

Additional Applied Science A

Twenty First Century Science Suite

Teacher Support

OCR GCSE in Additional Applied Science A J632

Contents

Managing Skills Development and Assessment in Twenty First Century Science	3
An Introduction to Skills Assessment for the Three Schemes	4
Marking Internally Assessed Work	5
Work-Related Portfolio A337	7
Standard Procedures	8
Work-Related Report	14
Management and Administration of the Skills Assessment	19
Internal Standardisation of Marks	20
External Moderation of Marks	20
Authentication of Candidates' Assessed Work	21
Appendix A: Suggestions of Suitable Activities for Standard Procedures	22
Appendix B: Assessment Criteria for Suitability Test	25
Appendix C: Suggestions of Suitable Activities for Suitability Tests	27
Appendix D: Examples of Suitability Test Reports with Commentaries	33
Appendix E: Assessment Criteria for Work-Related Reports	54
Appendix F: Suggestions for Contexts for Work-Related Reports	56
Appendix G: Guidance for Candidates Writing a Work-Related Report	57
Appendix H: Examples of Completed Work-Related Report with Commentaries	60
Appendix I: Cover Sheet for Work for Moderation	97
Appendix J: Support for Very Weak Candidates to Produce Coursework	99
Appendix K: Advice to Centres on Preparation of Sample for Moderation	103
Appendix L: Candidate Authentication Statement	105
Appendix M: Centre Authentication Form	106
Appendix N: Health and Safety Information	107

Managing Skills Development and Assessment in Twenty First Century Science

An education in science means different things for different people. The report *Beyond 2000 – science education for the future* [Robin Millar and Jonathan Osborne, eds; King's College, London 1998, ISBN 1 871984 78 5] identified two main purposes for science education at secondary level:

- the first stage in training for future scientists;
- a preparation for life in a modern society for all candidates.

The new assessment structure for GCSE Science in the National Curriculum recognises that these two purposes require courses with different content and different approaches. Thus, the former “Double Award” science, which tried to combine the different purposes into a single course, has been replaced by “Dual Science” – two separate specifications, taught with different aims in view, and leading to two independent qualifications.

The Twenty First Century Science suite of specifications has been designed from the beginning to address both purposes in a way which allows the maximum curriculum flexibility. It provides valid, meaningful and motivating learning experiences for the widest possible variety of candidates, regardless of interest, ability or career intentions.

The key to this flexibility is provision of a full suite of single subject specifications, which can be combined in many different ways.

The National Curriculum core requirement for science is a minimum of single award science. This must provide a basis of scientific literacy: science for citizenship, for all young people, based on sufficient knowledge of science content to comprehend major issues in modern society.

This coverage is provided through the specification:

- Science (J630), which provides an education for all candidates, based on scientific contexts and issues in contemporary society;

It is anticipated that the majority of candidates will wish to learn more about science. In this suite, two alternative varieties of Additional Science are offered:

- Additional Science (J631), which extends knowledge and understanding of science to provide a sound basis for more advanced study’;
- **Additional Applied Science (J632), which provides a work-oriented experience of how science is applied in chosen manufacturing or service areas.**

These three specifications are designed to suit different populations with different needs. Thus, the assessment of skills is different in each specification and designed to match the different objectives of each specification. Because many candidates will take one of the additional sciences as well as Science, the assessments for the Additional Science specifications are designed to be complementary to those for Science, not merely to repeat similar activities.

The three schemes of assessment are different, but each is based on activities which should occur as a normal part of teaching and learning in the course. The general procedures followed in awarding, recording and submitting assessment marks follow the same pattern for all of the specifications.

An Introduction to Skills Assessment for the Three Schemes

Where a centre is introducing all three schemes at the same time, it may be helpful to ask different staff to 'lead' on different schemes, thus sharing out the load of developing new techniques and learning new marking criteria.

The key features of the three schemes are summarized in table 1.

Table 1: *Key features of each skills assessment scheme*

Specification	Science A J630	Additional Science A J631	Additional Applied Science J632
Abilities to be developed	Responding to science in the media and in society	Practical investigative skills	Workplace skills and activities
Assessment activities	Analysis of first-hand data + A case study of science in the media	A complete practical investigation	Standard procedures + Suitability test + Work-related report

Marking Internally Assessed Work

Strands and aspects of performance

The method of marking the skills assessment is the same across all specifications in this Science suite. The award of marks is based on the professional judgement of the science teacher, working within a framework of descriptions of performance which are divided into **strands and aspects**. Within each strand there are different aspects of performance, which in turn have four descriptions of performance illustrating what might be expected from candidates working at different levels.

For example, in the assessment of the Work Related Report, Strand B: Description of workplace

Aspect of performance	Strand B Description of workplace			
	2	4	6	8
(a) Description of the expertise of an individual, or a working group, with the vocational qualifications and personal qualities required	Gives an account which is superficial or lacks detail or focuses on only one aspect	Gives a partial account of the expertise of an individual, or a working group, with the vocational qualifications or personal qualities required	Describes the expertise of an individual, or a working group, with the vocational qualifications or personal qualities required	Gives a clear account which explains the relevance to the work of the vocational qualifications and personal qualities required
(b) Description of the nature of the work, its purpose and place in the wider organisation	Gives an account which is superficial or lacks detail or focuses on only one aspect	Gives a partial account of the work, its purpose and place in the wider organisation	Gives an account of the work and describes its purpose and place in the wider organisation	Gives a full account of the work and explains its purpose and place in the wider organisation
(c) Understanding of the financial or regulatory context in which the work is done (e.g. health and safety regulations).	Makes a link between one financial or regulatory factor and the work	Identifies one relevant example of the impact of a financial or regulatory factor on the work	Describes one example of the impact of a financial or regulatory factor on the work.	Explains one example of the impact of a financial or regulatory factor on the work

Each aspect in turn should be considered, comparing the work first against the two mark performance descriptor, then the four mark, then six etc. until the best match is found.

Where performance significantly exceeds that required by one descriptor, but does not sufficiently match the next, the intermediate mark (1, 3, 5 or 7) should be awarded.

Note the implication that performance descriptors indicate the quality of performance required, as distinct from mark criteria which look for mechanical matching and too easily lead to 'hoop jumping' for its own sake.

Thus, the level of performance in each aspect is decided. The single, overall, mark for the whole strand is then taken as the best fit to the level of performance shown. This would normally be the average of the levels judged for the individual aspects.

All the aspects must be taken into account in reaching the final mark for the strand. If there is no evidence of achievement for an aspect, a mark of zero should be recorded and included in calculation of the overall strand mark.

Candidates may not always report their work in a particular order, so evidence of achievement in a strand may be located almost anywhere in the work. Thus, it is necessary to look at the whole piece of work for evidence of each strand.

Where a decision is based partly on teacher observation of the candidate at work, the work should be suitably annotated at the appropriate point in the report.

Marking Grids

Marking decisions should be recorded on marking grids. A master copy for Additional Applied Science is provided in Appendix I. The completed grid serves as a cover-sheet for the work if it is required for moderation.

Within any one strand, each aspect should be considered in turn. A tick on the grid should be used to indicate the performance statement that best matches the work.

When each aspect of performance within a strand has been assessed in this way the pattern of achievement is interpreted by a 'best-fit' judgement to give a mark for that strand. For example,

Strand	Aspect of performance	Level of performance related to mark scale										Mark for Strand
		0	1	2	3	4	5	6	7	8		
B	(a) expertise and qualifications					✓						5
	(b) nature of work					✓						
	(c) regulatory control							✓				

This method of marking can be applied even where there is a wide variation between performance in different aspects. Thus, weak performance in one aspect need not depress marks too far if other aspects show better performance.

Work-Related Portfolio A337

This unit aims to develop candidates' practical scientific competencies in a range of contexts that candidates may well encounter in their working or everyday lives. In addition, it is intended that these will equip candidates with the competencies necessary to embark on science related vocational courses.

Candidates produce a Work Related Portfolio, which comprises three components: Standard Procedures, a Suitability Test and a Work Related Report.

The unit is worth 50% of the assessment for the Applied GCSE. If a Suitability Test or Work-Related Report is missing from a candidate's Portfolio, this is likely to significantly affect their overall grade.

It is helpful to plan some opportunities for completing coursework.

Standard Procedures

These must be short, practical tasks which include observations, which can be recorded. Two are submitted from each Unit studied (six in all).

Suitability Test

This is a practical activity which includes an assessment on the collection of data in order to compare the suitability of materials, devices or tests for a well-defined purpose. A wider body of data can be used for the evaluation; for example data may be pooled from the whole class.

Work Related Report

This is a written report which must be produced independently by each candidate. Candidates develop literacy skills by finding sources of information to describe roles within a workplace; and the scientific and technical knowledge and skills which are used there. They are also assessed on the communication skills used in presenting the Report.

If it is felt that a particular study would benefit from some degree of joint work or collaboration, then the OCR Science Team should be used in advance to obtain guidance on the acceptability of the collaboration.

Arriving at the Final Mark

The final mark for each candidate comprises:

- the marks for two Standard Procedures from each of three Units, i.e. six in all;
- the total mark for one whole Suitability Test;
- the total mark for one whole Work-Related Report.

It is not permitted to aggregate part-marks from different activities as the assessment covers the candidate's ability to complete all aspect of the task. Candidates should be given opportunities to develop their skills before completing the assignments for assessment.

The marks awarded for each task are recorded on the cover sheet – a master copy is provided in Appendix I.

Standard Procedures

Why Standard Procedures?

Standard Procedures are used in the workplace to ensure that work is done in a consistent manner, regardless of which employee performs the task. Following a Standard Procedure minimises the risk of any hazard in the work. Many types of task are described by Standard Procedures.

Candidates learn the importance of consistency and safety in the workplace by following Standard Procedures for each Unit.

How many Standard Procedures?

Two Standard Procedures are required from each of the three Units.

Thus six Standard Procedures are required altogether.

This gives total of 24 marks and is worth 12% of the Additional Applied Science GCSE.

How are Standard Procedures assessed?

There are **four** aspects to the assessment of the Standard Procedures. There is one mark for each aspect.

These are the Assessment Criteria:

(a)	Follows instructions, step by step, without guidance	1 mark
(b)	Works safely, observing safety procedures and hazard warnings	1 mark
(c)	Makes observations/takes measurements	1 mark
(d)	Observations/measurements made to an appropriate degree of accuracy	1 mark
	Total per Standard Procedure	4 marks

Choosing and organising the Standard Procedures

Standard Procedures of a suitable level of demand are described in the Teacher and Technician Guide for each Unit. Centres are free to choose their own Standard Procedures, but suggestions are listed, in Appendix C, which have worked well in pilot schools. The references refer to the Teacher and Technician Guide.

The Standard Procedures are not intended to differentiate at higher levels, so making a simple measurement accurately would suffice for four marks.

The assessment could take as part of normal class practical work, but some pilot centres have set up a circus of Standard Procedures for a dedicated assessment session.

It is important to make sure that candidates understand that their observations must be accurate in order to obtain the fourth mark.

The observations and measurements must be recorded so that evidence is available for moderation. Before awarding the final mark, it is advisable to mark the work to make sure that

candidates have actually recorded their observations and to check the quality of the observations. Detailed marking with annotation is not required in Standard Procedures.

The instructions and the observations can usually be written on one sheet of A4 paper. Some pilot centres have preferred to put two sets of observations and the marking criteria onto one A4 sheet. This allows class sets of instruction sheets to be re-used. Some centres have colour-coded the assessment sheet according to the Unit, or used a bright colour to distinguish it from the instruction sheets.

Examples of distinguishing between 3 and 4 marks

Standard Procedure	3 marks	4 marks
testing pH	distinguish pH1, pH 7, pH13	distinguish pH5, pH7, pH9
comparing thermal conductivity	state which rod becomes hot first	measure the time before wax on the rod starts to melt
measuring voltage using an oscilloscope	measure the trace to the nearest centimetre	measure the trace to 0.2 of a centimetre
measuring blood pressure	results outside normal range for adolescents	results as expected, before and after exercise

Appendix C includes suggestions of suitable tasks for Standard Procedures. Appendix J provides specific guidance for supporting very weak candidates in producing their work-related portfolio.

Suitability Test

Each candidate is required to present one Suitability Test, a report based on a practical activity.

Why a Suitability Test?

The success of any company or organisation depends on its decisions. Decisions have to be made regarding materials, devices, procedures, and tests, to select which is the most suitable for a given purpose. The reasons for each decision must be clear. Candidates learn the importance of evidence-based decisions by carrying out a Suitability Test. A clear context should be defined for the suitability test. A quantitative, practical test is necessary to meet all the Assessment Criteria.

Only one Suitability Test is required for the Assessment, but it has a very high mark weighting (40 marks out of 96). It is necessary to teach and develop the skills so it is helpful to attempt one test in each Unit; the first could be a teacher-given model to follow, then one to practice a particular skill and the third for a full assessment. This could also help to avoid the problem of candidates completely lacking a Suitability Test due to absence. Candidates may need particular help with the Evaluation skills before carrying out the Assessment, especially Strand D (a) where the data must be linked with the purpose of the test. A test of low demand could be used to teach the requirements of this activity.

Comparison with the Data Analysis activity in Science A

Like the Data Analysis activity, the Suitability Test gives first hand experience of the problems of collecting valid and reliable data in order to reach a valid conclusion to a question.

Each candidate must be personally involved in generating their own data because the collection of data is assessed. However, shared data can be used for comparisons in order to help evaluate the data collected.

In Strand E, candidates should use the skills and vocabulary they developed in the data analysis exercise to discuss the accuracy, validity and reliability of their data. They should relate this to the conclusion they reach.

Choosing a topic

Choosing the right topic can be critical to the success of this exercise, to allow candidates to achieve at the appropriate level. It is helpful to give them a clear question to answer which refers to a context that they can understand.

Weaker candidates will need careful guidance, perhaps with writing frames, while the more able will need to be given opportunities to use initiative in planning and executing their tests.

It is important that the candidates can describe the relevant characteristics of the techniques or materials which are to be tested, and that they understand why these are relevant to its purpose, so that they understand why they are carrying out this test.

Organising the work

The Suitability Test will need 4 – 5 lessons to complete. This would be scheduled as an introduction, one or two practical sessions, and a lesson for writing results and conclusions. Time for producing the final version and for some catch-up work for absentees or slower workers will be needed.

The practical tasks need to be planned according to the abilities of the candidates; they must allow more able candidates to use initiative in their work. The science technicians need to be aware that there may be requests for slight variations on the equipment that will be ordered for the practical lessons.

It is important to check that individual support staff understand the internal assessment; and especially that they understand that it is the candidates' own work that is being assessed, so that doing work for them may stop them from getting marks. It would be helpful to have clear instructions on how to support individuals who may have particular difficulties with practical tasks.

This test involves assessment of a practical component, which under certain circumstances can prove difficult. Candidates would be disadvantaged if they had no means of attempting this task, so as a solution to a difficult problem, it may be possible to use a demonstration for candidates to collect their data. The marks in Strands B and C would be low. Teacher-generated data could be used to help write the evaluation. Further guidance for difficult circumstances can be obtained via the Coursework Consultancy scheme, by contacting the Subject Officer.

How is the Suitability Test assessed?

The assessment criteria for the Suitability Test are given in Appendix B.

Strand A: Purpose of the test

In Strand A the candidates are assessed on their ability to describe the use or purpose of the material, procedure or device to be tested, related to its workplace context; and the criteria for 'suitability' of the material, procedure or device.

They will need to be taught how to do this. A class discussion or brainstorm could be used to share ideas about suitability in many aspects of the specification. The candidates could then be asked to write a brief description. For the Suitability Test selected for assessment, all but the weakest should be able to write their descriptions independently after initially sharing ideas. Writing frames have been shown to be very helpful in supporting the work of weak candidates, but they can restrict independent work.

Strand B: Carrying out an appropriate test

In Strand B candidates are assessed on their ability to work with autonomy and independence, but the level of demand of the task is also taken into account. It is important to select a task at the right level because if a task has low demand, the higher ability candidates may be unable to demonstrate the skills required for higher marks. To gain six marks, there must be scope to demonstrate practical skill, autonomy and independence.

Strand C: Collecting data or observations

In Strand C the quality of the data collected is considered and assessed. There are three aspects to this and the 'best fit' mark should be awarded after the separate aspects have been considered. Marks of six and above reflect an independent approach to ensuring good quality data.

The first aspect concerns the ability to record data systematically. Weaker candidates should be given a clear format for their results to ensure adequate recording, and given a score in aspect (a) which reflects the help given.

The second aspect assesses the amount and range of data. A good range of data points should be available to candidates; for example, if testing glucose concentrations, a range of concentrations should be ordered in advance. If testing thermometers, some ice and the means of heating water should be available.

A poor range and/or quality of results makes it hard to evaluate the procedure, which is necessary for Strand D, so candidates should be encouraged to collect plenty of data.

Following the teacher's instruction to repeat measurements is worth 4 marks, but if a candidate independently plans to repeat measurements in order to improve reliability, that is worth six marks. This decision could also be made during the course of the experiment, to check on unexpected results.

The third aspect of Strand C concerns the quality of the data, which will reflect the candidate's practical skills.

Strand D: Evaluation of suitability

Candidates should be reminded of the original purpose and context of the test. They need to base their conclusion on both the data they have collected, and the purpose of the test. Many candidates will find this difficult. First they should draw a conclusion based on what they have found out by doing the test, i.e. the data they have collected. When they have done this, they can be prompted to consider the purpose of the test in its wider context.

More able candidates should also discuss the reliability of their data and the extent to which they can base a conclusion on it. For example, their range of results will probably be fairly limited and their conclusions may only be valid over this range.

Candidates are also assessed on their evaluation of the quality of their own method and techniques. They may need clear guidance to avoid confusion, especially where testing methods are being compared.

Strand D demands reflective thought about ideas which candidates find difficult. It would be considered acceptable for a centre to provide much more detailed guidance for this Strand than for the others, perhaps by extending the use of writing frames to guide achievement at 4 marks.

