



Experiment - Station

Photosynthesis

EXPERIMENT



Photosynthesis

Research question:

How does photosynthesis in plants affect the composition of the air?

Your assumption (hypothesis):

Materials:

- ☐ Ivy
- ☐ Scissors
- ☐ Sample container
- ☐ CO₂ sensor
- ☐ Lamp
- ☐ Clock (mobile phone or iPad)

Experiment procedure:

1. Cut a piece from the ivy plant.
2. Place the piece of ivy (plant) in the sample container.
3. Insert the CO₂ sensor into the upper opening of the sample container.
4. Place the sample container about 15 cm in front of the lamp.
Switch on the lamp.

5. Start measuring the CO₂ concentration.
Record the first measurement (**measurement 1**) in the table.
6. Wait 2 minutes.
Stop measuring the CO₂ concentration.
Record the second measurement (**measurement 2**) in the table.

Measurement table

CO ₂ concentration (ppm) at the start of the measurement (measurement 1)	CO ₂ concentration (ppm) after 2 minutes (measurement 2)

Describe your test results:

How much has the CO₂ concentration changed between measurement 1 and measurement 2?

Text box: ppm

Ppm is a unit of measurement.
It stands for "parts per million".

A carbon dioxide concentration of 500 ppm means that 500 out of every million molecules are carbon dioxide.

Experiment evaluation:

Explain the results. Read the text box "Photosynthesis" (next page) for more information.

Text box: Photosynthesis

Do you know why many plants are green?

It's because of a substance called chlorophyll.

This substance is found in parts of plant cells called chloroplasts.

Chlorophyll can absorb the sun's light energy.

The plant uses this light energy to convert water and carbon dioxide into two other substances. These substances are sugar (glucose) and oxygen.

This process is called *photosynthesis*:

Carbon dioxide (CO₂) + water → sugar (glucose) + oxygen (O₂)

Plants need sugar to live. They do not need oxygen and release it into the air. If a plant is placed in a closed container and exposed to light, the oxygen concentration in the container increases.

Carbon dioxide (CO₂) + water → sugar (glucose) + oxygen (O₂)

Conclusion:

Compare the results with your assumption (hypothesis).

Tick the box:

- ☐ The hypothesis is correct
- ☐ The hypothesis is incorrect
- ☐ The hypothesis is partly correct



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