Name: _____

2.2.4 Photosynthesis Worksheet

Plants making their own food

Role of Photosynthesis

- Plants use it to _____
- Animals get their food _____
- It produces _____ which is needed to release energy in _____
- It is responsible for forming _____
- It removes _____ from the air

Balanced Equation for Photosynthesis

6_____ + 6_____ + light → _____ + 6____

Carbon dioxide + Water + light → Glucose + Oxygen

Photosynthesis requires:

_____

_____

_____

_____

Photosynthesis produces

_____

_____

Photosynthesis converts

_____ energy → _____ energy

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Stages in Photosynthesis

1. Light is _____
2. Water is _____
3. Products are _____ (4 protons, 4 electrons and oxygen)
4. Light energises _____
5. Glucose is _____

Light is Absorbed

- The light that reaches a plant is trapped by _____
- Chlorophyll is found in the _____ of plant cells
- Therefore photosynthesis occurs in _____
- The trapped light provides the _____ the plants need to make _____

Water is Split

- Some of the trapped light energy is used to split water into _____ (____), protons (____) and _____ (e^-)
- Summarised as

$$2H_2O \rightarrow 4H^+ \text{ and } 4e^- \text{ and } O_2$$

What happens to these Products?

1. The electrons are passed to _____
2. The protons are stored in a _____ for later use
3. The oxygen may pass out of the leaf _____ OR it may be used for _____

Light Energises Electrons

- The electrons that were passed to the chlorophyll become _____ by some of the trapped light energy this changes them into _____ _____

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Glucose is formed

- The high energy electrons along with _____ from the proton pool are combined with carbon dioxide to form _____ (_____)

Sources of light for plants

- _____ is the natural source of light for plants but they can use _____ light for photosynthesis
- Artificial light is often used in _____ stimulate growth
- Increasing light can _____ _____ up to a certain saturation point where no more light can be absorbed and photosynthesis will level off

Sources of carbon dioxide for plants

- Plants have _____ of carbon dioxide one is external the other is internal
- Plants get most of their carbon dioxide from the _____ this is external
- Plants get carbon dioxide internally from their own _____ _____
- Sometimes artificial sources of carbon dioxide are used to stimulate growth, e.g. _____ in a green house

Sources of water for plants

- Water is absorbed from the _____ by the _____ of plants
- This water passes up the _____ and is used for _____

Syllabus Can you?

- Define the term: photosynthesis.
- Express photosynthesis as a balanced reaction.
- State the nature of photosynthesis from the syllabus – what are the main events?
- State the role & location of chlorophyll.
- Explain the nature of electron carriage.
- Identify the sources of light, CO_2 & water for photosynthesis.
- Explain how human intervention can play a role in photosynthesis.

END