

GCSE 2003

June Series



Report on the Examination

Design and Technology: Graphic Products

3543/3553

-
- Full Course
 - Short Course

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Kathleen Tattersall, Director General

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Design and Technology: Graphic Products

General

- This is the first written paper of the new Specification. The format and much of the content was retained from earlier papers but the new Assessment Objectives changed the weightings and demanded that the revised subject specific content had to be addressed.
- The section on Social, Cultural, Moral and Environmental Issues was particularly well done.
- There was ample evidence that centres had used the preparation sheet as intended, however some topics appeared to be only superficially investigated.
- Centres are to be congratulated for entering candidates for the appropriate tier as there were fewer transfers recorded on the Attendance/Mark Lists.
- Centres continued to prepare candidates well for the design questions and the quality of such work continues to improve. This year more candidates accessed the higher range of marks which suggests better subject specific knowledge either through examination preparation or as part of the whole course.
- One-word answers were rare, but some candidates did not give specific justifications with their responses and many failed to connect their response to the context in which the question was set.
- As in previous years the paper followed AQA's style of a 'minor project' and most students responded well to this format. Total misunderstandings of questions were extremely rare.
- As with last year's paper the quality of 'graphic' design continues to improve but 'practical' designing was less well done, relative sizes, the positioning and alignment of interlocking parts left much to be desired.

Full Course

Tier F

The paper was generally well answered. The time allocation was satisfactory with very few uncompleted scripts.

Much of the 'graphic' design work was very good with talent being clearly demonstrated by many candidates.

Some candidates did not show sufficient knowledge of British Standards conventions.

A sizeable number of candidates were poorly equipped for the examination, usually without coloured pencils to use in answering the design question.

While Quality of Written Communication is not an assessable part of the paper some responses demanded coherent written statements. Frequently, imaginative spelling, un-decipherable handwriting or continuous multi clause sentences made the interpretation of answers difficult. Where possible credit was given.

Question 1 – Representing Data

This was well understood and provided the candidates with a good introduction to the paper. Most candidates were able to draw a simple bar chart to graphically communicate statistics.

- (a) Most candidates identified the ‘cat’ and ‘dog’ bars correctly. Some lost marks on the accuracy of the two remaining bars.
- (b) Well answered by candidates equipped with coloured pencils and hatching was accepted.
- (c) The majority of students achieved full marks for the quality of colouring. A small number used hatching, frequently freehand, and marks were awarded according to quality.

Question 2 – Designing

This was well done by most candidates and many gained high marks. Generally, the quality of sketching, use of colour and annotation was satisfactory.

Box 1: Letterstyles (Font)

The majority of candidates drew two different ideas for the letterstyle for ‘Petzone’ but failed to produce any development of either idea as required by the question, therefore development marks were rare. Letterstyles were sometimes single line drawings and hence did not achieve full marks.

Box 2: Ventilation

Ideas for ventilation holes were well done by the majority of candidates but again candidates failed to develop a suitable idea.

Box 3: Logo

Well attempted by most candidates. Logos were often simple and adequate 2D drawings representing an animal theme. Some candidates attempted a pictorial logo but these were very rare. A minority confused motto for logo.

Evaluations were often descriptive or with simple reasoning, but showed an improvement on last year.

The overall quality of sketching was satisfactory to good with only a few examples of poor line work or confused drawing.

Colour was either indicated in the annotation or by application and both were acceptable in this question. Some candidates failed to comply with the number of stated in the specification by adding extra colours.

Question 3 - Presentation

The question was intended to examine the candidate's skill at producing a quality presentation drawing.

- (i) The majority of candidates did use and comply with the specification points, although some candidates failed to restrict their drawing to the front panel and instead extended their design to the handle.
- (ii) The quality of drawings was usually satisfactory to good, but not usually of a 'presentation drawing' standard. Weaknesses included the use of felt tip pens, blunt pencils and unstructured line drawings
- (iii) The vast majority of candidates scored highly in this section. Most successfully brought through their ideas from Question Two on to the outline of the pet carrier. Very few altered their formative ideas and all candidates managed working on two sheets well.
- (iv) Many candidates were able to show a suitable layout of their designs.
- (v) Colour enhancement was usually satisfactory but there were few examples of well rendered designs, most were block coloured. Where good quality tonal control or good quality block shading was offered marks were awarded accordingly as befits the product which as an inexpensive item would not have a relatively expensive or elaborate printing technique applied.

