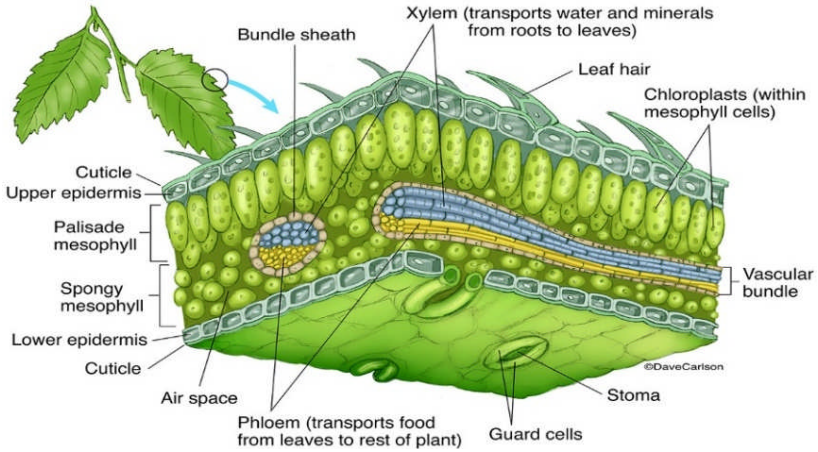
Knowledge Organiser – Photosynthesis

Knowledge and Content

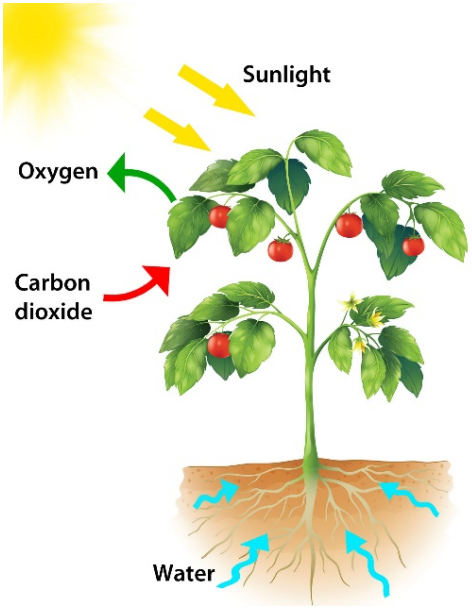
- Recall and use the word and balanced symbol equation for photosynthesis
- Identify the internal structures of a leaf and explain how the structure of a leaf is adapted for photosynthesis
- Identify factors that affect the rate of photosynthesis
- Describe how the internal structure of the leaf is adapted to maximise photosynthesis
- Explain how factors that increase food production can be controlled
- Evaluate the benefits of manipulating the environment to increase food production
- Know that chloroplasts absorb light and convert it to chemical energy
- Explain how materials pass in and out of cells
- Describe the conditions needed for diffusion to occur
- Describe transpiration in plants

Mathematical and Practical Skills

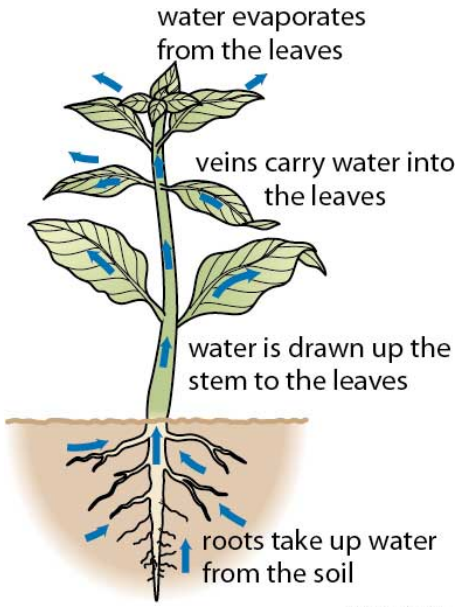
- Investigate the effect of light intensity on the rate of photosynthesis
- Interpret data about the rate of photosynthesis
- Understand and use the inverse square law in the context of light intensity and photosynthesis
- Calculate and compare surface area to volume ratio
- Translate information between graphical and numerical forms
- Use an appropriate number of significant figures
- Use the correct sampling techniques to ensure that readings are representative



Photosynthesis



Transpiration



Key Terms

Photosynthesis	Process by which plants make food using carbon dioxide, water and light.
Diffusion	The spreading out of the particles of any substance in a solution or particles in a gas from an area of high concentration to an area of low concentration.
Chloroplasts	The organelles in photosynthesis takes place.
Chlorophyll	The green pigment in which photosynthesis takes place.
Xylem	Non-living transport tissue in plants that transports water from the roots to the leaves.
Phloem	Living transport tissue in plants that transports dissolved food (sugars) around the plant.
Transpiration	Loss of water vapour from the leaves of plants through the stomata and evaporation through the surface of the leaf.
Stomata	Openings in the leaves of plants used for gas exchange. Found in large numbers on the underside of the leaf they are opened and closed by guard cells.
Guard Cells	Surround the stomata in the leaves of plants and control their opening and closing.
Spongy Mesophyll	The lower layer of mesophyll tissue in plant leaves that contains some chloroplast and many large air spaces to allow for gas exchange.
Palisade Mesophyll	The upper layer of the mesophyll tissue in plant leaves made up of closely packed cells that contain many chloroplasts for photosynthesis
Cellulose	Complex carbohydrate that makes up plant and algal cell walls and gives them strength
Osmosis	Diffusion of water through a partially permeable membrane from a dilute solution to a concentrated solution.