Strand E: Quality of scientific communication

This Strand assesses scientific communication skills in a similar way to the Work-Related Report and the case study in Science A. The assessment criteria are identical to those used in these Reports.

If a writing frame is provided, care should be taken that it is used appropriately for those who need it and that it does not restrict the scope of the more able candidates. A copy of the writing frame and any other guidance should be submitted with the Moderation Sample.

Even weak candidates should be encouraged to make a Contents listing, as this will help them to organise their ideas, and to number the pages. Candidates are assessed on their use of scientific

vocabulary and so should be given help with this, such as providing lists of key words and phrases for the topic.

Work-Related Report

Why a Work-Related Report?

Many occupations are based on applications of scientific knowledge. The Work-Related Report allows candidates to discover some of these applications and should arise naturally from work in the course Units. Only a Work-Related Report is required for the Assessment, but it has a high mark weighting (32 marks out of 96) which is worth 17% of the Additional Applied GCSE.

The skills required need to be taught but the literacy aspects are the same as those of the case study in Science A, so it would be helpful to remind candidates of what they did for this project. A teacher-led Work-Related Report can be produced under guidance so that candidates understand what is required, then in other Units candidates could produce a short practice Report before tackling a full assessment. This can improve performance and helps to avoid the problem of candidates being completely without a Work-Related Report owing to absence.

The weakest part of the Reports in the Pilot has been the science content. In a practice Report, the importance of the science knowledge can be emphasised and used to consolidate work from the Unit.

Comparison with the Case Study for Science A.

The literacy skills developed are very similar to those for the case study in Science A, which develops competency in searching for information, acknowledging sources and presenting ideas effectively. Like the case study, the Work-Related Report requires the use of specific scientific ideas which are relevant to the chosen topic.

Organising the work

Each Unit includes sections on 'People and Organisations' and this provides a natural introduction to the Work-Related Report.

Choosing a topic

The candidates are better motivated if they can choose their own topic, but this can make it hard for the teacher to support them. A compromise can be to suggest a limited list of topics which link to the Unit being studied. It is important to ensure that the scientific aspects of the work can be understood by the candidates and that they will be able to find enough information at a suitable level. The list could be compiled by candidates in discussion with the teacher as the Work Related Report is introduced to the class. One or two recommended resources for each would provide a starting framework.

The occupation studied should be at a level which can be well understood by the candidate. For example, a weak candidate would produce a better Report on the work of a Scene of Crime Officer than on the duties of a Forensic Scientist. Conversely, an able candidate would have more opportunity to explore scientific and technical skills in describing the role of a nurse practitioner, than if describing the work of an auxiliary nurse. Ease of contact with a workplace or practitioner should be considered, and the availability of reliable sources. Topics involving 'pseudoscience', such as a reflexologist or aromatherapist, must be avoided, because they give a poor fit to the assessment criteria.

Some suggestions for contexts are listed in Appendix F.

Timetabling

When the Report is introduced, a clear timetable for the work can make it easier for the teacher to keep track of candidates' progress in the work.

The centre should provide the lesson time, supervision and support which is needed. The work could be done over an extended period, perhaps as one lesson per week, or a full week of science lessons could be devoted to it.

The work should be supervised to avoid plagiarism and shared work, to check that the work is in line with the assessment criteria and to check that candidates do not stray away from their chosen title. Some lessons should be booked to allow Internet access and it could be helpful to book library sessions for wider access to scientific information.

Guidance and level of demand

It is better to give enough guidance and an appropriate level of demand, than to let candidates struggle or produce unsatisfactory work. The amount of guidance and level of demand should be accounted when marking.

Some candidates will need worksheets or writing frames in order to complete a successful Report.

Candidates may find it helpful to use 'Candidate-speak' versions of the assessment criteria. Teachers should not use these versions for marking the work as the criteria have been paraphrased.

It is important to ensure that all candidates have collected enough information before starting to write their report.

How is the Work-Related Report assessed?

Strand A: Information sources

Candidates are assessed on their initiative in finding relevant sources of information, on their ability to select relevant information and their use of direct quotations. The assessment criteria allow for success at all levels, as candidates can gain low marks for actively using material provided for them. At least three sources should be used in order to gain 4 marks in Strand A.

It is very important that candidates clearly understand the task.

Remind candidates to check whether the sites they find are UK or not, as vocational qualifications and regulations differ between countries and they are judged on the relevance of their information.

Bibliographies/referencing style

Where possible, candidates should use multiple and different types of sources of information e.g. web-sites, encyclopaedias, library books, course textbooks and their own notes. There should be a list of the sources used and these should be detailed referring to e.g. book and page number and full URL and not just homepage of particular website.

Weaker candidates often prefer to extract information from each source in turn and conclude each section with a statement like, 'I got this information from ...', rather than listing their sources in a bibliography. Using this method avoids the problem of sources being listed but not used in writing the Report.

Attributing quotations

Reworking extracts can cause problems for some candidates, but they are assessed on their ability to acknowledge directly-reported information. They may find it helpful to:

- use coloured paper to help organise the content;
- physically cut out text and paste it within their written Report, or add captions;
- choose one font for their own words and a different font for 'cut and paste' sections;
- put text from an extract into a textbox;
- supply their original material in an appendix to show the amount of reworking.

Reworking extracts

Candidates are assessed on their ability to select relevant information. Information from extracts should be reworked to avoid including information which is not relevant. Too much 'copy and paste' would score low marks in Strand A, and would not help the candidate to process the information required for the other Strands of the Report.

Information from people and organisations

Candidates should obtain information from a variety of sources, which for higher marks must include a practitioner and/or a workplace. The centre needs to ensure that the opportunity for this is available for all candidates. It may be possible to organise a visiting speaker or a visit to a workplace. Parents or people with local businesses may be willing to help. However, practitioners may not be used to talking to groups of people and may appreciate help. Candidates could prepare suitable questions so the speaker can know what to expect and so their answers are fully understood. Speakers would be an ideal source of relevant information about the workplace and technical skills. They could identify relevant science knowledge but candidates should use other sources, such as textbooks, to obtain a full explanation of the science involved.

It is acceptable for candidates to approach someone they know, but not all will be able to do so. It is not recommended that candidates rely on contacting organisations directly, as requests for information may be unanswered and the time delay in waiting for a reply can cause problems.

CRB checks: it is not a legal requirement for a visiting speaker to be checked by CRB but it is advisable to check the identity of anyone in direct contact with young people. The school or LEA may have a policy for checks on visitors.

Links to information on legal aspects pertaining to work-related learning industry links can be accessed on the Learning and Skill's Network website:

<http://www.vocationallearning.org.uk>

Help with finding contacts

Local organisations which might be able to help find contacts include:

- the work-related learning coordinator for the Centre;
- Education Business Partnerships;
- universities;
- professional bodies, e.g. Royal Society of Chemistry, Institute of Physics;
- training organisations;
- firms with a Public Relations Department;
- promoters of charities e.g. Special Care Baby Unit, Kidney Unit (this could also benefit other curriculum areas such as citizenship, community links);

- sports centres;
- museums; for example, the National Museum of Film, Photography and Television can arrange a day's TV workshop working with technicians and freelance directors (for Unit 5 Communications);
- the Construction Industry Training Board (CITB) has Ambassadors who are willing to talk to young people; contact the local Regional Office and ask for an Ambassador (for Unit 6 Materials and Performance).

Strand B: Description of workplace

The description of the workplace is assessed on three distinct aspects.

Aspect (a):

A description of the vocational and personal qualities required for a particular job. Candidates could access the careers service or one of the many websites which offer sound advice on careers and qualifications. Most professional associations have informative websites. They should check that their information is relevant to the UK.

Aspect (b):

Candidates describe not only the nature of the work, but also its purpose and how it relates to role in a wider context. Most candidates will be aware of the nature of the work for their Report but need to make sure they are clear about its purpose, as many are unclear about the separate roles within an organisation. They may need to compare closely related roles such as those of the Scene of Crime Officer and the Forensic Scientist, or the Ambulance Technician and the Paramedic.

Some workplaces may seem autonomous rather than part of a wider organisation; for example, a dairy farm. In a situation like this, the wider organisation would be interpreted as the wider market or the social context. For a dairy farmer, this would be the dairy industry.

Aspect (c)

Candidates learn about Standard Procedures and regulatory Standards in the work for the Units. In the Work Related Report they are assessed on how they relate these ideas to the work being described. Practitioners are likely to be well aware of the financial situations or legal requirements which affect their work and direct contact with a workplace could help here. Health and safety legislation applies in all workplaces and weaker candidates could focus on this if other considerations are too challenging.

Strand C: Scientific knowledge and skills applied in the workplace

In order to guide and assess the science content of the report, it is necessary to be aware of the relevant scientific ideas. If the work arises from the Unit being studied, information will be available from the course materials, but candidates may use information which is beyond GCSE. For higher marks the scientific ideas must be linked to the work described and the candidate should describe how the nature of the work depends upon these principles. Higher level science which is not linked to the workplace would not meet the criteria for high marks, so more able candidates should feel no pressure to struggle with hard ideas in order to produce a good report.

The candidates' textbook, their own notes and library books will be good sources of information for the scientific acts and principles. Candidates should explain these clearly and state how the principles are used in the workplace.

To discover a technical skill required, personal contacts or information from web sites will be helpful. This aspect should be assessed separately from the description of personal and vocational qualities which is required in Strand B.

Strand D: Quality of presentation

In Strand D, the ability to communicate scientific information effectively is assessed. The structure of the report and the organisation of ideas within it is an important part of effective communication and candidates should be encouraged to think about the different aspects of the work in order to produce a contents listing. Page numbering should be left until last unless the work is word-processed. When marking this strand, remember that the marking is hierarchical, so a contents listing would need to be part of a well-sequenced report before 6 marks could be awarded.

Much scientific information is conveyed visually rather than by text. Candidates should use diagrams, tables, charts and graphs to communicate their ideas. Illustrations should add meaning to the report. Some candidates will select relevant illustrations which do not convey much meaning, and these would be credited at the level of 4 marks.

Management and Administration of the Skills Assessment

The scheme of skills assessment is designed to award credit for capabilities which are developed as part of the normal teaching and learning process through the course.

In order to achieve this, schemes of work should:

- make candidates familiar with the assessment requirements and the marking criteria;
- present activities in ways which emphasise aspects of the assessable skills;
- identify activities which will be suitable for formal assessment.

The overall aims of the course include teaching the ability to assess the quality of scientific data, and of forming critical judgements about issues of public or personal policy which involve science-based decision-making. An important aspect of this is to provide regular activities involving these skills.

Record-keeping

An A3 record sheet is available for each candidate and can be folded around the work for the Portfolio. Marks can be recorded onto it as work is completed, and the best complete tasks can be selected for the final mark.

Appendix I is a master copy for the record sheet which should be kept with the marked scripts following assessment. It has spaces in which all marking decisions can be recorded as the work is marked. The sheet is then attached to the candidates work. If the work is later required for moderation, the candidate scripts and cover sheet are simply taken from the store and posted to the moderator. The record sheet will be used by the moderator when checking the marks for the work. It will be retained by OCR as a complete record of all marking decisions made by both the centre and the moderator.

When to enter

The Coursework component is only assessed in the June sessions. It is advisable not to enter coursework before the summer of Year 11.

The submission date for Coursework marks is normally 15 May. This should be checked by referring to the OCR final timetable for GCSE Examinations.

Importance of complete portfolios

The coursework is worth 50% of the assessment for the Applied GCSE. If a Suitability Test or Work-Related Report is missing from a candidate's portfolio, this is likely to significantly affect their overall grade.

It is helpful to plan some opportunities for completing coursework.

Arriving at the final mark

The final mark for each candidate comprises:

- the marks for **two** Standard Procedures from each of three Units, i.e. six in all;
- the total mark for **one whole** Suitability Test;
- the total mark for **one whole** Work-Related Report.

It is not permitted to aggregate part-marks from different activities as the assessment covers the candidate's ability to complete all aspects of the task. Candidates should be given opportunities to develop their skills before completing the assignments for assessment.

Internal Standardisation of Marks

It is the responsibility of the centre to make sure that the rank-order of candidates is secure. This requires that all work is consistently marked to the same standard.

Appendices E and H provide examples of completed Suitability Tests and Work-related Reports with commentaries to explain the mark decisions. These can be used as a focus for discussion between all staff involved in the marking, to exemplify standards.

Internal standardisation should also be carried out. Some or all of the following procedures may be found to be effective:

- one member of staff moderates samples from all markers, thus providing a single reference standard for all;
- copies of scripts are passed round for marking agreement trials at department meetings (it is essential that this is accompanied by discussion of reasons for any disagreements);
- a common approach to marking, or customised mark-scheme can be devised and agreed by all markers;
- scripts from one cohort, which have been part of external moderation samples, can be kept and referred to, to help in carrying forward consistent standards from year to year.

OCR provide a free consultancy service. As part of this, centres can send up to three marked scripts to the Subject Officer and receive feedback on their marking standards.

External Moderation of Marks

After work has been marked in the centre, a sample of the work will be checked by an external moderator. The purpose of this is to ensure that the activities used are appropriate and match the specification requirements, and that the marking standards used in the centre are consistent and in line with national standards.

Shortly after entries are submitted for the skills assessment, OCR will provide form MS1 (mark-sheet) and instructions for what must be submitted from the centre (Appendix K). The mark sheet is in three layers and is self-carboning. The top copy is sent to OCR and will be used to enter raw marks on the computer. The second copy is sent to the moderator. The third copy is kept by the centre as a record.

The moderator will ask for the work of a sample of candidates. The work which counts towards the final total must be sent, together with information which shows what activities were used and how they were presented to candidates. In a few cases, the moderator may ask for further work or information to be sent.

The work will be returned, and a moderator's report will be sent to the centre when results are published. This will provide a commentary on the work seen. In the past, marks from the majority of centres have been in line with standards and have been accepted without change. Where any change has been required, this will be clearly stated and an explanation of the reasons for any changes will be given.

Authentication of Candidates' Assessed Work

Samples of work sent for moderation must be accompanied by a signed authentication to certify that the work presented is the authentic work of the individual candidates.

Appendix A: Suggestions of Suitable Activities for Standard Procedures

A1 Lifecare	
	References to OUP materials
Measuring Body Mass Index	Activity AA1.4 Candidate book page 50
Measuring skin fold thickness	Activity AA1.4 Candidate book page 51
<p>'Measuring the vital signs' is suitable for weak candidates but can be extended for the more able, for example by measuring before and after exercise:</p> <ul style="list-style-type: none"> • measuring blood pressure; • measuring pulse rate; • measuring breathing rate. 	Activity AA1.7
<p>Testing 'urine' samples</p> <p>Explain that candidates must describe the colour changes in as much detail as possible</p> <p>The four samples suggested in AA1.11 should be of different concentrations so as to give a range of colours to be recorded.</p> <p>This Procedure could be developed into a Suitability Test by using colorimetry for the biuret test and by using different methods for testing the glucose concentration; for example by using Fehling's solution or by Clinistix.</p>	Activity AA1.11

A2 Agriculture and Food

Standard Procedures can be based on following instructions for making foodstuffs. Measuring the mass or volume of the food produced could gain the accuracy mark. Some of the procedures in this Unit are fairly complex and may not be suitable for assessing weaker candidates.

Extracting sugar Candidates should record observations of the sugar produced and measure the yield in order to obtain four marks for observation.	Activity AA2.2
Testing soil: measuring pH, humus content, water-holding capacity	Activity AA2.6
Measuring plant productivity (could include wet and/or dry mass)	Activity AA2.7
Making cheese To obtain the fourth marks, candidates should make measurements; for instance, of the pH change during cheese production.	Activity AA2.15
Yogurt production To obtain the fourth marks, candidates should make measurements; for instance, of the pH change during yogurt production.	Activity AA2.24
Testing milk quality Candidates should include the freezing point test in order to obtain the fourth mark for accurate observation. This Procedure could be developed into a Suitability Test by using colorimetry.	Activity AA2.31

A3 Scientific Detection

Various measurement activities, including: <ul style="list-style-type: none">• to measure a £5 note;• to measure volume and mass;• to measure pH values.	Activity AA3.2
Find the active ingredients in painkillers by measuring R _f values	Activity AA3.17
Crime Scene Investigation These activities include several possible Standard Procedures. Observations should be detailed in order to obtain the fourth mark, and could include measurements. For example: <ul style="list-style-type: none">• examine pollen grains in honey: a detailed diagram to show surface structure and pattern should be included;• make a footprint cast: a detailed diagram of a shoeprint should be drawn and measurements should be made, for example of tread depth and pattern.	Activity AA3.23

A4 Harnessing Chemicals

This Unit provides opportunities for preparing useful chemical products. To obtain the fourth marks, the yield of the product should be measured.

Making soluble salts	Activity AA4.17
Making insoluble salts	Activity AA4.18
Making low-sodium salt	Activity AA4.27
Making face cream Accurate observation could be measurement of pH, viscosity, or mass or volume of product.	Activity AA4.30
Making sweeter syrups This activity would be suitable for higher-ability candidates. Measurements of glucose concentration could be made with Clinistix.	Activity AA4.34
Factors affecting reaction rates Each includes a procedure and observation which could be used as a Standard Procedure.	Activities AA4.13, 4.14, 4.15

A5 Communications

Some of these procedures require unfamiliar skills, which may need to be taught before an assessment can be made.

Making and using a circuit for Morse code; to send and receive a short message.	Activity AA5.4
Measuring current.	Activity AA5.5, AA5.7
Measuring voltage Calculations do not form part of the assessment for Standard Procedures, so calculating resistance should not be included in the assessment. A Standard Procedure for measuring resistance should not be submitted alongside measuring voltage as the techniques are very similar. If candidates measure voltage it is helpful for them to measure current too.	Activity AA5.5, AA5.7
Using an oscilloscope	Activity AA5.11 Activities 1 and 2
Finding the refresh rate required for video images	Activity AA5.15 Activity 2
Rectifying alternating voltage and observe the value of the d.c. voltage produced. This activity is suitable for more able candidates.	Activity AA5.24 Activity 3

A6 Materials

This Unit offers many opportunities for Standard Procedures which include measurement.

