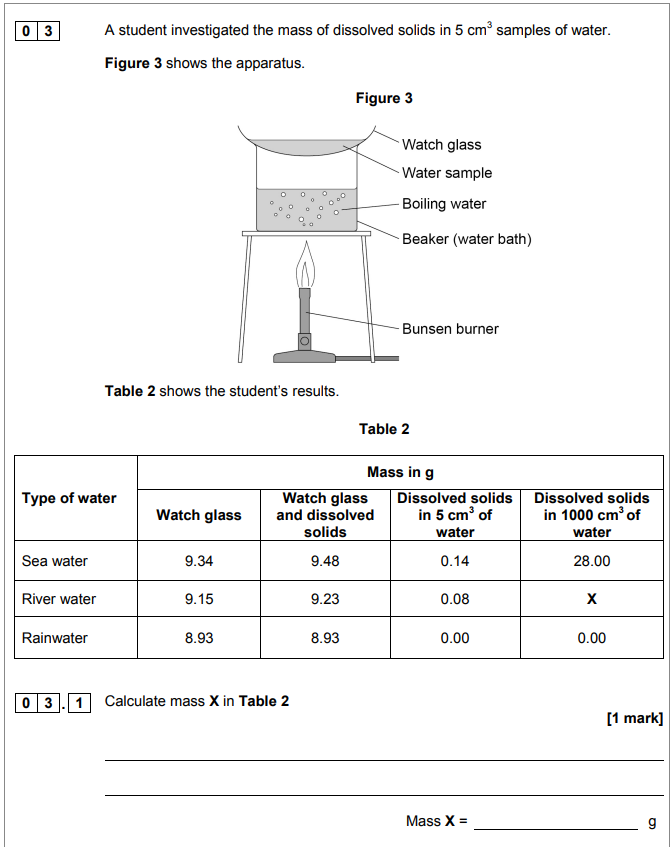
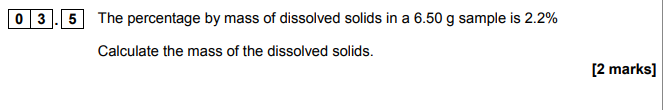
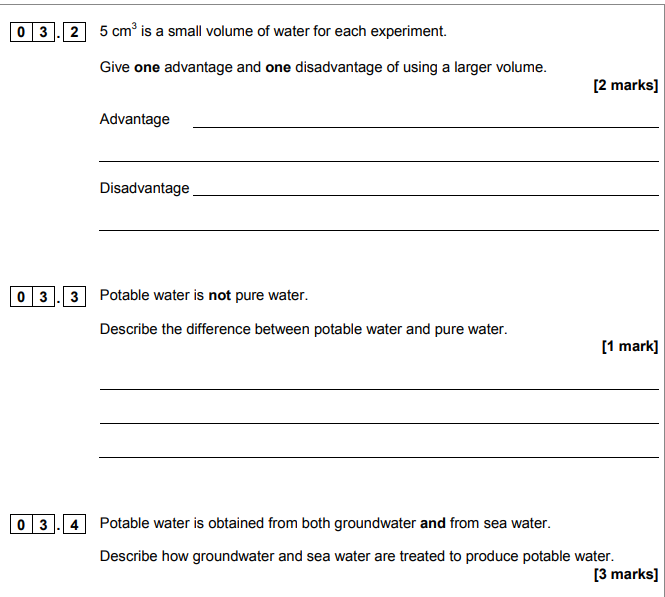
ASE 2023: ETC GCSE Science   
  
Support booklet and further information

Spring 2023

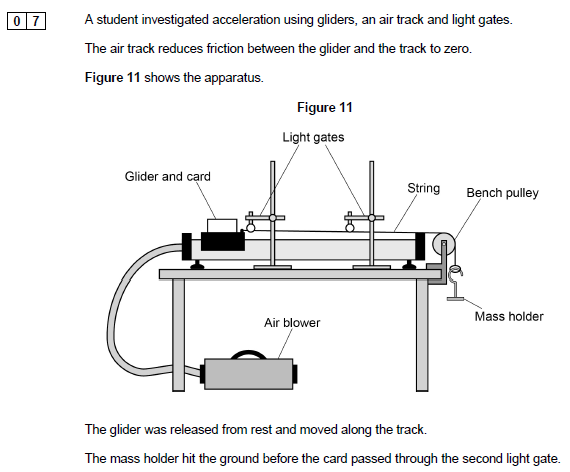
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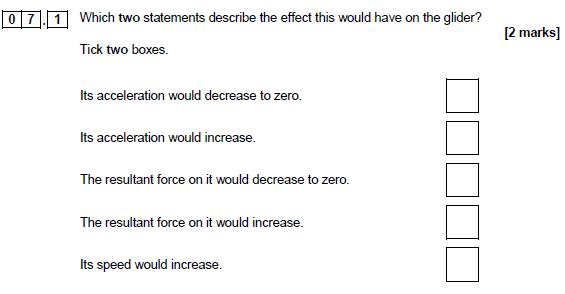
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| --- | --- |
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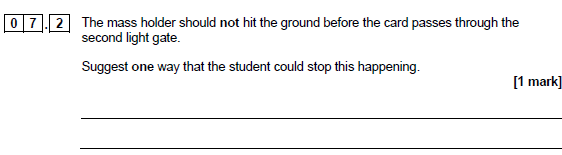
Assessment objectives: Trilogy C2H 2018

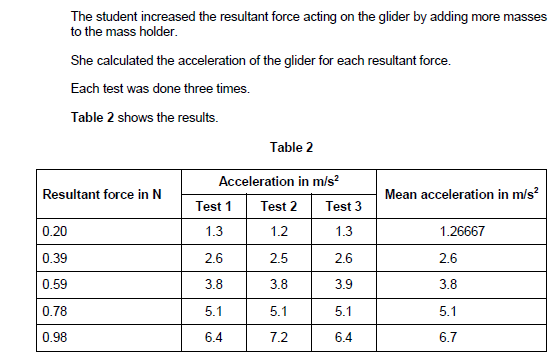


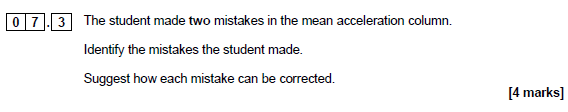
## Structure of an exam question: Trilogy P2 2018 standard demand

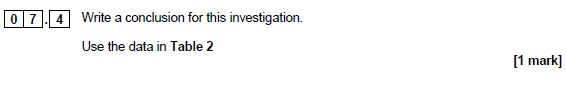


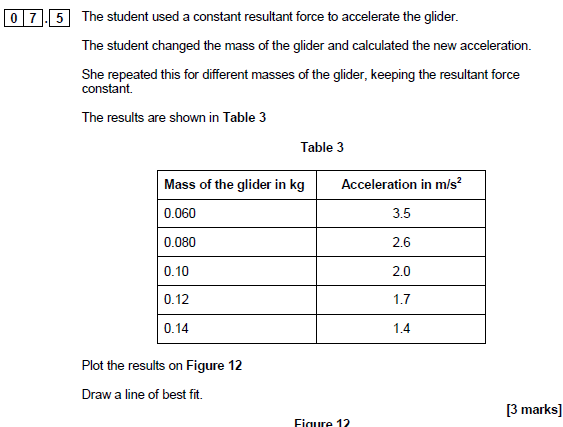




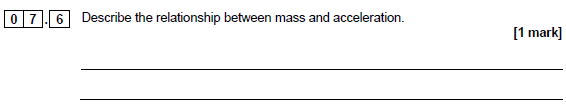








**Graph paper given with scales and axis labelled**



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## Types of questions and common errors

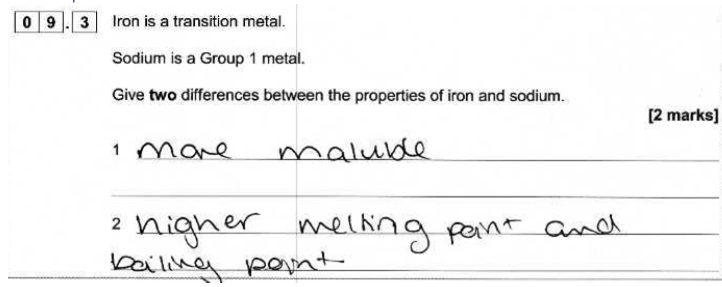
### Multiple-choice questions

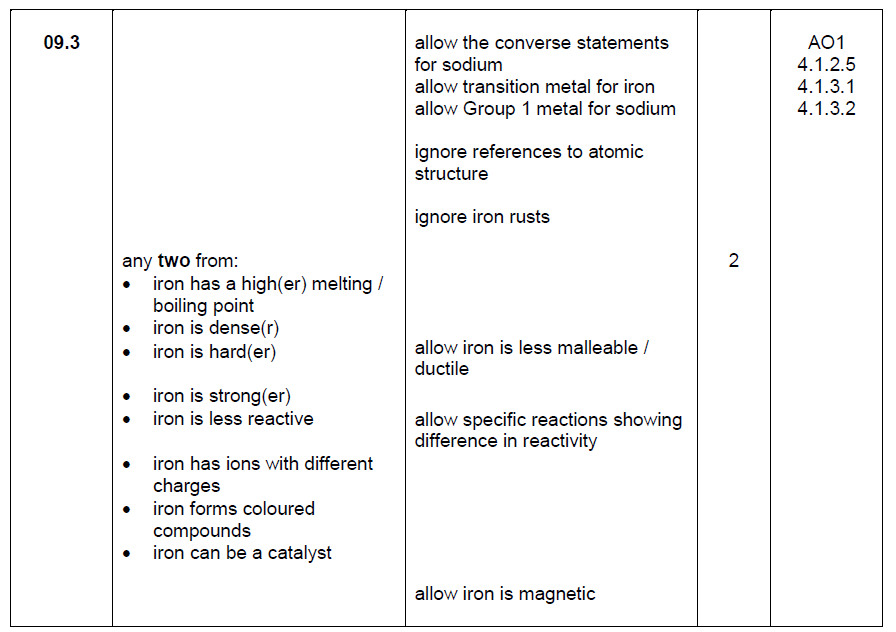
Ticking too many boxes, or not enough.

