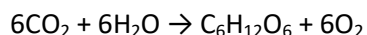


Section A: Key Vocabulary	
Tier 3 vocabulary	Definition
Metabolic rate (n)	The rate at which the body uses energy.
Polymer (n)	Substance made of many monomers bonded together.
Monomer (n)	Identical repetitive units that make up a polymer.
Aerobic respiration (n)	Transferring energy from glucose and oxygen.
Anaerobic respiration (n)	Transferring energy from glucose, with no oxygen.
ATP (n)	Chemical energy store.
Exothermic reaction (n)	Chemical reaction in which energy is transferred to its surroundings.
Endothermic reaction (n)	Chemical reaction in which energy is transferred from the surroundings.
Oxygen debt (n)	Oxygen required to break down lactic acid formed in anaerobic respiration.
Fermentation (n)	Type of anaerobic respiration that produces ethanol and carbon dioxide.
Limiting factor (n)	Factors that prevent an increase in the rate of photosynthesis.
1/t	Equation to calculate the rate of photosynthesis, where t=time.
1/distance from light source ²	Inverse square law equation. Tells you the relative light intensity, when a light source is placed at different distances from a plant.
Tier 2 vocabulary	Definition
Dependent (adj)	Contingent on or determined by.
Independent (adj)	Free from outside control; not subject to another's authority.
Ferment (v)	Of a substance to undergo fermentation.
Experiment (n)	A scientific procedure undertaken to make a discovery, test a hypothesis, or demonstrate a known fact.
Syringe (n)	A tube with a nozzle and piston or bulb for sucking in and ejecting liquid in a thin stream.

Section B: Photosynthesis

Photosynthesis Equations



Carbon dioxide + Water → Glucose + Oxygen

Photosynthesis is an **endothermic** reaction.

Stages of Photosynthesis

Photosynthesis can be split into two main stages:

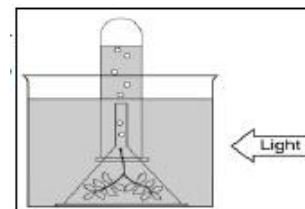
Stage 1: (light dependent) –

Energy transferred from light splits water molecules into oxygen gas and hydrogen ions.

Stage 2: (light independent) –carbon dioxide gas combines with the hydrogen ions to make glucose.

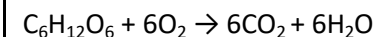
Photosynthesis Experiment

This experiment can be used to test the effect of changing conditions on the rate of photosynthesis. An upturned test tube is placed above an aquatic plant, such as pondweed. The intensity of light can be changed, and the amount of bubbles produced counted for each light intensity. We would expect to see a greater amount of bubbles for greater light intensity. A more accurate way of measuring the rate of photosynthesis is to use a gas syringe. This will allow you to measure the volume of oxygen produced.



Section C: Diagrams

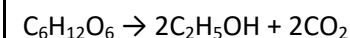
Respiration Equations

Aerobic respiration

Glucose + Oxygen → Carbon dioxide + Water

Anaerobic respiration

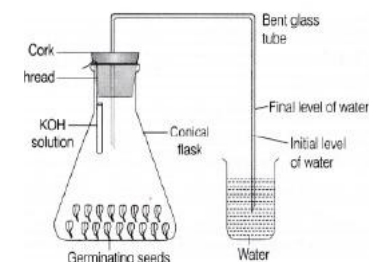
Glucose → Lactic acid

Fermentation

Glucose → Ethanol + Carbon Dioxide

Respiration is an **exothermic** reaction.

Respiration Experiment



This is a common experiment to show that the germinating seeds release CO₂ during respiration. This is absorbed by the KOH solution. Due to the CO₂ being absorbed, a vacuum is created in the flask, which causes the level of water in the delivery tube to rise.