Measuring the mechanical properties of tennis balls	Activity AA6.2
Measuring the mechanical properties of bicycle frames – tubes and rigid structures.	Activity AA6.5
Measuring the stiffness of a ruler	Activity AA6.9
Measuring the focal length of a lens	Textbook p54-55
Measuring current	Activity AA6.16
Measuring voltage	Activity AA6.16

Appendix B: Assessment Criteria for Suitability Test

Strand A Purpose of the test				
Aspect	2	4	6	8
(a) The use or purpose of the material, procedure or device to be tested, related to its workplace context.	Makes some reference to its use or purpose.	Gives a limited description of both its use and some aspect of the workplace context.	Gives a reasonable description of both its use and some aspect of the workplace context.	Gives a detailed description of both its use and relevant aspects of the workplace context.
(b) The criteria for 'suitability' of the material, procedure or device.	Gives some description of its desirable properties or characteristics.	Gives a full description of its desirable properties or characteristics.	Gives a full description of its desirable properties or characteristics, explaining why at least one of these is necessary.	Gives a full description of its desirable properties or characteristics, explaining why these are necessary.
Strand B Carrying out an appropriate test				
Aspect	2	4	6	8
(a) Candidate autonomy and independence	The approach is based on specific, task-related structured worksheets with further guidance from the teacher at most stages.	The approach is closely defined by the teacher but is then carried out with further guidance at several points during the testing.	The approach is closely defined by the teacher but is carried out with little further guidance.	The approach is defined by the candidate from a more general brief, and then carried out independently.
(b) Complexity and appropriateness of test	Carries out a simple measurement or comparison task.	Carries out a task of limited complexity.	Skilfully carries out a complex task.	Skilfully carries out a complex task, explaining how it relates to the criteria for 'suitability'.

Strand C Collecting data or observations				
Aspect	2	4	6	8
(a) recording the data	Partially records data or observations in a given format.	Fully records data or observations in a given format.	Devises own format and correctly records data or observations including all units of measurement.	Devises own format and correctly records data or observations to an appropriate degree of precision.
(b) range and quantity of data or observations	Data or observations are limited in amount, covering only part of the relevant range.	An adequate amount or range of data or observations.	An adequate amount and range of data or observations, with repeats or checks for reliability.	Data or observations collected cover the relevant range, with values well-chosen across the range.
(c) quality of data	Data generally of low quality.	Data of variable quality, with some operator error apparent.	Data generally good quality – adequately precise and reliable.	Data has a high level of precision and reliability.
Strand D Evaluation of suitability				
Aspect	2	4	6	8
(a) Conclusion about suitability, drawn by appropriately linking data or observations to the purpose of the test, and awareness of any limits to the conclusions.	Draws some conclusion, but data or observations not linked back to the purpose of the test.	Draws a correct conclusion from individual results or simple pattern in results, by linking these to the purpose of the test.	Draws a correct conclusion from overall pattern of results, by linking clearly to the purpose of the test.	Draws a correct conclusion from overall pattern of results, by linking clearly to the purpose of the test. Discusses any limitations, such as range over which it is suitable.
(b) Evaluation of testing procedure used.	Makes a relevant comment about how the data was collected.	Comments on any problems associated with the apparatus and techniques used.	Suggests improvements to apparatus or techniques, with little practical detail.	Describes in detail and explains improvements to apparatus or techniques.
Strand E Quality of Scientific Communication				
Aspect	2	4	6	8
(a) The structure and organisation of the report	The report has little or no structure or coherence, or follows a structure provided by worksheets	The report has an appropriate sequence or structure.	Information is effectively organised, with contents listing of key elements and page numbering.	Considerable care has been taken to present the information clearly to a chosen audience.
(b) General quality of communication	Little or no relevant technical or scientific vocabulary is used.	Use of appropriate vocabulary is limited.	Appropriate scientific vocabulary is used.	There is full and effective use of relevant scientific terminology.

Appendix C: Suggestions of Suitable Activities for Suitability Tests

A1 Lifecare	
<p>Which is the best body site for measuring a pulse? This would be suitable for lower ability candidates, or for teaching the skills needed for the Suitability Test. Measuring a pulse could be taught as part of a Standard Procedure. Weak candidates may need reminding that the pulse rate is the same at all sites.</p>	Activity AA1.7
<p>Which is the best type of thermometer for a paediatric ward? This test can be made accessible for low ability candidates but does allow candidates of higher ability to achieve appropriately.</p>	Activity AA1.7
<p>Is pulse rate or breathing rate better for monitoring fitness? Is breathing rate or peak flow rate better for monitoring fitness? These tests are enjoyed by candidates but there is the problem of how to define fitness so that the effectiveness of the tests can be compared.</p>	Activity AA1.7
<p>What is the best way for a diabetic person to measure glucose in urine? A range of concentrations of glucose should be made available so that full use is made of the Clinistix colour chart. The corresponding concentrations should be recorded as well as the colours on the Clinistix. Fehling's solution and Benedict's solution could also be used.</p>	Activity AA1.11
<p>Comparing BMI and skinfold measurements to assess body fat. This would be suitable for weak candidates. If candidates generate data on height, weight and skinfold thickness, they can be helped in calculating BMI as calculation does not form part of the coursework assessment.</p>	Activity AA1.4

<p>Find the most suitable soil for a particular plant</p> <p>The most suitable soil for growth of a particular plant (soil properties for optimum growth of a specific plant should be defined in the brief given, for instance, heather in acidic soil; lavender in alkaline soil) should be determined. Properties under investigation should include pH, soil humus, soil water holding capacity.</p>	Activity AA2.6
<p>Find the best way of measuring plant productivity</p> <p>A number of methods are available, e.g. wet mass, dry mass, height, leaf area, stem diameter, etc. Higher level candidates should consider the validity of the measurements obtained using these methods and discuss the use of destructive vs. non-destructive methods of measurement.</p>	Activity AA2.7
<p>Find the best conditions for making yogurt</p> <p>This suitability test is best carried out using data-logging, but the method used to determine suitability could, in fact, form the basis of a Standard Procedure or a Suitability Test itself (qualitative examination; semi-quantitative estimation using resazurin – which could be made quantitative by colorimetry; or quantitative estimation by titration of the lactic acid produced against sodium hydroxide). A range of temperatures from 25 - 55°C would give excellent results. Higher ability candidates could consider why (different) optimum conditions are necessary for the growth of the two bacteria.</p>	Activity AA2.8
<p>Find the best conditions for making bread</p> <p>This Suitability test is most suited to low/mid level candidates. Several variables can be investigated.</p>	Activity AA2.9
<p>Find the best way of measuring the productivity of micro-organisms</p> <p>This activity is best carried out for yeast or yogurt-producing bacteria. A number of direct (cell counting; cell mass) and indirect (change in pH; measurement of carbon dioxide or alcohol produced; density measurements) methods are available.</p>	Activity AA2.27
<p>Compare methods of clotting milk</p> <p>Candidates should consider and investigate the use of a number of enzyme preparations used to produce clotting of milk proteins in cheese production – rennet (calf chymosin), Fromase® (a fungal protease from <i>Rhizomucor</i>), Maxiren® (pure calf chymosin from a genetically modified dairy yeast, <i>Kluyveromyces</i>). In addition to the efficacy of each, scientific, moral and ethical implications of the various enzyme preparations can be considered.</p>	Activity AA2.30

A3 Scientific Detection

Compare colour matching with colorimetry

This is an excellent Suitability test for candidates across the ability range. Higher level candidates should consider the best filter to measure the absorbance of the liquids – they may determine this experimentally or by considering the physics of colour. These candidates could consider the range of concentrations over which the relationship between concentration and absorbance is linear.

Activity AA3.12

Which is the best solvent for chromatography?

This is an excellent Suitability test for candidates across the ability range. Candidates should investigate the separation of a number of mixtures, for instance, of different types of ink (it may be of help to tell candidates the number of dyes in each type of ink). Higher ability candidates could investigate a number of solvent systems, and/or stationary phases. Mid and higher ability candidates should calculate R_f values from measurements made and use these to make their judgements.

Activity AA3.20

What is the best way to measure the pH of an unknown solution?

This suitability test is suitable for candidates across the ability range (using Universal indicator paper and solution, narrow range indicators, and pH meters). The words 'sensitivity', 'accuracy' and 'precision' should be used by higher level candidates. These candidates could make measurements of pH considering a range of buffers to calibrate their pH meters.

How should we test water quality?

Candidates should test environmental water samples, for instance, for pH, dissolved oxygen, ammonia, and iron, nitrate and phosphate ions using various methods. The parameters to be measured; the number of parameters to be measured; and the methods used should be based on the ability of the candidates carrying out the suitability test.

Activity AA3.9

Testing for glucose; are dipsticks better than Benedict's solution?

Higher level candidates should consider the physiological use of these tests, i.e. to measure glucose concentrations in urine and blood in conditions where these are elevated, e.g. in the diabetic and in the use of some drugs. Higher ability candidates could consider the degree of specificity, and interference of creatinine and uric acid in tests on urine with reagents involving the reduction of Cu²⁺. Higher ability candidates could also investigate the use of quantitative Benedict's solution and enzymatic methods over a range of (physiological) concentrations.

What is the best way to measure the water content of soil?

This Suitability test is suitable for lower/mid level candidates. The length of drying (so as to obtain a constant mass) and the temperature used to dry the sample (and not burn off the humus) could be considered.

Activity AA3.22 to match mud on shoe

A4 Harnessing Chemicals

This Unit provides opportunities for preparing useful chemical products.

What is the best way of making large copper sulfate crystals? This suitability test is suitable for candidates across the ability range. The significance of crystals of specific size, for instance in the preparation of silver halides for photographic emulsions, can be discussed. Higher ability candidates could make measurements of crystal size, some microscopically using eyepiece graticules.	Activity AA4.5
What is the best way to measure the pH of fruit juice? This suitability test is suitable for candidates across the ability range (using Universal indicator paper and solution, methyl red - suitable across the pH range of fruit juices, indicators not suitable across this range, and pH meters). The words 'sensitivity', 'accuracy' and 'precision' should be used by higher level candidates. These candidates could measure the pH of different fruit juices and consider a range of buffers to calibrate their pH meters.	Activity AA4.8
Which is the best catalyst? Candidates should be demonstrated the 'clock reaction' and investigate a number of catalysts (copper (II) sulfate, iron (II) sulfate and iron (III) chloride) on the rate of reaction. Careful measurements should be made of the rate of reaction. Candidates should make conclusions concerning the best catalyst (considering also the catalysts on grounds of cost and health and safety).	Activity AA4.16
Which antacid is most effective? Candidates should investigate the ability of various commercial antacids to neutralise hydrochloric acid. As well as volumes of acid that be neutralised by the different antacids, they should also consider other aspects, e.g., cost, other medical effects (for instance the laxative properties of Mg^{2+} ; possible links with dementia for Al^{3+}), and the use of additional ingredients in the tablet/powder/liquid.	Activity AA4.28 Part D
Which solution has the best buffering capacity? This Suitability Test is best carried out with more able candidates. A range of buffers can be investigated.	Activity AA4.31
What are the best conditions for making sweeter syrups? This Suitability Test is best carried out with more able candidates. A range of factors can be chosen and investigated.	Activities AA4.34

A5 Communications

In this Unit, a decision on suitability is usually made in advance of any hands-on practical work. These activities would be considered acceptable for generating data, although demonstrations would reduce the number of marks available for Stands B and C.

Find the most accurate communication code by measuring the error rate

The data here would be the number of errors and the number of items of information sent.

Activity AA5.2-

Find the most suitable frequency response of different microphones

This could be done as a demonstration, with the class collecting the data by observing the oscilloscope trace. This could be used to teach the skills needed for the Suitability Test, or in a situation where a full class practical would be difficult to manage.

Activity AA5.11 (replace the voice with a signal generator and loudspeaker)

Which cable gives the best signal transfer?

This could also be done as a demonstration, if necessary.

Activity AA5.11

Find the best compression for a set of images

A class could be shown how to use Microsoft PhotoDraw or a similar package for image compression options; ensure that data such as file size or pixel size is obtained and recorded.

Activity AA5.15

Should I use fax, email, text or phone calls to send information?

The time from sending to receiving and the cost of each message can be collected as data.

Use a sampling mask to determine the most suitable sampling rate for a signal

This would be suitable for more able candidates.

Activity AA5.25

A6 Materials

In some of these tests, individuals could collect enough data to make a comparison (Strand C) but could also share data to help in evaluating their results (Strand D). Very weak classes could collect a limited amount of data but could use shared data together with a writing frame to support work for the Evaluation.

Find the most suitable type of fishing line by comparing tensile strength and stiffness

Safety considerations may restrict measuring tensile strength to a demonstration, but data from this could be shared and used together with data on stiffness to form a conclusion.

Activity AA6.3

Choose elastic for clothing by comparing its stiffness and elastic behaviour

Data on extension can be supplemented by measurements of length without the load, to check the load at which the behaviour becomes plastic.

Activity AA6.4.3

Find which mortar mixture has the highest compressive strength

- When planning, remember that the mortar requires time to set. Spare samples may be needed for absentees and disasters.
- A clear labelling system is needed.
- This could be used with low ability candidates if safety can be guaranteed.

Activity AA6.8

Find the best material for a crumple zone

This could be used for low ability classes, generating very simple data such as the number of layers needed before the magnet falls off.

Activity AA6.7

(could count layers or measure thickness of crumple zone materials)

Find the most suitable lens power for correcting an eye defect

Lenses of different powers can be used to form an image on a screen. The image distance should be recorded for each lens. The most suitable lens is the one which gives an image closest to 5 cm from the 'eye lens'.

This would be suitable for higher-ability candidates.

Activity AA6.26

(using an 'eye lens', a screen to locate the image and lenses of different powers)

Find the best material for soundproofing a room

This could be used for lower ability classes. It could be done as a demonstration, but the marks for data collection would be low. For Strand C, candidates could describe the loudness of the sound by the height of the oscilloscope trace, which might need to be qualitative. Quantitative data could also be given to help with the evaluation.

This Suitability Test could be helpful where class management issues cause problems.

Activity AA6.24

Appendix D: Examples of Suitability Test Reports with Commentaries

Script A: Which thermometer is best for measuring body temperature?



Contents Page

Page number :-	What is on it ! :-
1	..... Short introduction
3	..... Suitability tests
4	..... Conclusion of temperature range
4	..... Are the thermometers easy to read?
5	..... The link
7	..... Graph
8	..... The Price
8	..... Conclusion of Price
8	..... Overall
9	..... Evaluation

1.

Introduction.

Many people use thermometers. Parents use them to see if their child/ren are unwell and doctors use them to check their patients. This is just two types of people that use thermometers. Everyone that uses a thermometer can tell whether or not the person they are using the thermometer on is ill or not.

By using a thermometer we can tell if someone is hypothermic or hyperthermic. If someone is hypothermic their temperature is well below the average body temperature of 37°C and if someone is hyperthermic then their body temperature will be well above the average body temperature; and this is why I am going to run a suitability test on three thermometers.

Suitability Tests.

For this test, I will choose three of the pure aspects below to see which type of thermometer is the most suitable to use overall.

The aspects are:-

- Price
- Quality
- Whether or not it's easy to read
- Accuracy / reliability
- Whether or not it measures a suitable range of temperatures

I am going to assess some thermometers of different kinds. I will assess a forehead thermometer, a plastic thermometer that goes in the mouth and a digital thermometer, also placed in the mouth. The areas/aspects I am going to look at are:-

whether or not there is a suitable range of temperatures because if you started with the perfect body heat, 37°C , but a person's body heat was well below this, then you wouldn't be able to tell what was wrong with that person as certain body temperatures are known symptoms of certain illnesses and you couldn't stop at 37°C for the same reason, whether or not it is easy to read because if you cannot read someone's temperature then you might give a patient a wrong diagnosis and I have also decided to assess what the prices of the thermometers are because if ~~they~~^{people} don't have them in their homes, parents won't be able to know if their child/ren have fevers and for other illnesses.

To check whether the range in temperature is a good range, I will draw a table on the next page to show the results of this test. I will do this for the reasons given in the previous paragraph.

Type of thermometer	Temperature range (°C)	Is this suitable?
Glass mercury thermometer	35-42	Yes
Forehead thermometer	35-40	Yes
Digital Thermometer	32-41.9	Yes

Conclusion of temperature range.

Although the range of temperature on all thermometers are suitable, the digital thermometer proves the best in this test because it has a much wider range so if a person's body temperature was above or below this range they would be seriously ill.

Are the thermometers easy to read?

For this test, I will check whether or not I can read the temperature on the three thermometers with ease and I will record this in a table. After I have recorded the results in the table, I will describe how easy/hard I found reading the temperature.

Type of thermometer	easy to read
Forehead thermometer	easy
Glass mercury thermometer	Hard
Digital thermometer	easy

The forehead thermometer was very easy to read as the circles that show your temperature light up; but the only problem with this is that it is not accurate as the 36°C circle will light up if your temperature is from 35.5°C - 36.4°C. The glass mercury thermometer was very hard to read as you had to find the silver line that went up to very small lines on the gauge; I think you may have to have training for this particular thermometer as I think a qualified doctor would be able to

5

take this reading. The digital thermometer is the easiest to read as it just shows you your temperature number after $\frac{1}{2}$ your temperature has been taken.

The link.

The link between the temperature range and weather or road thermometers are easy to read also link in with the accuracy ^{reliability} of thermometers, although this was not a choice of mine.

