GCSE

Design & Technology (Product Design)

General Certificate of Secondary Education **GCSE J901**

General Certificate of Secondary Education (Short Course) **GCSE J900**

Report on the Components

June 2008

J901/J900/MS/R/08

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This report on the Examination provides information on the performance of candidates which it is hoped will be useful to teachers in their preparation of candidates for future examinations. It is intended to be constructive and informative and to promote better understanding of the syllabus content, of the operation of the scheme of assessment and of the application of assessment criteria.

Reports should be read in conjunction with the published question papers and mark schemes for the Examination.

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Any enquiries about publications should be addressed to:

OCR Publications
PO Box 5050
Annesley
NOTTINGHAM
NG15 0DL

Telephone: 0870 770 6622
Facsimile: 01223 552610
E-mail: publications@ocr.org.uk

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REPORTS ON THE COMPONENTS

Chief Examiner's Report

General Comments

There were a significant number of centres who sent paperwork to the wrong moderator during this session. All centres re reminded that there are separate moderators for B801 and B803 and separate sets of paperwork are therefore required.

The submission of the CSF (Coursework Summary Form) along with the 2nd copy of the MS1 (Mark Sheet 1) is required to be sent directly to the Moderator on or before the 10th January for January entries and 15th May for May entries. A significant number of centres failed to meet the 15th May deadline which caused problems with moderation. There was also evidence of centres sending the CSF directly to OCR which added further problems to the moderation process.

It is very pleasing to note however, that a good number of centres submitted all of the required paperwork, correctly completed ahead of the 15th May deadline. This allowed a prompt start to the moderation process for some moderators. There were also a smaller number of centres who forwarded their coursework directly to the moderator without waiting to be asked for a sample. Where there are low numbers of candidates in a centre, this positive action is welcomed by the moderators and by myself.

Where centres are submitting portfolio evidence on CD-ROM it has been found that putting a number of candidates work, in some cases all the candidates in the sample, on one single CD-ROM is both effective for centres and for moderators. With effect from now if centres wish to adopt this practice, rather than the original instruction of one CD-ROM per candidate, they may do so. This will in fact lessen costs for centres with the number of CD-ROM's and also postage costs.

There have been a number of instances where centres have submitted a mark breakdown on either the CSF (Coursework Summary Form) or equivalent for each separate teaching group. This is not an acceptable method as moderators are required to both check the additions for each candidate and the transfers of the mark totals to the MS1's or electronic equivalent. Centres are advised that candidates mark breakdowns should be presented in candidate order for the whole centre which will be the same as that on the MS1.
Increasingly there are numbers of "larger centres" entering candidates and these centres are encouraged to produce their own mark breakdown sheets in excel format which will allow for automatic totalling but also be able the data to be "sorted". If centres could then provide the candidates mark summaries in electronic format this will greatly assist moderators in their sample selection. It will also reduce printing costs for centres. Several centres did just this in the June 2008 examining session and their action was greatly appreciated.

B801 Coursework – Developing and Applying Design Skills

Centres are reminded that for Unit 1 Candidates <u>are not required to make</u> their design outcomes. However, with appropriate teacher guidance and support, the design outcomes may well be realised in Unit 3 Making, Testing and Marketing but do not have to be. There a distinct benefits from differing approaches and project for B801 and B803

B801/01 (B801A) is the code for Paper Portfolios and B801/02 (B801B) the code for CD-ROM Portfolios. Care should be taken when submitting entries to OCR to ensure the correct coding is provided.

The majority of candidates presented evidence for all three assessment objectives (IAO1, IAO2 and IAO3).

Based on the evidence seen for this June's examination session there are areas of the Product Design Specification where candidates need to show improvement, including:

- Improved communication skills which should include 2D and 3D sketching and rendering. Much of the work presented had communication of a low order but where centres taught those skills work ranged from good to excellent
- The selection of non teacher lead and appropriate start points i.e. "The problem identified". Situations / problems to be addressed which were too challenging for an average 16 year old to address in the allotted time, thus restricting access to the assessment criteria. were seen once again. A large number of centres "over prescribed" the start point which severely restricted candidates accessing the assessment criteria
- Identification of a suitable user or user group. Once again a significant number of candidates had no clear focus with their design activity because they either had not clearly identified who they were designing for or, in a few instances, when they were designing for themselves
- Evidence of both the problem and the user in IAO1. This could be in the form of photos, newspaper articles, actual data obtained from the internet or elsewhere (not fabricated) or genuine interviews or questionnaires
- Consideration and reflection of the situation and the user throughout the design activity. Often the Candidates brief and their subsequent design specification are ignored after they have been written which limits access to the assessment criteria especially in stand 3 of IAO3
- An appropriate range of clearly focused and relevant research activities. Internet downloads with no valid analysis or evaluation and mood boards without meaningful comments will gain few if any marks against the assessment criteria. Research is undertaken to gather data and information to inform the design process and this is lacking in a large number of cases
- Development of analytical skills and the willingness to use their findings in the design activity. Often when research has been undertaken the information gained is ignored. The whole portfolio should demonstrate a "flow" from problem to solution in a meaningful way
- Preparation of questionnaires (for IAO1 and for IAO2) which will illicit relevant data which can then be used to enhance the design activity. To produce a good questionnaire to elicit useable data is a high order skill which centres will need to teach candidates. Unless the questions and data are meaningful then they or no value and cannot be rewarded
- Modelling skills – demonstrating manipulative modelling skills. Modelling is a basic communication and design skill which needs to be taught at KS3 and reinforced at KS4.
- Appropriate use of CAD or Other Computer Applications (OCA) to support and enhance the designing activity. The higher marks in strand 5 of IAO3 cannot be awarded unless the ICT (ideally CAD) is used during the design activity. To produce images of what has already

been designed is not actually using Computer Aided Design software appropriately and marks will be capped in such instances

- Production of a range of detailed ideas with reflection of the user and other design influences (Page 34 of the Product Design Specification). Often ideas are predictable and so preclude access to the higher marks in strand 1 of IAO3. If, in IAO1, a candidate is going to design a jewellery box (often they say "*make* a jewellery which is not a requirement of this unit) then designing will be restricted throughout the whole process
- Detailed and meaningful comparison of ideas and development against their specification. A simple tick box or marks out of ten does not show any meaningful relationship between the specification and the ideas

Comments on Individual Assessment Objectives

Internal Assessment Objectives 1 (Maximum Marks 6)

Candidates will need to:

- provide a detailed description of the design need using various means of communication.
  - o **For one mark what is required:** A short description (two or three sentences would be more than sufficient) of the problem to "set the scene"

- extract from verbal, visual and statistical information the essential problems to be solved
  - o **For one mark what is required:** Evidence of some sort to justify / support the problem outlined. As stated above, this could be in the form of photos, newspaper articles, actual data obtained from the internet or elsewhere (not fabricated – this send both the wrong signals to candidates and limits access to the assessment criteria) or genuine interviews or questionnaires. It is not sufficient for the candidate mealy to "state" that there is a problem they need to "prove" in some way.

