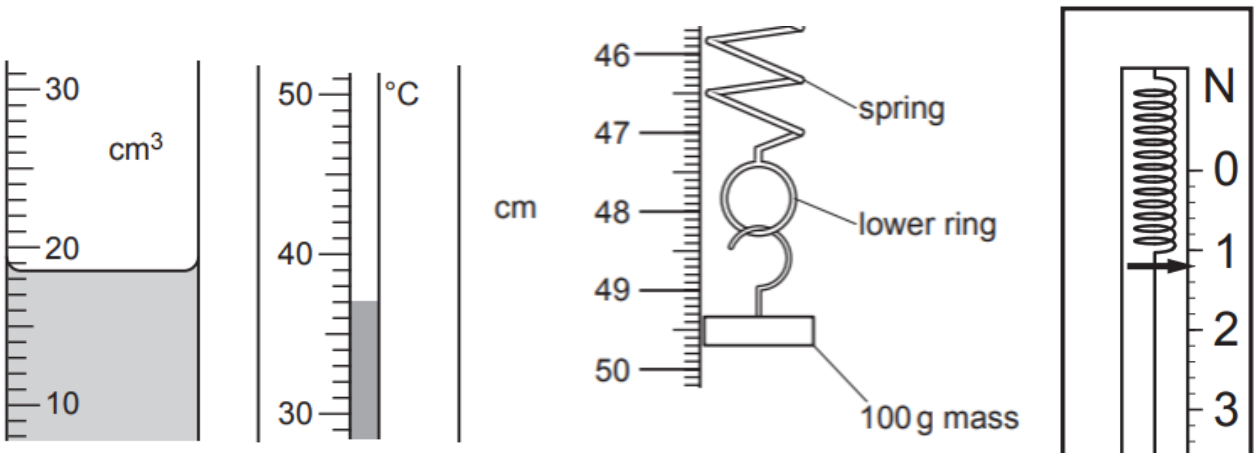
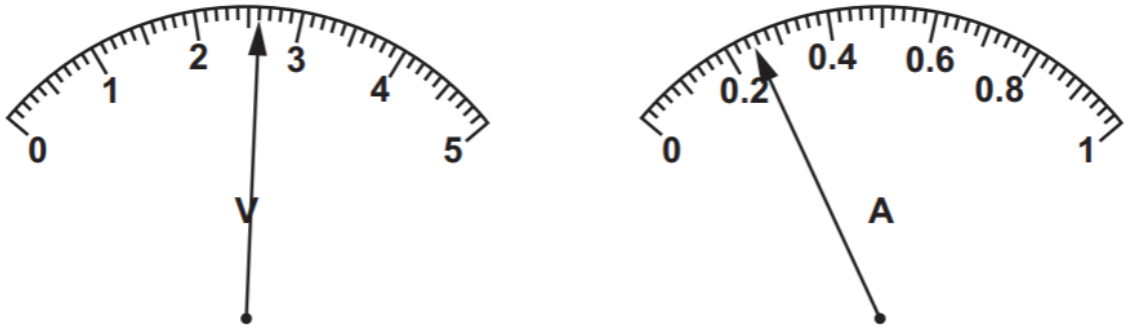
Paper 6 – Alternative to practical

This paper could have questions about almost anything, experiments you have done, seen or never even met.

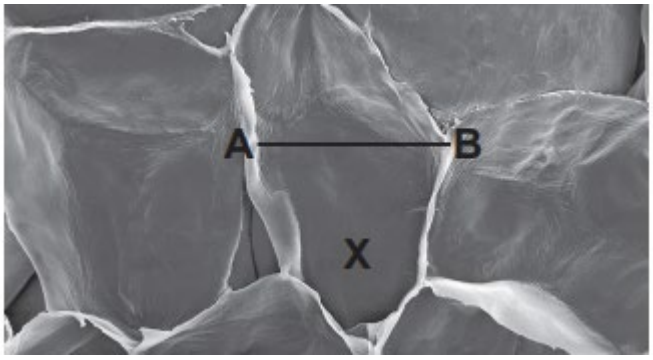
Make sure you can

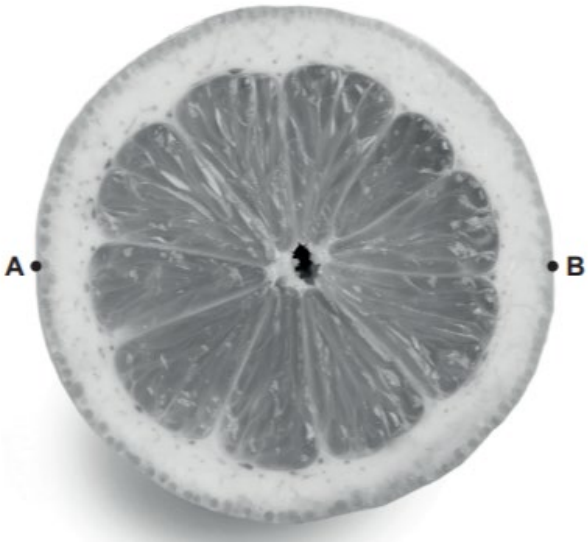
- Read scales on measuring cylinders, thermometers ruler and meters (including between scale markings if needed),



