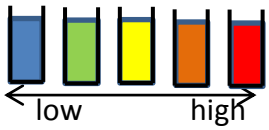
EXPERIMENTS

Potential hazards		precaution
Microorganisms	Some bacteria make us ill	• Wear gloves • Tie hair back • Wear goggles • Wash hands • Use fire proof matt • No water near electricity
Chemicals	Sulphuric acid can burn skin, alcohols can catch fire easily	
Fire	Unattended Bunsen burners	
Electricity	Faulty electrical equipment could give a shock	

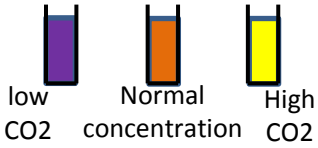
Indicators:

iodine- tests for **starch** (starts orange, turns blue/black if present)

Benedict's solution- tests for **glucose**



Hydrogen carbonate- shows change in **CO2** concentration



Designing an experiment:

C-what you change, what are you investigating

O-what organism are you using

R-repeat

M-what you measure, ow you measure

S-thing you keep the same to make a fair test

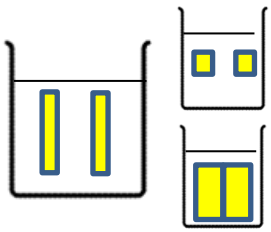
Control variable to improve validity

Carry out repeats to improve reliability

Use smaller scales or more sensitive equipment to improve precision

Improve method to improve accuracy (How close results are to true answer)

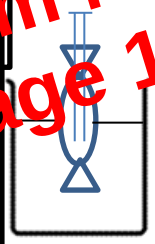
Measuring osmosis (living)



1. Cut up potato into cylinders
2. Put some in sugar solution and some in pure water
3. Measure length of cylinders before and after

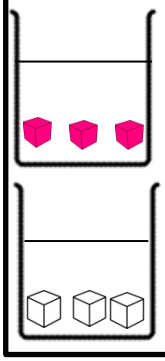
- Distilled water potato swells up
- Concentrated sugar potato solution shrinks

Measuring osmosis (non-living)



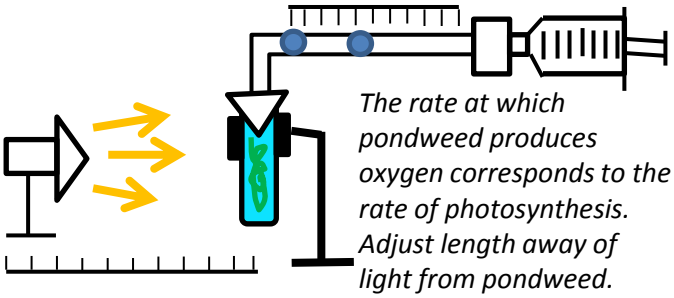
1. Tie wire around one end of viscous tubing, put a glass tube in other end and tie
2. Put sugar solution down glass tube
3. Measure where liquid is up to
4. Put pure water into beaker and leave overnight
5. Water will be drawn in and liquid will move up tube
6. Re-measure where liquid is

Measuring diffusion



1. Use scalpel to cut out agar cubes (containing phenolphthalein indicator and sodium hydroxide)
2. Acid will diffuse into cubes and turn them colourless
3. Repeat with different sized cubes

Measuring light intensity and photosynthesis

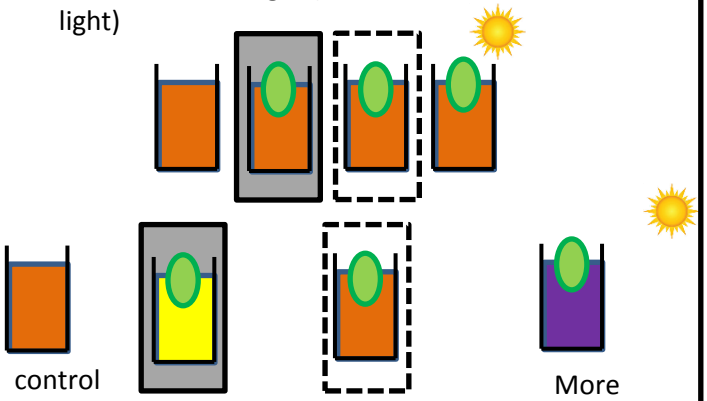


The rate at which pondweed produces oxygen corresponds to the rate of photosynthesis. Adjust length away of light from pondweed.

1. Leave pondweed to photosynthesise for a set amount of time, oxygen will collect in capillary tube
2. Use syringe to draw gas bubble up to ruler and measure

Gas exchange in plants

1. Set up tubes with no leaf, leaf and foil (no sunlight), leaf in gauze (a little light) and a leaf in sunlight (lots of light)
2. Use hydrogen carbonate indicator to measure change in co2 concentration



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