- identify the range of users and the market for which the product is intended
  - o **For 1 mark what is required 1:** Identification of a single user or a user group. A specific person e.g. "The senior citizen who lives across the road", "estate agents" or "left handed tennis players" are examples of users or user groups. Poor examples might be when designing "it will be for senior citizens of both sexes".
  - o **For 1 mark what is required 2:** Some actual evidence of the user – some specific information / details upon which the candidates can focus their design activity. An image and information or genuine quotes from the user, objects which mean something to the user, evidence of particular like or dislikes of the user to keep the situation "real".

- develop a design brief for a marketable product which is innovative and might involve some degree of risk taking.
  - o **For one mark what is required:** One or two sentences would be more than sufficient where the candidates individually "explain" what they are going to try to achieve to solve the problem which they have identified.

  - o **For the ward of one mark:** A candidate who takes on a challenging or risky activity or steers their design work with a social conscience for example "I will only consider recyclable materials in my designs because……………" (It will be the "because" or the "why" which is important) gains the 6th mark in IAO1. It is not rewardable for the candidate to merely say "I will do ……… because I will be taking a risk". There needs to be something tangible for the award of this mark.

As has been previously stated in reports to centres, the start point for all candidates is critical to empower them to proceed effectively as true Product Designers. Even Candidates who are unable to demonstrate Flair and Creativity will gain positive rewards providing they present evidence which meets the assessment criteria.

Examples of designing the Olympic stadium or a aeroplane demonstrate the fact that an achievable focus was absent and resulted in design work of unacceptable depth or breadth. Centres are advised to ensure that the "Situation and User" chosen by the candidates will allow access to all the assessment criteria and also allow the design activity to proceed smoothly. Centres may wish to "theme" their candidates and this is acceptable as long as there is sufficient scope and flexibility for all levels of ability t access the assessment criteria.

One serious problem noted in IAO1 s where candidate actually specifically state what they are going to design, or, in extreme cases what they have made. This just will not allow candidates the freedom to access the assessment criteria.

Remembering that candidates do not have to make what the design and how, if they design with making in mind, it will limit their design activity it is worrying when candidates clearly sate that this is the case and reflects on an inappropriate centre approach.

Once again most candidates gained marks in IAO1 again with 3 and 4 being awarded most often. The work represents about an hour's candidate work and should be presented on one or perhaps two pages (slides).

Centres are reminded that teaching activities such as planning how to approach the project, mind maps and time planners are not rewardable against the assessment criteria but are often good teaching support for candidates.

Examples of a very good "situation" and excellent "evidence" for the situation are shown below.

N.B. Internet hyperlinks <u>must not</u> be used but are quite effective if used with a presentation.

4 **Design need**

As he needs to carry so many things around with him, he would like me to design something which can store the documents and items of stationary he needs during the lesson, whilst the other books stay in his brief case. He would like it to fit into the boot of his car. He also has to show some clients documents. These documents needs to be kept safe whilst driving but be easily assessable. He needs something which can go in the back of the car whilst he travels to the location of the lesson, and be easily assessable when he gets there. Below is just some of the things he needs to travel with.

The things in blue Boxes need to go into his brief case and the things in red boxes are going to be stored in my product.

Contents page

What is not shown here is the candidates design brief.

Internal Assessment Objective 2 (Maximum Marks 23)

Candidates will need to:

- examine the intended purpose of the product;

  ◊ **For 6 to 7 marks what is required:** Some investigation into the user / user group requirements or the possibility of factors to avoid for example the use of milk in a product or the use of fur fabric for whatever reasons. Information such as "genuine" anthropometric data and ergonomic requirements or details of specific components such as battery holders where the use of a battery is obviously necessary for the problem being solved are required to gain marks in this strand of AO2.

  Sheets on "materials" are unlikely to gain marks unless there is a specific situation being addressed such as protective clothing for cyclist when information on Kevlar or Nomex would be relevant.

- identify and collect data relevant to the product(s) and its users;

- identify opportunities for developing new and innovative products to improve upon the weaknesses of existing products

- understand the issues that expand and detail the requirements of the product;

  ◊ **For 0 to 7 marks what is required:** Analysis and evaluation of existing, appropriate or inspirational products. If some method of feeding a goldfish is being designed then looking at exiting systems and methods, identifying their strengths and weaknesses together with materials and methods of construction is wholly appropriate.

Candidate who seek inspiration for other sources such as architecture when designing mood lighting or fishing tackle boxes when solving a jewelry storage problem are positively rewarded accordingly but are also likely to think and design "outside of the Box". However the analytical comments must relate to the problem being addressed.

- demonstrate an ability to express the results of research and analysis in the form of a suitably detailed specification.

For 0 to 8 marks what is required: Specification points which are "Specific" to the problem being solved. The generic statements of being ascetically pleasing or being strong or easily stored have virtually no value unless they are clearly related to the specific problem in hand. Where points are justified to inform and clarify the specific specification points then the higher marks can be awarded. The use of ACCESSFM and similar methods are not suitable for this level of study and often penalise candidates. These are all "writing frames" by a different names, and have their place when introducing product analysis and specification writing but are very limiting at this level.

Mood boards were still evident in this session. Centres should note that unless candidates provide significant detailed analysis and justification for the content of the mood board and also indicate in their designing where they have used the influences then no marks can be credited. There was still evidence of A3 sheets of cut and paste "mood board" which have no value and the contents are not used or reflected on by candidates. However where correctly undertaken they do have great value and contribute to the structure needed and "out of the box" thinking for candidates.

In general the depth and breadth of candidate research was, in many cases, insufficient for meaningful design activity. The results of research, which should consist of a range of appropriate activities, should provide data and other factors to provide direction and restriction for the design process.

This candidate combines both looking at existing products which are relevant to their project but also detailed ergonomic consideration. This is only part of their research which is shown as an example.

Once quality research and analysis have been undertaken IAO2 requires candidates to produce a specification for their chosen design activity. Where candidates justify their specification points higher marks will be awarded.

Specification

Must have/be:

• Sensitive material, as children have softer skin. Instead of using elastine or lycra, perhaps use cotton for example.

• Not too short for running and wind etc – children run around and move lots, so you don't want anything revealing underwear for example.

•Good sewing, so the garment doesn't fall apart or rip easily. Children move about and fall over more than adults.

•Cheap – an adult does not want to buy an expensive garment that the child will just grow out of.

•Easy to manufacture – no small parts because they are harmful and harder to create/sew

Should have/be:

• Easy and strong fastening – children have trouble tying bows and doing hooks/eyes etc

•Machine washable, as no doubt something will be spilled/stained on it.

•Easy to iron

•Nothing too fancy such as bows and appliqué flowers that can rip off or be broken, lost or damaged.