Question 4 - Third Angle Projection

- (a) Overall, this section was well attempted with most candidates identifying and completing the plan. Common faults included untidy or indistinct lines that were difficult to see, inappropriate thickness of the missing parts that did not show alignment with the given detail and missing lines on the right hand locking flap.
- (b)
 - (i) This was the lowest scoring section on the paper. A large number of candidates did not attempt it. There is poor knowledge of centre lines and the 3rd angle projection symbol.
 - (ii) Most candidates identified length and width, but fewer correctly identified overall height. Applying British Standards continues to be a problem. Many candidates indicate some basic knowledge but did not apply the standard conventions. Very few candidates scored more than half marks.

Question 5 –Materials.

The first parts of this question attempted to test the candidate's knowledge of materials used in the making of a pet carrier box. Many candidates failed to link the material with its application and gave generalised responses rather than focused answers.

- (a) Most candidates correctly communicated the structure of corrugated card board although some variations were attempted and these were rewarded according to their merit. Most showed a cross sectional view of the structure. Most were well labelled or annotated. A common error was to draw a surface development (net) of the carrier box.

- (b) Quite a well answered section when the response focused on the material in its context, generalisations were marked on merit.
- (c) Smart/New Materials are in the new Specification and were highlighted in the Autumn Meetings but unfortunately this question was poorly answered. Some candidates understood the meaning of thermo but did not explain the ink's reaction to heat, hence few could provide a suitable use of thermochromatic inks.
- (d) Generally well attempted, most candidates gave 'storage' or 'transport cost' answers and were able to explain and justify their responses.

Question 6 – Mechanisms

The majority of candidates attempted this question with varying degrees of success. Some were well thought out and included essential construction and component details.

- (a) Most candidates appeared to understand the workings of the toy and could visualise its action. Many applied some centres to the mechanism but only a small minority faithfully copied the correct convention. The middle pivot was frequently omitted and only a few candidates placed pivot point 2 above the mid-point of the lever so as to achieve greater movement from the head of the dog.
- (b) (i) This section was well attempted, usually with simple 2D drawings. Not many successfully used exploded views or included a hole allowing the connecting component to pass through the card without tearing.

Weak candidates merely copied the given illustration. Most attempted to draw a paper fastener or other component but were unable to label them.
- (ii) A poor knowledge of technical components was evident with 'split pin' the most common response. To overcome possible variations in vocabulary and regional differences examiners were instructed to credit a range of alternative names ranging from 'butterfly pin' to 'star binder' if the sketch matched the name.

Question 7 – Environmental, Cultural and Social Issues

- (a) Well answered with most candidates responding with 'causing offence', some even gave possible examples and were rewarded accordingly.
- (b) (i) There were very few successful responses to this question. Answers were often of a general nature – 'to make the package look better', rather than 'instantly recognisable' or 'easy to understand in any country'
- (ii) This was frequently well done with rain drops and shelters clearly drawn. Some candidates failed to produce a stylised 2D drawing in a similar style to that given as an example, a small number copied the given symbol and block colouring left much to be desired especially if a felt pen was used.
- (c) (i) Candidates did not fully understand the term 'landfill'. Common responses included 'a type of rubbish tip' or 'dump'. A fuller and correct description permitted more marks to be awarded.

- (ii) Even if an understanding of 'landfill' was proved incorrect many candidates scored well on this section by correctly stating two of its disadvantages. Typical answers included references to pollution, low house prices and possible dangers. All were rewarded on merit.
- (d) This question required candidates to give answers in the context of a milk container some forgot this fact and appeared confused repeating the same answers for both reasons. Many candidates used the key words – 'recycle', 'refill' and 'reuse' but often with the wrong meaning therefore many candidates gained only a few of the marks available.

Full Course

Tier H

The majority of candidates attempted all the questions and there were very few sheets left blank. The spread of marks appears to be greater with more candidates accessing the high range. This may be because of the revised subject content and the change in Assessment Objective weighting.

As with Tier F, good quality graphical designs and drawings were evident and these tended to score well, but there was also a general lack of certain specific subject knowledge which prevented the many candidates from reaching higher mark range.