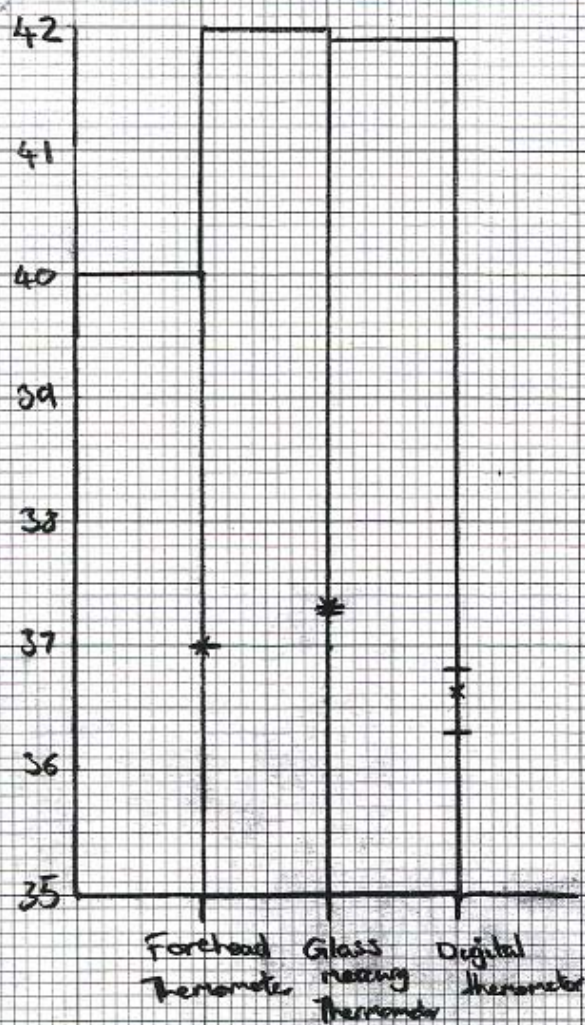
I will now test the accuracy of the three thermometers by recording it in a table.

Type of thermometer	Times tested					Mean
	1	2	3	4	5	
Forehead thermometer	37°C	37°C	37°C	37°C	37°C	37°C
Glass mercury thermometer	37.3°C	37.25°C	37.25°C	37.3°C	37.3°C	37.3°C
Digital thermometer	36.3°C	36.6°C	36.6°C	36.8°C	36.8	36.6°C

I will now draw a graph to show the accuracy/reliability of all three thermometers on graph paper.

From the table above, I can tell which thermometer is the most reliable. The forehead thermometer seems to be the most reliable as the temperature result was always 37°C. The glass mercury thermometer was second most reliable as that only had 0.05°C difference between tests 2 and 4, 5, 1. Test 3 for this thermometer also had 0.05°C ~~to~~ difference between tests 4, 5 and 1. The digital thermometer ^{suggested} ~~interpreted~~ that my body heat was rising as I was testing but this is impossible as noones heat changes whilst sat down checking their temperature and this is why this particular thermometer is the least reliable.

graph to show the accuracy & reliability of the three thermometers.



Key:-

Bar chart = Range

Lines = Reliability

Crosses = Mean

The graph shows that the forehead thermometer should be the best in both range and reliability/accuracy but because the forehead thermometer doesn't have decimal places on it, it is not that accurate or reliable at all because 37°C could mean 36.5°C - 37.4°C so the best thermometer for reliability would be the glass mercury thermometer. I know this because there is hardly any space between the two lines. The digital thermometer is best for range though as it has decimal points; although this is only 0.1°C less and the only reason it is better than the forehead thermometer is because it is more accurate with its decimal places.

8 Argumentation 1997 The Price

The price of a thermometer is very important for whoever uses them as doctors will need particular thermometers for various things and parents would want them to make sure that their child/ren will not be ill.

In a catalogue fever strips would cost £20.60 per ten but in my opinion I don't think that someone would need ten fever strips in one household and doctors would need a more complicated thermometer than a fever strip so I will divide the price by 10 to get the price per one which is £2.06; this is more than the glass mercury thermometer that the catalogue priced at only 91p and this thermometer is more accurate so I would've thought at first that a fever strip would cost less than a glass mercury thermometer. A digital thermometer costs much more than the previous two thermometers as the catalogue prices these at £11.33.

Conclusion of Price

I think that the most convenient thermometer, in terms of price and for use at home, would be the fever strip because although it only gives you a rough reading of what your temperature is you would still be able to tell if you were ill or not.

Overall

Overall the suitability test on the fever strips, glass mercury thermometers and digital thermometers has shown that the glass mercury thermometer is the best to use ~~and~~ although it is the hardest to read.

Evaluation.

In this evaluation, I will say what is the best thermometer, why it is the best and what method was the best and why.

The best thermometer is the ~~best~~ ^{glass mercury} thermometer because it is the best in all of my results except for the easy to read test. I think that if everyone could have some sort of training to use the glass mercury thermometer then it would be the best in every category.

I think the method to see which thermometer was best was the task to see how accurate/reliable the thermometers read for five times. (see the table on page 5). I thought this because it is important to get the correct result on a thermometer and if you didn't then the person you was using it on may get the wrong treatment.

How could I make the suitability test better?

I could make the test better by taking more prices for the three thermometers and I could also do more tests such as; - is the thermometer water proof and how brittle is the thermometer.

I could have done these tests as a brittle thermometer could break in someones mouth and if this was a glass mercury thermometer that person would have to go to hospital with mercury poisoning.

Commentary on Script A AP1 Life care – Which thermometer is best for measuring body temperature?

This Suitability test has been popular with Centres. To obtain good scores on the test, it helps to define the context, for example, its use by any nurse on a busy ward. Several different temperatures should be used for assessing the thermometers.

Aspect	Mark	Comment
Strand A: Purpose of the test [6 marks awarded]		
(a) The use or purpose of the material, procedure or device to be tested, related to its workplace context.	6	There is reference to the use or purpose of a thermometer. There is a description of both its use at home and by doctors. The description includes hypothermia, hyperthermia and normal body temperature, so it is 'reasonable' rather than 'limited'. The description lacks detail.
(b) The criteria for 'suitability' of the material, procedure or device.	6	Lists price, quality, easy to read, accuracy, reliability, range. Understanding of properties is assumed but explains sensibly why they are needed. However does not attempt to explain the listed properties (e.g. meaning of accuracy, reliability)
Strand B: Carrying out an appropriate test [6 marks awarded]		
(a) Candidate autonomy and independence	7	The task was not closely led by the teacher. The approach was similar to that of other candidates but showed some individuality. The original approach was not defined by the candidate but was carried out independently.
(b) Complexity and appropriateness of test	4	Measuring temperatures is not a complex task – so a maximum of 4 marks awarded.
Strand C: Collecting data or observations [6 marks awarded]		
(a) recording the data	6	Candidate uses own format for recording and uses consistent units. The test does not give scope for deciding on the degree of precision.
(b) range and quantity of data or observations	4	Enough data was collected to check each property separately. However the repeated results assessed reliability at one temperature only and no test for accuracy was made i.e., there was no comparison with a known temperature. Thermometers were not tested over their stated range.
(c) quality of data	6	Results were consistent but a high level of precision was not possible with this test.

Strand D Evaluation of suitability [4 marks awarded] (Best fit is 4 or 5, awarding 4 compensates for generosity in scores in B and C)

(a) Conclusion about suitability, drawn by appropriately linking data or observations to the purpose of the test, and awareness of any limits to the conclusions.	6	Conclusions are correct and are linked to the purpose of the test, and the link is made clear. The limitations of this test are not mentioned.
(b) Evaluation of testing procedure used.	3	Repeated reading 5 times to check reliability There is a comment about 'heat' rising with digital thermometer; could be a problem or random error. Suggestions to 'make the test better' do not refer either to apparatus or to techniques.

Strand E Quality of Scientific Communication [5 marks awarded]

(a) The structure and organisation of the report	6	The structure was chosen by the candidate, it is clear and appropriate, there is a contents listing and the pages are numbered. The report is neat but not written with considerable care. The audience hasn't been chosen.
(b) General quality of communication	3	Some scientific vocabulary is used. The vocabulary used is enough to describe the basic ideas clearly. There is confusion between 'accuracy' and 'reliability' and between 'heat' and 'temperature'.

The information for the Record Sheet is:

Title of Suitability Test	Strand A	Strand B	Strand C	Strand D	Strand E	Total mark / 40
Comparing Thermometers	6	5	6	4	5	28

Script B: Colorimetry

Colorimetry

Suitability Test

Introduction

Red dye is put in Cherryade to make it look attractive so more will buy it. But the red dye that is used to put in Cherryade can cause hyperactivity to children and others who drink it. The maximum permitted dose that is allowed in Cherryade is 50 mg/l. The solution is E122 which is Carmoisine, Carmoisine is coal tar. If there was less dye in a Cherryade Bottle the company would lose thousands of pounds because not many people would buy it the Cherryade if it was unattractive.

I am going to evaluate 2 methods (skying & colorimetry) to assess the amount of coloured dye used in Cherryade.

Skying results

In my results I have 80 ppm 40 ppm 20 ppm 10 ppm and 5 ppm. The one that matches the Cherryade is 5 ppm. To find out my results I had to fill up cylinder with 10 cm³ of red dye and poured it all into a test tube

I poured half it back into the cylinder the half that I poured back into the cylinder I poured into another test tube and poured 5cm³ of distilled water in. the test tube with diluted water in I took half of the solution out and into another test tube and I kept doing this routine until I had 5 set of test tubes of results. The test tube that had 5ppm matched the Cherryade. The amount of dye that is used in Cherryade is 5ppm (part per million.)

Colorimetry Results

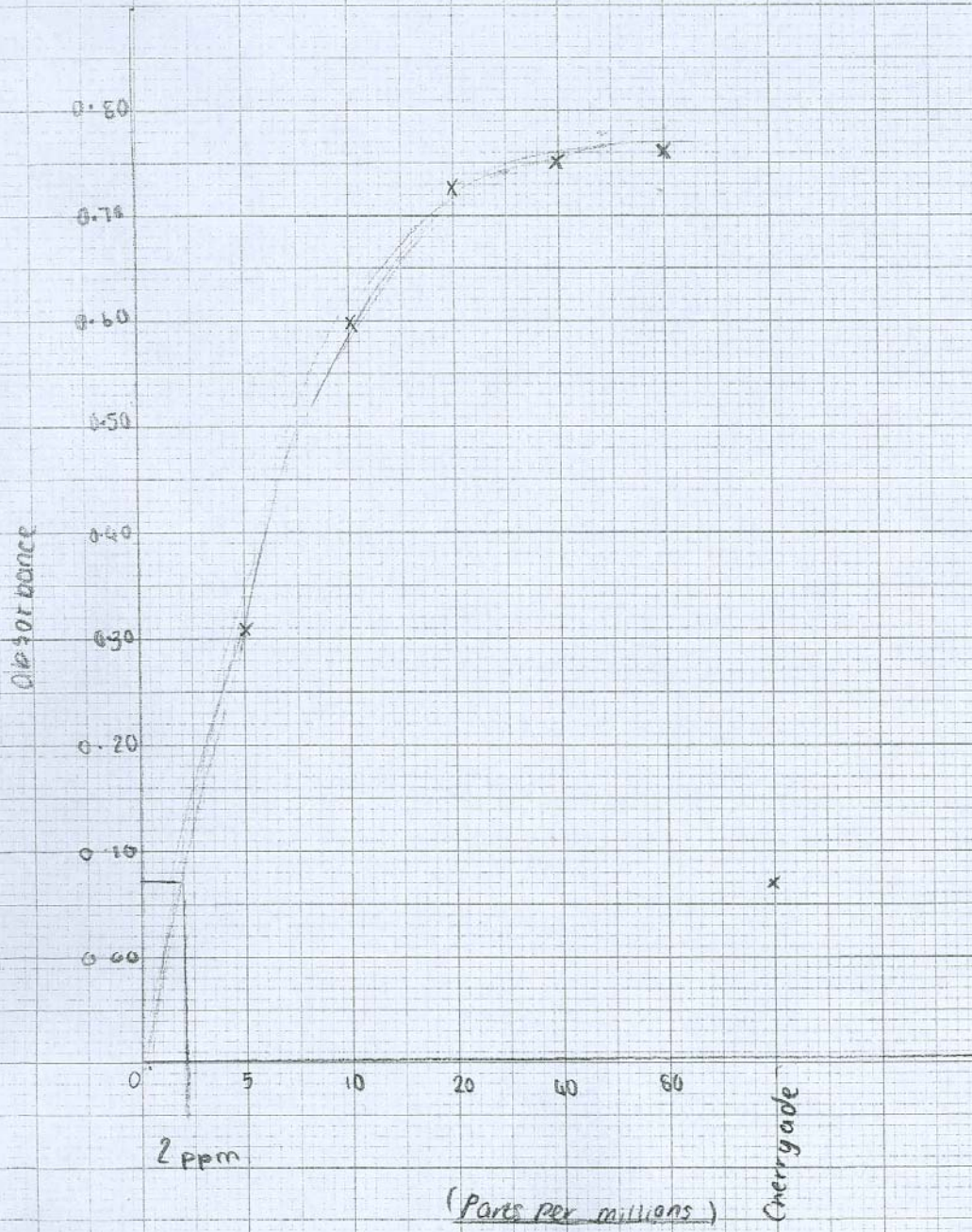
Parts per million	Absorbance
80 ppm	0.76
40 ppm	0.75
20 ppm	0.73
10 ppm	0.60
5 ppm	0.31
Cherryade	0.07

In my results I found out the unknown solution for Cherryade is 2 parts per million (ppm).

Evaluation

From Skying the results was 5 ppm that looked the closest to the Cherryade, doing colorimetry made me help to find out that Cherryade has 2 ppm of red dye in. The method I suggest people to use is colorimetry because if you get an accurate result. The disadvantages of using colorimetry is: you need a person who can properly use it and know how, spend money on the equipment. Something could go wrong such getting finger prints on the tube (as it stops the light going through the tube as it needs to absorb the light.) using Skying could be appropriate to use as you don't need anyone professional to do it or use any expensive equipment. I think colorimetry is the best to use out of the two because when you draw the graph you can get the accurate result you want. Such as how much dye is used in Cherryade = 2 ppm I found this out using colorimetry.

Food colouring
absorbances



Commentary on Script B

AP3 Scientific detection: The suitability of a visual method and a colorimetric method for estimating the concentration of a red dye in cherryade

This is potentially a very good Suitability test that can assess the performance of candidates across the ability range. Higher level candidates can determine the optimum filter to use from an understanding of the physics of colour or by experimentation. The range of concentrations could be extended, and the range of concentrations over which there is a linear relationship with absorbance could be determined and discussed.

Aspect	Mark	Comment
Strand A: Purpose of the test [3 marks awarded]		
(a) The use or purpose of the material, procedure or device to be tested, related to its workplace context.	4	The requirement for a suitable method for determining the concentration of carmoisine is implied but not clearly stated. There is a discussion of its workplace use – the limit on the maximum concentration of carmoisine is stated in terms of health aspects and the minimum concentration in terms of the aesthetic qualities of the drink. This criteria for 6 and 8 marks have not been met.
(b) The criteria for 'suitability' of the material, procedure or device.	1	There is no statement in the introduction, other than that two tests were to be used to assess the concentration of carmoisine in the cherryade. Accuracy, cost and expertise required to use the test, are discussed in the 'Evaluation'. These comments should be in the introductory part of the write up.
Strand B: Carrying out an appropriate test [4 marks awarded]		
(a) Candidate autonomy and independence	4	The test is not based on structured worksheets. The approach similar to that used by other candidates and described in the published material. No suggestion of candidate individuality has been made by teacher annotation.
(b) Complexity and appropriateness of test	4	Measures absorbance of a range of concentrations of carmoisine using a colorimeter. At least part of the task – the construction of the calibration curve – has not been carried out skilfully. This largely teacher-directed task is not sufficiently complex for the award of six marks.
Strand C: Collecting data or observations [4 marks awarded]		
(a) recording the data	4	Candidate uses own format for recording but the 'concentration' column is inappropriately labelled.
(b) range and quantity of data or observations	4	Sufficient data have been collected. From the data recorded, an additional series of measurements should ideally have taken over a range taken from the linear part of the graph. No repeats or checks for reliability, e.g., comparing calibration curves within the group, have been made.
(c) quality of data	4	An appropriate trend is shown, so there is no reason to suggest that the data are of low quality. There is no evidence of operator error, but no evidence of care over precision and reliability.

Strand D Evaluation of suitability [2 marks awarded]

(a) Conclusion about suitability, drawn by appropriately linking data or observations to the purpose of the test, and awareness of any limits to the conclusions.	3	The conclusions are largely correct and are linked to the purpose of the test. The conclusions are based on some valid science. But note that the x-axis of the calibration curve is incorrect, so the concentration of the carmoisine in cherryade is incorrect.
(b) Evaluation of testing procedure used.	0	There is no comment as to how the data were collected.

Strand E Quality of Scientific Communication [4 marks awarded]

(a) The structure and organisation of the report	4	The structure was chosen by the candidate, it is appropriate has an appropriate sequence. The report contains some superfluous information on the preparation of serial dilutions of carmoisine. The report is neat but not written with considerable care. The audience hasn't been chosen/specified.
(b) General quality of communication	4	Some scientific vocabulary is used. The vocabulary used is enough to describe the basic ideas clearly. The term 'accurate' is used without an understanding of its meaning.

The information for the Record Sheet is:

Title of Suitability Test	Strand A	Strand B	Strand C	Strand D	Strand E	Total mark / 40
Comparing Thermometers	3	4	4	2	4	17

Script C: Suitability of Benedict's test and Clistinix in testing glucose

24th march 06

GCSE coursework

Suitability test

Urine testing

Doctors order urine tests on a regular basis to make sure that the kidneys and other organs are functioning properly. or when they suspect that they might have an infection in the kidneys, bladder or a urinary tract.