•Many parents have more than one child, so they may want similar items for other children without directly matching them.

•Environmentally friendly to make, with no harmful chemicals or machines used

•Not made by child labouring countries

Might have/be:

•Not white – gets dirty easier and stains show up more.

•Might be zipped or have buttons, because as before children can't do up anything tricky.

•Might be bright to appeal to children more and make them want to wear it.

•Pink and blue are a bit stereotypical, so you might want to steer away from that to get customers.

•Might come with specific shoes for the outfit

•Could be for a specific client e.g extra thin or wide

N.B. Avoid using ACCESS FM at this level of study

Internal Assessment Objective 3 (Maximum Marks 61)
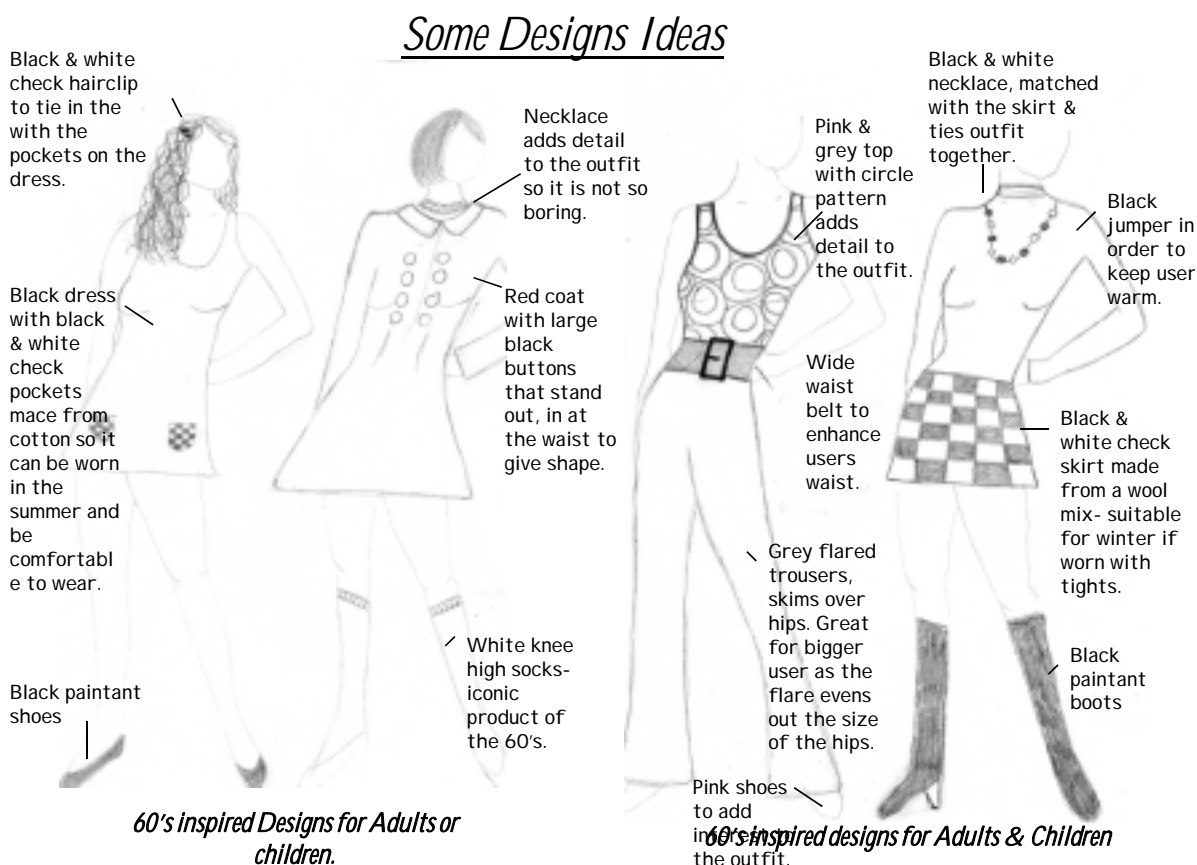
Candidates will need to:
- generate and record the development of design proposals that are innovative, show flair and imagination;
- consider user needs and issues when developing ideas;
- appraise design ideas for suitability, value and consequence;
- consider Aesthetics, Ergonomics and Function;
- use suitable communication techniques including graphics and ICT to develop and model design proposals and production systems;
- use modelling to check on the feasibility of design ideas; (1g)
- identify, with reasons for selection/rejection, the chosen design proposal(s) for prototype manufacture;
- check that the design proposal meets legislative standards. Consider patents and copyrights;
- have control on developing the product for manufacture, identify within the design proposals the resources needed for the prototype to be realised

- consider, using examples, those aspects of the design which could most easily be manufactured in quantity;
- produce a final product specification.(1e)

IAO3 has <u>five</u> separate sets of marks in five different strands. A summative approach is shown below:

1. **A range of ideas (with or without innovation and flair) showing developments**

   0-19 marks (20 - 25 where there is some "Wow" factor).

2. **Technical content (the design influences, ergonomic, function and aesthetics considerations) 0-10 marks**

3. **Specification - use and consideration (best during but acceptable after the design activity) 0- 8**

4. **Communication skills including modelling 0-8**

5. **Use of CAD 0-10 used during the design work or 0-7 if retrospective. There are up to 3 marks available for quality word processing and basic ICT drawings.**

This initial set of sketches gains marks for the range of ideas and also addresses some of the candidates specification points and other design influences.

Some Designs Ideas

Black & white check hairclip to tie in the with the pockets on the dress.

Black dress with black & white check pockets mace from cotton so it can be worn in the summer and be comfortable to wear.

Black paintant shoes

Necklace adds detail to the outfit so it is not so boring.

Red coat with large black buttons that stand out, in at the waist to give shape.

White knee high socks- iconic product of the 60's.

Pink & grey top with circle pattern adds detail to the outfit.

Wide waist belt to enhance users waist.

Grey flared trousers, skims over hips. Great for bigger user as the flare evens out the size of the hips.

Pink shoes to add interest to the outfit.

Black & white necklace, matched with the skirt & ties outfit together.

Black jumper in order to keep user warm.

Black & white check skirt made from a wool mix- suitable for winter if worn with tights.

Black paintant boots

60's inspired Designs for Adults or children.

60's inspired designs for Adults & Children

8

Some development and simple modelling is also evidenced.

Paper model of fairy outfit

Fabric wings with sequins to add detail attached with elastic

Halter, adjustable straps to ensure the top will stay up

Below is a slightly different model of the dress shown opposite, as it has a curved top and a belt. If I was to make this costume I may consider changing it in one of these ways shown in the model, as it may improve the finished product.

Strips of various materials in purple, violet and green. May need an under skirt so it is not see through.

Fitted purple top with a zip at the back to fasten easily

Fabric purple shoes to match the dress

This confident graphically presented work was preceded by a "rough Ideas" submission which is often a good way to lead candidates into more detailed thinking to address the "technical" aspects and also relationship to their specification.