### Short-answer questions

#### Being clear about what they are referring to

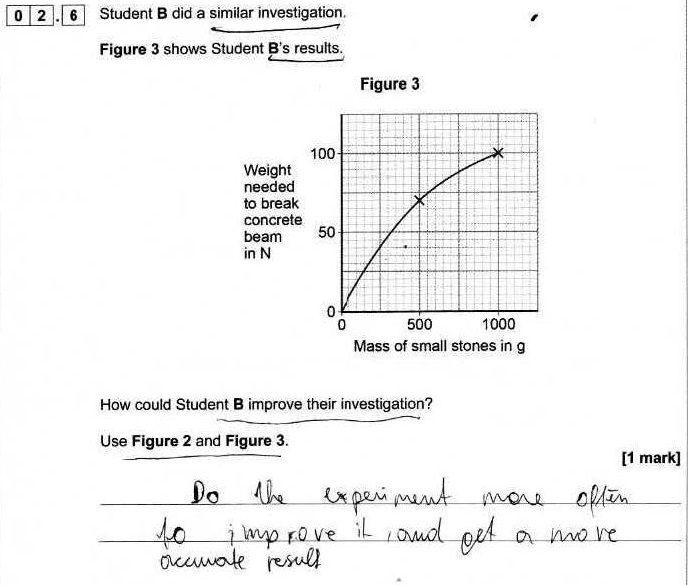
Example 1

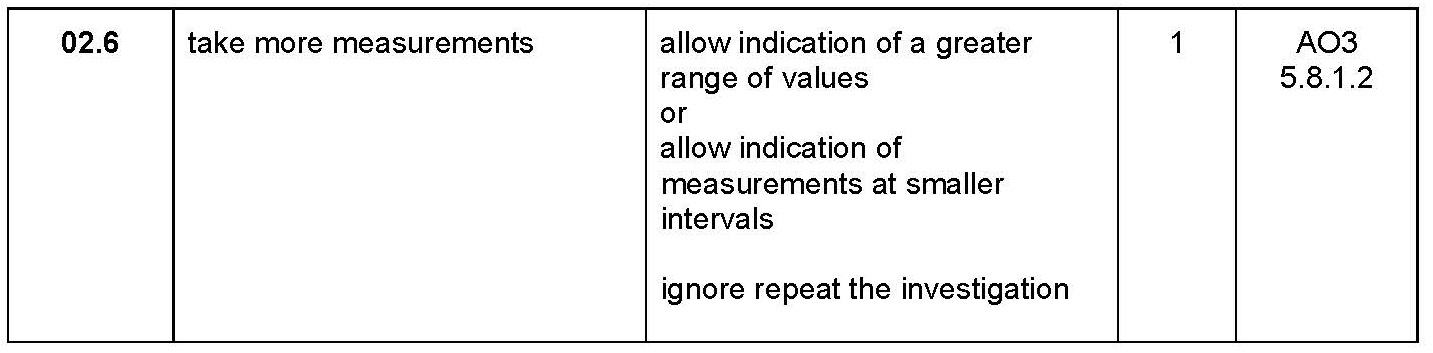




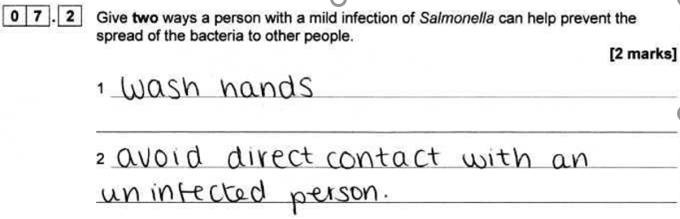
#### Being vague or not answering the question fully