If someone came to A and E with abdominal pains several urine tests will be done

There are many types of different urine tests;

- Fasting urine test
- Random urine test
- Mid-stream urine test
- 24-hour urine test

There are more than 100 different tests can be done on urine. A routine urinalysis usually includes the following tests:

- colour – Many factors affect urine colour. These include fluid balance, diet, medication and disease. Pale or colorless urine indicates that it is dilute, and deep yellow urine indicates that it is concentrated. Reddish brown urine may be caused by certain medications, foods or by blood in the urine.
- Clarity – Urine is normally clear. This urine test determines the cloudiness of urine. Bacteria, sperm, crystals, or mucus can make urine appear cloudy.
- Odor – Urine does not smell very strong, but has a slightly 'nutty' odor. Some diseases can cause a change of the odor.
- Specific gravity – This measures the amount of substances dissolved in the urine. It indicates how well the kidneys are able to adjust to the amount of water in the urine. When you drink very little liquid, your kidneys should make only small amounts of concentrated urine.
- PH – The PH measures how acidic or alkaline the urine is. PH of 4 is strong acidic. 7 is neutral and 9 is strongly alkaline.
- Protein – Protein is normally detected in the urine. When a person stands up sometimes a small amount of protein is released into the urine. Also Fever normal pregnancy, kidney disease may also cause protein in the urine.
- Glucose – Glucose is a type of sugar which is usually found in the blood. Normally there is very little or no glucose in the urine. But when someone's blood sugar is very high, it spills over into the urine. This can also happen if the kidneys are damaged or diseased.
- Nitrates – Bacteria that cause a urinary tract infection produce an enzyme that converts urinary nitrates to nitrites. The presence of nitrites in urine indicates a urinary tract infection.
- Leukocyte esterase (WBC esterase) – Leukocyte esterase detects white blood cells in the urine. The presence of white blood cells in the urine may indicate a urinary tract infection.
- Ketones – The body produces by-products called Ketones when fat is broken down for energy. Diabetic Ketoacidosis is found by large amounts of Ketones in the urine. A diet low in sugars, starches, starvation may also cause Ketones in the urine.

- Red or white blood cells – usually these are not found in the urine. Disease or injury to the kidneys, bladder or urethra can cause blood in the urine. White blood cells are often a sign of infection, cancer or kidney disease.
- Crystals – Healthy people often have a few crystals in their urine. However too many crystals may indicate kidney stones or a problem with the metabolism.
- Bacteria, yeast cells, or parasites – Normally there are no bacteria yeast cells or parasites in the urine. Their presence can indicate an infection.

A urine test may be done:

- To screen for a disease or infection of the urinary tract. There are several tests which may lead to a urine test including: discolour or foul-smelling, pain, difficulty urinating, blood in the urine or fever.
- To monitor the treatment of certain conditions such as diabetes, kidney stones a urinary tract infection or some types of kidney or liver disease.
- As part of a routine physical examination.

How it is done:

A routine urine test can be done in your health professional's office, clinic or lab. You may also be asked to collect a urine sample at home and bring it in with you to the office or testing lab. A patient is given a sterile collecting container and storage container and asked to collect their urine.

Specific Gravity

Sample	Results
E	1.025
F	1.025
G	1.000
H	1.000

Method

To do the specific gravity test we gently dropped the hydrometer into the liquid to be measured. Next we allowed the hydrometer to settle and then read the measurement of density or specific gravity from the scale inside the hydrometer. The hydrometer measures the density of liquid. The depth in which the hydrometre sinks is directly related to the density. The density of a liquid compared to water is its specific gravity.

Multistix test

Samples	E	F	G	H
Glucose	Negative	Negative	+++ 100mg /DL Positive	Negative
Ketones	Negative	Negative	Negative	Negative
Gravity	1.030	1.005	1.005	1.005
Blood	Negative	Negative	Negative	Negative
PH	5.0	6.0	5.0	6.0
Protein	+++ 300mg/ DL	Negative	Negative	Negative
Nitrates	Negative	Negative	Negative	Negative
Leucocytes	Negative	Negative	Negative	Negative

When we did the multistix test we looked for Glucose, Ketones, Gravity, Blood, PH, Protein, Nitrates, and leucocytes.

method.

To do the multistix test we dipped a multi-stix into the urine. you pull it out and leave it 30-60 seconds and then compare the colours on the multi stix to the colours on the chart, you then read and write down the results.

PH test

Sample	Colour and appearance and PH
E	PH = 6 Showed protein dark purple colour. Urine was dark yellow with floating bits.
F	PH = 5 No protein present. Urine was clear.
G	PH = 5 No protein present. Urine was a clear yellow.
H	PH = 5 No protein present. Urine was a clear yellow colour.

method

A PH test is done in a similar way to the multistix test. You dip the indicator paper into the urine and then take it out and compare the colours with the colours on the chart and then record the results. This shows how acidic or alkaline the urine is. Normal urine has a range of 4.5 – 8.0

Glucose test

Sample	Glucose
E	Negative
F	Negative
G	Positive (Brick Red)
H	Negative

Sample G shows that there is lots of Glucose present.

method

To do the Glucose test we had to first bring a beaker to the boil with water in side on a bunsen burner. Next we placed 2 cm³ of the sample in a test tube and then added an equal amount of the benedict's solution. Then the solution turned blue. Next we placed the test tube in the beaker of boiling water. If Glucose is present the solution changes colour a precipitate appears. Then we recorded our results. A Brick red colour shows lots of Glucose present and a green colour small amount of urine.

Protein test

Sample	Protein
E	Yes
F	No
G	No
H	No

method

To do the protein test we placed 2cm³ of the solution to be tested in a test tube and then we added an equal amount of sodium hydroxide solution. We then added a few drops of very dilute copper sulphate solution. Next we mixed the solution if the mixture turned purple protein is present. Then record the results.

Although the multistix test and Benedicts test give the same results the multistix test is more accurate because it tells you the test tells you the amounts rather than wether it is present.

The specific gravity test results and the multistix results were very similar with sample E, G and H with only 0.005 difference. Sample F has a bigger difference. The protein results from both tests were the same E read positive. The multistix test again gives a more accurate results of + + + 300 mg/DL.

I would choose the multistix test if I was to choose between the multistix and the Benedicts test. The multistix test is more reliable and easier to do. It is also easy to make sure you are conducting a fair test. eg. when testing the hydrometer for the specific gravity test your eye level may vary slightly. This isnt accurate. It is also quicker to do a multistix test rather than completing all the other tests to get the same results as the multistix test does. If you are busy in A and E.

Commentary on Script C

AP1 Life Care: The suitability of Benedict's test and Clinistix in testing for glucose

This is potentially a very good Suitability test that can assess the performance of candidates across the ability range. Higher level candidates can determine the optimum filter to use from an understanding of the physics of colour or by experimentation. The range of concentrations could be extended, and the range of concentrations over which there is a linear relationship with absorbance could be determined and discussed.

Aspect	Mark	Comment
Strand A: Purpose of the test [2 marks awarded]		
(a) The use or purpose of the material, procedure or device to be tested, related to its workplace context.	1	There is a comment made concerning which is the most suitable method to use when testing for glucose in 'a range of (unspecified) people'. There is no reference to the medical requirement to test for glucose. The criterion has not met in full, so 1 mark is awarded.
(b) The criteria for 'suitability' of the material, procedure or device.	2	The candidate lists price, quality, ease of use, the length of time and accuracy. There has been no elaboration of these criteria. There are no explanations of why each property is needed.
Strand B: Carrying out an appropriate test [4 marks awarded]		
(a) Candidate autonomy and independence	3	Teacher annotation has indicated that the method was discussed. Teacher annotation has indicated that this criterion has been met in part – some help was given after the initial discussion. There is no evidence to suggest that the approach showed the degree of individuality required for 6 marks.
(b) Complexity and appropriateness of test	4	Practical work on the detection of glucose has been carried out. In this format, this suitability test is not complex.
Strand C: Collecting data or observations [2 marks awarded]		
(a) recording the data	2	Limited data and observations have been recorded. Insufficient data and observations have been recorded to achieve 4 marks. In this format, this Suitability test does not enable achievement of more than 4 marks.
(b) range and quantity of data or observations	2	Enough data have been collected to enable a simple comparison of each property indicated in the range. Insufficient data have been collected to check each property separately. No repeats or checks for reliability have been made.
(c) quality of data	2	The data are in the form of valid observations and are limited in scope.

Strand D Evaluation of suitability [1 mark awarded]

(a) Conclusion about suitability, drawn by appropriately linking data or observations to the purpose of the test, and awareness of any limits to the conclusions.	2	A simple table of comparison has been provided. There is a simple overall conclusion, that Clinistix is the better test, but the term 'accurate' is used inappropriately. A simple assessment of the suitability in terms of cost has been made. The conclusions drawn from individual tests are limited to a table of comparison or incorrect scientifically. There is no discussion linking them to the purpose of the test.
(b) Evaluation of testing procedure used.	0	No evaluation has been made.

Strand E Quality of Scientific Communication [4 marks awarded]

(a) The structure and organisation of the report	2	The structure of the candidate's report has been facilitated by a writing frame.
(b) General quality of communication	2	Some scientific vocabulary is used.

Title of Suitability Test	Strand A	Strand B	Strand C	Strand D	Strand E	Total mark / 40
Comparing Thermometers	2	4	2	1	2	11

Appendix E: Assessment Criteria for Work-Related Reports

Strand A Information sources				
Aspect of performance	2	4	6	8
(a) Initiative in collecting information	Information given is restricted to that provided by the original stimulus materials.	Information from a few additional sources is provided, although some may be irrelevant or inappropriate.	Relevant information is collected, from a variety of sources including a practitioner and/or workplace.	Uses relevant information, carefully selected from a variety of sources including a practitioner and/or workplace.
(b) Reference to sources	Sources of information are not identified.	Sources are identified by incomplete or inadequate references.	Sources are identified clearly but in limited detail.	References to sources are clear and fully detailed.
(c) Identification of source of particular information	–	Direct quotations are rarely indicated as such.	Direct quotations are generally acknowledged.	Direct quotations are appropriately used and acknowledged.
Strand B Description of Workplace				
Aspect of Performance	2	4	6	8
(a) Description of the expertise of an individual, or working group, with the vocational and personal qualities required	Gives an account which is superficial or lacks detail or focuses on only one aspect.	Gives a partial account of the expertise on an individual, or working group, with the vocational and personal qualities required.	Describes the expertise on an individual, or working group, with the vocational and personal qualities required.	Gives a clear account which explains the relevance to work of the vocational and personal qualities required.
(b) Description of the nature of the work, its purpose and place in the wider organisation	Gives an account which is superficial or lacks detail or focuses on only one aspect.	Gives a partial account of the work, its purpose and place in the wider organisation.	Gives an account of the work, its purpose and place in the wider organisation.	Gives a full account of the work, and explains its purpose and place in the wider organisation.
(c) Understanding of the financial or regulatory context of the context in which the work is done.	Makes a link between one financial or regulatory factor and the work.	Identifies one relevant example of the impact of a financial or regulatory factor on the work.	Describes one example of the impact of a financial or regulatory factor on the work.	Explains one example of the impact of a financial or regulatory factor on the work.

Strand C: Scientific knowledge and skills applied

Aspect of Performance	2	4	6	8
(a) Scientific knowledge and understanding applied in the workplace	Makes a link between the work and one example of scientific knowledge.	Identifies scientific knowledge involved in the work described.	Describes scientific knowledge involved in the work described.	Describes scientific knowledge and explains how it underpins the work described.
(b) Technical skills applied in the workplace	Makes a link between the work and one example of a technical skill.	Identifies a relevant example of a technical skill applied in the workplace.	Describes an example of a technical skill applied in the workplace.	Describes and explains an example of a technical skill applied in the workplace.

Strand D: Quality of Presentation

Aspect of Performance	2	4	6	8
(a) The structure and organisation of the report	The report has little or no structure or coherence, or follows a structure provided by worksheets.	The report has an appropriate sequence or structure.	Information is effectively organised, with contents listing of key elements and page numbering.	Considerable care has been taken to present the information clearly to a chosen audience.
(b) Use of visual means of communication	There is little or no visual material to support the text.	Visual material is simply decorative, rather than informative.	Visual information is used to convey information or illustrate ideas.	Visual information is used appropriately to convey information or illustrate ideas.
(c) General quality of communication	Spelling, punctuation and grammar are of generally poor quality.	Spelling, punctuation and grammar are of very variable quality.	Spelling, punctuation and grammar are generally sound.	Spelling, punctuation and grammar are almost faultless.
	Little or no relevant technical or scientific vocabulary is used.	Use of appropriate vocabulary is limited.	Appropriate scientific vocabulary is used.	There is full and effective use of relevant scientific terminology.

Appendix F Suggestions for Contexts for Work-Related Reports

A1 Lifecare

Try to avoid: social work; alternative therapies; the role of a doula.

Appropriate occupations include:

nurse (it helps to specify which type of nurse); midwife; paramedic; dietician; fitness instructor; doctor.

A2 Agriculture and food

Occupations in these sectors:

food processing (sugar, flour, dried foods); plant propagation (seed production, tissue culture, cutting and grafting); animal husbandry (cattle, sheep, pigs, chickens, deer, bison, ostriches); animal fertility (artificial insemination, embryo transfer); food production using microorganisms (yogurt, cheese, mycoprotein, beer); government organisations (meat inspector, veterinarian, inspector for DEFRA, FSA)

A3 Scientific Detection

Occupations include:

forensic scientist; Scenes of Crime Officer; Fingerprint expert; archaeologist; environmental analyst; food analyst; drugs testing

A4 Harnessing Chemicals

Occupations include:

Product developer/ manufacturer/ chemical engineer/ analyst/ quality controller in bulk chemicals industries (ammonia products; sulfuric acid products; chlorine products; oil industry; polymers)

Product developer/ manufacturer/ chemical engineer/ analyst/ quality controller in fine chemicals industries (cosmetics; toothpaste; shampoos; synthetic fibres; dyes and pigments; speciality chemicals)

Try to avoid over-reliance on advertisements, especially for cosmetics and toiletries.

A5 Communications

Occupations include:

sound engineer; TV producer; sports photographer; air traffic controller; security engineer; electronic engineer

A6 Materials

Occupations include:

trading standards inspector; building inspector; builder; dental technician; optician; sound engineer; prosthetics technician

Appendix G: Guidance for Candidates

Writing a Work-Related Report

In your Work-Related Report you describe how science is used in an occupation.

This is worth **17%** of your Additional Applied Science GCSE.

You are assessed on four separate aspects of your work.

Strand A: Information sources

(a) How you select information

You need to collect information from several different sources. You must carefully select the information that is relevant to the job. Be very careful to use UK websites. You also need to get some information from someone who does this job, or from a contact person at the workplace.

There is a checklist to help you find the right information.

(b) How you describe your sources of information

You need to make a separate list of the sources of information. The list should have enough detail, for someone else to find the sources. It is best to include all the details for each source.

(c) How you indicate any quotations or 'copy and paste' sections.

Try to use quotations only where they fit in really well, and always indicate any the quotations and their source. Introduce them by a statement such as 'Nurse Nightingale of Lantern Hospital says this:' Make sure that you clearly indicate any 'copy and paste' sections. You could print these onto coloured paper before sticking them in, or use a different colour of ink or a different font to make them stand out. If you forget to do this before your final draft, you could highlight or underline them, but be careful not to make a mistake when you do this.

Strand B Description of Workplace

(a) How you describe the personality and skills needed for this job, and why these are needed.

You need to describe clearly both the qualifications and the personal qualities that are needed to do this job and why they are necessary for the work. You also need to describe technical skills, which are assessed in Strand C.

(b) How you describe the work and why it is done.

You should describe the work in as much detail as possible and you must explain the purpose of the work. You will need to contrast the role with that of other similar jobs, for example, other members of a working team. You need to describe how this work fits into the whole organisation or market.

(c) Understanding of the financial or regulatory context of the context in which the work is done.

You have learned about industry standards and Standard Procedures to ensure safety. There will be regulations like these which affect the work you are studying and you should describe one of them. You should explain how it affects the way the work is done. In some jobs it makes more sense for you to describe how finances affect the way the work is done, rather than describing

regulations. If it is hard to find information about regulations of finance, then look for the rules that cover Health and Safety.

Strand C: Scientific knowledge and skills applied

(a) How science ideas are used in the workplace

You need to describe the scientific knowledge involved in the work. Then explain how the work is based on these scientific ideas. You can use your school textbooks or library books to help you describe the science.

(b) Technical skills applied in the workplace

You need to describe a technical skill that is important in this job. You should explain what the skill involves and why it is important for this job. You may need to talk to someone doing the job to get this information.

Strand D: Quality of Presentation

(a) How you have organised your report

You should put your ideas into a sensible order and use headings and side headings to make the sections clear.

When you are sure your work is in the best possible order, then you should number the pages and make a Contents page.

You may decide to write for a particular group of people. You may gain marks by taking care to make a report that is suitable for that group.

(b) How you use charts and illustrations

A lot of scientific information is given as tables, charts or diagrams so you should be careful to select some charts and illustrations. They should help to explain the ideas, or to give extra information.

(c) The quality of your communication.

Make sure you check your spelling, punctuation and grammar and make corrections. Check over the key words for the science topic before you start writing about the science, and make sure you can use the words in a sentence. Ask for help if you do not understand any of the words.

What information do I need to collect?

You need to be sure you have all the information you need, before you start to write your Report.

