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| **What will we be learning?**  **GCSE Unit: Bioenergetics**  Paper 1 | **Why this? Why now?**  **GCSE Course:**  AQA Biology  AQA Trilogy  **What other GCSE Science units does this unit relate to?**  **Cells** – 4.1.3 diffusion, osmosis and active transport, 4.1.1 plant cell structure and cell specialisation  **Organisation** – 4.2.3 plant tissues & organ systems, plant transport systems, 4.2.2 heart, blood & lungs  **Energy Changes** – 5.5.1 Exothermic and endothermic reactions  **Rate and Extent of Chemical Change** – 5.6.1 Calculating rates of reaction  **Chemical analysis** – 5.8.2.Tests for Oxygen and carbon dioxide  **Chemistry of the atmosphere** – 5.9.1.3 How oxygen increased | **Key Words:**  energy  rate of photosynthesis  chlorophyll  palisade cells  stomata  limiting factor  light intensity  biomass  glucose  starch  cellulose  nitrates  aerobic respiration  anaerobic respiration  lactic acid  oxygen debt  metabolism  pulse  mitochondria  ethanol  fermentation  exothermic  endothermic  enzymes |
| **What will we learn?**  **Useful equations/formulae/maths skills for this unit:**  Measure and calculate rates of photosynthesis  Interpret graphs of limiting factors and pulse rate and exercise  Plot and draw graphs  Understand and use inverse proportion for light intensity in context of photosynthesis (Higher Tier only)  **Misconceptions in this topic**  Plants only photosynthesize – no, they photosynthesize in the day, or when there is light, but they respire all the time!  Plants suck up water through their roots – no, the roots absorb water by osmosis and minerals by active transport  Breathing and respiration are the same thing – no, breathing is getting air in and out of your lungs, respiration is a chemical reaction in mitochondria of cells that produces energy!  Metabolism is to do with your diet – no, it is all the chemical reactions that happen in your body. | |
| **What opportunities are there for wider study?**  **If you are interested in this unit, what careers does it relate to?**  agronomist, botanist, horticulturist, garden designer, farmer, food scientist  physiotherapist, sports scientists, doctor, food technologist, brewer  **Collins Revision guide relevant pages for this unit:**  Trilogy Revision Guides: P. 46-49, 61, 82  Biology Revision Guide: P. 42-45, 68-69, 98-99 | |
| **How will I be assessed?**  **Deep Marking Task Title for this unit:** Limiting Factors in Photosynthesis - Design a greenhouse | |