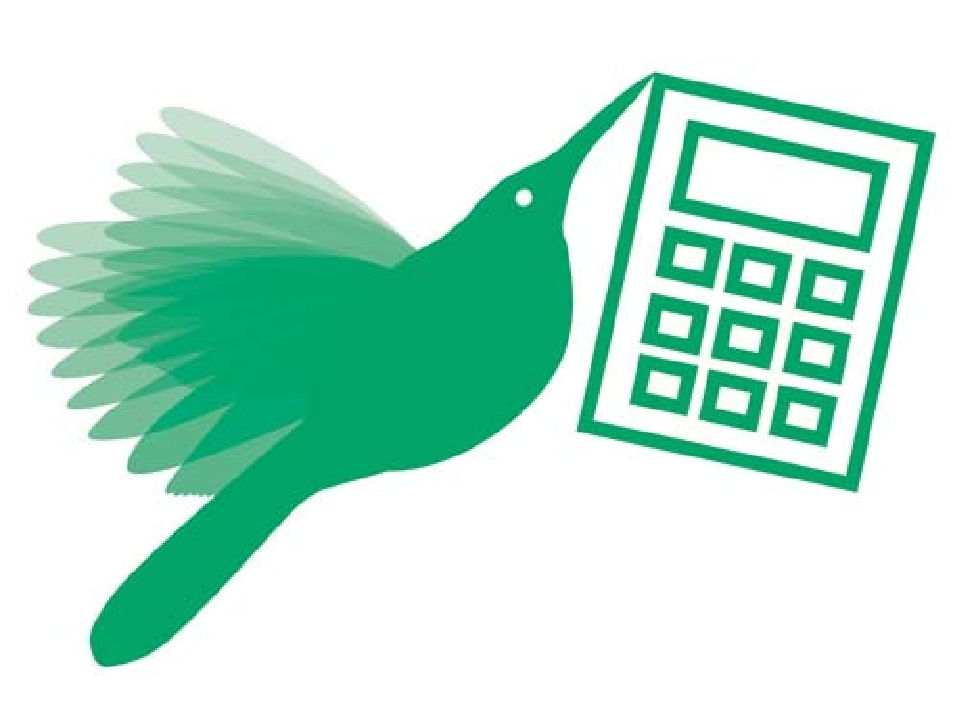
**Level 3 Essential Skills Wales in**

**Application of Number (3768)**

**Candidate logbook**

500/7629/2



www.cityandguilds.com September 2010 Version 1.1



Your name:

City & Guilds enrolment number:

Unique Learner Number (ULN):

Date of registration for 3768:

Date portfolio started:

Date portfolio completed:

Assessor’s name: Internal verifier’s name:

**1 How do I use this logbook?**

This logbook will help you work towards Level 3 Essential Skills Wales in Application of Number. It contains:

* an **evidence record form** detailing the evidence you must provide to complete this qualification. You should use this to record and organise your evidence.
* a **skills checklist** containing all of the skills you need to have in order to show that you are competent. You can use this to help show how you have learnt and gained confidence in these skills.

The evidence and skills requirements for ESW are set out in full in the DCELLS document ‘Essential Skills Wales’. This can be downloaded from  [**www.cityandguilds.com/es**](http://www.cityandguilds.com/esw)**w**. Your assessor/tutor will also be able to explain to you in more detail what you need to do.

**About ESW**

The Essential Skills Wales (ESW) qualifications are designed to help you develop and demonstrate the skills to needed make the most of your learning, work and life.

This qualification will help you improve your **number** skills. You will be required to demonstrate your skills in:

* understanding numerical data
* carrying out calculations
* interpreting results and presenting findings

in order to tackle problems or tasks that you meet in education, training, work and social roles.

**About City & Guilds**

City & Guilds is your awarding organisation for Essential Skills Wales. City & Guilds is the UK’s leading awarding body for vocational qualifications. You may also be working towards other City & Guilds qualifications at the same time as completing ESW and in some cases you may be able to use work completed for those qualifications towards your ESW portfolio.

Information about City & Guilds and our qualifications is available on our website  [**www.cityandguilds.co**](http://www.cityandguilds.com/)**m**.