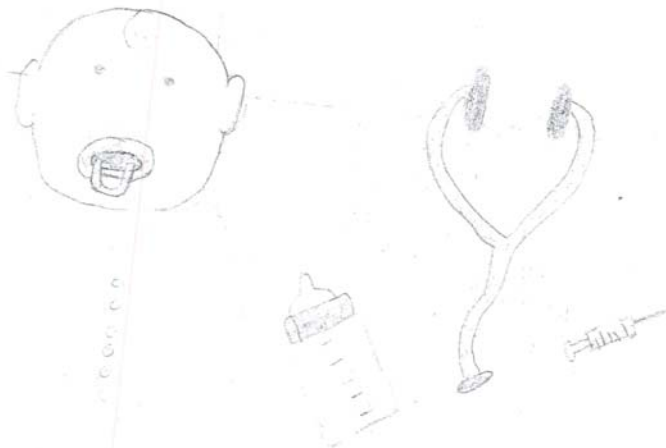
Use this list to help you:

Topic	checked?
the personality needed for the job	
the vocational skills needed for the job	
why these skills are needed	
qualifications needed for the job	
technical skills	
why the technical skill is important for the job	
what the job involves (what do people do every day in their work)	
the purpose of the work	
the role of this job	
how this job fits together with other jobs in the organisation	
how the work contributes to the organisation	
regulations that affect the work, or how finances affect the work	
the science topics that are relevant to the work	
how the work is based on these scientific ideas	
tables, charts or diagrams	
other illustrations	

Appendix H: Examples of Completed Work-Related Report with Commentaries

Example D: The paediatric Nurse

Paediatric
Nurse



Work
Related
Report
By

Contents

Nursing	Pg 1
Paediatric nurse	Pg 2
Measuring pulse rate	Pg 3
Measuring blood pressure	Pg 4
Incubators	Pg 5
Qualifications	Pg 6
Tools	Pg 7
Interview	Pg 8
References	Pg 10

Nursing

Nursing involves caring for sick people and for others in need of help. Today nursing is one of the most highly respected professions. But this was not always the case. From the 1600's to the mid-1800's nurses were untrained and were considered disreputable, and hospitals were unhygienic, cold and miserable.

Modern nursing dates from 1860, when Florence Nightingale opened the first training school at St. Thomas's hospital in London. She did a lot to improve the reputation of nurses, and people came to realize the nobility of working for the sick.

Today, nurses perform many important duties apart from nursing the sick back to health. They assist in surgical operations, act as midwives in the delivery of babies, take care of the old, provide public health information and visit the bedridden in their homes. In most countries, nurses must train for several years before they are registered to practise. Their training includes both classroom lessons and practical work in hospital wards.

Pediatric Nurse

Pediatric nursing can take you from intensive care of a newborn baby with breathing problems to looking after a six foot tall adolescent whose leg has been broken in a soccer match.

Children's bodies and minds work in different ways. Children are still growing, the impact of the illness or injury on their development needs to be taken into account.

Because of their age they will be more scared by what is happening to them. That is why there is pediatric nurses who understand their particular needs.

As part of the caring process pediatric nurses work closely with the patient's families.

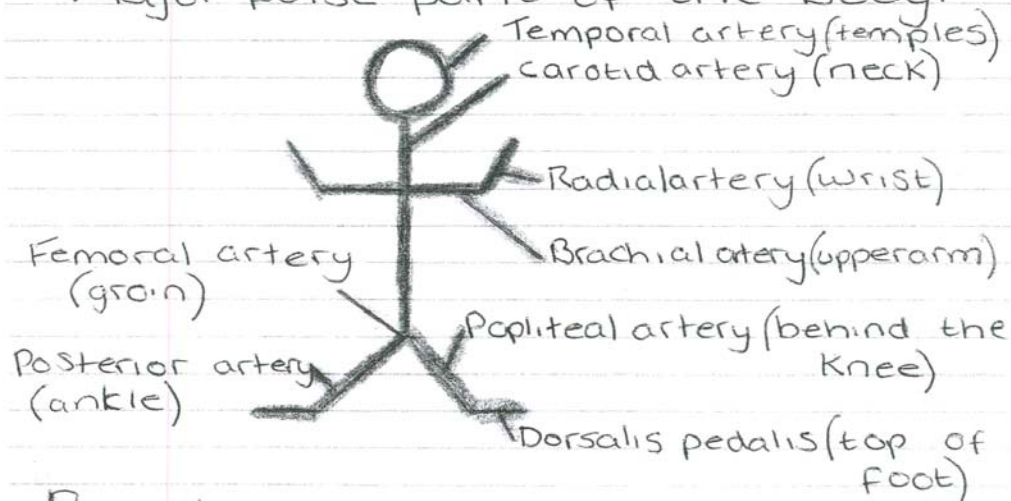
Pediatric nursing can sometimes involve managing distress. A mix of emotions often surrounds child illness such as panic anxiety, anger and guilt. They play a key part in helping families come through their crisis.

Measuring Pulse Rate

Reason for assessing pulse rate:

- * To see if the person's pulse rate falls within the usual range for their age.
- * To establish the person's baseline pulse rate.
- * To assess the level of fitness.
- * To help estimate the degree of fluid loss in a person suffering from dehydration.

Major pulse points of the body.



Procedure:

- The person should be relaxed.
- The pulse is taken in the Radial artery by placing the first and second fingers along the artery and pressing against the bone.
- Then they count the number of pulses in 60 seconds. Measured in beats per min. Healthy adults should have a rate of 60-100 beats per min. Infants should have a much higher pulse rate.

Measuring Blood Pressure⁴

Reasons for recording blood pressure.

- * assess persons usual range of blood pressures
- * Help diagnose certain diseases.
- * Help assess cardiovascular disease during and after treatment.

Procedure:

- Place cuff on upper arm.
- Hold stethoscope to brachial artery just below.
- Inflate the cuff until the blood stops flowing through the arm.
- You will hear no sound through the stethoscope.
- Deflate the cuff until you can hear each heart beat.
- Record this, the Systolic pressure.
- Deflate the cuff further until sound changes from being discontinuous to constant.
- Then they record this the diastolic pressure.

The reading.

It is measured in millimeters of mercury (mm Hg)

There are two numbers in the reading. The first is the larger number (read as '130 over 80')

The second number is the smaller number, diastolic blood pressure.

It is generally agreed that a healthy blood pressure is less than 140/90

Incubators

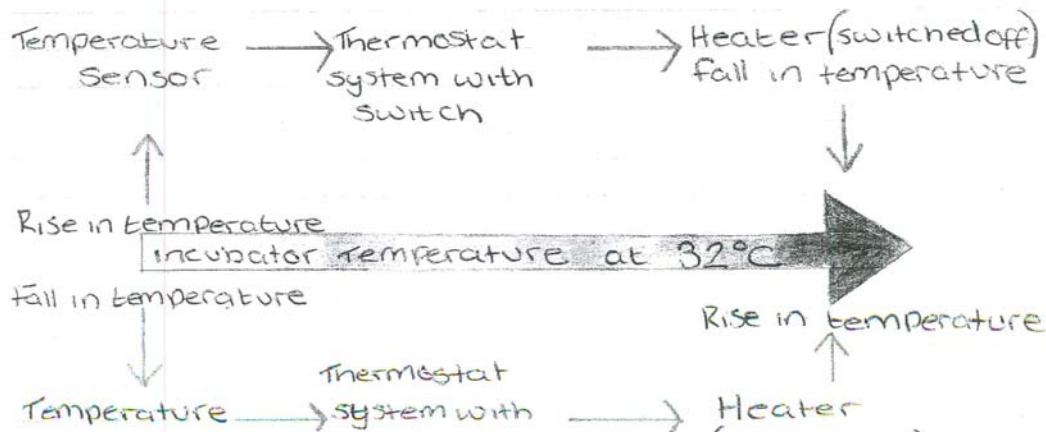
To be a pediatric nurse you need to know how incubators work. Incubators detect the baby's temperature or the temperature inside the incubator. If the temperature drops a heater gets switched on and warm air gets blown into the incubator.

If the temperature goes up the heater gets switched off. Oxygen levels are also controlled.

An incubator control system is made up of:

- * A receptor which detects the change of the temperature.
- * A processing centre that receives and processes information and it also triggers a switch.
- * The heater which provides the heat for the incubator.

Newborn babies have an immature temperature control system, so it is very important that premature or sick babies are kept in an ideal environment.



Qualifications

To become a qualified pediatric nurse you will need five C's or above in your GCSE's. After School you will need to go to college and study nursing for two years, and achieve a National Certificate/Diploma in nursing.* After collage you need to go ^{or} to university and study pediatric nursing for three years. Only then are you a qualified nurse.

Medical Administration Certificate

One or two-year Course

A course for school leavers wishing to work in a hospital or medical environment. The programme combines Word Processing, Audio and IT Skills with Communication, NCFE Medical Administration and Terminology Level 1 with the option to progress to Level 2. Shorthand is also offered as an option. Work experience in a hospital is provided during the programme.

Progression: Employers are seeking these skills and most students move straight into medical administration posts.

Social Care Cadetship

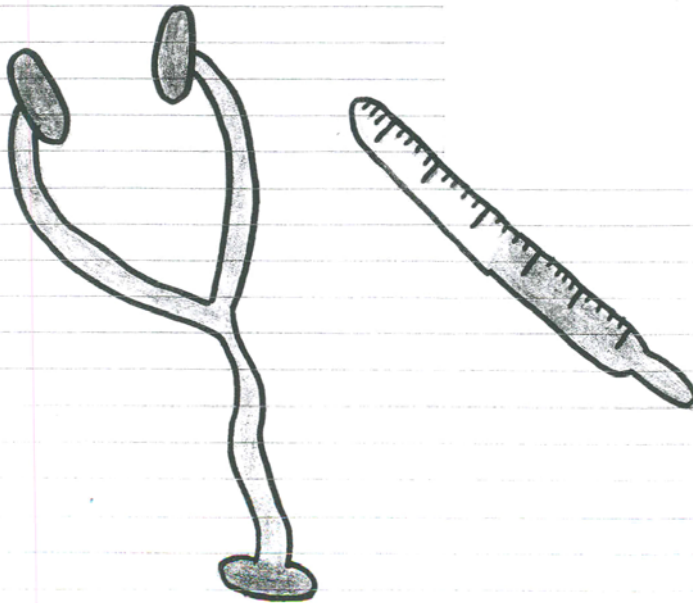
One-year Course

This course is for 17-19 year olds who are interested in a career in the Care Sector. During the course you will work towards NVQ Level 2 in Care, the certificate in supporting Care practise, Food Hygiene and First Aid. You will also gain substantial work experience in Social Care for adults. Young people on the Cadetship are paid a training allowance. This scheme is run in partnership with Tameside MBC.

Progression: Advanced study for qualifications in Care and employment.

Tools

The basic tools that a nurse uses are their eyes, hands and ears. Assessment is very important in nursing. They use a stethoscope to listen to a child's lungs, heart and abdomen. They use a blood pressure cuff (a sphygmomanometer) to obtain their blood pressure and a thermometer to obtain their temperature. Also they use cardiopulmonary (CP) monitors that keep track of the patient's heart rate and respiratory rate. They use a Snellen chart to test their vision. There are many tools that a nurse uses but this is a list of the most common ones.



Interview

8

I did an interview with a pediatric nurse and this is what she had to say:

What responsibilities do you have being a pediatric nurse?

A few responsibilities include being a patient advocate, always maintaining confidentiality for your patient and their family's, ensuring that the family and patient understand what is being done. You have to always maintain professionalism. It is also your duty to keep your level of knowledge up and continue learning even after school by asking lots of questions.

In an Emergency Department what do you do as a pediatric nurse?

I start IV's, perform catheterizations to collect urines, collect stool samples, perform basic eye exams, obtain vital signs, perform head to toe assessments, perform CPR and a variety of other duties.

In an emergency room we treat the child based on what is wrong with them when they come in. It is very important

for us to consider basic child development when treating children and to communicate with them based on their developmental level.

Why did you want to become a paediatric nurse and how did you go about being one?

I've always wanted to work with children and make a difference to people's lives that's why I became a paediatric nurse. I had to get 5 C's or above in my GCSE's. Then go on to college for two years. I then went to university and after three years I became a qualified paediatric nurse.

Interview taken by Lisa Jones -
Paediatric nurse.

References

- Life care twenty first century science book.
- www.NHS.com
- Interview with Lisa Jones - paediatric nurse - September 14th.
- www.rcn.org.uk/resources/becomenurse.php
- www.nhscareers.nhs.uk
- www.medical-colleges.net/pediatric.htm
- www.nurseseye@site.nhs.uk/spec-area-paediatric/child-role.asp
- www.intl.edgevierhealth.com/childcarenursing

Commentary on Script D

AP1 Life Care: The paediatric nurse

Aspect	Mark	Comment
Strand A: Information sources [6 marks awarded]		
(a) Initiative in collecting information	8	There is a lot of extra and relevant information. There is an interview with a nurse. The information is has been carefully selected and reworked
(b) Reference to sources	6	Sources are identified with full URL but the page numbers of the book are not given.
(c) Identification of source of particular information	4	The interview is credited to the nurse. Other direct quotations are not indicated.
Strand B: Description of Workplace [5 marks awarded]		
(a) Description of the expertise of an individual, or working group, with the vocational and personal qualities required	6	describes the various roles of nurses p2 understanding the needs of children and their families p7 the 'tools' that a nurse requires does not explain the relevance to the work of the vocational and personal qualities required.
(b) Description of the nature of the work, its purpose and place in the wider organisation	4	Mentions incubators, Emergency Department and families but not the workplace context. Doesn't describe the role within an organisation.
(c) Understanding of the financial or regulatory context of the context in which the work is done	4	p1 identifies that nurses must be registered to practice, but does not give sufficient description for 6 marks.
Strand C: Scientific knowledge and skills applied [6 marks awarded]		
(a) Scientific knowledge and understanding applied in the workplace	5	p3 pulse rate; p4 blood pressure; p5 temperature regulation Describes: pulse points and blood pressure figures without explaining pulse or blood pressure
(b) Technical skills applied in the workplace	6	Describes p3 how to measure pulse rate p4 how to measure blood pressure

Strand D Quality of Presentation [6 marks awarded]

(a) The structure and organisation of the report	5	Orderly structure by the candidate. Sequencing is poor but pages are numbered and contents are listed.
(b) Use of visual means of communication	6	There is visual material which is informative. An audience is not chosen and more care could have been taken.
(c) General quality of communication	8	There are hardly any 'spg' errors. Scientific terminology is used fluently.

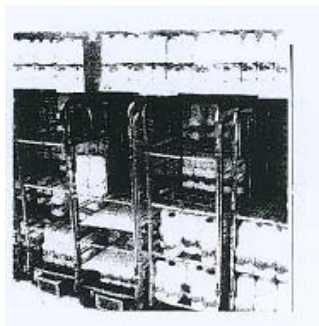
The information for the Record Sheet is:

Title of Work Related Report	Strand A	Strand B	Strand C	Strand D	Total mark / 32
Paediatric Nurse	6	5	6	6	23

The dairy industry

Introduction

In this report I am going to look at the dairy industry. I am going to look at many aspects of the industry such as the cows used and how they are kept, I am also going to look at types of milk and the other products of which are made from milk.



Types of cow used

Dairy cattle may be found in herds on farms where dairy farmers own, manage, care for, and collect milk from them.

There are many types of dairy cow and they are Holstein-Friesian, Brown Swiss, Guernsey, Ayrshire, Jersey, and Milking Shorthorn.

The Holstein, or Frisian as it is known in the UK, is a cattle breed used in dairy farming. Developed in northern Germany (Holstein) and Friesland, The Netherlands, The Holstein cattle are sometimes also known as Friesian Holstein or Holstein Friesians. Thanks to the breed's flexibility, productivity, and economic production of milk, the Holstein is now the most common breed of dairy cattle around the world. The Holstein's best characteristic is its combination of a high volume of milk production at an acceptable milk fat percentage. Typical Holstein milk is 2.5% to 3% milk fat and produces about 28,000 pounds of milk per year. The primary colour pattern for this breed is black and white, but a red and white variety, called "red Holstein" is also maintained.

Brown Swiss

Is the breed of dairy cattle that produces the second largest quantity of milk per year. The milk contains 4% butterfat and 3.5% protein. The Brown Swiss is known for a long pregnancy and a stubborn temper. The Brown Swiss originally came from the Alps in Switzerland; because they were bred in this harsh climate, they are resistant to the heat, cold and many other common cattle problems.

The Guernsey is a small, cream-and-brown breed of dairy cattle and is well known for the high butterfat content of its milk,

As its name hints, the Guernsey was bred on the British Channel Island of Guernsey. It descended from cattle stock brought over from nearby Normandy, and was first recorded as a separate breed around 1700..

Guernsey cows are small, producing more milk per unit of body weight than any other breed. Overseas farmers who preferred maximum quality, immunity to disease and high milk production selected Guernsey's.

The Ayrshire cattle are a breed of dairy cattle that comes from Ayr in Scotland. The average Ayrshire cow weighs 1000-1300 pounds. Ayrshires have red markings. The red can be an orange to a dark brown, with or without brown legs. They are known for low somatic cell counts, ability to convert grass into milk efficiently, and resistance to certain types of weather.

The Jersey is a small, brown breed of dairy cattle; the Jersey is renowned for the high butterfat content of its milk. As its name suggests the Jersey was bred on the British Channel Island of Jersey. The breed displayed greater variation than it does today with white, dark brown and mulberry beasts. However, since the honey-brown cows sold best breed was developed accordingly.

With an average weight of 1,000 pound (400 kg), the Jersey cow is small, but by some measures it produces more milk per unit of body weight than any other breed. Bulls are also small by standards of domestic cattle, ranging around 1,200 pounds (700kg), but can be surprisingly aggressive.

How are the cows kept?

Every two weeks, cereal, potato chips and even cotton seed are sold to dairy farmers to feed to dairy cows. Cows are fed up to eight times a day. Their feed is a combination of hay and silage. This mix is known as a TMR, or Total Mixed Ration. This TMR generally consists of: hay, corn, barley, field grasses, cotton seed, bakery or grocery by-products.

And cows drink 30 to 40 gallons of water each day. A cow is ruminant with four compartments to their digestive system. A cow makes milk after she has a calf. The milk is high in protein and vitamins and is good for calves. The cows go to the milking parlour at a dairy factory where they are milked and looked after.

Milk

Milk most often means the nutrient fluid produced by female mammals. It comes from some mammals but mainly from milk cows kept on dairy farms. Milk cows produce up to 8 gallons of milk per day. Milk is stored in the cow's udder which is a mammary gland. The udder is a large bag with four teats which are squeezed when a cow is milked. Milk is the primary product of nutrition for newborns before they are able to digest more diverse foods. It is also turned into dairy products such as cream, butter, yogurt, ice-cream, cheese, casein, whey protein, lactose, condensed milk, powdered milk, and many other food-additive and industrial products.