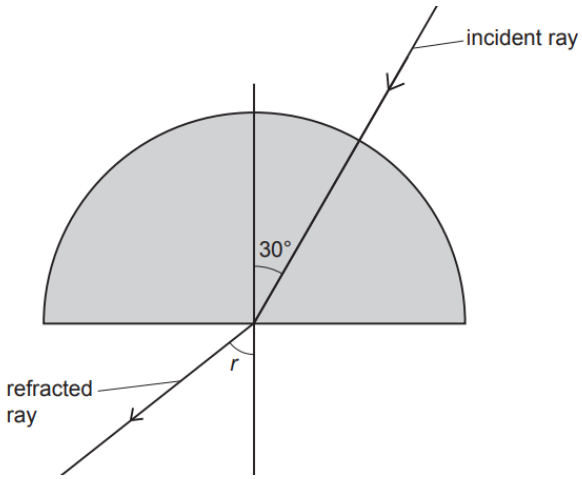


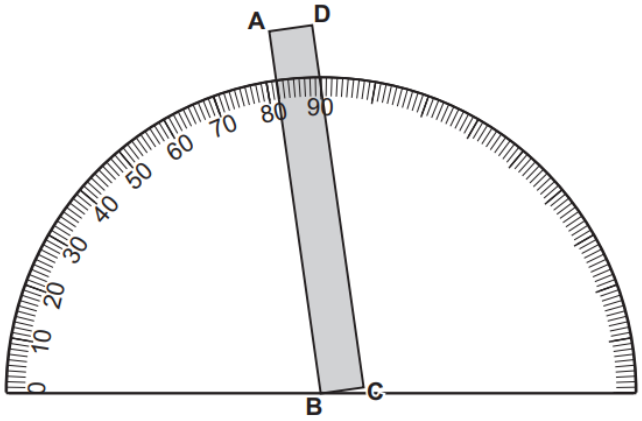
- Measure a line or distance between 2 points accurately with your ruler (in cm or mm).



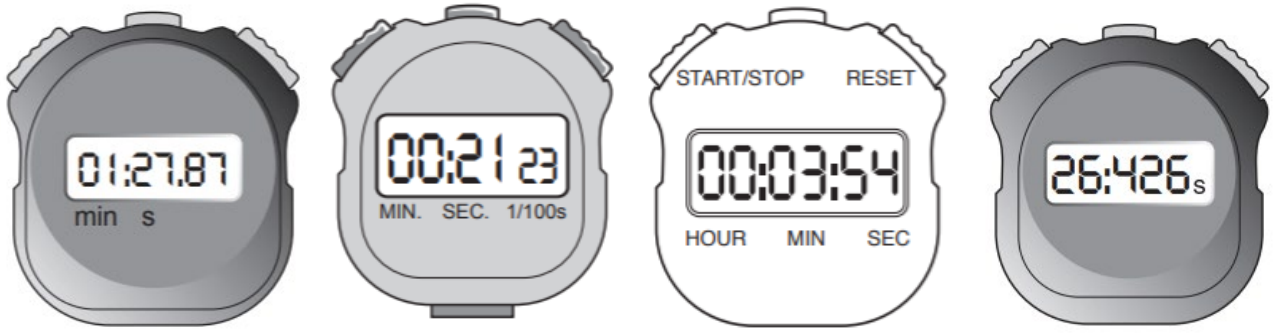


- Measure an angle e.g. r or angle of the line AB.





- Convert time in seconds or in minutes and seconds into seconds (s), to the nearest second (or nearest 0.1 s if asked).



Read the stopwatches carefully e.g. min s vs hour min sec etc

In terms of 'fair test experiments'

Know:

- Independent variable (the thing you change – what you are altering to see the effect)
- Dependent variable (what changes as a result of the independent variable – the thing you measure and record to get some data)
- Controlled variables (things you keep the same)

Know :

The parts of an experiment / plan

- Apparatus (the gear you will use)
- Method (what you will do)
- What you will measure (the dependent variable) – and how you will record the results in a <u>results table</u>
- How you will process results – average repeat trials, <u>graph</u> etc

How do we record results?