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**2 Level 3 Essential Skills Wales in Application of Number**

2.1 Evidence record

Your portfolio must include **all** of the following. Please use this sheet to record what your evidence is and where it can be found. The Declarations on page  [5](#page5) **must** be completed.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Standard** | | **Description of** | **Location/** | **Confirmed met and date** |  |
|  |  | **evidence presented** | **reference** | ***(assessor use only)*** |  |
| **Overall** | |  |  | >=1 task covers all |  |
| You must carry out at least one activity that shows your skills in | | |  | three components |  |
| all three components (N3.1, N3.2, N3.3). | | |  | all cover >1 component |  |
| If you need to carry out additional activities to meet all of the | | |  |  |
|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
| requirements for N2.2 (a, b, c, d) **each** activity must include | | |  |  |
|  |  |  |
| tasks for either N2.1 and N2.2 **or** N.3.2 and N3.3. | | |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
|  |  |  |  |  |
|  | |  |  |  |  |
| **N3.1.1** | |  |  | >=1 prob independently |  |
| Identify, analyse and accurately | |  |  | ID/described |  |
| describe at least one practical | |  |  | range of data/info |  |
| problem or task that involves a range | |  |  |  |
|  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
| of numerical data and information. | |  |  |  |
|  |  |  |  |
|  |  |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
|  | |  |  |  |  |
| **N3.1.2** | |  |  | plan devised, including |  |
| Plan how you will tackle it. | |  |  | how to obtain relevant |  |
|  |  |  |  | data/info |  |
|  |  |  |  | clear sequence of tasks |  |
|  |  |  |  | showing how info used |  |
|  |  |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
|  |  |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
|  | |  |  |  |  |
| **N3.1.3** | |  |  | relevant data/info |  |
| Collect relevant numerical data and | |  |  | collected from >=3 |  |
| information from a range of sources | |  |  | sources |  |
| to meet the purpose of your task. | |  |  | >=1 appropriate data |  |
|  |  |  |  |  |
| Your sources must include at least | |  |  | set grouped |  |
| **two** of a table, a chart, a graph or a | |  |  | includes >=2 of table/ |  |
| diagram, of which at least one must | |  |  |  |
|  |  | chart/graph/diagram |  |
| be complex, and a large data set. | |  |  |  |
|  |  | >=1 complex/large data |  |
|  |  |  |  |  |
|  |  |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
|  |  |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
|  | |  |  |  |  |
| **N3.2.1** | |  |  | >1 method chosen/used |  |
| Choose and use appropriate | |  |  | to get results needed |  |
| methods to get the results you need | |  |  | methods and purpose |  |
| and justify the methods you have | |  |  |  |
|  |  | explained |  |
| used. | |  |  |  |
|  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
|  |  |  |  |  |
|  |  |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
|  | |  |  |  |  |
| **N3.2.2** | |  |  | relevant data/info from |  |
| Use the data and information you | |  |  | N3.1 used |  |
| have obtained to carry out | |  |  | amounts or sizes |  |
| calculations relevant to your task to | |  |  |  |
|  |  | scales or proportions |  |
| do with: | |  |  |  |
|  |  | handling statistics (incl. |  |
| a) | amounts or sizes |  |  |  |
|  |  | use of grouped data) |  |
| b) | scales or proportion |  |  |  |
|  |  | using formulae |  |
| c) | handling statistics |  |  |  |
|  |  | methods/accuracy |  |
| d) | using formulae. |  |  |  |
|  |  | justified |  |
|  |  |  |  |  |
|  |  |  |  | checked methods/calcs |  |
|  |  |  |  | results chked for sense |  |
|  |  |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
|  |  |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
|  |  |  |  |  |  |

