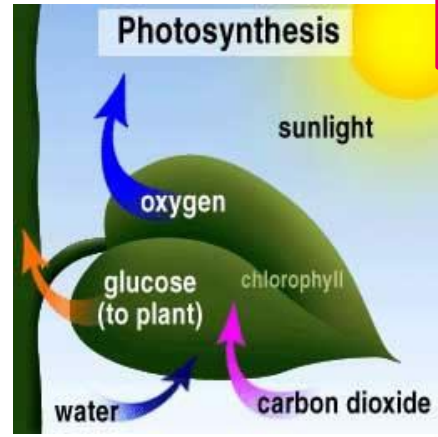
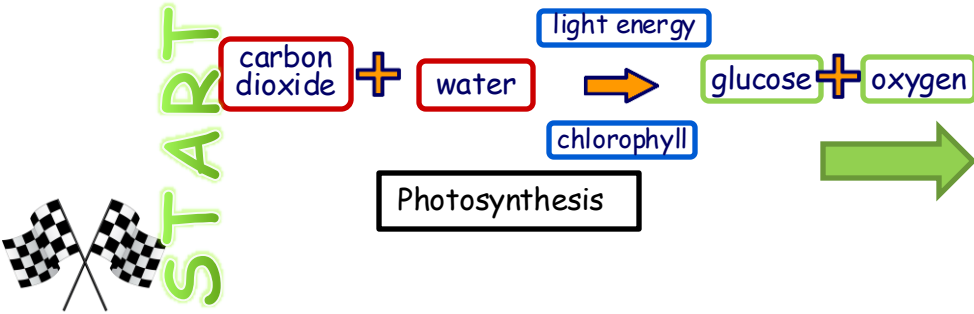
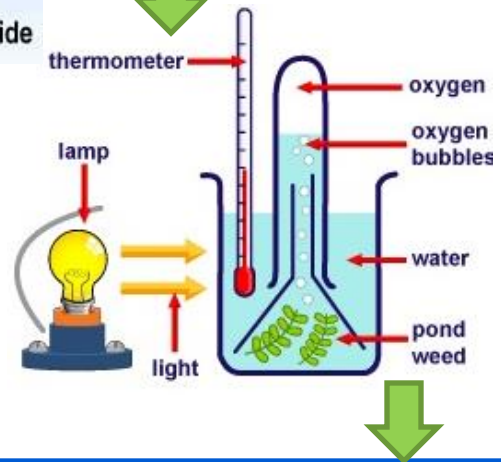


Y10 Biology (F) Bioenergetics



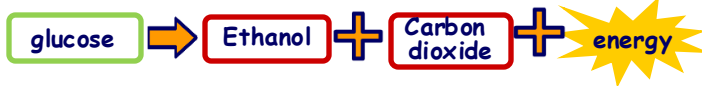
Investigating Photosynthesis:
Count the number of oxygen bubbles in a set amount of time.
More oxygen = more photosynthesis



Exercise:

- Uses both aerobic and anaerobic respiration in order to supply enough energy, quick enough to our cells.
- After we exercise we must get rid of lactic acid by reacting it with oxygen = oxygen debt.
- This is why we are out of breath after exercise

Anaerobic Respiration in yeast



- Key words:**
1. **Photosynthesis:** Light energy is used to react carbon dioxide and water to make glucose and oxygen
 2. **Limiting factor:** A factor that affects the rate of reaction. When the factor is increased the rate of reaction goes up
 3. **Aerobic respiration:** Respiration using oxygen
 4. **Anaerobic respiration:** Respiration with **no** oxygen

Factors that can affect how quickly photosynthesis works:

- 1) Carbon dioxide concentration
- 2) Light intensity
- 3) Temperature

Anaerobic respiration takes place when there is no oxygen available.

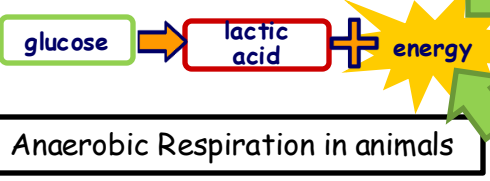
GOOD: Can produce some energy when there is no oxygen
GOOD: Can produce energy very quickly
BAD: Produces very small amount of energy
BAD: produces lactic acid which is poisonous for our cells

Respiration: Chemical reaction that gives our cells energy

Breathing: A mechanical process that gets oxygen into our lungs for respiration and carbon dioxide out

How the Plant uses glucose

1. The plant uses glucose in respiration
2. The plant stores glucose as starch
3. To make cellulose to build plant tissue



Aerobic Respiration

QUESTIONS

Photosynthesis

1. Write out the word equation for photosynthesis from memory (repeat until you can!)
2. Write out the symbol equation for photosynthesis from memory (repeat until you can)
3. What is the role of stomata in relation to photosynthesis?
4. Why stomata close at night?
5. What role does osmosis play in photosynthesis?
6. Explain why photosynthesis is endothermic.
7. Describe & explain why the effect of temperature as a limiting factor for photosynthesis is different to the effects of CO_2 and light intensity.
8. Why does increasing light intensity have no effect on photosynthesis above a certain level?
9. If there was already the optimum levels of CO_2 , temperature and light intensity, what is the only other way the rate of photosynthesis could be increased in a plant?
10. Why is counting the bubbles from pondweed an indicator of the rate of photosynthesis?
11. Use the inverse square law to compare the light intensity hitting a plant from a lamp that is 20cm, 40cm, and 80cm away. What do you notice? (HINT: do the calculation in m instead of cm)
12. List 3 uses of glucose produced by respiration
13. What is the link between nitrate ions and photosynthesis?

Respiration

1. Write out the word equation for respiration from memory (repeat until you can!)
2. Write out the symbol equation for respiration from memory (repeat until you can)
3. Explain what happens during respiration on terms of energy transfer.
4. Explain why respiration is exothermic.
5. Give examples of what the energy transferred during respiration is used for
6. Outline the similarities and differences between anaerobic respiration in yeast and in animals.
7. Compare aerobic respiration to anaerobic respiration in terms of the need for oxygen, the different products formed, and the different amounts of energy transferred.
8. Describe how the raw materials for respiration enter the body and travel to target cells.
9. How are the waste products excreted from the body?
10. Explain the changes to heart rate and breathing that happen during exercise.
11. Why is it important to eventually remove the lactic acid built up from anaerobic respiration
12. Why do you keep breathing heavily for several minutes after you have stopped vigorous exercise?