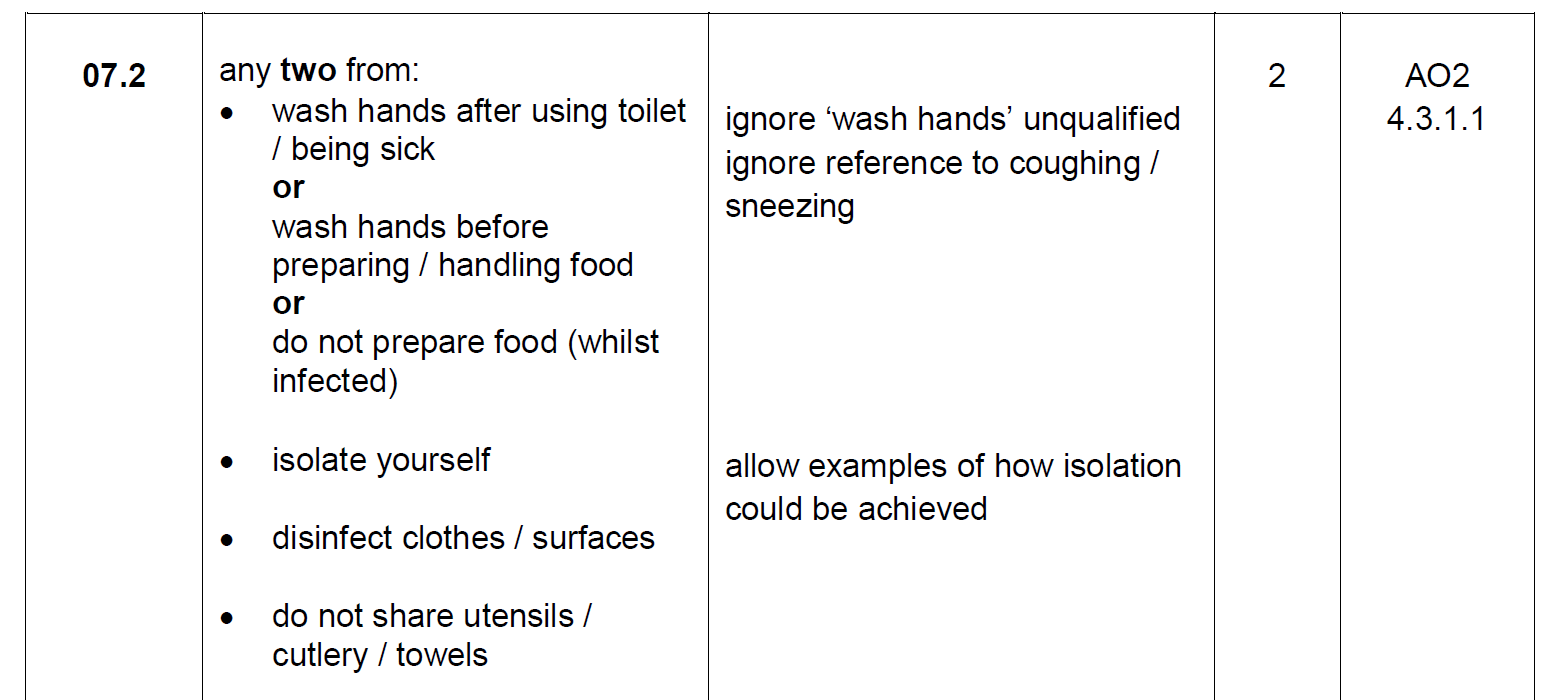
Example 2





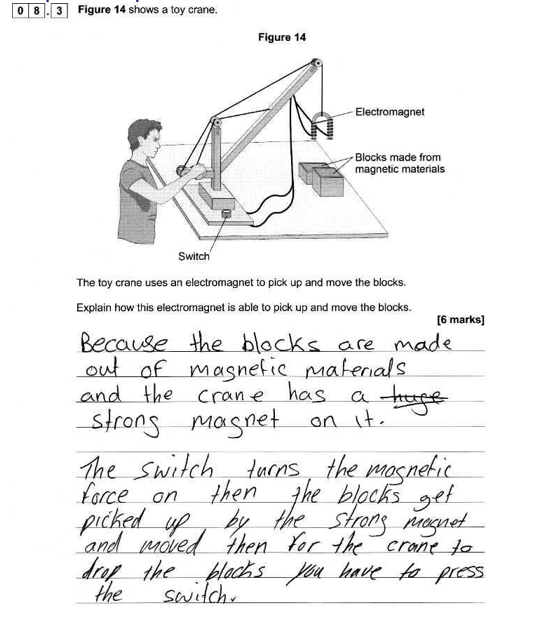
Example 3

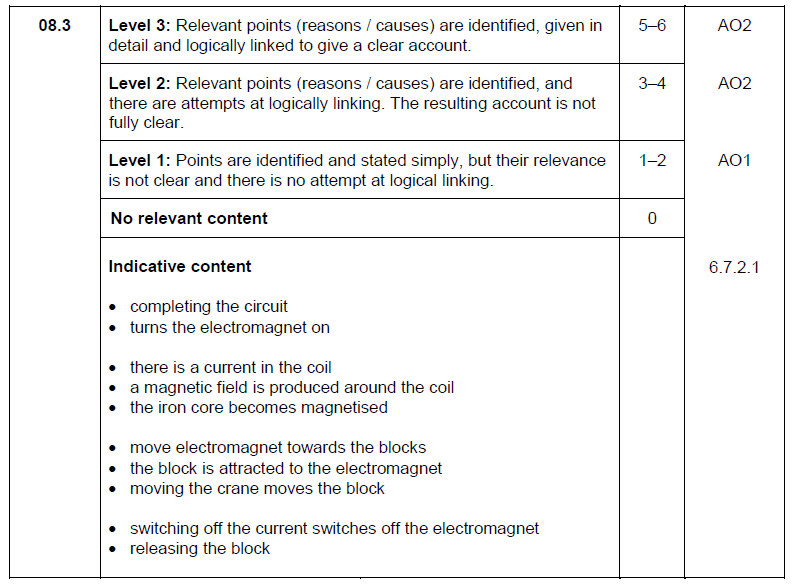




#### Repeating unnecessary information

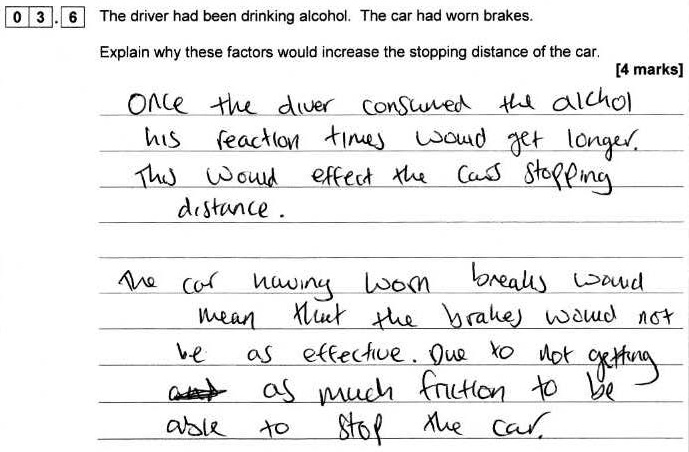
Example 4

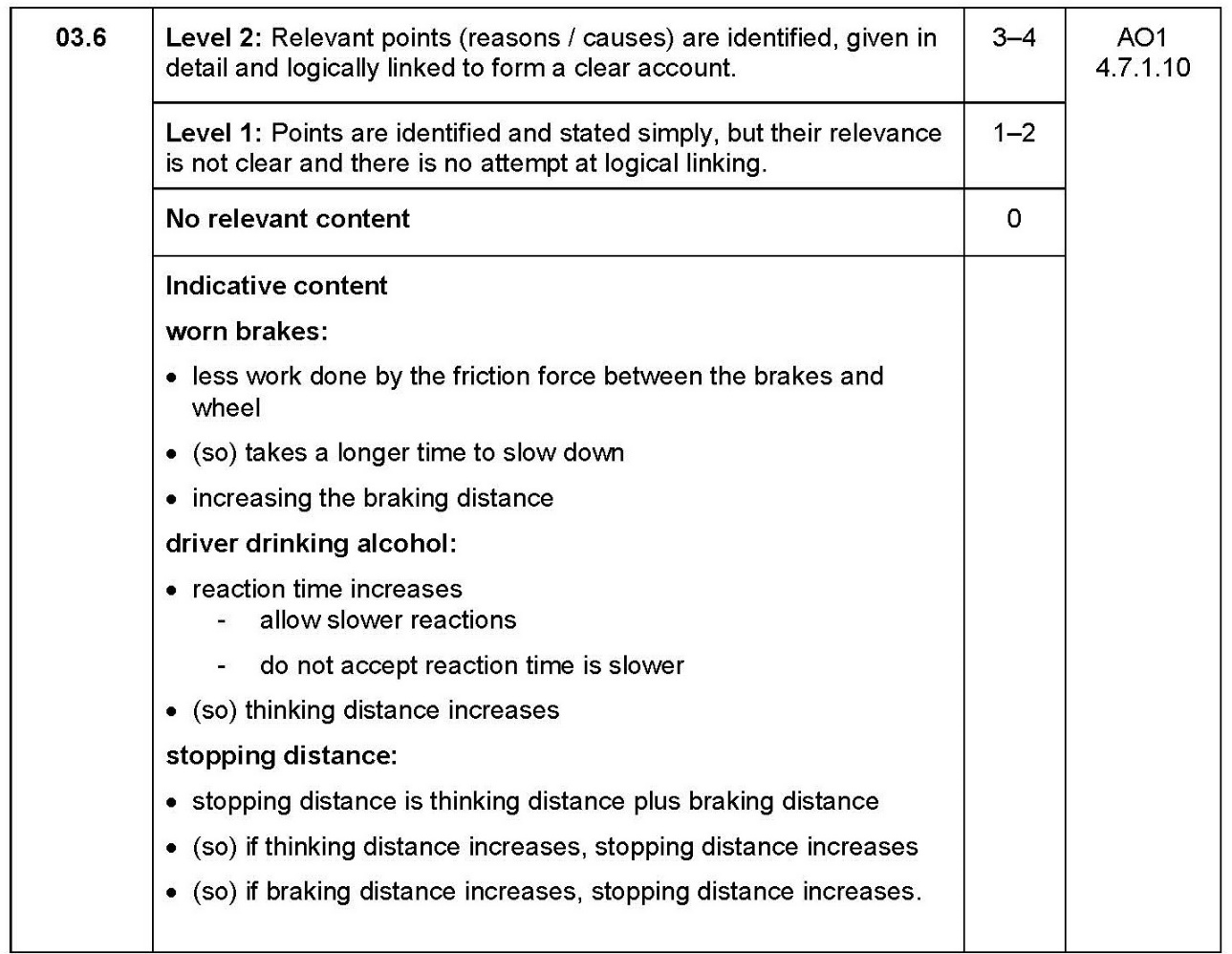




#### Not explaining fully

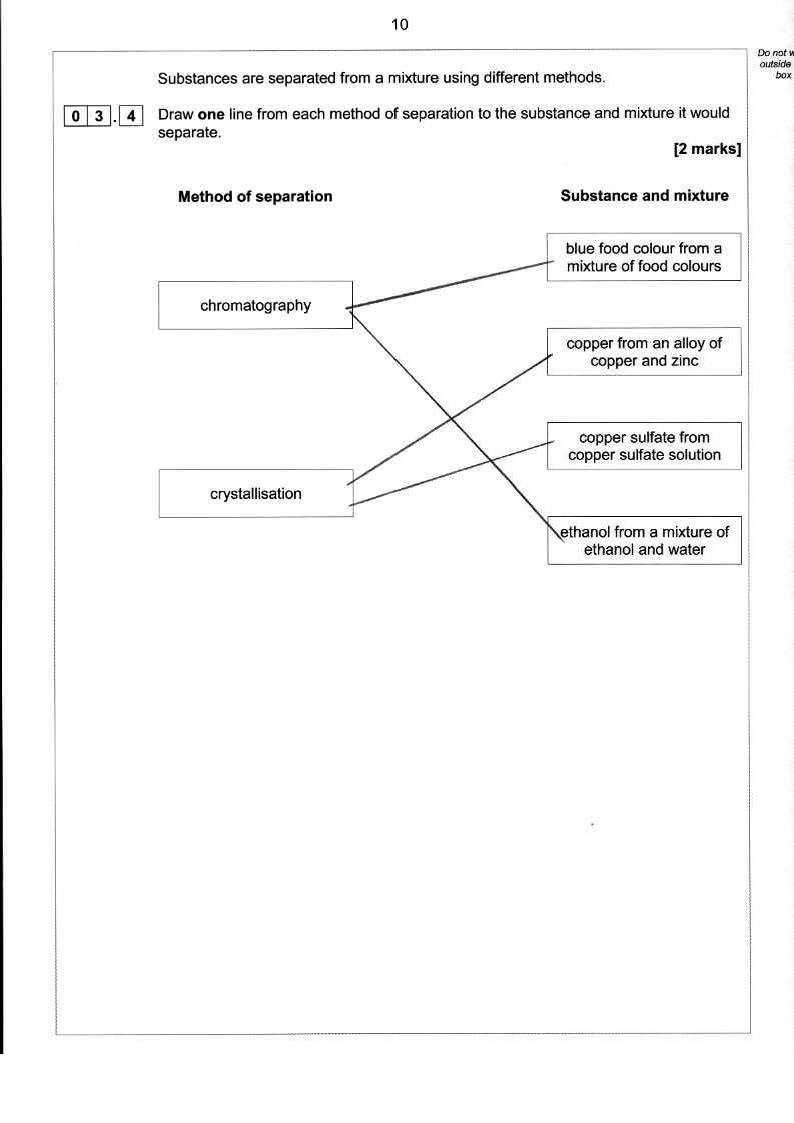
Example 5

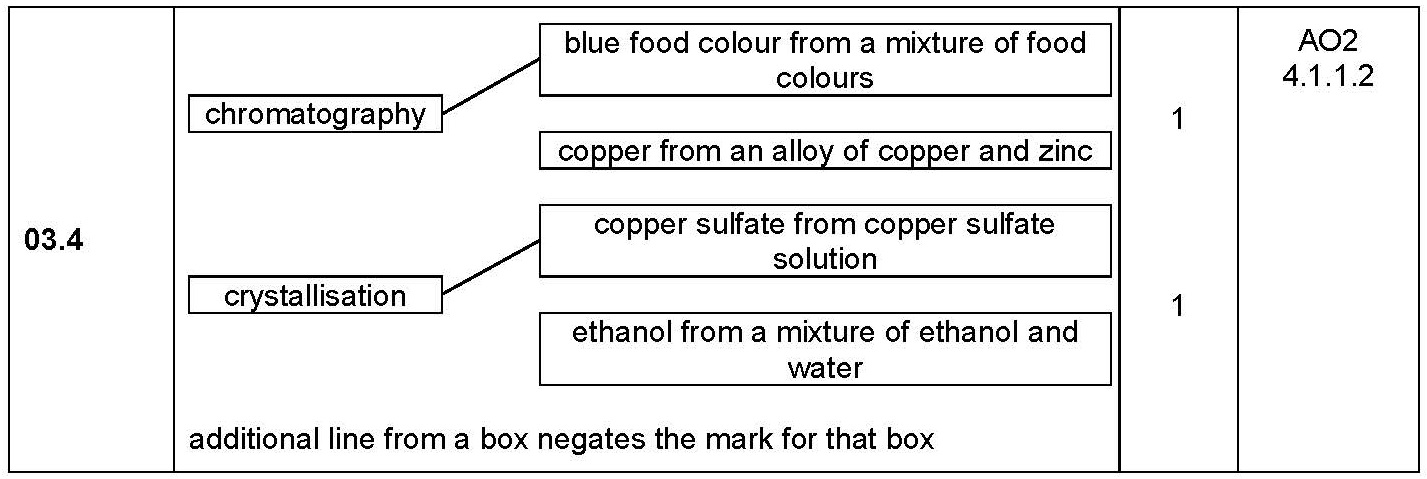