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|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Standard** | **Description of** | **Location/** | **Confirmed met and date** |  |
|  | **evidence presented** | **reference** | ***(assessor use only)*** |  |
| **N3.3.1** |  |  | >=2 of chart/graph/ |  |
| Select and justify two different ways |  |  | table/diagram selected |  |
| to present your results, using charts |  |  | Appropriateness of |  |
| or graphs, and tables or diagrams |  |  |  |
|  |  | each explained and |  |
| appropriate to your audience. |  |  |  |
|  |  | justified |  |
|  |  |  |  |
|  |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
|  |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
|  |  |  |  |  |
| **N3.3.2** |  |  | methods/findings |  |
| Present and explain your methods |  |  | explained effectively |  |
| and findings and justify how they |  |  | meaning described/ |  |
| meet the purpose of your task and |  |  |  |
|  |  | explained/justified in |  |
| are appropriate to your audience. |  |  |  |
|  |  | relation to problem |  |
|  |  |  |  |
|  |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
|  |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
|  |  |  |  |  |

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**2 Level 3 Essential Skills Wales in Application of Number**

2.2 Declarations

The candidate and assessor declarations below **must** be completed in all cases.

Candidate name:

**Candidate declaration:**

I confirm that the evidence produced for this portfolio is entirely my own work.

Candidate signature: Date:

For centre staff and City & Guilds’ use only

**Assessor declaration:**

I confirm that the candidate has met / not met (as applicable) all of the evidence requirements for this Essential Skills Wales qualification. Assessment is valid, authentic, reliable, current and sufficient.

Assessor signature Date

**Internal verifier declaration:**

*(if sampled)*

I confirm that the candidate has met / not met (as applicable) all of the evidence requirements for this Essential Skills Wales qualification. I have internally verified this work.

Internal verifier signature: Date:

**External verifier declaration:**

*(if sampled)*

I confirm that the candidate has met / not met (as applicable) all of the evidence requirements for this Essential Skills Wales qualification. I have externally verified this work.

External verifier signature: Date:

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2.3 Skills checklist

This checklist is designed to help you show you have learnt all of the skills needed for this qualification. Unlike the Evidence record, this list is not a formal part of your assessment although you and your assessor/tutor should be confident that you can do all of these things by the time you complete your portfolio.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **In order to show you are competent,** | | **Tick if** | **Further guidance** |  |
| **you need to know how to:** | | **you** |  |  |
|  |  | **can** |  |  |
| a) | identify, analyse and accurately |  | **Problem** |  |
|  | describe the problem or task and its |  | At this level, problems must include sub-problems. The |  |
|  | sub-problems |  | techniques you need to tackle the problem must be |  |
| b) | plan how you will tackle the problem |  | relatively sophisticated (eg interrelated multi-stage |  |
| calculations rather than those that require two or more |  |
|  | by breaking it down into a series of |  |  |
|  |  | separate steps), and must require you to consider |  |
|  | tasks |  |  |
|  |  | carefully the nature and sequence of tasks when you are |  |
| c) | plan how you will obtain the data and |  |  |
| planning how to obtain and use information to meet your |  |
|  | information you need |  |  |
