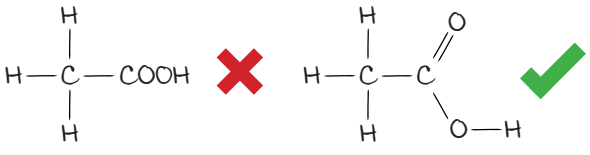
APPLIED SCIENCE

OCR
Oxford Cambridge and RSA

2019 Summer Highlights

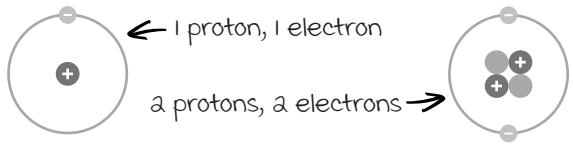


When drawing display formulae show all of the bonds in the compound.

Molecular formula C_8H_{16}

Empirical formula CH_2

An empirical formula gives the proportions of elements in a compound, not the actual number.

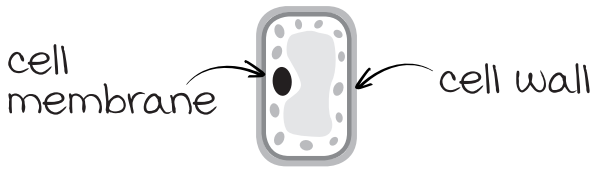


The higher the proton number of an element, the more electrons are attracted to its nucleus.

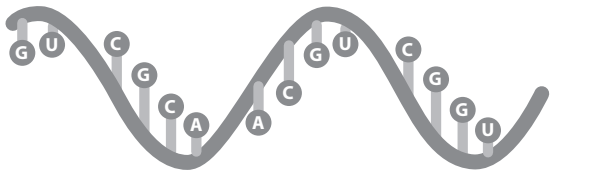
Oxidation
Is
Loss

Reduction
Is
Gain

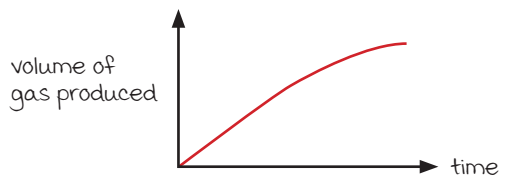
Oxidation is loss of electrons, reduction is gain of electrons.



The cell membrane controls what goes in and out of the cell. The cell wall protects and provides structure.

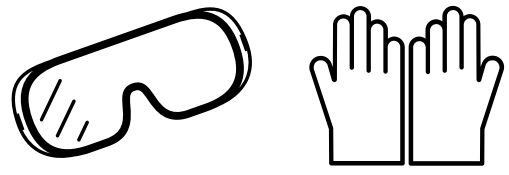


The nitrogenous base in RNA is Uracil, not Thymine.



Reaction rate is based on relationships between time and the **observed outcome.**

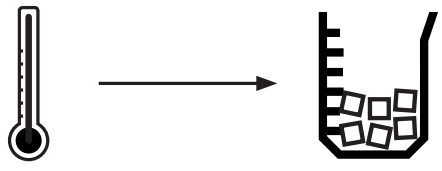
Make sure you are aware of the meanings of the up-to-date hazard symbols.



Be specific with suggested safety precautions and why they are needed.

Phenolphthalein:
Acid: pink
Alkaline: colourless

In titrations, make sure you know the acidic colour and the alkaline colour for the indicator being used.



To calibrate thermometers for 0 °C, use melting ice.

NaOH

base ✓ alkali ✓

Sodium hydroxide is both a base and an alkali (an alkali is a base which is soluble in water)

Titration	Rough	2	3
Titre (cm^3)	22.50	21.30	21.20

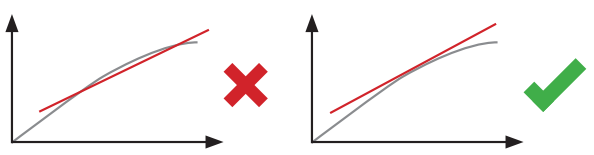
Average = (21.30 + 21.20) / 2

Do not use trial or rough results when calculating a mean titre.

100 µm / 10 cm ✗

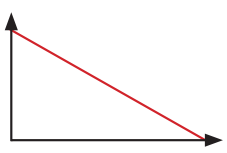
100 µm / 10,000 µm ✓

Make sure that you are using the same units when you are calculating magnification.