Model 3

I made this model out of different types of material so that it looks the same as the idea that I had sketched out. I used plasticine to make the model out of and wore a ring with it to show what the design will look like.

The model I made out of plasticine also showed a screen on top which I sketched out on top using paint so that I get to see what the design will look like if it was a finial design. It was kind of difficult to make the design out of plastic cine as I had to make sure that the design fitted my hand and looked similar to the sketch drawing I drew. I made the model by cutting out 2 pieces of plasticine and joining them together so that it makes out the shape of the hand and fits the hand perfectly and comfortably without the itching or rubbing.

On this slide I have included 2 photographs I have taken once I had finished modelling my design. The photographs that I had taken are of a 2-D design that I had sketched out before. I modelled this idea out to ensure myself that my design works.

This electronic product is flexible so that the bride can move her hand easily and comfortably and the little flexible product is well hidden with palm of the hands. The product works when the bride shakes hands with her guests and picks up the guests fingerprint with the electronic device she will be wearing. The fingerprint then tells the bride who the guests will be through the hidden headphones she will be wearing and will be attached to the long tradition earrings which the bride always wears on a wedding. I think that this product will be quite easy to make in the industry as the plasticine are always flexible and you can get any size you want with the plasticine as it can stretch into any size. This product tells the bride everything she needs to know about her brides and does it without the wedding guests even knowing about it.

Modelling should be part of the design process to inform the design activity rather than producing a model of the final design.

The ability to communicate well using a range of communication techniques is a fundamental design skill.

Candidates are required to select an idea for development which should be clearly compared to their design specification. Additionally during the ideas stage the specification must be constantly referred to.
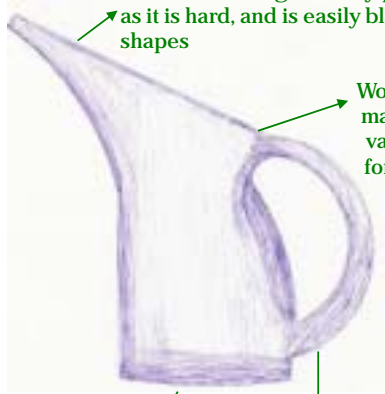
- For some candidates a formal method may work for comparing against their specification.

- Where candidate simply produce a grid and tick or cross ideas against specification points there is very limited value.

- Equally where candidates grade ideas against the specification against a 10 point scale i.e. 5/10, there is limited value unless there is genuine justification of the reasoning behind the judgement evidenced.

Design Ideas (2)

Design Idea 3

Created on a computer aided design program and rendered in biro.

Made from high density polythene as it is hard, and is easily blown into shapes

Would be made by vacuum forming

Large, curved handle

Flat, even base so the products weight will spread evenly when it is put on the ground, and it will not fall over.

Design Idea 4

Hand drawn and rendered with pencils.
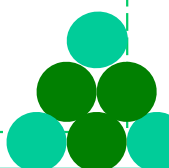
Ergonomically designed handle to fit the groove of the hand.

Flower head to allow water to disperse.

Mosaic design. Mosaic pieces made from green metallic acrylic plastic as it is hard, durable and can easily be bent and formed

Would be made by strip heating.

Best results are obtained when the user is asked to make evaluative comments on the ideas and / or development.
This example also incorporates simple CAD during the design activity

B802 Innovation Challenge

General Comments

Students and staff have again enjoyed the work they have carried out within the 'innovation challenge' with many students reflecting positively on their experience. Students continue to combine skills and knowledge of different material areas and use this to develop optimum solutions to the given design problems. All of the challenge themes have been undertaken by candidates with 'Entertainment' and 'Day at the Beach' being the most popular.

Administration

It is important that all examination papers are dispatched to the appointed examiner as soon as the innovation challenge activity has been completed. Centres should not retain scripts in the centre. Delays have been caused during this session due to late dispatch of examination scripts.

Centres are reminded of the requirement to submit details of the dates of the innovation challenge to OCR using the VAF form. A number of centres failed to submit this form before the given deadline this session. This form should be submitted by either 1st January or 1st May. Copies of the form are available on the OCR website – www.ocr.org.uk.

All materials relating to examinations sent from OCR to centres will be dispatched to the examinations officer. It is important that colleagues check with the examinations officer that they have received all relevant and most up to date information prior to starting the challenge activity.

Examination notices must be displayed in the area where the examination is to take place and an invigilator should be present.

Running the Challenge

Centres are reminded that the role of the teaching colleague is that of a facilitator and not that of a normal classroom teacher. They are there to provide access to materials, monitor health and safety issues and read the teacher script to candidates, elaborating and explaining where this is indicated. Colleagues must not give advice to students about the design or manufacture of their product or cut materials to correct shape or dimension for students. It must be made clear to all candidates that this is an examination and we are assessing the individual student's designing and modelling capability.

It is important that the theme sheet is read through with the candidates and the appropriate challenge identified along with the supplementary information. It has again been clear in this session that a number of students have approached the challenge with pre-conceived ideas and have failed to respond to the supplementary information given.

Photographs

The quality of photographs has improved this session but examiners have reported some problems with the photographs presented for assessment. These problems include; failing to focus on the object, photos being printed at a size too large for the allocated positions within the workbook and photos being printed at low resolution or occasionally in black and white.
It is important that colour images of a good quality are provided by the centre. Photographs should be of an appropriate size to fit into the space provided.
The addition of a card with the candidates name within the photo aids the return of photos to students. Centres are reminded that four "teacher" photographs is the minimum required. Additional photos can be added to the workbook. This is particularly important if it is necessary to show other parts or views of an artefact to fully illustrate the final outcome.

It is recommended that if candidates wish to annotate photographs that a second print is produced and stuck into either the appropriate section of the workbook or into the 'additional space' and clearly labelled and then annotated.
Candidates should be encouraged to stick photos into the workbook as they are printed. Care needs to be taken not to stick pages of the workbook together.

Completion of the workbook

Examiners have again reported difficulty in understanding student's work where either blunt pencils, highlight pens or gel pens have been used for written work. Please advise candidates of the need for all of their work to be legible.

Security of Workbooks

Centres are reminded of the importance of appropriate security of all workbooks between the three sessions of the Innovation Challenge.

Development of design. Evolution through making.

Initial Thoughts
Candidates used a mix of text and drawings to explore the given theme and identify possible design areas/problems. Some candidates failed to think creatively about the problem and suggested only predictable responses. Some candidates failed to consider the 'supplementary information' given within the challenge theme. Candidates need to be encouraged to take risks and think creatively.

Briefs
Briefs identified by candidates were often poorly written. Design Briefs were often too prescriptive. Many candidates confuse the design brief with the specification. Candidates should be encouraged to write clear and precise design briefs that offer scope for creativity.

User/Clients

The majority of candidates identified appropriate user groups for their products. However, many candidates failed to give any further consideration of the user during their design work.