|  |  | purpose. Problems must offer different possible |  |
|  |  |  |  |
|  |  |  | approaches which you must evaluate to decide how best |  |
|  |  |  | to tackle the problem. |  |
|  |  |  | If you choose to tackle a problem of your own, rather |  |
|  |  |  | than one given by your teacher/tutor/trainer, you must |  |
|  |  |  | take their advice about whether your chosen problem is |  |
|  |  |  | appropriate. |  |
|  |  |  | **Plan** |  |
|  |  |  | You need to know to break down an activity into a series |  |
|  |  |  | of interrelated tasks, and identify the problems to be |  |
|  |  |  | tackled. It may not be immediately clear what these |  |
|  |  |  | problems are, and you may need to extend your |  |
|  |  |  | knowledge of methods and approaches. You will need to |  |
|  |  |  | take time to specify the problem, formulate questions in |  |
|  |  |  | terms of the data you need, plan how you will obtain this |  |
|  |  |  | information and what you are going to do (eg methods |  |
|  |  |  | you will use for organising data, such as tabulating and |  |
|  |  |  | grouping, types of calculations, how you will take account |  |
|  |  |  | of variability or bias) to meet the purpose of your activity. |  |
| a) | read, understand and extract |  | **Collect, record** |  |
|  | information from tables, diagrams, |  | You must know how to select and use suitable equipment |  |
|  | charts and graphs |  | for making accurate measurements and observations, as |  |
| b) | collect, obtain, read, understand, |  | well as how to interpret a variety of numerical, written |  |
| and graphical material, including complex tables and |  |
|  | select and record relevant data and |  |  |
|  |  | charts (ie those that present very detailed information |  |
|  | information from different sources, |  |  |
|  |  | relating to a large data set), in order to decide about their |  |
|  | including at least one data set of a |  |  |
|  |  | relevance to the purpose of your activity. You must |  |
|  | size appropriate to a planned |  |  |
|  |  | record measurements and observations accurately and in |  |
|  | activity, and use this to meet the |  |  |
|  |  | a way that is fit for the purpose of your task. |  |
|  | purpose of the activity |  |  |
|  |  | **Sources** |  |
| c) | make accurate and reliable |  |  |
| Sources can include graphical and/or written material (eg |  |
|  | observations over time and use |  |  |
|  |  | reference books and journals; organisations that collate |  |
|  | suitable equipment to measure in a |  |  |
|  |  | their own statistical information; the internet; and |  |
|  | variety of appropriate units |  |  |
|  |  | newspapers) and/or direct measurements or |  |
| d) | group data into classes of width |  |  |
| observations, depending on the context in which you are |  |
|  | appropriate to the data |  |  |
|  |  | working. This material must include at least two of: a |  |
| e) | use estimation to help you plan, |  |  |
| table, a chart, a graph, or a diagram. You must be able to |  |
|  | multiplying and dividing numbers of |  | deal with scales, such as 1:1250 (as on large-scale maps), |  |
|  | any size |  | graphs with several graph lines on the same axes (eg |  |
| f) | read and understand ways of writing |  | power outputs compared with speed for different |  |
| temperatures, weights against heights for a range of |  |
|  | very large and very small numbers |  |  |
|  |  | body mass indexes). |  |
| g) | understand compound measures. |  |  |
| **Data set** |  |
|  |  |  |  |
|  |  |  | The ‘large data set’ must be of a size appropriate to your |  |
|  |  |  | activity, sufficiently complex to be challenging to |  |
|  |  |  | interpret, and large enough to enable you to carry out |  |
|  |  |  | statistical calculations relating to grouped data. |  |
|  |  |  |  |  |