#### Putting a right and wrong answer

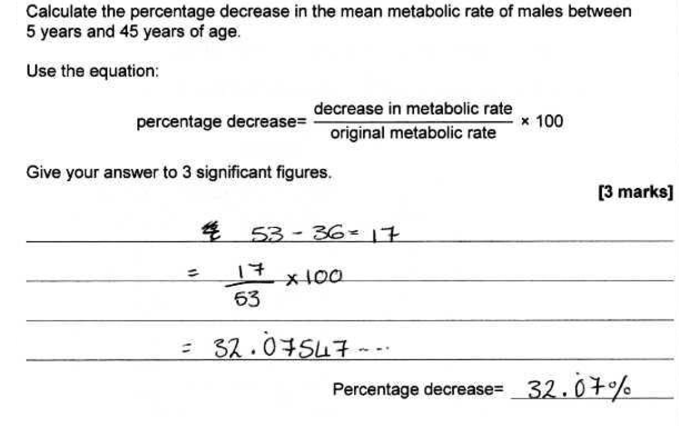
Example 6



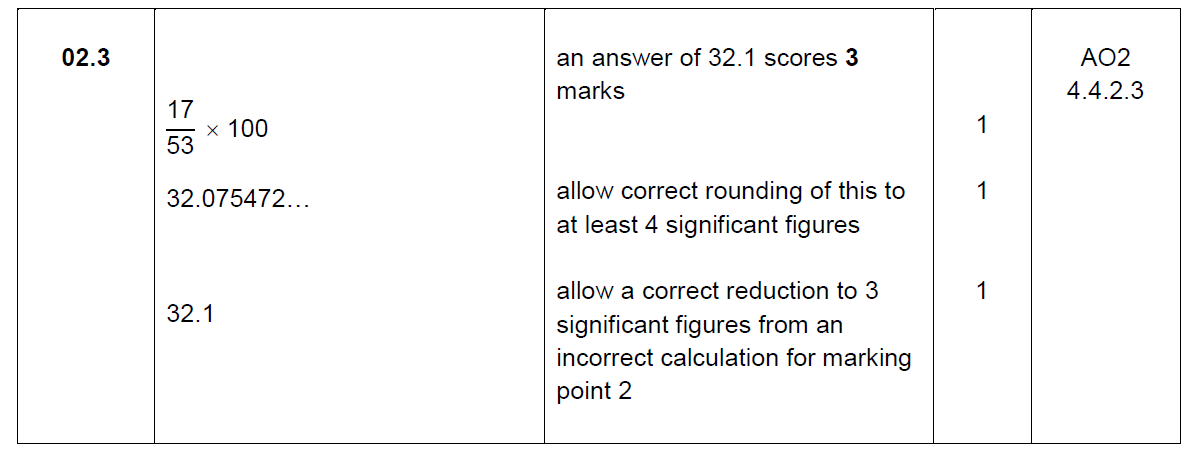


### General principles of marking calculations

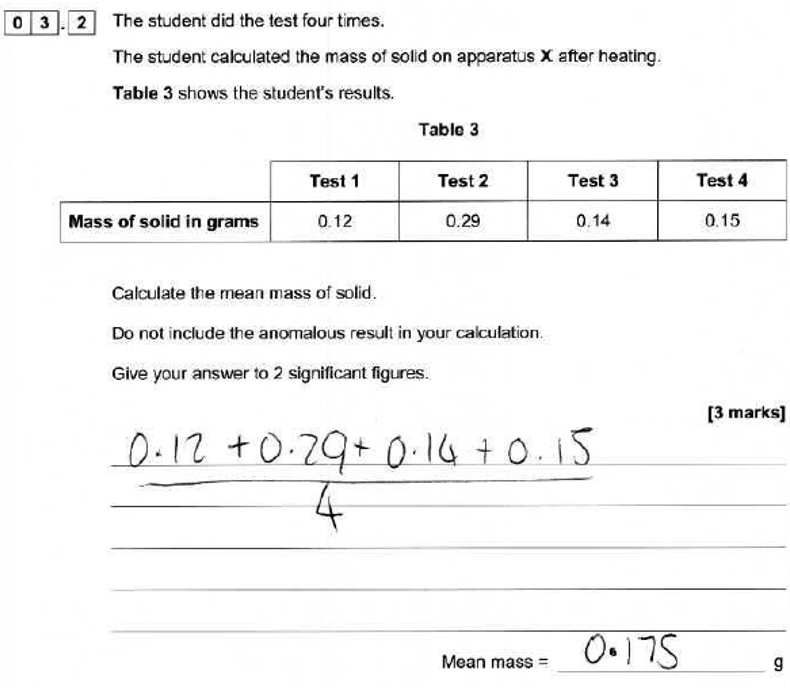
#### Example 7

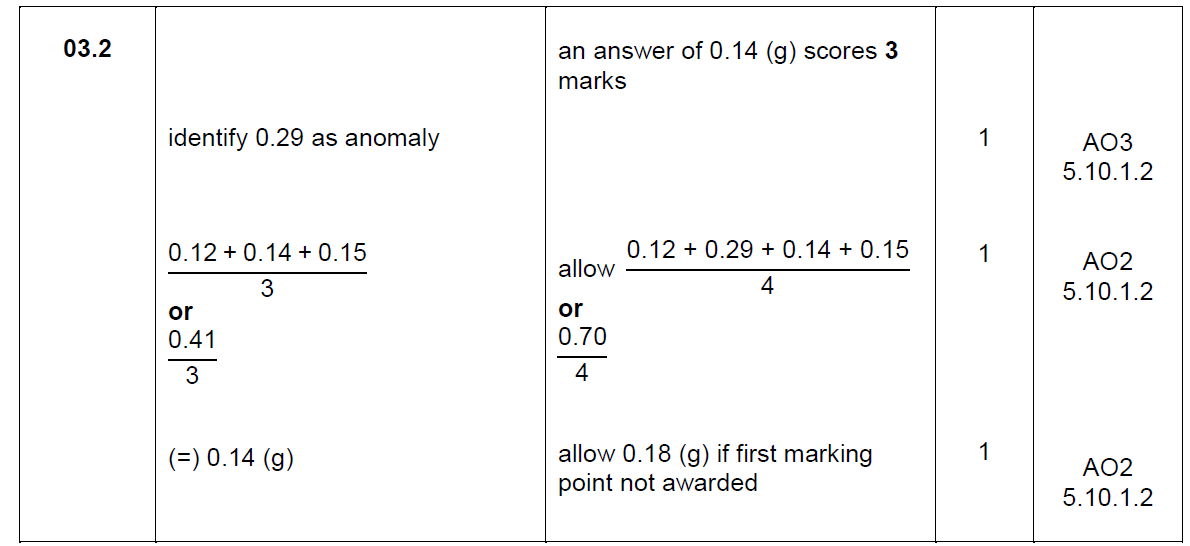


Repeat symbol



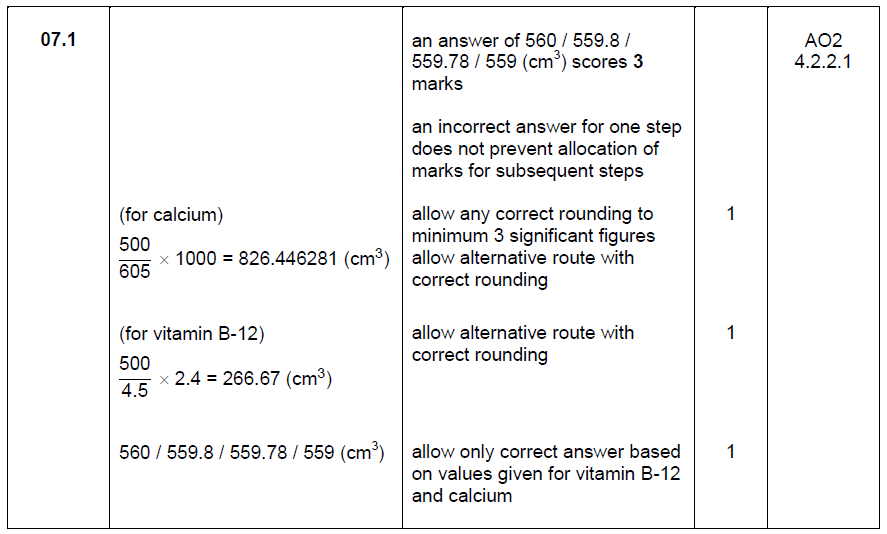
#### Example 8





#### Example 9

### 



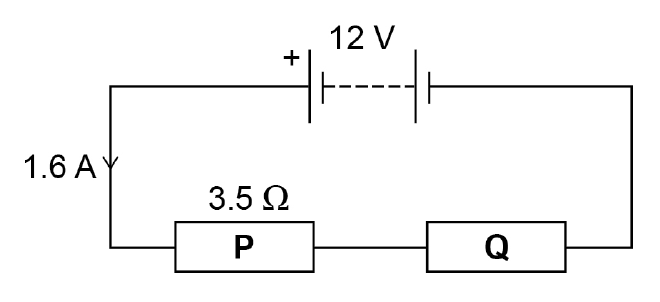
## Summary information on assessing physics equations

