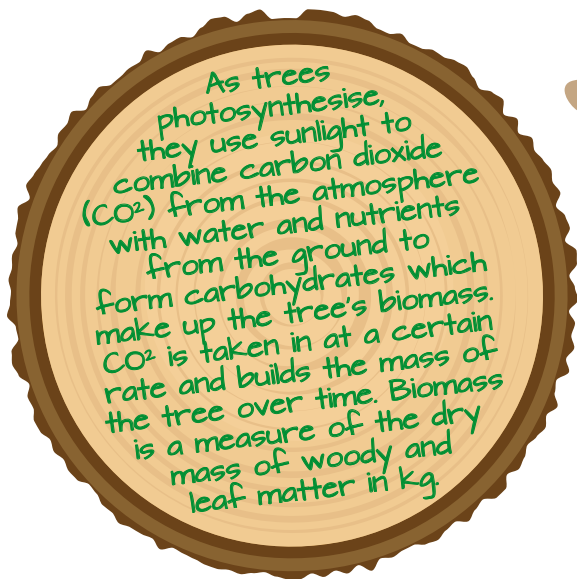
STUDENT ACTIVITY SHEET

INVESTIGATE
FORESTS

4. Calculate the tree's carbon content by dividing it's biomass by 2:

Biomass of Tree _____ kg \div 2 = Carbon Content _____ kg

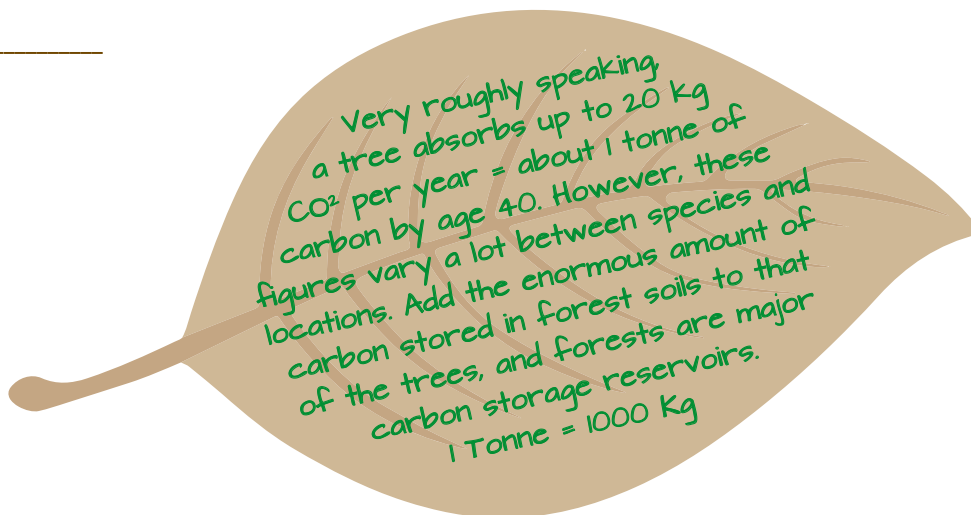
Result = _____



5. Find out how much CO₂ the tree has absorbed in its life by multiplying the carbon figure by 3.67

Carbon content _____ Kg \times 3.67 = CO₂ the tree absorbed in its life _____ Kg

Result = _____



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