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|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **In order to show you are competent,** | | **Tick if** | **Further guidance** | |  |
| **you need to know how to:** | | **you** |  |  |  |
|  |  | **can** |  |  |  |
|  |  |  | Where you compare two sets of data, one set must have | |  |
|  |  |  | been obtained by you, while the other set may have been | |  |
|  |  |  | given to you. A set of about 50 items is likely to be | |  |
|  |  |  | appropriate at this level, but if opportunities arise in your | |  |
|  |  |  | normal work to manipulate slightly smaller sets of data | |  |
|  |  |  | for a worthwhile purpose, you should not reject these in | |  |
|  |  |  | favour of larger data sets that are less relevant to your | |  |
|  |  |  | activity. It is essential that there is a relevant and realistic | |  |
|  |  |  | need to group the data. You may produce a large data set | |  |
|  |  |  | by sampling or drawing from a larger set of secondary | |  |
|  |  |  | data. | |  |
|  |  |  | **Compound measures** | |  |
|  |  |  | You must know how to interpret compound measures, ie | |  |
|  |  |  | those presented as ‘something per something’ such as | |  |
|  |  |  | milligrams per 100 millilitres, or pressure in pounds per | |  |
|  |  |  | square inch (psi), or miles per litre/gallon, etc. | |  |
| a) | identify and design methods that are |  | **Identify and design methods** | |  |
|  | appropriate for your task and justify |  | You must consider a range of possible methods (eg look | |  |
|  | your choice |  | up formulae/ information relating to similar tasks or | |  |
|  |  |  | problems), weigh up the pros and cons of alternatives, | |  |
|  |  |  | possibly adapt or originate new methods, and be able to | |  |
|  |  |  | justify your choice in relation to its suitability for your | |  |
|  |  |  | purpose and circumstances. | |  |
| a) | carry out calculations clearly showing |  | **Carry out multi-stage calculations** | |  |
|  | your methods |  | Application of Number requires you to show that you can | |  |
| b) | justify the levels of accuracy you |  | carry out a number of different types of calculations | |  |
| (amounts or sizes; scales or proportion; handling | |  |
|  | have worked to |  |  |
|  |  | statistics; using formulae). ‘Amounts or sizes’ is a single | |  |
| c) | carry out multi-stage calculations |  |  |
| category. ‘Scales or proportion’ is another single | |  |
|  | with numbers of any size |  |  |
|  |  | category. From each of these categories, you must | |  |
| d) | use powers and roots |  |  |
| present at least one example as evidence. | |  |
| e) | use compound measures |  |  |
| You must show that you can carry out multi-stage | |  |
| f) | use mental arithmetic involving |  |  |
| calculations, ie where the results from one stage are used | |  |
|  | numbers, simple fractions, and |  |  |
|  |  | to provide some of the data for the next stage. For | |  |
|  | percentages |  |  |
|  |  | example, this could involve finding the mean time taken | |  |
| g) | work out missing angles and sides in |  |  |
| by shoppers at checkouts, and using the results, together | |  |
|  | right-angled triangles from known |  | with data about the number of shoppers in the | |  |
|  | sides and angles |  | supermarket, to calculate the number of checkout | |  |
| h) | calculate with sums of money in |  | assistants required at different times of the day (this | |  |
| differs from Level 2 in that each stage might include | |  |
|  | different currencies calculate, |  |  |
|  |  | calculations involving two or more steps, eg adding and | |  |
|  | measure, record and compare time |  |  |
|  |  | dividing to find the mean). | |  |
|  | in different formats |  |  |
|  |  | You must be able to carry out calculations both with and | |  |
| i) | estimate, measure and compare |  |  |
| without a calculator. | |  |
|  | dimensions and quantities using |  |  |
|  |  | Examples of calculations in each category: | |  |
|  | metric and, where appropriate, |  |  |
|  |  |  |  |  |
|  | imperial units, and check the |  | a) | Amounts or sizes |  |
|  | accuracy of estimates |  |  | Using powers and roots, such as ‘square’, ‘cube’ and |  |
| j) | calculate within and between |  |  | ‘square root’, 106, 10-3; finding missing angles and |  |
|  | sides, such as when working out the space |  |
|  | systems and make accurate |  |  |  |
|  |  |  | implications for ramps at different slopes, when it is |  |
|  | comparisons |  |  |  |
|  |  |  | quicker to use calculations than scale drawings. |  |
| k) | draw 2-D representations of simple 3- |  |  |  |
| b) | Scales or proportion |  |
|  | D objects |  |  |
|  |  |  | Knowing that if land measurements on a plan are |  |
| l) | solve problems involving irregular 2- |  |  |  |
|  | doubled, the area of land is four times as much, or, if |  |
|  | D shapes |  |  |  |
|  |  |  | three dimensions of an object are trebled, its volume |  |
| m) | work out actual dimensions from |  |  |  |
|  | or weight becomes 27 times as much. |  |
|  | scale drawings and scale quantities |  |  |  |
|  |  | c) | Handling statistics |  |
|  | up and down |  |  |
|  |  |  | Using several methods (visual, such as frequency |  |
| n) | work out proportional change |  |  |  |
|  | charts, histograms or cumulative frequency graphs; |  |
| o) | compare distributions, using |  |  |  |
|  | numerical, such as calculations of mean, median and |  |
|  | measures of average and range, and |  |  |
|  |  |  | interquartile range) to compare distributions of |  |
|  | estimate mean, median and range of |  |  | grouped data. |  |
|  | grouped data |  |  |  |  |
| p) | rearrange and use formulae, |  |  |  |  |
|  | equations and expressions |  |  |  |  |
| q) | make multi-step calculations |  |  |  |  |
|  | efficiently |  |  |  |  |