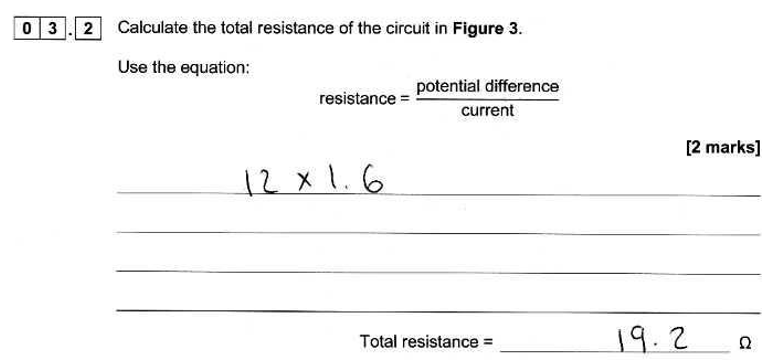
* 23 Physics equations that students need to know and be able to apply (21 in Combined Science).
* 12 further Physics equations (7 in Combined Science) that students must be able to select from a list and apply. Students will be given the prompt ‘Use the correct equation from the Equation sheet’.
* How assessed on the papers

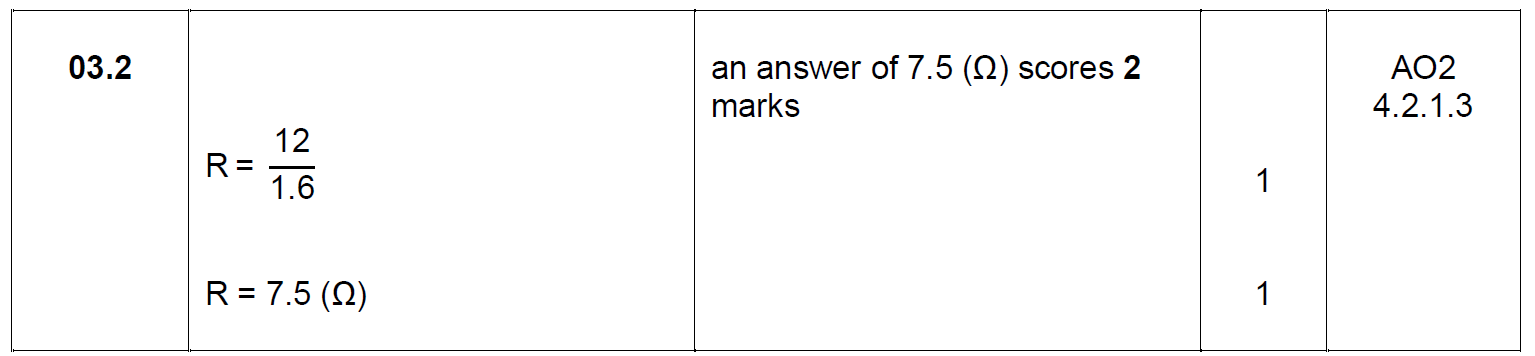
### Low demand, grades 1−3 (Foundation tier only)

* Recall (AO1) grades 1−3 be asked to recall an equation by multiple choice, link boxes. Will only be worth 1 mark.
* Apply (AO2) students will be given the equation to apply.
* Simple equations with substitution of two numbers, no transformations.

#### Example 10



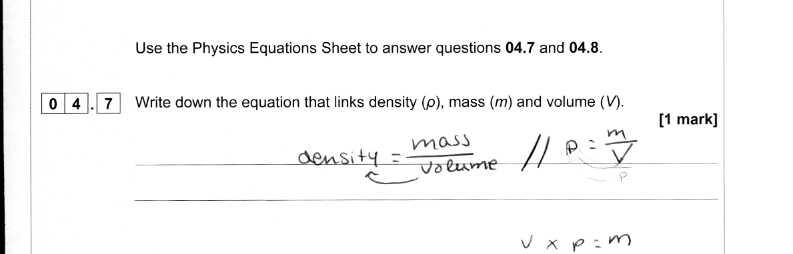


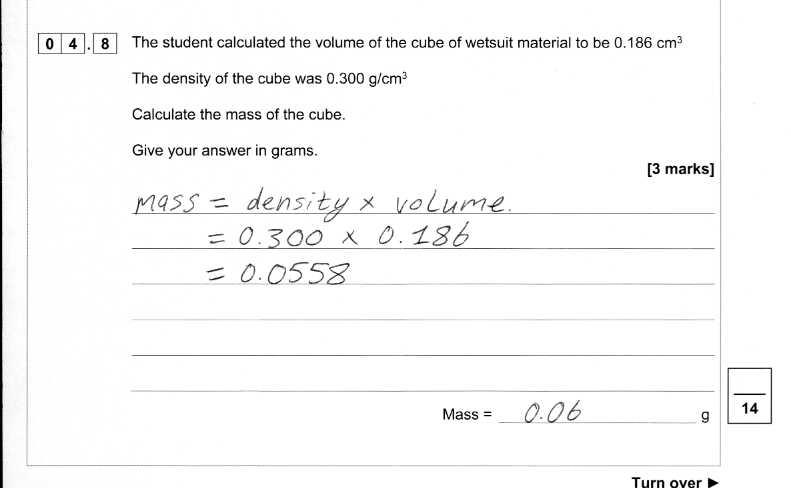


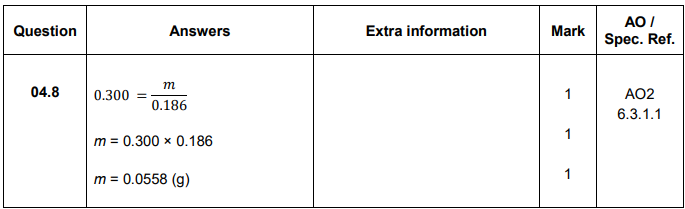
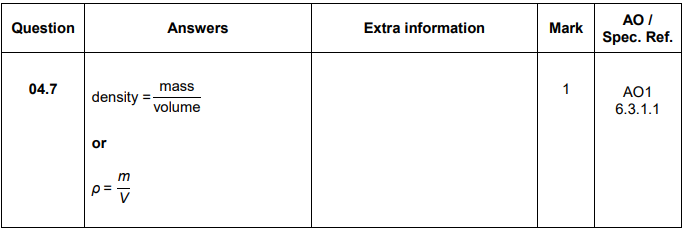
### Standard demand, grades 4−5 (Foundation and Higher tier)

* Students will be given the prompt ‘Write down the equation that links…’ so they access AO1. These will be written in alphabetical order not necessarily in the way they need to be used.
* Calculation will involve something ‘extra’ e.g. simple transformation.

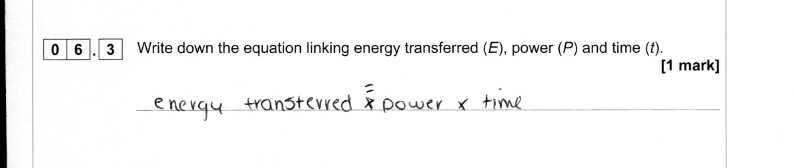
#### Example 11

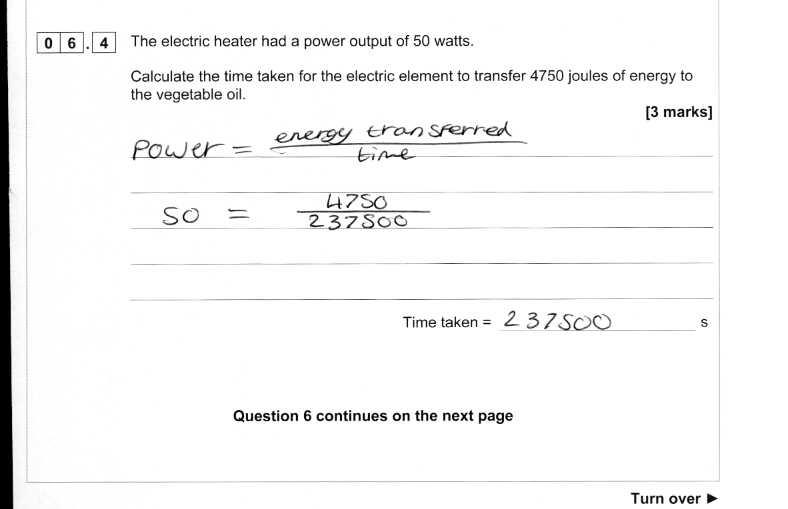


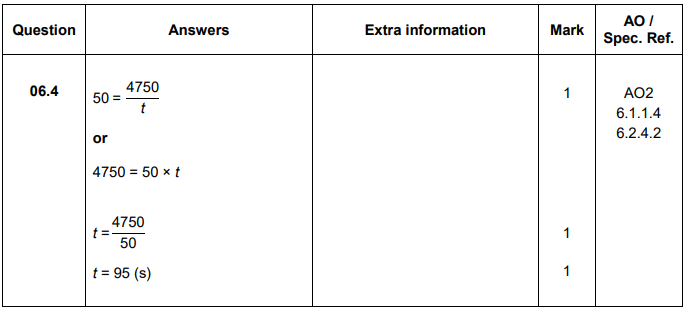
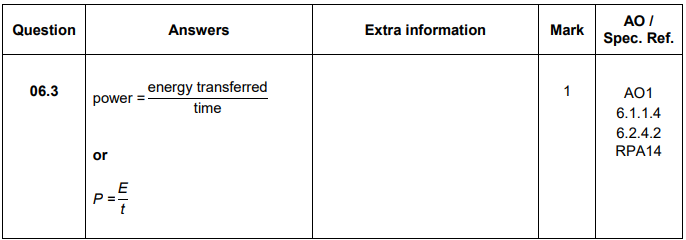