Specifications

Specifications from many candidates were disappointing and often failed to go beyond the information given in the challenge theme or contained only vague, generic points which could apply to almost any product. Candidates should be encouraged to write detailed, justified, specific points about their proposed design. A bullet pointed format was seen to be of assistance to higher performing candidates.

Ideas
Students used a mix of drawings, text, annotation and occasionally modelling/photographs to show their ideas. Lower scoring candidates reproduced the initial thoughts from section one of the challenge activity and disregarded both the design brief and specification.
Higher performing candidates produced a range of creative ideas that clearly related to their design brief, specification and potential users. Drawings of both full designs and parts of designs were provided along with annotation relating to materials and construction methods. Development of the design from the 'initial thoughts' was clearly evident. Designs were 'rendered' to enhance communication.

Supplementary Information

High achieving candidates responded well to the supplementary information and gave clear reference and consideration to it throughout their design work.
Centres should be cautious of over preparing students for the examination from the pre-published theme sheets. Examiners felt that on a number of occasions candidates approached the examination with pre-conceived ideas. This obviously limits the candidate's opportunity for responding to the supplementary information.
Centres have been provided with an alternative theme should they wish to carry out a practice innovation challenge activity.

Communicating information through sketches, writing and photographs

The standard of design communication was generally good. Candidates presented their ideas using a range of annotated drawings and text. Higher performing candidates gave different views of objects or parts of objects and clearly communicated their design thinking. Examiners felt that many candidates work could have been enhanced with the use of rendering techniques and that centres should encourage candidates to be more adventurous in their forms of communication.

Materials, Components, Processes, Techniques and Industrial Practice

Centres are reminded that candidates should undertake prototype modelling of their design using appropriate modelling materials such as foam, foam board, card, balsa, modelling clay, mechanism kits, polymorph etc. It was apparent from some candidates' work that materials such as pine, MDF, plywood and acrylic sheet were used by candidates. Where these materials were used, the candidates' work was limited due to the problems of shaping these materials and in most cases incomplete because candidates were trying to manufacture 'final outcomes' rather than 'prototype products'.

Higher achieving candidates considered the choice of materials and components available and identified the most appropriate material for the manufacture of their product. They completed their models to a high standard and demonstrated adept use of these materials. The model they produced accurately reflected their design.

Analysis of ideas, models and prototypes

Peer Evaluation

The majority of candidates planned for the presentation and recorded the outcome. Clear evidence was seen of candidates using the feedback to further develop ideas. Occasionally, candidates failed to record the feedback or planning for this activity.

Development of ideas

Some candidates failed to develop their ideas and simply copied the design from the ideas section into the development section or produced a card model of their initial idea which was then stuck into box 8 with no further development taking place. It is important that candidates use notes or annotations to show how they are developing their design towards an optimum solution that satisfies the design brief, specification and needs of the user. Producing a model of the initial idea or redrawing the initial idea does not show development of the design.

Evaluation

Many candidates produced detailed evaluations of their prototype product. Higher performing candidates considered each of their specification points and completed the 'fast forward' section with detailed information about the future product.

Reflection

The reflection should focus on design issues rather than the process the candidate has undertaken. Many students failed to achieve high marks in this section due to focussing purely on the modelling process. High achieving students clearly identified design problem based upon their testing of the prototype and suggested alterations and improvements to the design. These alterations were shown through the use of text and drawing.

B803 Coursework – Making, Testing and Marketing products

The moderation process of this unit continues to demonstrate the improving understanding of the specification and interpretation of Assessment Objectives 4 and 5. Centres who are unsure about the delivery and content for this specification should attend appropriate in-service training as the requirements of this specification is very different from the linier specifications currently available. Misinterpreting the criteria is detrimental to candidate's progress.

It is imperative that centres who are entering candidates from a wide variety of "traditional" material areas invest time in assessing the candidates work as a centre and not as individual members of staff.
The Centres procedures should ensure that the rank order of candidates is correct. This minimises the problem of candidates being affected adversely if the centre's marks are adjusted.

Teachers are required to authenticate that the work is that of the candidate. Where evidence is e-portfolio based (CR-ROM) this is particularly important. Form CCS160 must be supplied with the sample requested for moderation and be signed by <u>all</u> staff teaching the specification.

Candidates are free to present the work in any appropriate medium, both in paper format or in electronic format on CD-ROM, but not a combination of the two. Currently CD-ROM has worked best for the marketing presentation (IAO5 strand 4) as it allows a broader variety of media to be used to create a 'Sales Pitch' or advertising campaign.

Candidates paper portfolios should be bound together or contained in some way.

CAM is to be encouraged where facilities are available; however, centres need to be reminded that candidates are to combine a range of skills and techniques when constructing their final outcome. Candidates that purely use CAM to make their products cannot achieve the highest marks in any area of Assessment Objective 4.

Centres are reminded that B801 and B803 work should be clearly separated by the centre and not submitted together for moderation.

Centres must try to ensure prompt response to examination paperwork and the forwarding of moderation samples to moderators. An appropriate postal tracking option is best in the case of work going missing.

Assessment Objective 4.

All products made by candidates must reflect the time and quality required to achieve the GCSE standard.

The range of products manufactured varied considerably in size and complexity. Centres are reminded that the unit is 20 hours and the type of product manufactured should reflect this. Some centres allowed the candidates to produce far too complex products whilst others allowed the whole of their candidate cohort to produce products which would clearly take significantly less than 20 hours.

This unit is about creating a quality 3D product capable of evaluation.

Modelling is not acceptable in this unit.

Production Log

The recording of the manufacture was generally well done with centres encouraging pupils to record their progress in real time. Some centres either produced a written time plan or a limited number of photographs which did not demonstrate the candidates understanding of their manufacturing.

The above example shows part of an excellent method of demonstrating ownership and understanding of the manufacturing process. Tools and techniques are explained and where necessary health and safety implication are identified clearly.

A general written step by step of a plan of making is not required for this specification and will gain no marks. Moderation requires proof of work being that of the individual candidate and the use of a centre generated set of "class photographs" is not acceptable and will not allow candidates full access to the assessment criteria.
The example below is of the use of CAD/CAM that shows clear understanding of the processes and techniques used by the candidate.

21) After the glue dries you then sand it down to finish it off and remove any excess glue from around the joint

22) For the animals on Noah's ark they were made using computer aided design on 2D design. I also made bases that will attach to the bottom of the animals so they can stand up. These files could then be transferred to the laser cutter
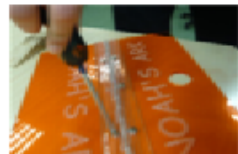
23) For the roof of the ark, that will go on top of the house, I designed a pattern on 2D design. I put in a hole on one side that can be used to lift the roof when it is put onto hinges

24) I transferred the files to the laser and cut them out onto plastic. I used 3mm orange acrylic plastic for the roof and 3mm acrylic plastic for the animals

25) Sample of animals cut out on the laser

26) When the animals and bases had been cut then they were put together as shown in the above video

27) The left over plastic from the animals I can now make into a stencil kit. This minimises waste materials so saves money and is good for the environment

28) One of the roof panels cut out on the laser

29) To attach the acrylic roof panels to the hinge you drill 2.5mm holes where you want the bolts to be and then thread the holes for the bolt

30) After that mark on the hinge where the holes on the acrylic are and then drill 3mm holes into the hinge. Then simply use a washer and bolt to attach the hinge to the roof panel

Note the use of video placed within the presentation to further emphasize the candidate's ownership of the project.