Types of milk

There are many types of milk. Firstly, Milk powder (or powdered milk). Milk powder is produced by removing the water from the milk. Whole milk is full fat milk and is suitable for toddlers. There is also nutritional milk powders for infants. Condensed

milk is milk which has been concentrated by evaporation, often with sugar added for longer life in an opened can

Evaporated milk is less concentrated than condensed milk without added sugar. There is also semi skimmed, pasteurised (which is milk that has been treated), skimmed milk and Soya milk.

Other Dairy products

Milk that is produced is turned into other dairy products. They include Types of dairy products. There are more than 30 products made from milk. Dairy products include:

Different types of cream such as Cream that is fat skimmed off the top of milk or separated by machines.

Sour cream is cream that has been fermented by the bacteria *Streptococcus* and *Leuconostoc citrovorum* and Crème fraîche, is slightly fermented cream.

Cultured buttermilk is fermented concentrated milk using the same bacteria as sour cream. One very well known product of milk is butter. This is made of mostly milk fat, produced by churning cream. Buttermilk is the liquid left over after producing butter from cream. Anhydrous is milk fat or the lipids in milk. Another product of milk is cheese, produced by coagulating milk, separating from whey and letting it ripen, generally with bacteria and sometimes also with certain moulds a type of cheese containing bacteria is stilton cheese. Cottage cheese is also another type of cheese. Cream cheese is produced by the addition of cream to milk and then curdled to form a rich curd or cheese made from skim milk with cream added to the curd.



How is cheese made?

Cheese is one of the many products of milk and is produced by coagulating milk, separating from whey and letting it ripen, generally with bacteria and sometimes also with certain moulds. There are six main stages to making cheese and they are as follows

- processing milk
- Separating the curd
 - Treating the curd
 - Pressing the curd
 - Ripening or ageing
 - Packaging the final product

- 1.) Cheese makers inspect milk and remove any clumps and make sure it is pasteurised. Suction pumps pump the milk into stainless steel containers. The milk is then processed.
- 2.) After processing, the milk is treated so that it forms a custard-like substance called curd. The curd has whey inside it which must be removed before cheese

is made. They then heat the milk to 96 degrees Fahrenheit. Starter culture (fresh, plain whole milk yogurt containing live, active cultures of bacteria). It is added to make the milk sour. The starter culture ferments the curd, (In other words, sugar is removed). Rennet is added to thicken the mixture. Special knives cut the curd and the whey and the whey oozes out. Then the temperature is raised to 102 degrees Fahrenheit.

- 3.) Workers cut the curd into slabs and then the slabs are pushed into a mill the mill chops them into little pieces.
- 4.) The curd is then salted and put into a steel mould for 24 hours.
- 5.) The cheese is then aged for a certain amount of time. Time depends on what type of cheese you want whether it is cheddar mild, sharp.
- 6.) The cheese is then packaged, sold to shops and then sold to customers.

Who works in the industry?

There are many people who work within the dairy industry. One important job is a dairy farmer. To be a dairy farmer you need Personal Requirements these are:

- good at planning
- able to analyse and solve problems
- good organisational and supervisory skills
- good communications skills
- responsible approach and attitude
- enjoy working outdoors in all kinds of weather
- able to endure isolation and limited social contact
- able to handle animals with confidence and patience
- mechanical knowledge
- aptitude for working with computers
- Able to work independently

You also need to carry out many duties and tasks. Some of these duties include;

- manage the business capital, plans and strategic direction of the business
- manage the financial aspects of the business by controlling income and expenses
- decide or advise on the kind of crops to be grown, the area to be sown or planted and the livestock to be raised
- plan the type of farming activities to be undertaken, estimate operating costs and order supplies such as seed, fertiliser, livestock fodder and farm equipment
- recruit, coordinate and direct farm workers on crop growing and livestock raising
- plant, spray, fertilise, harvest and sell crops
- handle, load and transport livestock for showing, slaughter or sale
- clean and maintain buildings, sheds, pens, equipment and facilities to maintain health standards and high quality of produce
- monitor animal health and seek veterinary advice when necessary

- make sure there is adequate food supply, water and protection from the weather for livestock
- make sure there is adequate food supply, water and protection from the weather for livestock
- make sure temperature, ventilation and lighting conditions are comfortable for livestock kept indoors
- observe and record produce quality of livestock body weight and condition, adjusting management of feeding programs if required
- plan activities to minimise environmental degradation, monitor environmental effects of farming activities and repair existing damage through programs such as tree planting etc

References

- http://en.wikipedia.org/wiki/Dairy_cattle (page was last modified 23:44, 28 February 2006)
- <http://en.wikipedia.org/wiki/Mik> (page was last modified 23:44, 28 February 2006)
- <http://www.moomilk.com/tours/tour1-2.htm>
- <http://library.thinkquest.org/5417/cheesemadeatfactory.html>
- <http://www.myfuture.edu.au/services/default.asp?FunctionID=5050&ASCO=131000A>
-

Glossary

Coagulating - when a substance clots or sets such as blood.

Ruminant - mammal or animal with four compartments to its stomach.

Mammary glands - glands that produce milk.

Pasteurise - harmful bacteria removed from milk.

Starter culture - fresh, plain whole milk yoghurt containing live, active cultures of bacteria. It is added to milk to make milk sour.

Commentary on Script E

AP2 Agriculture and food: The dairy industry

This is potentially a very good subject for a Work related Report. It combines aspects of Animal Farming and Biotechnology and Food. The study could have been extended to cover intensive (and look at controversial areas such as use of antibiotics and hormones, and the medical and legislative issues concerning of their use) and organic dairy farming. The study could have considered a wider range of workers in the dairy industry, farmers' cooperatives and financial aspects of dairy production.

Aspect	Mark	Comment
Strand A: Information sources [6 marks awarded]		
(a) Initiative in collecting information	8	There is a lot of extra and relevant information. There is an interview with a nurse. The information is has been carefully selected and reworked
(b) Reference to sources	6	Sources are identified with full URL but the page numbers of the book are not given.
(c) Identification of source of particular information	4	The interview is credited to the nurse. Other direct quotations are not indicated.
Strand A: Information sources [4 marks awarded]		
(a) Initiative in collecting information	5	A lot of relevant information sought out by the candidate is included in the report. Information has been collected from a variety of sources. But there is no evidence from the content and references list that any information included has been collected from a practitioner and/or workplace.
(b) Reference to sources	7	Sources are identified with full URL. Information has been included on the date some of the URLs were accessed.
(c) Identification of source of particular information	0	The sources of the respective pieces of information have not been included.

Strand B: Description of Workplace [3 marks awarded]

(a) Description of the expertise of an individual, or working group, with the vocational and personal qualities required	4	Gives a good, but generic account of the requirements of the dairy farmer. Presents a list describing many relevant qualities of the dairy farmer. The candidate did not describe the qualities of the dairy farmer although he selected this list from a website (and reproduced this verbatim).
(b) Description of the nature of the work, its purpose and place in the wider organisation	4	Gives an account of several aspects of the work in the dairy industry, without linking their purposes to the wider organisation.
(c) Understanding of the financial or regulatory context of the context in which the work is done	2	Mentions some characteristics of the breeds of dairy cattle and their milk, milk production and feeding regime. Mentions relevant financial/economic contexts, but does not go on to discuss their impact on the work of the dairy farmer.

Strand C: Scientific knowledge and skills applied [5 marks awarded]

(a) Scientific knowledge and understanding applied in the workplace	5	Scientific knowledge is used in the description of cattle breeds, milk production, types of milk, cheese production, and some aspects in the role of the dairy farmer.
(b) Technical skills applied in the workplace	4	Covered in the production of cheese and listed in simple terms in the requirements of the dairy farmer. Technical skills have not been described in the necessary detail to meet the 6 mark criteria.

Strand D Quality of Presentation [6 marks awarded]

(a) The structure and organisation of the report	4	Orderly structure by the candidate. No contents listing or page numbering.
(b) Use of visual means of communication.	6	The visual material provides descriptions of cattle breeds and the cheese making process, but has not been exploited to the full.
(c) General quality of communication	7	There are hardly any 'spg' errors. Scientific terminology, with the exception of the scientific names of organisms and temperatures cited in °F, is used fluently.

The information for the Record Sheet is:

Title of Work Related Report	Strand A	Strand B	Strand C	Strand D	Total mark / 32
The dairy industry	4	3	4	6	17

My work

related



Report on



A

Practice



Nurse



Contents



1. Introduction
2. Interview
3. How to become a practice nurse
4. Skills and interests
5. Working environment



Introduction

In my work related report I am going to do about a Practice Nurse, I chose to do a Practice Nurse because I thought it would be quite interesting and learn more about their job and what is involved. I also have a lot a lot of magazines and information around the house because a member of my family is a Practice Nurse therefore I could get a lot of extra information off them. This project will include information on a Practice Nurse, qualifications and training you will need to be a practice nurse and what you need to become a general nurse first. You will also read an interview with a Practice Nurse which tells you what type of clients they work with and why they were interested in going into practice nursing.

What makes a good nurse?

A nurse should:

1. Have excellent people skills and commitment to helping others.
2. Have stamina.
3. Be practical and able to pay attention to detail.
4. Have good write and numerical skills.

Nurses work as part of a care team, liaising with doctors and many other healthcare professionals. By providing healthcare and advice, nurses help individuals and their families to live more comfortable lives.

How to become a Practice Nurse

You need to become a general nurse before you can become a practice nurse. Training requirements for practice nursing depends on the role you are undertaking. The ENB practice nurse course covers most of the basic topics needed for practice, but further training is required to undertake nurse-led clinics in speciality areas. Practice nurses can now access Bsc Community nursing courses with other branches of community nursing leading to the professional 'specialist' qualification. Increasingly Practice Nurses are integrating with other primary care nurses, but are still set apart by differing employment conditions.

Nurses with no experience in Practice Nursing could be advised to see if a local surgery would be prepared to allow them to spend some time seeing what the job entails, before they decide to whether to look for work in this field. Some Health Authorities employ Practice Nurse trainers to run induction programmes for all new nurses. Contact you local Health Authority for details of the Primary Care Development manager in your area, who can offer advice.

For a diploma of higher education in a nursing course, the minimum entry requirements are 5 GCSEs (A-C.) Subjects at GCSEs are not specified but some colleges ask for one or more from English, Maths and science.

Entry may also be possible with alternative qualifications such as an intermediate GNVQ plus 1 GCSE, a relevant GNVQ level 3 or edexcel (BTEC) national qualification. For entry to a degree course, most universities and higher education colleges at least two A levels or equivalent.

Skills and interests

Nurses must be interested in people and have a desire to help them. An interest in the body and how it works, but also an understanding of the way illness affects people emotionally and socially. Nurses have to work in life and death situations so its important for them to be able to stay calm under pressure and break good and bad news to family or friends. Also good communication skills are useful, both for taking written and verbal instructions, writing reports and records, and for describing a patient's conditions and treatment to medical professionals and people who know nothing about medicine. Nurses must also be able to juggle the different needs of a number of patient's. They should be able to work as a team and with different groups of people and different ages people. Nurses need good observation skills to notice and react to changes in patient's conditions. Sometimes patients cannot describe how they are feeling, either because they are too ill, or because they lack communication skills, so a nurse must be able to interpret a variety of other signs, noticing when something in a patients environment could be affecting their health is another useful skill.

Working environment

Nurses work in all sorts of places, from Hospitals, health centres and clinics, to prisons, factories and patients homes. Nurses usually work in a team with other health care professionals, but there are times when they have to work and make decisions on their own. Practice nurses work on their own but with a team of other nurses and Doctors. They usually work in a general practice.

General Nurses normally work 37.5 hours week. This may include weekend and night shift work. There are many opportunities for flexible working hours.

Nurses work in:

- hospitals, GP surgeries and clinics
- the community, supporting patients in their homes
- nursing and residential homes
- hospices
- industry, within occupational health services
- prisons, education and Armed Forces.

Body mass index

Body mass index (BMI) is a measure of body fat based on height and weight that applies to both adult men and women.

BMI Categories:

- **Underweight=<18.5**
- **Normal weight = 18.5-24.9**
- **Overweight = 25-29.9**
- **Obesity = BMI of 30 or greater**

A practice nurse used BMI as an indicator for risk factor for example, any patient with a BMI over 30 are at risk of heart disease and diabetes and patients in the over weight and above category are given diet and exercise advise. This is done to help prevent them from developing a long term disease. BMI is a reliable way to tell if you weight is putting your health at risk. BMI is a measure which takes into account a person's weight and height to gauge a degree of obesity in adults.

You can calculate someone's BMI by using the following formula BMI = Weight (kg) divided by height (in meters squared).

Body Mass Index Table

To use the table, find the appropriate height in the left-hand column labeled Height. Move across to a given weight. The number at the top of the column is the BMI at that height and weight. Pounds have been rounded off.

Bibliography

For my project I got most of my information and pictures off the internet and I spoke to a practice nurse. The websites I got the information off where:

www.nhs.co.uk

www.practicenurse.com

www.nursing.co.uk

These are the resources I uses to get my information from for my project.

Commentary on Script F

Ap1 Life care: A practice nurse

Aspect	Mark	Comment
Strand A: Information sources [5 marks awarded]		
(a) Initiative in collecting information	6	Nearly all the extra information is relevant and includes an interview with a practitioner.
(b) Reference to sources	6	Sources are identified; the website home pages are given clearly but the URL s are not given.
(c) Identification of source of particular information	4	only the interview indicates direct quotations
Strand B: Description of Workplace [4 marks awarded]		
(a) Description of the expertise of an individual, or working group, with the vocational and personal qualities required	8	lists 'what makes a good nurse?', skills and interests, and required qualifications describes essential skills explains why these skills are needed for the job
(b) Description of the nature of the work, its purpose and place in the wider organisation	4	describes the 'Working environment'. the interview describes the work but not much on the role in the wider organisation – a team is mentioned but not fully described there is no description of Primary Care
(c) Understanding of the financial or regulatory context of the context in which the work is done	2	Mentions in passing that the nurse has to attend annual teaching sessions, but does not identify it as an example.
Strand C: Scientific knowledge and skills applied [4 marks awarded]		
(a) Scientific knowledge and understanding applied in the workplace	4	describes use of BMI to identify patients at risk; mentions various health issues does not describe any science
(b) Technical skills applied in the workplace	4	states why good observational skills needed but does not describe an observational skill

Strand D Quality of Presentation [5 marks awarded]

(a) The structure and organisation of the report	5	Orderly structure by the candidate. There is a contents listing and the pages are numbered, but description of skills is split. No audience is chosen and some information has not been reworked.
(b) Use of visual means of communication.	5	Illustrations are decorative but there is a table for BMI. Careful Formatting. just one table to convey an idea
(c) General quality of communication	4	variable quality 'spg'. Scientific vocabulary is used appropriately but not very much of it.

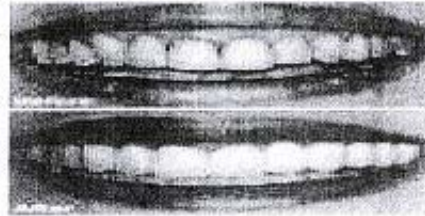
The information for the Record Sheet is:

Title of Work Related Report	Strand A	Strand B	Strand C	Strand D	Total mark / 32
Practice Nurse	5	4	4	5	18

Why are dentists around

Dentists are here to :

keep teeth clean, healthy,
looking good and repairing if
anything does go wrong

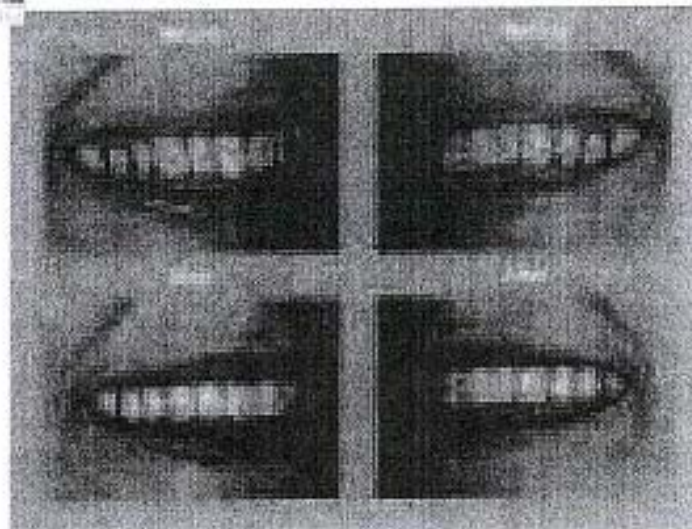


It is good that dentists are
here they are helping
you to keep healthy and
be a better person and
keep up an appearance
ect





pictures 2



Are dentists useful

I believe they are useful if you are under the nhs you do not have to pay and also they make them fresh and healthy. on the bad side if you are not on the nhs or need something done to your teeth it does cost a lot. But all in all I think dentists are good



Commentary on Script G

Ap1 Life Care: Dentists

Aspect	Mark	Comment
Strand A: Information sources [2 marks awarded]		
(a) Initiative in collecting information	2	Another site included.
(b) Reference to sources	2	no sources given
(c) Identification of source of particular information	0	nothing
Strand B: Description of Workplace [2 marks awarded]		
(a) Description of the expertise of an individual, or working group, with the vocational and personal qualities required	2	why dentists are here
(b) Description of the nature of the work, its purpose and place in the wider organisation	2	to keep healthy & look good
(c) Understanding of the financial or regulatory context of the context in which the work is done	2	it costs a lot if not NHS
Strand C: Scientific knowledge and skills applied [0 marks awarded]		
(a) Scientific knowledge and understanding applied in the workplace	0	not done
(b) Technical skills applied in the workplace	0	not done

Strand D Quality of Presentation [3 marks awarded]

(a) The structure and organisation of the report	2	no structure
(b) Use of visual means of communication	4	relevant photos but they don't convey ideas or information
(c) General quality of communication	2	poor grammar and punctuation no scientific vocabulary

The information for the Record Sheet is:

Title of Work Related Report	Strand A	Strand B	Strand C	Strand D	Total mark / 32
Dentist	2	2	0	3	7

Appendix I: Cover Sheet for Work for Moderation



Additional Applied Science

OCR GCSE J632 21 Century Science Unit A337 Work Related Portfolio

Record Card

Record of all marks awarded for assessed portfolio **200** award

Centre No:

Centre Name: _____

Candidate No:

Candidate Name: _____

The investigation report which provides the candidate's final total must be available for moderation.

