

Required practical homework

- Chose one of the required practicals (RP) on the list provided and read the AQA handbook section about it.
- Write out the AQA method in your own words, looking at the handbook as little as possible.
- Check you method and correct mistakes in a different coloured pen.
- Now research and write an alternative method to investigate the same hypothesis as the RP you chose.
- Submit one of your own methods to your teacher at the end of each half-term.
- Select a new RP for each half term and repeat the instructions above.
- Try to complete the tasks without help first (read the help sheets carefully and look online). If you need any more help, speak to your parents or your science teachers.
- Remember **GERMS** and focus on improving your spelling, use of keywords, punctuation, grammar and sequence each time you write a new method.

Required practical list

Term	Year 9	Year 10	Year 11	Triple science only
Autumn 2	Microscopes, Chromatography	Field investigations, Density	Microscopy, osmosis, Rates of reaction, Temperature change, Density, Radiation and absorption	Biology – Microbiology, Plant responses, Decay
Spring 1	Food tests, Radiation and absorption	Food tests, Rates of reaction	Food tests, Enzymes, Making salts, Chromatography, Specific heat capacity, Acceleration	Chemistry – Identifying ions, Neutralisation
Spring 2	Photosynthesis, Rates of reaction, Density	Reaction time, Temperature change, Resistance	Photosynthesis, Reaction times, Field investigations, Electrolysis	Physics – Thermal insulation, Light
Summer 1	Making salts, Reaction times, Waves	Any that you need to revise	Any that you need to revise	
Other required practicals not shown above: IV characteristics, Force and extension				

Required Practicals

GERMS

- **G**ather ideas – apparatus, variables, basic method.
- **E**stablish aims – A valid, practical method that could be followed by someone else.
- **R**ecognise features – see the help sheet
- **M**odel and example – see the **WAGOLL** – What A Good One Looks Like
- **S**hift – write your method independently.

WAGOLL – What A Good One Looks Like

Hypothesis – The time (dv) it takes to heat water depends on the volume of water (iv).

Independent variable (iv) – volume of water (ml)

Dependent variable (dv) – time taken (s)

Control variables – Temperature rise, flame used for heating, distance of beaker from flame, same type of water, same shape and material beaker.

Method

1. Set up a Bunsen, heat-proof mat, tripod and gauze.
2. Use a measuring cylinder to measure out 100ml of tap water into a 500ml, glass beaker.
3. Record the temperature of the water using a thermometer.
4. Place the water-filled beaker onto the gauze and heat on a full strength blue flame.
5. Use a stop-watch to time how long it takes for the temperature to rise by 50 °C.
6. Record the time in the results table.
7. Repeat steps 2 to 6 but change the volume of water to 200ml, 300ml, 400ml and 500ml.
8. Repeat steps 2 to 7 two more times, remove any anomalous results and calculate a mean time for each volume of water.

Volume of water (ml)	Time taken to increase temperature by 50° C (s)			
	Test 1	Test 2	Test 3	Mean
100				
200				
300				
400				
500				

Risk Assessment		Practical:
Hazard (What could cause harm?)	Risk (What harm could it cause?)	Control measures (What will you do to keep safe?)
Bunsen flame	Burns to skin/eyes	Wear safety goggles, tie hair back, stand up,
Hot water	Burns/scalds	Wear safety goggles, tie hair back, stand up, use gloves to handle hot apparatus
Broken glassware	Cuts	Wear safety goggles, dispose of broken glass with dustpan and brush into glass bin.
Water spillages	Slips/falls	Inform all of the spillage, close off the area, clean up spillage.

Help sheet – Features of a good practical method.

Equipment	A list of everything you will use	
Variables	Independent variable	Identify what you will change. How many values? Range and interval.
	Dependent variable	Identify what you will measure
	Control variables	Identify all of the things you will keep the same.
		Describe how you will monitor and control each control variable
Measurements	Identify what you will be measuring and how the measurements will be taken.	
Method	Step by step instructions on how to carry out the method.	Include a diagram. Include repeat measurements and how to calculate a mean. State how you would deal with anomalous results.
Risk assessment	Identify hazards (what could cause harm), risks (the harm they could cause), level of risk (low, medium or high and explain why you think that), control measures (what you will do to keep safe – safety goggles etc).	
Results	Draw a suitable results table. Usually you should write the independent variable in the first column and the dependent variable in the second column. Include units (e.g. cm, ml, g) in brackets.	

Equipment	
Variables	Independent variable
	Dependent variable
	Control variables
Method	1. 2. 3. 4.

Risk Assessment		Practical:
Hazard (What could cause harm?)	Risk (What harm could it cause?)	Control measures (What will you do to keep safe?)

Results table	Practical:			
iv ()	dv ()			
	Test 1	Test 2	Test 3	Mean