Carbon storage calculator

As trees grow they take in carbon dioxide from the atmosphere and store it as carbon in their trunk, roots and leaves. Approximately half of the dry weight of a tree is carbon. This means that trees are a carbon store and can help us to reduce the effects of climate change.

Follow the instructions to complete the table and calculate the amount of carbon that has been stored in up to 3 different size trees.

Instructions

1 Species

Use identification sheets, books or apps to identify the species of tree.

2 Circumference

Use a tape measure to measure the distance all the way around the trunk of the tree at a height of 1.3 metres (approximately chest height) up from the ground.

3 Age

Divide the circumference of the tree by the growth rate to calculate the age.

Trees grow at different speeds with the circumference increasing at an average of 2.5cm per year.

Growth rates

- Holly and yew – 1.25cm per year
- Oak – 1.88cm per year
- Ash, beech, elm and hazel – 2.5cm per year
- Sycamore – 2.75cm per year
- Pine and spruce – 3.13cm per year

NB If the species of your tree is not listed use the average growth rate of 2.5cm per year.

4 Dry weight

Use the conversion table to convert the circumference of the tree into the dry weight.

Dry weight conversion table

Circumference (cm)	Dry weight (kg)
1.5	0.009
2.5	0.04
5	0.23
10	1.4
20	9
30	27

Circumference (cm)	Dry weight (kg)
40	82
50	106
75	310
100	668
125	1208
150	1964
175	3253
200	4221

5 Carbon stored

Half of the dry weight of the tree is carbon, therefore you need to divide the answer for the dry weight by two. This tells you how much carbon is stored in the tree.

Example
The circumference of a tree is 150cm. Looking at the table this means that its dry weight is about 1964kg. Dividing this by two tells us that the tree is storing 982kg of carbon.

Circumference converted into dry weight ÷ 2 = carbon stored

6 How do we produce this amount of carbon?

Use the carbon equivalent resource cards to find out how we create the amount of carbon which is stored in the tree.

		Tree A	Tree B	Tree C
1	**Species**			
2	**Circumference** (cm)			
3	**Age** (circumference ÷ growth rate)			
4	**Dry weight (kg)** (see conversion table)			
5	**Carbon stored** (kg)			
6	**How do we produce this amount of carbon?** (see Resource cards: Carbon equivalents)			

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