Record of all marks for the work-related portfolio:

(a) Standard Procedures (submit 2 per module)

Module code	Description of procedure	Total for task (max =4)

Total for 6 tasks
(out of 24 marks)

(b) Suitability testing

Date	Title of suitability test	Strand A	Strand B	Strand C	Strand D	Strand E

(mark out of 40)

The final total for this is the best total score from any one suitability test.

(c) Work-related report

Module code	Title of Research report	Strand A	Strand B	Strand C	Strand D

(mark out of 32)

Unit A337 total

The overall total mark for unit A337 is the sum of the three sub-totals in the right-hand boxes above (out of a possible maximum of 96 marks)

This final mark out of 96 should be submitted to OCR on Form MS1 in the year of entry for unit A337. These forms will be provided at the relevant time based on entry information provided by the Centre. Reports, work-sheets, etc which contribute to the final total must be available for moderation.

Keeping records of coursework marks

Coursework assessment for Additional (Applied) Science comprises a portfolio of work related materials.

This includes three types of activity:

- o Carrying out standard procedures (raw mark 24, assessment weighting 18%)
- o Suitability test (raw mark 40, assessment weighting 20%)
- o Work related research and report (raw mark 32, assessment weighting 17%)

Unit A337: Work-related Portfolio

This card provides spaces to record all marks awarded for internally assessed investigative work.

(a) Standard procedures

Each unit of study in the course will provide a range of standard procedures. Candidates may be assessed on any occasion where standard procedures are carried out.

For each of the four aspects of a standard procedure, performance is assessed as satisfactory (1 mark) or unsatisfactory (0 marks), giving a maximum total mark of 4 for any one procedure.

Note that the final total for this part of the portfolio is made up of the best two marks from each of the three modules studied in the course. When marks are recorded, it is essential to record which module they are obtained from. This can be done by recording the module code (Ap1, Ap2, etc). No more than two procedures can be counted from any one unit, thus if a candidate has only been assessed on one procedure (or none) in a particular module, it is not permitted to transfer marks from other modules.

(b) Suitability test

The mark submitted should be the highest total achieved from any **one** suitability test. It is **not** permitted to aggregate together marks from different pieces of work to produce an overall total.

Incomplete pieces of work will be acceptable for assessment. If the best total for a candidate comes from an incomplete piece of work (fewer than 5 strands attempted) then that total can be submitted as the final assessment mark.

It is not necessary to record which module the test relates to.

(c) Work related report

The research report is marked on four strands. Each strand is marked on a scale of 0–8, giving a maximum possible mark of 32.

The mark submitted should be the highest total achieved from any **one** work-related report. It is **not** permitted to aggregate together marks from different pieces of work to produce an overall total.

(d) The overall assessment total for unit A337

The overall total raw mark for the work related portfolio is the sum of the three totals (a) + (b) + (c), out of a maximum of 96 marks.

This final overall total must be submitted on form MS1 in the year of entry for the unit.

Form MS1 is an optically readable mark-list which will be supplied to Centres, based on entry information from the Centre.

All pieces of work which have contributed marks towards the final total must be available for moderation.

Appendix J: Support for Very Weak Candidates to Produce Coursework

Value of preparation for weak candidates

The preparation of extra materials and the careful administration needed to support very weak candidates should be given a high priority within the Science Department, because these resources can also be used in cases of extended staff absence, or for candidates who miss the normal opportunities for preparing their coursework in lessons. As the coursework is worth a high proportion of the marks for the whole GCSE it is very important that all candidates attempt every component.

Organising the work

A strict timetable improves the pace of work. A clear, achievable outcome for each lesson builds confidence and makes supervision and guidance much more manageable. An A4 or A3 tick chart for each group can be displayed and updated to confirm completion of each outcome and to indicate work that is incomplete or missing.

Collecting all work in each lesson for checking helps to ensure an appropriate rate of progress. Rough work should also be collected as it may prove useful later. Support staff can help to ensure that all work is named and handed in. A brightly-coloured and clearly labelled folder for coursework emphasizes its value and significance.

It is important to check that individual Support staff understand the internal assessment; and especially that they understand that it is the candidates' own ideas that are being assessed, so that telling them what to write, may stop them from getting marks.

The Work-Related Portfolio allows weak candidates to achieve if they are given adequate guidance and very structured tasks. The assessment criteria take account of the extent of guidance provided whilst crediting the work of the candidate.

Standard Procedures

Weak candidates can be shown a procedure and allowed to practice it before they are assessed on their ability to follow instructions independently. In this way they can learn the importance of working safely and how to follow instructions. They will probably fail to gain the fourth mark, for accurate observations.

Standard Procedures which might be more accessible to weak candidates include:

Ap 1 Lifecare

AA1.7 'Measuring the vital signs' is suitable for weak candidates but can be extended for the more able, for example by measuring before and after exercise.

- measuring blood pressure
- measuring pulse rate
- measuring breathing rate

Ap2 Food and Agriculture

AA2.2 Extracting sugar

Candidates should record observations of the sugar produced and measure the yield in order to obtain four marks for observation.

AA2.6 Testing soil: measuring pH, humus content, water-holding capacity

Ap3 Scientific Detection

AA3.2 various measurement activities, including:

- to measure a £5 note
- to measure volume and mass
- to measure pH values

Ap4 Harnessing Chemicals

AA4.17 Making soluble salts.

AA4.18 Making insoluble salts.

Ap5 Communications

AA5.5, AA5.7 to measure current

AA5.5, AA5.7 to measure voltage

Ap6 Materials and Performance

AA6.9 To measure the stiffness of a ruler

AA6.5 Bicycle frames – tubes and rigid structures

Suitability Tests

Weak candidates need a familiar context for their suitability test, so that they can describe its purpose and the desirable properties required for the purpose. The practical procedure must be simple so they can generate sufficient data of reasonable quality.

Worksheets with detailed writing frames can be used to guide candidates through each stage in their work, but the work for assessment must be their own. It is important that assistants are aware of this and do not compromise the assessment by giving inappropriate assistance.

Ap 1 Lifecare

Comparing BMI and skinfold measurements to assess body fat. (based on AA1.4)

Candidates measure height, weight and skinfold thickness. They can be helped in calculating BMI as calculation does not form part of the coursework assessment.

Ap 2 Food and Agriculture

Find the best conditions for making bread (based on A2.26)

After Activity 2.26, yeast could be used to make bread dough rise. If identical baking tins are used, such as the baking trays used for buns, the height of the bread could be measured. It could be cooked quickly in a microwave oven.

Portions of flour, water, sugar and yeast could be measured by candidates or prepared by technicians, depending on the level of ability.

Other measurements could include the temperature of the dough and the length of time for which it is allowed to rise (this should be the same for all loaves). The temperature could be classed as cold, warm, hot and very hot but could also be measured with a thermometer.

Class data could be shared to aid an evaluation.

Ap 3 Scientific Detection

Which is the best solvent for chromatography? (AA3.20)

Candidates may have learned chromatography earlier in the school or as a Standard Procedure. The separation of colours with different solvents can easily be seen. Different inks can be used with each solvent, and/or different solvent systems to extend the range of data.

Ap 4 Harnessing Chemicals

What is the best way to measure the pH of fruit juice? (AA4.8)

Measuring pH can be done simply using litmus paper, universal indicator paper and universal indicator solution, and pH meters or dataloggers. A range of juices can be available to test.

Ap 5 Communication

Should I use fax, email, text or phone calls to send information?

The time from sending to receiving a reply can be collected as data. A reliable contact might be needed to guarantee a reply and a result. Data on costs might be useful to aid the evaluation.

Ap6 Materials and performance

Find which mortar mixture has the highest compressive strength (AA6.8)

Candidates should be involved in preparing the mortar samples but it would be advisable to request sets of samples from the technicians, to be sure that some meaningful results can be obtained.

The Candidates will need to be aware of safety issues when crushing their mortar and it may be necessary to plan for adequate supervision. The SEN department may be able to help here.

Work Related Report

The work and its context should be familiar to the candidates so they can understand the extra information they find whilst producing their report.

A report can be based on one or two sources of information provided for a weak candidate, and structured by the use of worksheets or writing frames which can guide them through the process.

This information provided should include a clear account of the nature and purpose of the work and at least one financial or regulatory factor relevant to the work. The personal qualities and qualifications needed should also be included. It can be hard for a candidate to see how to rework an account which is already well-written, and worksheets or writing frames can help overcome this problem. One or two alternative sources, such as a familiar textbook, could also be available, with the relevant pages clearly identified.

The link between the work and science ideas studied in the Unit needs to be made clear, and a revision lesson could be used to consolidate a relevant science topic so that candidates can use the ideas in their Report. The essential scientific vocabulary should be made clear so candidates can learn it and use it correctly in their Report. A particular skill, such as measuring pulse rate, could be revised and possibly assessed as a Standard procedure, to emphasise its relevance to the work studied.

Worksheets should be used to guide the structure of the Report so candidates are able to organise their ideas. They should be encouraged to search for relevant visual material to add to the Report.

Coloured paper and glue sticks can help so direct quotations can be cut out and stuck into place, while different colours of paper can help with organising ideas. This engages the candidate in actively processing the information and makes clear to the Moderator the degree to which the candidate has selected and reworked the information given.

Suggestions for topics:

Ap1 Lifecare	the work of a nurse or ambulance technician
Ap 2 Agriculture and food	animal husbandry (cattle, sheep, pigs, chickens)
Ap3 Scientific Detection	Scenes of Crime Officer
Ap 4 Harnessing Chemicals	Chemical engineer or new product developer
Ap 5 Communications	TV film crew
Ap 6 Materials	builder

Appendix K: Advice to Centres on Preparation of Sample for Moderation

Specification J632: Assessment unit A337

This is to remind you of the stages in preparation of a sample of coursework for moderation. If you have any further queries about coursework, or any aspect of the assessment, please contact the science team, tel 01223 553311.

The notes which follow summarise the materials and evidence required for moderation of the coursework assessment, and explain how to use the documentation which is also enclosed.

Unit A337

Each candidate is required to complete a Work-Related Portfolio.

The final mark for each candidate comprises:

- The marks for **two** Standard Procedures from each of three Units, i.e., **six** in all.
- The total mark for **one whole** Suitability Test.
- The total mark for **one whole** Work-Related Report.

It is not permitted to aggregate part-marks from different activities as the assessment covers the candidate's ability to complete all aspect of the task.

The centre will be provided with self-carboning mark sheets (MS1). Enter the overall total mark (one data analysis + one case-study). The top copy of the completed MS1 form is sent to OCR, the second copy to the moderator, to arrive not later than 15th May, and the third copy is retained by the centre.

The moderator will ask for the work of a sample of candidates. The work of these candidates should be sent as quickly as possible to the moderator. The list will identify the names and candidate numbers for each candidate whose work is required by the moderator. This list may be kept to provide a record for you of what work has been sent.

The sample sent to the moderator should contain:

- Brief notes about the activities used for assessment.
- A description of procedures used within the centre to ensure internal standardisation of marking
- The sample of work (one case study and one data exercise) for each candidate in the sample.
- A completed cover-sheet for each candidate in the sample.

Recording of marks for assessed work

The cover sheet may be photocopied to make sufficient copies to provide for each candidate in the sample. The sheet should be used by the teacher to record marking decisions when marking the work. The pages in each piece of work should be stapled together. A paper-clip provides a convenient way of linking the piece of work and the completed mark sheet.

It is essential that a completed sheet is sent for each sample of work which is called for moderation. Enter the centre name and number and the candidate name and number at the top of the sheet.

The sheet also includes spaces which should be left blank. These will be used as a working document by the moderator when checking the work. The sheets will be retained by OCR as a complete record of all judgments related to the moderation.

The centre should also keep its own record of the work done and marks awarded.

Special consideration candidates

If a special consideration application regarding coursework marks has been made for any candidate, the work of the candidate(s) concerned should be added to the sample, with a note to explain that they are for special consideration.

The sample of work will be returned to the centre, normally early in July. A report on the moderation will be sent with the notification of results.

I hope that these guidelines are clear and will help the process of moderation to run smoothly. Please do not hesitate to get in contact if you have any queries.

Appendix L: Candidate Authentication Statement



Candidate Authentication Statement

The completed form should be retained within the Centre and should not be sent to the moderator or OCR unless specifically requested.

NOTICE TO CANDIDATE

The work you submit for assessment must be your own.

If you copy from someone else or allow another candidate to copy from you, or if you cheat in any other way, you may be disqualified from at least the subject concerned.

1. Any help or information you have received from people other than your subject teacher(s) must be clearly identified in the work itself.
2. Any books, information leaflets or other material (e.g. videos, software packages or Information from the Internet) which you have used to help you complete this work must be clearly acknowledged in the work itself. To present material copied from books or other sources without acknowledgement will be regarded as deliberate deception.

Declaration by candidate

Centre name

Centre No

Session

Year

Specification of Unit title

Candidate Name

Candidate Number

I have read and understood the **Notice to Candidate** (above). I have produced the work without any help from other people apart from that which I have declared in the work itself.
I have acknowledged all source materials in the work itself.

Candidate's signature:

Date:

Notes:

The Candidate Authentication statement once completed should be stored securely within the centre. A copy of this authentication form must be available upon request for each coursework/portfolio submission.

Standard Candidate Authentication Statement

Appendix M: Centre Authentication Form



Centre Authentication Form

OCR Advanced GCE GCSE Entry Level

One copy of this form must be completed for **each** unit or coursework component and signed by the appropriate person(s). The completed form **must** accompany the coursework or portfolios submission to the moderator/examiner or be inspected by the visiting moderator for Entry Level, GCSE, GNVQ, VCE and GCE qualifications.

It is now a requirement of the Code of Practice that this authentication form is signed.

'Authentication of candidates' work – The internal assessor must present a written declaration that the candidates' work was conducted under the required conditions as laid down by the specification.'

Centre Name Centre No

Specification or Unit title

Qualification or Unit number/component code

Session Year

Moderated unit
(Please tick box if yes)

In this case this form must accompany the sample posted to the moderator or inspected by the visiting moderator

OR
Examined unit
(Please tick box if yes)

In this case this form must accompany the packet of coursework which is posted to the examiner or assessed by the visiting examiner.

Signature(s) of internal assessor(s) – i.e. person(s) responsible for carrying out internal assessment and/or supervision (in the case of examined coursework) of work:

I/We the undersigned confirm that the candidates' work was conducted under the required conditions as laid down by the specification.

Signature:..... Print name:.....

Signature:..... Print name:.....

Signature:..... Print name:.....

Please continue on a separate sheet if required.

In order to support internal assessors in authenticating their students' work an **example** of a standard Candidate Authentication Statement is provided on the OCR Website (www.ocr.org.uk). Alternatively centres may wish to continue to use their own internal arrangements for candidate authentication, but these must provide equivalence to the standard Candidate Authentication Statement.

Notes

In the case of private candidates or distant tutored candidates, the centre must ensure that:

- *the tutor/teacher has acquainted themselves thoroughly with the general standard of candidates' work before accepting coursework for Internal Assessment. Work submitted by candidates that is atypical or inconsistent with their general standard may raise concerns over authenticity.*
- *sufficient on-going regular monitoring of the candidates' examination coursework has taken place.*
- *Centres are reminded that they must comply with restrictions that may apply to entries e.g. the exclusion of Private candidates from a specification.*

CCS160 Revised July 2005

Centre Authentication Form

Oxford Cambridge and RSA Examinations

Appendix N: Health and Safety Information

In UK law, health and safety is the responsibility of the employer. For most centres entering candidates for GCSE examinations this is likely to be the Local Education Authority or the Governing Body. Teachers have a duty to co-operate with their employer on health and safety matters. Various regulations, but especially the COSHH Regulations 1996 and the Management of Health and Safety at Work Regulations 1992, require that before any activity involving a hazardous procedure or harmful microorganisms is carried out, or hazardous chemicals are used or made, the employer must provide a risk assessment.

A useful summary of the requirements for risk assessment in school or college science can be found in Chapter 4 of Safety in Science Education. For members, the CLEAPSS guide, Managing Risk Assessment in Science offers detailed advice.

Most education employers have adopted a range of nationally available publications as the basis for their Model Risk Assessments. Those commonly used include:

- Safety in Science Education, DfEE, 1996, HMSO, ISBN 0 11 270915 X;
- Topics in Safety 3rd edition, 2001, ASE ISBN 0 86357 316 9;
- Safeguards in the School Laboratory, 10th edition, 1996, ASE ISBN 0 86357 250 2;
- Hazcards, 1995 with 2004 updates, CLEAPSS School Science Service*;
- CLEAPSS Laboratory Handbook, 1997 with 2004 update, CLEAPSS School Science Service*;
- CLEAPSS Shorter Handbook (CLEAPSS 2000) CLEAPSS School Science Service*;
- Hazardous Chemicals, A manual for Science Education, (SSERC, 1997) ISBN 0 9531776 0 2.

*Note that CLEAPSS publications are only available to members or associates.

Where an employer has adopted these or other publications as the basis of their model risk assessments, an individual Centre then has to review them, to see if there is a need to modify or adapt them in some way to suit the particular conditions of the establishment. Such adaptations might include a reduced scale of working, deciding that the fume cupboard provision was inadequate or the skills of the candidates were insufficient to attempt particular activities safely.

The significant findings of such risk assessment should then be recorded, for example on schemes of work, published teachers guides, work sheets, etc.

There is no specific legal requirement that detailed risk assessment forms should be completed, although a few employers require this.

When candidates are planning their own investigative work the teacher has a duty to check the plans before the practical work starts and to monitor the activity as it proceeds.