#### Example 12





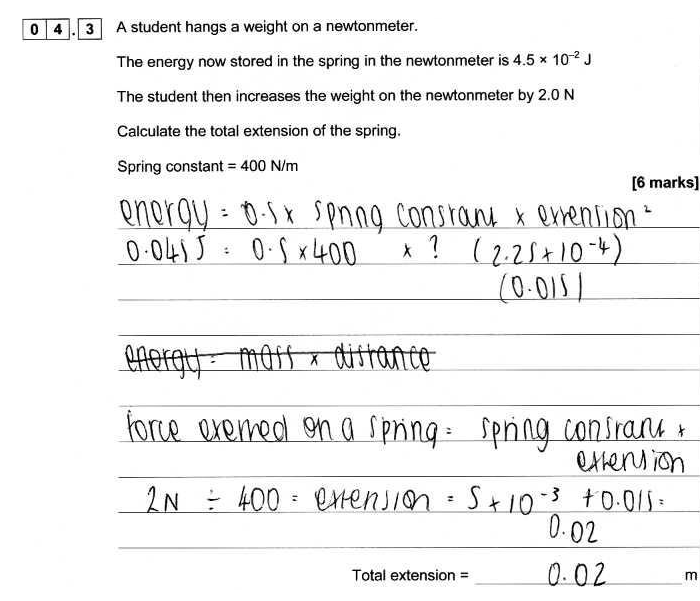


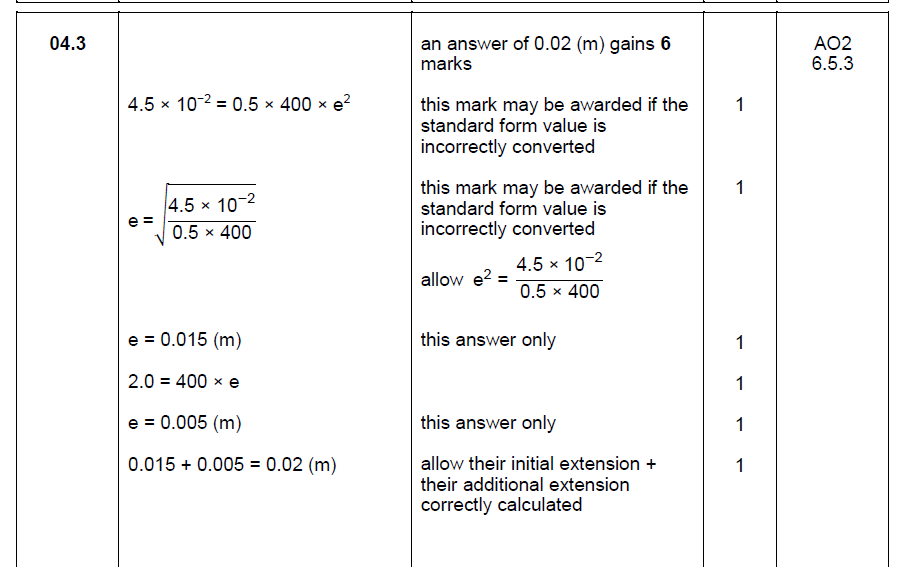
### High demand, grades 6−9 (Higher tier only)

* No prompts about which equation to use.
* Students will not gain marks simply for writing the equation down without doing something with it (so no AO1).
* Questions will involve transformations or ‘something extra’.
* Could be multi-step

#### Example 13

For calculations that involve multiple steps (5 or 6 mark extended response on Higher tier) students may need to use more than one equation.





An example of a completely correct response, with all working shown, that scores 6 marks.

## Graphs

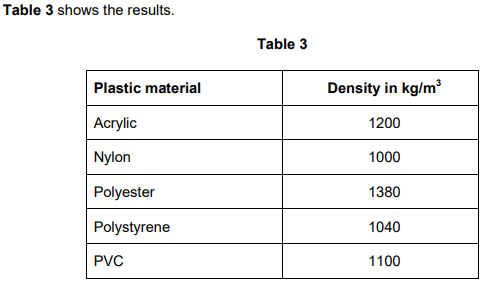
We use a variety of graphs to test a range of skills covering all levels of demand. Students can use a pencil or a pen but a **sharp pencil** is best as they can then rub out mistakes.

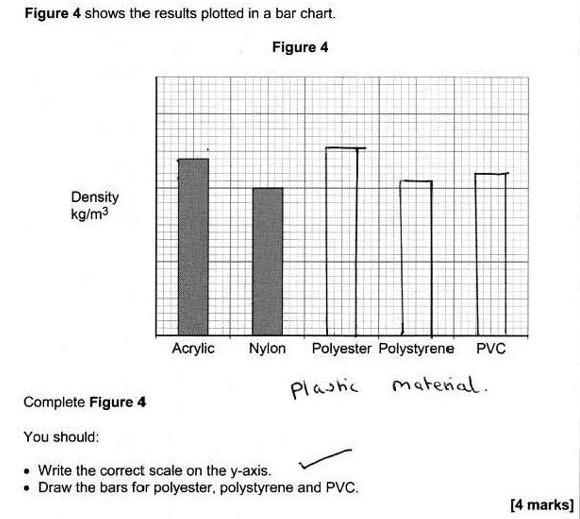
Students **may be** asked to:

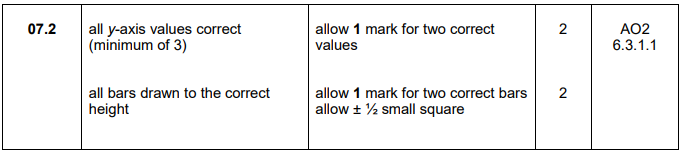
* plot the data from a table:
  + cross (x) or dots can be used but crosses (x) are easier to see.
  + marked for accuracy - different divisions of scales are used depending on demand.
* label the axis – use the headings in the data table to help decide on the labels.
* draw the scale – try and use most of the available graph paper so the examiner can see clearly what you have done.
* draw a line of best fit – in science because we are using real data, **lines of best fit** can be **straight or curved**. Look at the pattern in the data first to decide.

#### Simple bar charts: Example 14

AQA-8464P1F-QP-JUN18

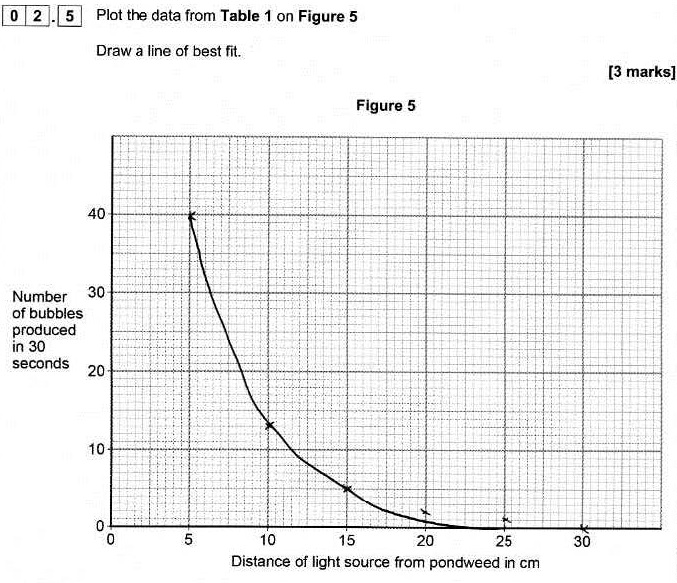




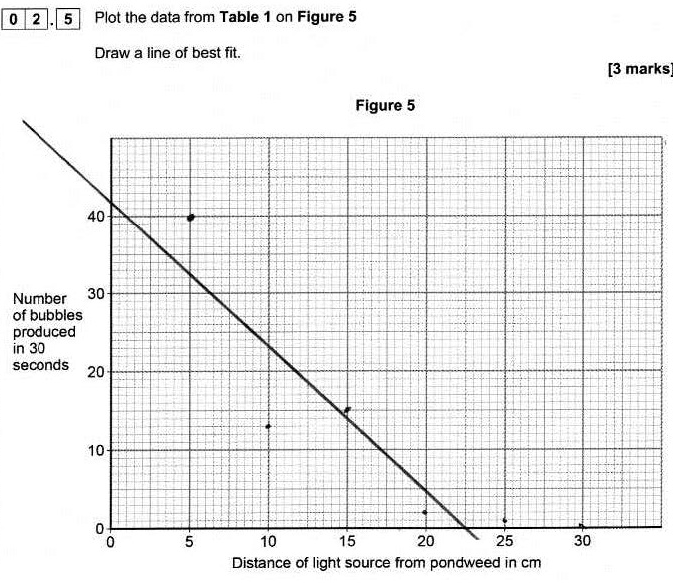


#### Line graph: Example 15

AQA-8464B1F-QP-JUN18



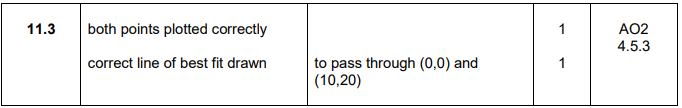
#### Line graph: Example 16



#### 

#### Line graph: Example 17

#### 



## Extended response

One of the assessment criteria all exam boards have to assess is a student’s ability to write an answer that is ‘coherent, relevant, substantiated and logically structured’.

These questions carry 4 – 6 marks and are usually set at standard demand or above, so on the foundation tier they are often part of the last questions.   
  
They are marked using ‘levels of response’ mark schemes (unless multi-step calculation).

Levels of response mark schemes provide a framework in which students are rewarded according to the level of skill they show and the correct content they include. There is not one right answer. The mark is determined by:

* looking at the overall quality of the answer
* taking into account the descriptor for each level
* taking into account the content included

Typical command works are plan, describe, explain, compare and evaluate. Each command word has a different levels descriptor.