The image is clearly labeled showing there is a video clip enabling interaction with the students work.

The final Product

Marking of the final product was generally accurate. The main alterations to marks in this section was due to poor recording of the manufacturing process and limited or poor quality images of the final product.

The posters and leaflets were used at the Bath Rugby Kit Launch. It was the first time I'd seen my final products

The images above should show a range of views and information to demonstrate the quality of each candidates work.

It helps understanding when centres provide some idea of scale in at least one photograph; placing a ruler or familiar object alongside the finished product.

If there is no evidence of a completed and finished product the candidate can only achieve the lowest threshold mark for this section, providing there has been some evidence of making in the images of the manufacturing process.

Assessment Objective 5.

This objective is all about taking the product forward, and not about recapping on anything that has happened in the construction stage (Assessment Objective 4).

No repetition of the work form Assessment Objective 4 is required in this section including reproduction of images of the final product or stages of making.
Success in this objective relies upon candidates including clear and justified evidence matching the bullet points outlined in the assessment criteria.

Testing

Evaluations (of the product being tested) were generally well done with the better ones clearly referencing the specification provided on the concept page **and** by realistic user testing.
The only adjustment to marks in this section was for centres where candidates themselves evaluated against the specification but were awarded marks in the top band.

Below is a good example that shows clear user group feedback, with images, video and audio all being used to provide evidence of realistic users testing the product. Candidates should be encouraged to explore different ways of recording and presenting their evidence.


Modifications

Modifications are still being presented in written format with very few centres encouraging candidates to sketch their possible changes.

Candidates should suggest, in detail, appropriate design modifications to improve the finished manufactured prototype. This should be seen as a design exercise and is an opportunity for candidates to show how their finished product could be improved or modified. Candidates should show these as sketches or perhaps alterations made to photographs. This is an exercise that can be practiced as any product can be improved upon with a little imagination. Candidates may wish to alter or draw on original images of the finished product or use overlays in an innovative design way.
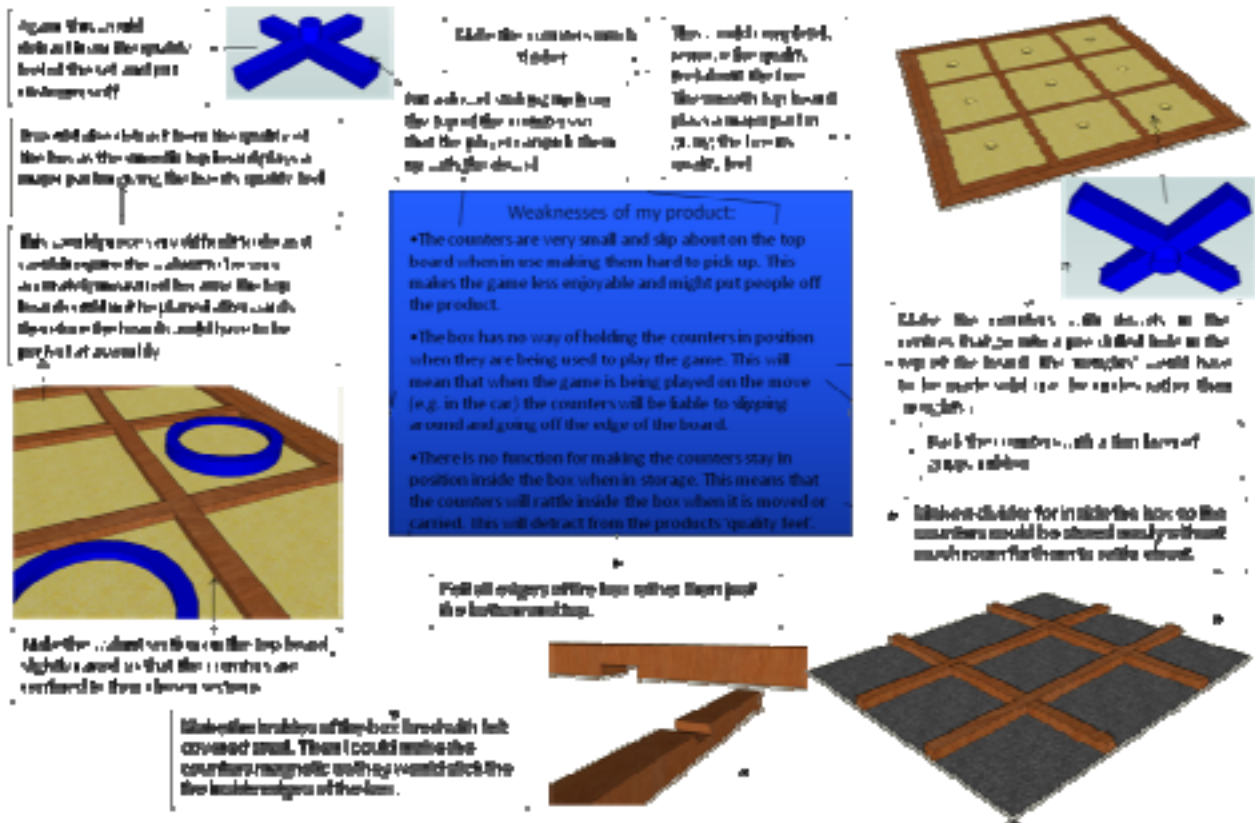
Generally this section was poorly attempted, with most candidates making reference to the construction stages, rather that thinking specifically about how the finished product could be improved. Centres are reminded that this is a design subject and sketches/images/CAD etc., with clear and detailed annotation is the best way this assessment point can be addressed.

Quantity Production

Quantity production continues to be a very weak area. Candidates do not understand how their product could be manufactured in quantity in the "Real World". Responses tend to be very generic based on theory notes or cut and paste information from the internet. Appropriate research needs to be carried out to find out how a similar product would be manufactured in a 'Real World' situation. This is best achieved as part of the general teaching of the course over the Key Stage with as wide a range of production techniques as possible being explored.

Marketing Presentation ("Sales Pitch")

The marketing presentation section has significantly improved with centres now approaching this in a far more innovative way. Higher performing candidates produced videos or placed their product in a promotional context. Many candidates produced poor quality posters and were unable to access many marks in the assessment criteria. Packaging of the product only, is not sufficient to gain full marks in this section.