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|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **In order to show you are competent,** | | **Tick if** | **Further guidance** | |  |
| **you need to know how to:** | | **you** |  |  |  |
|  |  | **can** |  |  |  |
| r) | use checking procedures to identify |  | d) | Using formulae |  |
|  | and correct errors in methods, |  |  | Solving simultaneous linear equations with two |  |
|  |  |  | variables, using formulae with letters and |  |
|  | calculations and results |  |  |  |
|  |  |  | rearranging them so as to change the subject |  |
| s) | check that your results make sense. |  |  |  |
|  | (output) of a formula, such as making w or h the |  |
|  |  |  |  |  |
|  |  |  |  | subject rather than b in b= hW2 as well as finding the |  |
|  |  |  |  | value of W given the values of h and b. |  |
|  |  |  | **Levels of accuracy** | |  |
|  |  |  | You must decide what levels of accuracy to work to (eg | |  |
|  |  |  | nearest whole number, nearest pound, one place of | |  |
|  |  |  | decimals) and be able to justify your choice. | |  |
|  |  |  | **Multi-stage** | |  |
|  |  |  | Where you use the results from one stage to provide data | |  |
|  |  |  | for calculations at the next stage, the stages can involve | |  |
|  |  |  | calculations from any of the four categories. | |  |
|  |  |  | **Use checking procedures** | |  |
|  |  |  | You must always check the accuracy of your calculations. | |  |
|  |  |  | This is often a mental process and you do not have to | |  |
|  |  |  | produce evidence every time you do it. | |  |
|  |  |  | Where there is a series of calculations of the same type, | |  |
|  |  |  | you must record evidence of checking at least the first | |  |
|  |  |  | few of each type. For the remainder, accurate results | |  |
|  |  |  | should confirm that you have checked effectively. You | |  |
|  |  |  | must be aware of the importance of checking your results | |  |
|  |  |  | and your methods and be familiar with different methods | |  |
|  |  |  | of carrying out checks. | |  |
|  |  |  | **Check that results make sense** | |  |
|  |  |  | While your results may be based on accurate | |  |
|  |  |  | calculations, they may not ‘make sense’ or be fit for | |  |
|  |  |  | purpose in relation to the problem or task that you have | |  |
|  |  |  | tackled. You must check this. | |  |
| a) understand what the results of your | |  | **Select and justify** | |  |
|  | calculations mean in the context of |  | You must be able to identify, describe and consider | |  |
|  | your problem or task |  | different ways to present your results (eg graphs, chart, | |  |
| b) | select and use appropriate methods |  | tables, diagrams) to at least two different audiences. You | |  |
| must choose and use the two ways (ie charts and/or | |  |
|  | to present and illustrate your |  |  |
|  |  | graphs, **and** tables and/or diagrams) that are most | |  |
|  | findings, showing trends and making |  |  |
|  |  | appropriate to your actual audience, to the nature of the | |  |
|  | comparisons, including numerical, |  |  |
|  |  | data you want to present, and to the features you want to | |  |
|  | graphical and written formats |  |  |
|  |  | highlight. You must be able to give reasons that justify | |  |
| c) | justify your choice of methods of |  |  |
| your choice. | |  |
|  | presentation |  |  |
|  |  | Evidence that you have considered different ways and | |  |
|  |  |  |  |
|  |  |  | that explains your choice must be in the form of notes, | |  |
|  |  |  | written by hand or electronically. | |  |
| a) construct and label tables, charts, | |  | **Describe and justify** | |  |
|  | graphs and diagrams using accepted |  | You must be able to describe your methods and justify | |  |
|  | conventions |  |  |
|  |  | them in relation to the problem you have tackled. | |  |
| b) | describe and justify your choice of |  |  |
| **Draw appropriate conclusions** | |  |
|  | methods |  |  |
|  |  | At this level, not only must you support your conclusions | |  |
| c) | describe what your results tell you |  |  |
| with evidence, but you must also assess the accuracy and | |  |
| d) | draw appropriate conclusions based |  | dependability of the results, taking into account | |  |
| approximations in calculations and possible inaccuracies | |  |
|  | on your findings, including how |  |  |
|  |  | in the original information. | |  |
|  | possible sources of error might have |  |  |
|  |  | **Respond constructively** | |  |
|  | affected your results explain how far |  |  |
|  |  | You must be able to respond constructively to feedback, | |  |
|  | your results meet your purpose |  |  |
|  |  | whether it is positive or negative, eg by being assertive | |  |
| e) | respond constructively to feedback. |  |
| rather than aggressive or dismissive. | |  |
|  |  |  |  |

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