When a student writes their answer they can:

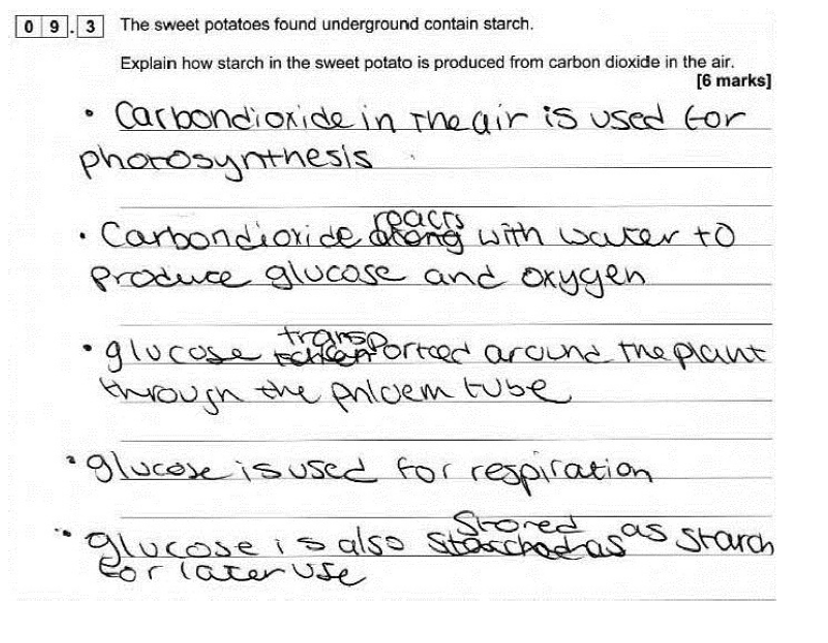
* write in **paragraphs**
* use short sentences in **bullet points**
* use **labelled diagrams**, especially if it’s planning an experiment or writing the method. They need to refer to them in their answer, e.g. set up the equipment in the diagram and then …… .   
  A logically sequenced series of annotated diagrams can save time writing and may be clearer than a long written account.
* Use **tables** with headings for compare and evaluate questions. Students must make sure to explain what the table is showing. Statements, explanations and numerical data need to be clearly linked across the table so that like is being compared with like. An evaluation has to have a judgement at the end

Answers don’t need to be long; students need to be concise and keep to the point.

The **number of answer lines** is an indication of the maximum amount of space they should be using, not the space they must fill. Make sure students understand this and they shouldn’t be tempted to keep writing to fill the space. If they do they may end up contradicting themselves or including wrong statements that affect the overall quality of the answer.

Encourage students to **always have a go** at these questions as any relevant information may get them a mark and every mark counts!

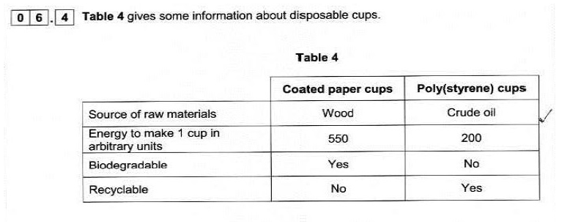
#### Using bullet points and prose

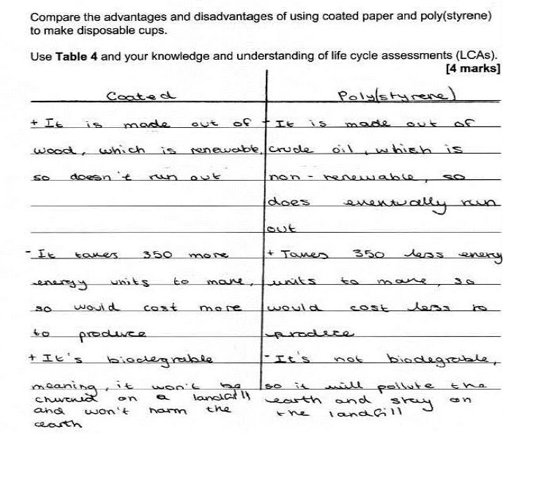


Commentary

This answer is given as a clear sequence of relevant bullet points, which link to give a clear account of what happens in the plant. The level of detail given is sufficient for Level 3 and this student gains full marks.

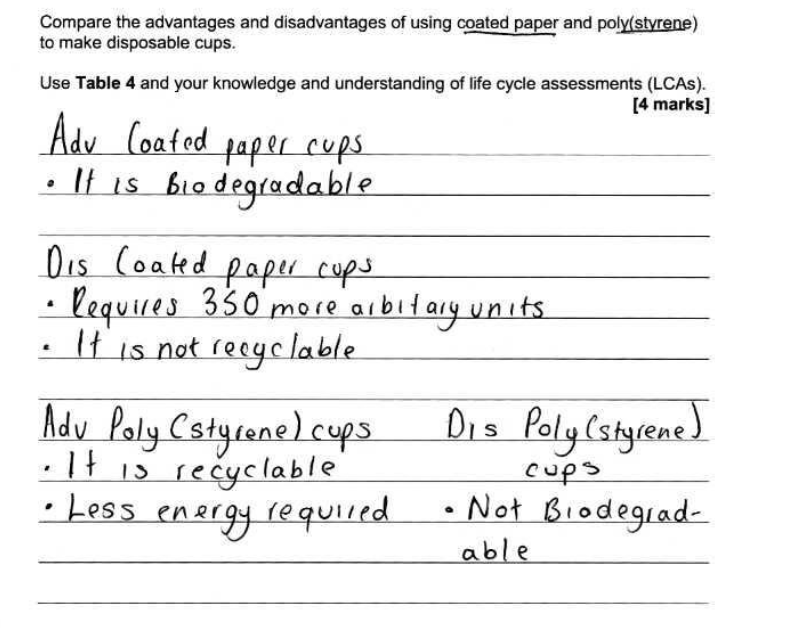
#### Using a table to layout similarities/differences and advantages/disadvantages





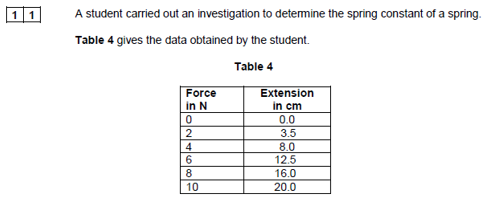
Commentary

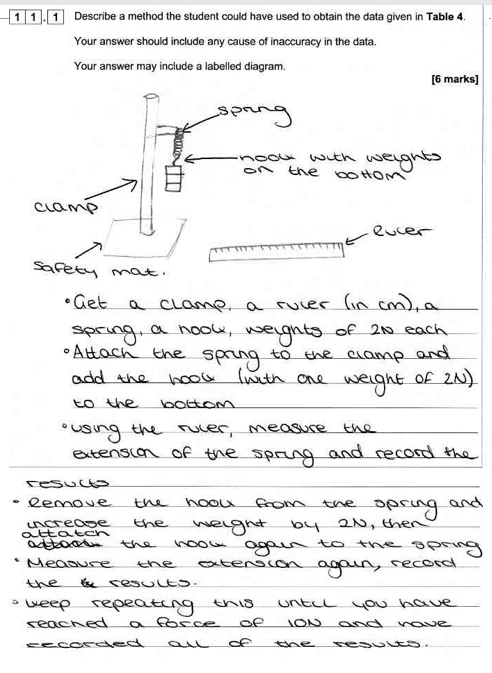
This student has presented their comparison in tabular form, which is perfectly acceptable. They have identified scientifically relevant features of both types of cup, and clearly linked each feature to whether it is an advantage or disadvantage. The comparison of the features of the two types of cup is clearly shown in the tabular presentation, and there is numerical data to indicate the magnitude of the difference in cost production. This is a top Level 2 answer and deserves full marks.

Commentary 

This answer to the same question is not as good and gets **1 mark.** General advantages and disadvantages are identified here but there is no explanation of why its an advantage or disadvantage. They have just repeated the information in the table.What is needed is for example;  
paper cups are not recyclable **so they end up in landfill** or they are biodegradable **so they break down or rot.** The layout doesn’t show how the two cups compare against each other

#### Using a labelled diagram





Commentary

The method given will produce a valid outcome, so is a level 3 response. There is a correct, labelled diagram, and if they had referred to this they didn’t need to rewrite the set up as in bullet 1 and 2. The response lacks some detail as there is no reference to calculating extension or causes of inaccuracy, so this scores 5 marks.

## Command words

Command words are the words and phrases used in exams that tell students how they should answer a question.

**Calculate** Students should use numbers given in the question to work out the answer.   
  
**Choose** Select from a range of alternatives.

**Compare** This requires the student to describe the similarities and/or differences between things, not just write about one.

**Complete** Answers should be written in the space provided, for example on a diagram, in spaces in a sentence, or in a table.

**Define** Specify the meaning of something.

**Describe** Students may be asked to recall some facts, events or process in an accurate way.

**Design** Set out how something will be done.

**Determine** Use given data or information to obtain and answer.

**Draw** To produce, or add to, a diagram.

**Estimate** Assign an approximate value.

**Evaluate** Students should use the information supplied, as well as their knowledge and understanding, to consider evidence for and against.

**Explain** Students should make something clear, or state the reasons for something happening.

**Give** Only a short answer is required, not an explanation or a description.

**Identify** Name or otherwise characterise.

**Justify** Use evidence from the information supplied to support an answer.

**Label** Provide appropriate names on a diagram.

**Measure** Find an item of data for a given quantity.

**Name** Only a short answer is required, not an explanation or a description. Often it can be answered with a single word, phrase or sentence.