The marketing presentation is an opportunity for the candidates to promote their ideas through an innovative presentation to a prospective manufacturer, supplier, buyer, retailer or *consumer* of the product.

Many very good examples were seen which included TV commercial type videos, adapted pages from magazines, with the product cut and pasted onto the page; web based selling; billboards and fake celebrity endorsements. To achieve the higher marks the end result must be realistic and "professional" in appearance and **must** include an explanation for the idea of the marketing strategy.

This is a graphic showing the product in place in a Lakeland catalogue.

The product would be displayed alongside other kitchen storage systems. It should be sold by kitchen equipment sellers, for example "Lakeland" which is a kitchen utensil company.

Promotions

Something like, this truck for example, or this bus shelter, would be great advertisement opportunities as many people who were travelling places could see my product and be influenced as they were travelling.

B804 Designing Influences

General comments

Overall the paper provided a suitable challenge to the students. The vast majority of candidates found the paper fully accessible and were able to attempt every question. In nearly all cases it was clear that candidates had carried out their research into designers and design eras. Some of the Charles Rennie Mackintosh responses showed a real insight into his work. The emphasis of this question changes from session to session, therefore it is important that candidates address the foci within the question and not merely regurgitate random facts. The design section was well answered and in general an improvement upon previous examination sessions. The development section was significantly improved with candidates systematically developing the idea whilst evaluating their ideas against the specification. The weakest feature of the design is the four specification points. Too often, candidates merely repeat points given to them in the brief. For example, the brief to design a chopping board in the style of CRM often led to specification points such as: 'it should be in the style of CRM and it should be appropriate for chopping food'. It is crucial that specification points go beyond the generic eg aesthetically pleasing, aimed at adults etc, into specific points that can be evaluated. In addition, it is crucial that when designing solutions, candidates pay particular attention to the brief and ensure that the solutions address the original need. For the systems question, this does require a systems diagram and for a food question, a food outcome <u>not</u> a packaging design is required.

Detailed comments:

Q1a Generally well done although there were still candidates who used vague 1 word answers with no justification. Many candidates scored full marks

Q1b(i) Ergonomics was often understood with the majority of candidates getting some marks for this section. Weaker candidates struggled with this and in some cases ignored the question.

Q1b(ii) Was often well answered by those who answered 1b(i). Many could give valid possible dimensions.

Q1c posed more of a problem to a larger number of candidates. Some ignored this question or did not understand the meaning of "planned obsolescence".

Q2 Whole of this question was generally well answered. Most students understood the need to protect an idea and knew of patents and copyright protection. Quite a lot described the use of holographic labels to allow the product to be recognised as the genuine article. There was a clear understanding of the reasons why people buy designer items.

Q3 Most candidates could achieve marks in this section. Almost all very familiar with both types of bottles and could give reasons for choosing poly bottles rather than glass. There were some impressive answers as to why people still used glass containers in some cases.

Q4a This had quite a varied response. Quite a few left out this section altogether. Quite a number used the words in the description box as an answer for which they were not rewarded. It was quite common to see the iconic product used to illustrate the answer to the trend setter, eg describing a mackintosh chair in section a, it was also common to see the answer repeated in the section b. Better candidates could give good concise answers.

Q4b was seen as being difficult for some especially if they confused the trend setter with the product. Some chose a different trend setter to the product. It was clear that Mackintosh had been taught by most schools and processed food was least popular. Many candidates did not understand this question but could get some marks by writing everything they knew about the product and hoping that some was valid.

Q5a. The responses to this question were very disappointing.

Many candidates produced vague, generic, subjective specification points, sometimes taken straight from the question stem. Without clear, focussed thinking at this point in the question, it is unlikely that a candidate will be able to generate and develop viable ideas to meet the need. This aspect of Question 5 is a matter for preparation before the examination.
Before entering the examination room, Candidates should have a clear idea about what constitutes a viable and useful specification points, and what kind of statements are not creditable.

A good example is shown below:

Q5b. A wide range of responses here. From a single, un-labelled sketch, though to three or four annotated designs, and on to perhaps seven or eight, 'busy' drawings, fully annotated with details of materials, sizes, user requirements, and function.

A good example is shown below:
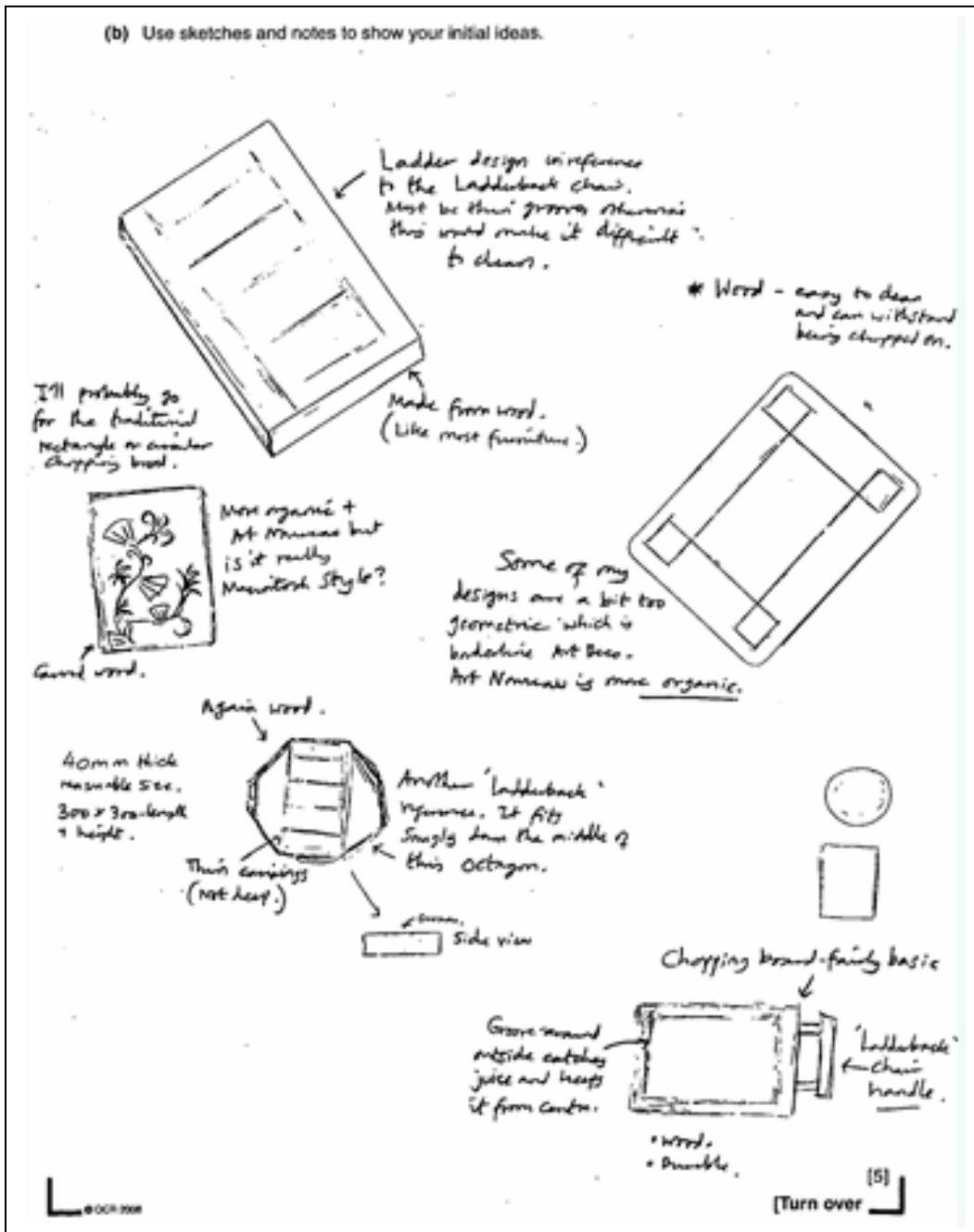
Q5c. Many Candidates provided a single drawing of their final idea, rather than a series of sketches with notes to show the developmental thinking required to take an initial idea and through consolidation, refinement, and detailing, formulate a final solution that seriously meets the requirements of the need and the specification.
The single drawing scored no more than 2 of the available 5 marks.
It was at this point in the question that the particular requirements of the need were expected to be revealed in the design thinking. Where ideas showed no evidence of a Mackintosh styled chopping board, a Quant styled hat, a 1970's style of meal, or an electronic system fridge alarm, then no marks were scored.