Make sure when you draw a tangent on a graph it only touches the curve at the specific point required.

Primary data is data you collect. Secondary data is data obtained from books or from the internet.



negative gradient ✗

decreasing trend ✓

When describing gradients of a graph, use the terms 'increase' or 'decrease'.

Public information scientists: universities/ government agencies. Scientific journalists: author books/news articles.

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Systematic errors are consistent errors in the equipment. Random errors are present when any measurement is made.

Answer: 65000

Answer: 6.5×10^4

You need to be able to convert results between decimal form and standard form (e.g. $a \times 10^n$).

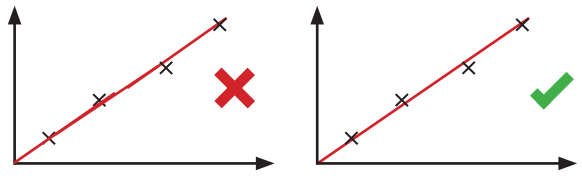
$$\% \text{ uncertainty} = \frac{2 \times 0.10}{20.25} \times 100 = 0.0049\%$$

ECF

Show clear working for calculations. Error carried forward may mean a response still gains marks if a mistake is made.

The value of A is greater than that of B

When a question asks you to make a comparison, make sure you clearly describe differences and/or similarities.

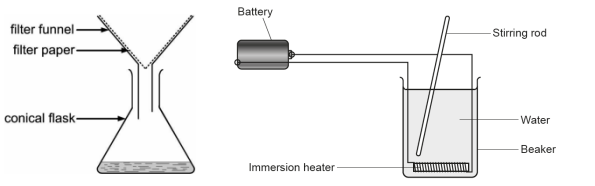


Make sure lines of best fit are smooth and one single line.

mgo
al_2o_3

mgO
Al_2O_3

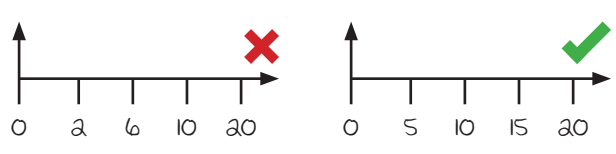
Use capitals where appropriate when writing chemical symbols. The first letter of an element symbol is always a capital.



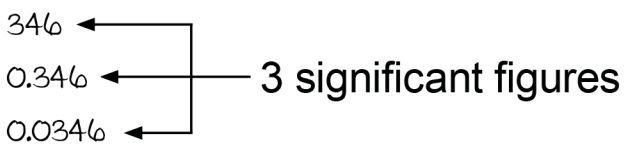
Apply what you know to new situations. Unfamiliar experiments will still use apparatus & techniques you know.

Remember that precision is the closeness of agreement between different results. It is not the same as accuracy.

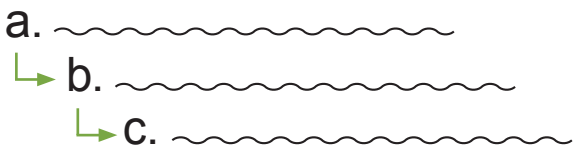
Accuracy is a measure of how close a result is to the true value.



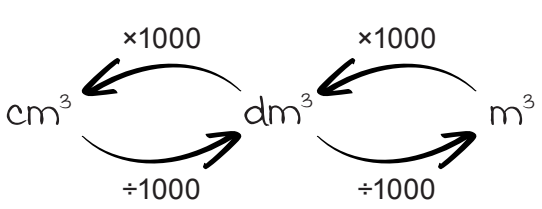
Use linear scales on graphs.



Make sure you give answers to the number of significant figures asked for after performing calculations



The different parts of extended questions are linked. Information from part (a)ii may help with part (b)i.



In calculations always check the units and make conversions if needed.

State two hazards and suggest precautions for each one.

For longer questions, answer each part of the question roughly equally. Check you have answered the whole question.

Describe and compare the bonding of the materials and suggest which of them would be best to use, giving reasons for your answer.

Underlining or circling key information in questions will help you remember, as will jotting down ideas and equations .

The examiners' reports for the 2019 Applied Science papers can be found on Interchange.