**Plan** Write a method.

**Plot** Mark on a graph using data given.

**Predict** Give a plausible outcome.

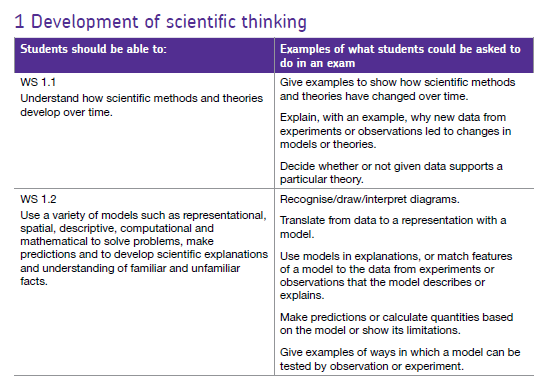
**Show** Provide structured evidence to reach a conclusion.

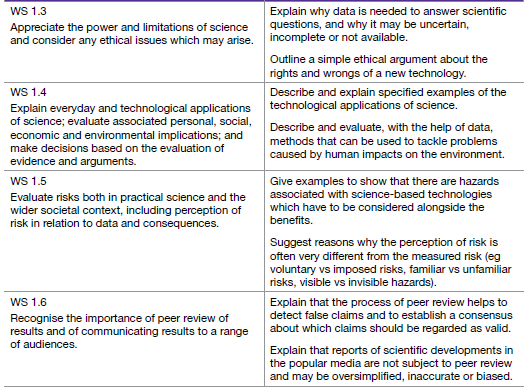
**Sketch** Draw approximately.

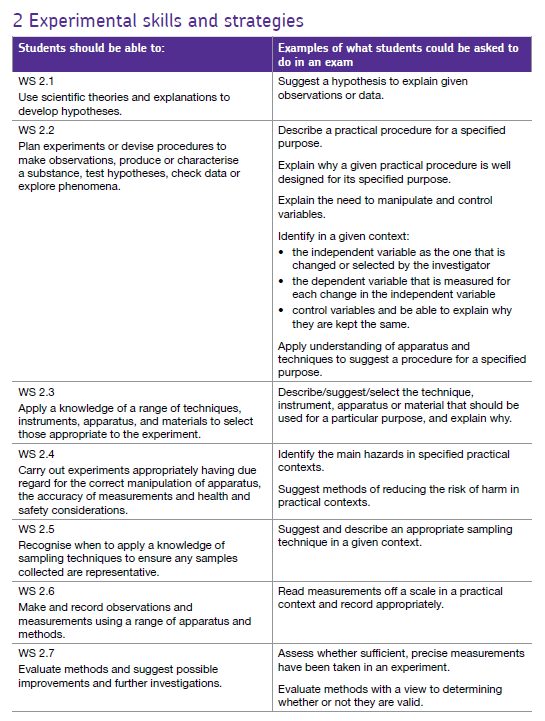
**Suggest** This term is used in questions where students need to apply their knowledge and understanding to a new situation.   
  
**Use** The answer must be based on the information given in the question. Unless the information given in the question is used, no marks can be given. In some cases students might be asked to use their own knowledge and understanding.

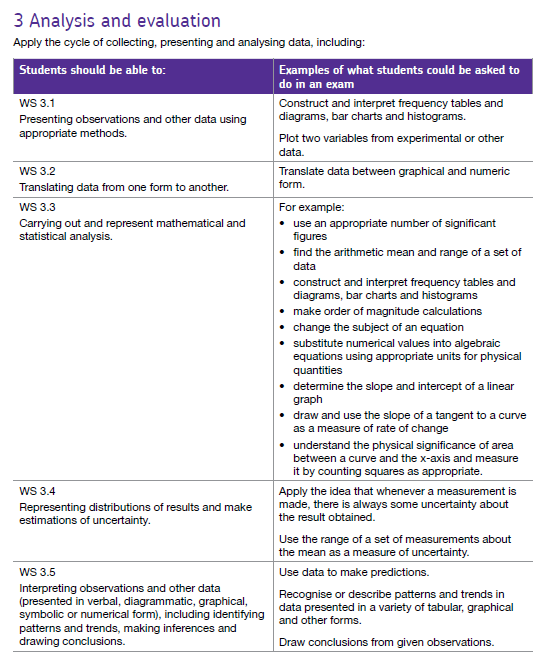
**Write** Only a short answer is required, not an explanation or a description

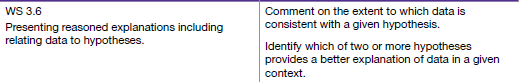
## Working scientifically

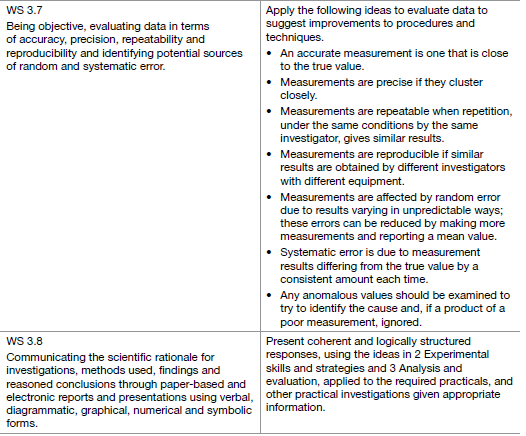


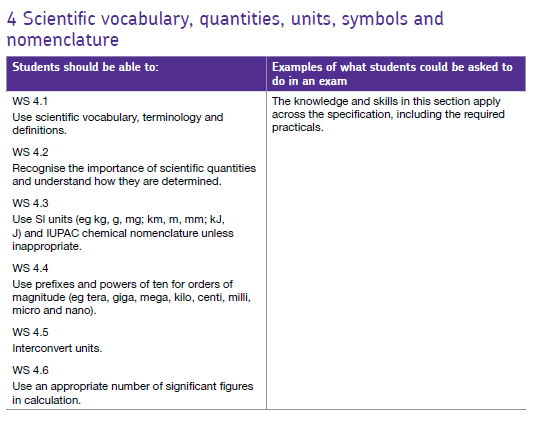






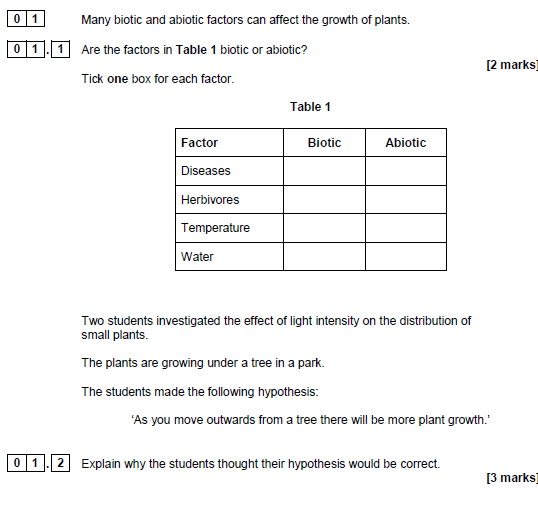


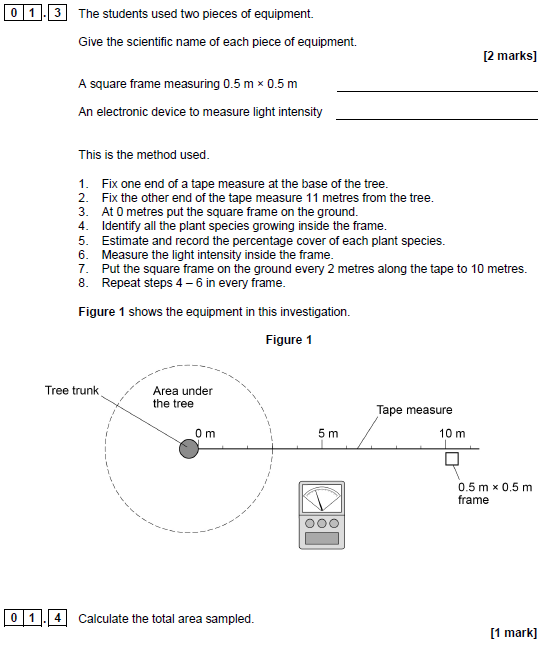


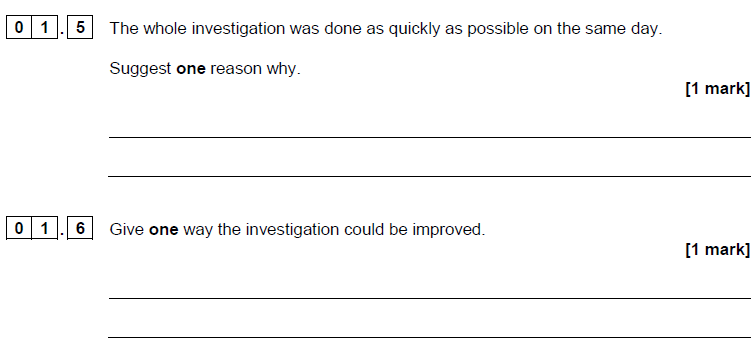


## Elements covered in practical questions

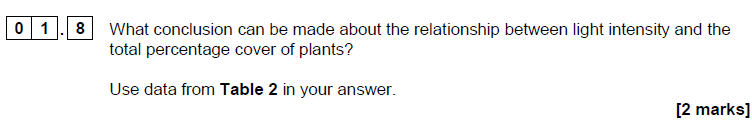
### Look at this common biology question. Can you identify any of the skills from the list above that are being assessed?

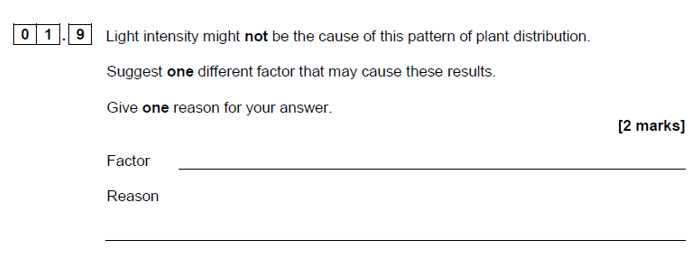












Contact us  
  
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