A good response is shown below:
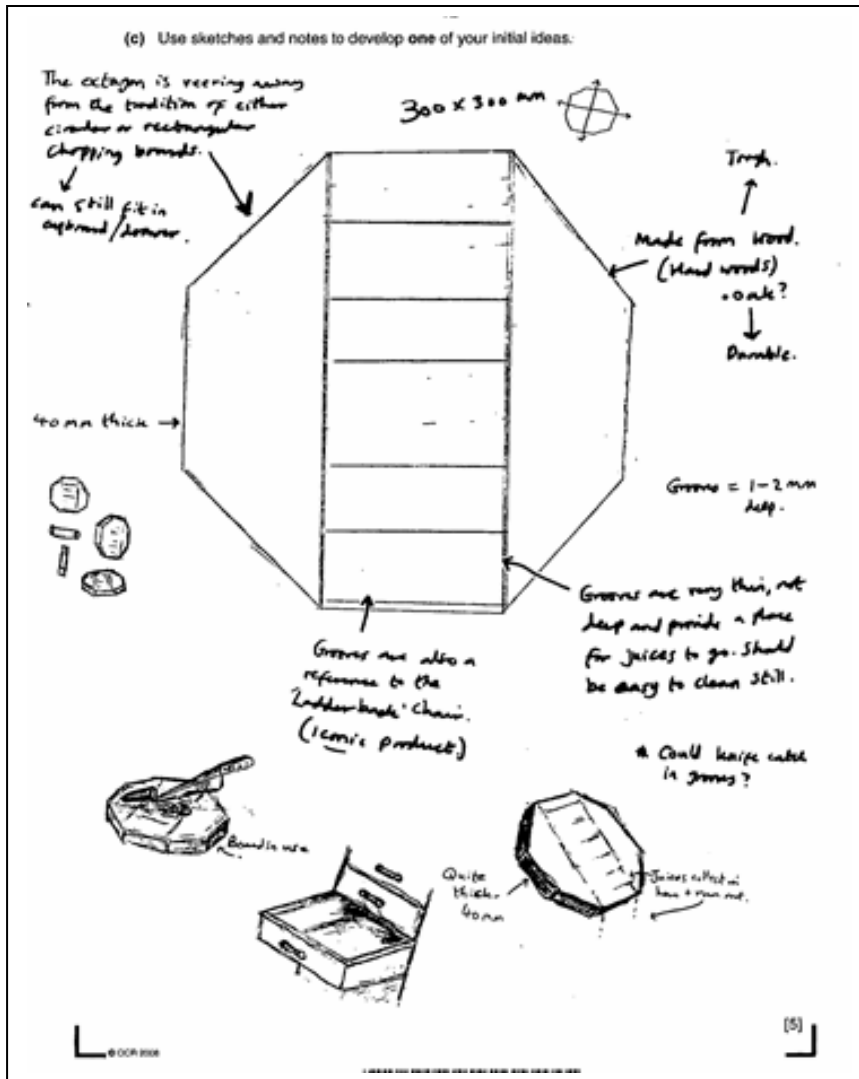
Q5d. Many candidates provided a simple single drawing of their final proposal together with brief descriptive notes highlighting particular features.
These tended to score only 1 or 2 of the available 6 marks.
To score high marks it was necessary to:

- present a detailed drawing with mention of sizes/quantities, materials/ingredients, and other relevant information sufficient to be able to make the item;

- present justifying statements explaining how the final proposal meets and satisfies each of the specification points.

As with other aspect of this question, candidates who had been well prepared for the examination, gave all of the necessary detail with their drawing and explained how their proposal satisfied the requirements of their own specification.

A good example is shown below:

Grade Thresholds

GCSE Product Design (Specification Code J900/901)
June 2008 Examination Series

Unit Threshold Marks

Unit		Maximum Mark	a*	a	b	c	d	e	f	g	u
B801 (01)	Raw	90	83	69	55	41	35	29	24	19	0
	UMS	120	108	96	84	72	60	48	36	24	0
B801 (02)	Raw	90	83	69	55	41	35	29	24	19	0
	UMS	120	108	96	84	72	60	48	36	24	0
B802	Raw	60	50	43	36	30	26	22	19	16	0
	UMS	80	72	64	56	48	40	32	24	16	0
B803 (01)	Raw	90	76	64	52	41	34	27	21	15	0
	UMS	120	108	96	84	72	60	48	36	24	0
B803 (02)	Raw	90	76	64	52	41	34	27	21	15	0
	UMS	120	108	96	84	72	60	48	36	24	0
B804	Raw	60	45	38	31	24	20	16	12	8	0
	UMS	80	72	64	56	48	40	32	24	16	0

Specification Aggregation Results

Overall threshold marks in UMS (i.e. after conversion of raw marks to uniform marks)

	Maximum Mark	A*	A	B	C	D	E	F	G	U
J900	200	180	160	140	120	100	80	60	40	0

	Maximum Mark	A*	A	B	C	D	E	F	G	U
J901	400	360	320	280	240	200	160	120	80	0

The cumulative percentage of candidates awarded each grade was as follows:

	A*	A	B	C	D	E	F	G	U	Total No. of Cands
J900	0.5	6	24	46	63	77	88	97	100	1249
J901	1	9	34	60	77	88	95	99	100	2794

Statistics are correct at the time of publication