- In tables with titles for the columns AND units (if appropriate)

metal	initial temperature /°C	final temperature /°C	change in temperature /°C
iron	19.5	38.0	
magnesium	21.0	78.0	57.0
zinc	21.5	56.5	
copper	21.0	21.0	0.0
lead			

percentage concentration of hydrogen peroxide	time for the disk to rise to the surface/s		
	first experiment	repeat experiment	average
5	9	7	8
4	29	25	27
3	56		
2	101		
1	153	152	153

Know:

Why we do repeat trials? (How does this let you evaluate/judge the quality of your data?)

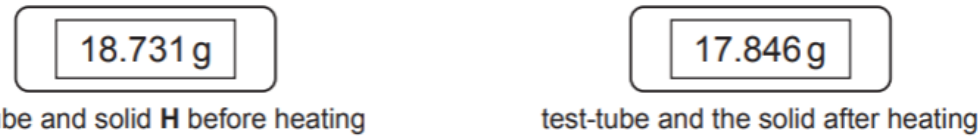
How to average results

Why we average results

What should we do with outliers / anomalous results

Be able to:

- calculate a change in mass.



- make a conclusion from experimental results
- predict a result based on a pattern or a trend
- calculate in 'new situations' when provided with a formula.

Use your results from **(a)(iii)**, **(b)** and the equation shown.

$$W = 0.01 \times F \times L$$

W = ... J [1]

Use the equation shown.

$$\Delta E_R = 630 \times \Delta T_R$$

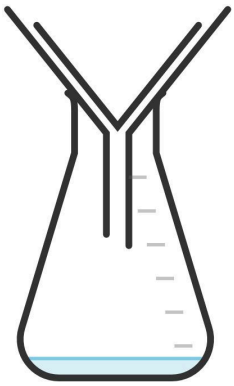
ΔE_R = ... J [1]

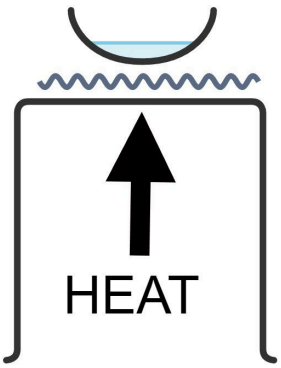
- give an answer to a [given] number of decimal places e.g. 10.627
  - 1 d.p. answer is 10.6
  - 2 d.p. answer is 10.63

- to give an answer to a [given] number of significant figures e.g. 10.627
  - 2 s.f. answer is 11
  - 3 s.f. answer is 10.6
  - 4 s.f. answer is 10.63

Know your basic separation technique – what to use and how to draw and label diagrams

<table>
<tr>
<td>Filtering / filtration
To remove insoluble solid from liquid or solution

Be able to label
• filter funnel
• filter paper
• residue
• filtrate
  </td>
<td>Evaporating
To remove the liquid and leave the solid behind

Be able to label
• evaporating dish
• gauze
• tripod
 
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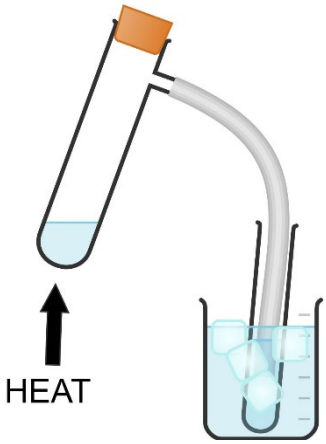
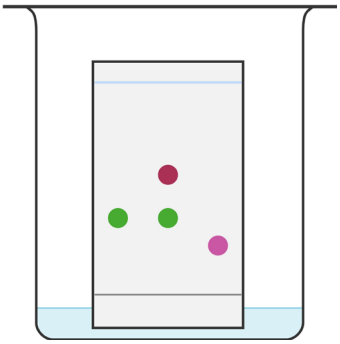
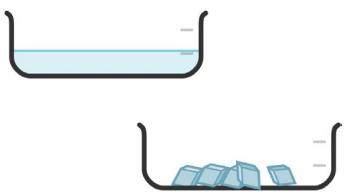
<tr>
<td>Simple distillation
To obtain the solvent from the mixture

Be able to label
• distillate
 
</td>
<td>Chromatography
To separate different coloured substances
  </td>
</tr>
<tr>
<td>Crystallisation
Obtain a solid from its saturated solution
  </td>
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