Question 1 - Representing Data

A well answered question where many scored full marks.

- (i) The vast majority of candidates scored well, accuracy and isometric projection were usually well presented. A few candidates failed to draw the correct bar height and lost some aspects of the projection.
- (ii) Colouring to give an enhanced 3D effect was well done with tonal control and/or shadowing techniques evident. It was difficult to reward tonal control where felt water colour pens had been used.

Question 2 – Designing

Generally a well answered question allowing talented designers to demonstrate their capabilities. The carrier is a cheap, card box. It does not have expensive printing techniques on it and to keep costs down the colour range is limited. However, if candidates provide evidence of higher graphical skills within the given specification they were rewarded as was simpler but effective designs and techniques.

The question required the *development* of ideas, but many candidates were content to present a number of separate and discrete ideas with no clear developmental work evident. These candidates could not access maximum marks. Some candidates chose not to use the free space for their work, but preferred to draw a number of pet carrier boxes and decorated each in turn. Whichever method was evident the same marking criteria was applied.

- (a) Many satisfactory letter styles (fonts) were generated. Some imaginative work used the animal theme but these tended to lose clarity. Single line lettering was popular when ‘block’ would have scored better.
- (b) The logo had to have an animal theme and most did. The term animal was given a wide definition and creatures of every kind were accepted. A minority of candidates appeared to confuse a logo with a motto and many used time inventing slogans when an appropriate picture or ideogram would have sufficed.

- (c) The development of ventilation vents presented problems for many candidates, The majority simply drew circular holes. More creative designers incorporated the vents in to another part of the overall design and offered alternatives to the round hole.

Generally the quality of sketching was good. Line differentiation was well applied, images tended to be sharply drawn and quick ‘informal’ sketches common. All these factors aided the communication of ideas and were rewarded on merit.

The use of colour was restricted in keeping with the function of the carrier box, and the candidates were free to indicate their ideas in any appropriate way. The majority kept to the limitation and either added simple colouring or labelling to these formative sketches.

As in earlier years annotation was required but this year it usually took the form of descriptive text or labels rather than a critical appraisal of ideas, as a result few candidates achieved maximum marks.

Question 3 – Presentation

The ideas generated in Question 2 were expected to be carried through on to the presentation drawing. This was the best answered question on the paper with many candidates being very successful and scoring high marks.

- (i) The specification was well applied and the ideas from Question 2 brought to this drawing. Fortunately only a few candidates saw fit to alter their designs from the preliminary sketches on the previous page.
- (ii) Drawing skills were well demonstrated with candidates recognising the need for quality presentation.
- (iii) The layout of the information on the front panel presented no problems to the majority of candidates. Symmetry, balance and alignment were frequently displayed. Some placed the ventilation vents in areas that would have weakened the box but most were satisfactory. A minority of candidates of all abilities insisted on including additional text to the layout often to the detriment of the overall layout. Whilst they were not penalised, they did use time and effort which could have been more beneficial elsewhere on the paper.
- (iv) Much good work was evident, many candidates demonstrated advanced colouring techniques e.g. tonal control, shadows, perspective. Where ‘flat’ block colouring was applied in many cases it was done to ensure a regular, even and consistent covering.

Question 4 – Evaluation and Modifying a Design.

Candidates were asked to consider ways of improving the given handle design so that its strength and comfort would be improved. The given text and accompanying sketch implied that the handle was too near to the top edge and the circular cut out was uncomfortable.

- (a) The question asked for a development of ideas but unfortunately many candidates only offered one or two discrete ideas. The majority of candidates addressed only the comfort issue by either sketching or annotation. Basic ergonomic considerations were recorded and rewarded. A few candidates recognised that the size and position of the cut out improved the strength of the handle. The ideal solution of folding the cut out back on its self, thus radiusing the edge and

adding extra layers of card to the edge of the cut out was appreciated by only a very few of the most able candidates.

Annotation giving reasoned descriptions of the designs allowed maximum marks to be gained. Often good annotation explained rather indistinct or confused drawings.

- (b) The improved design was to be drawn on the given detail of the pet carrier handle. This was almost universally well done. Symmetry and position were rewarded.
- (c) The majority of candidates correctly identified the detail drawing as half full size and gave the completed the convention for the scale. However, it is evident that many candidates are not being introduced to scales. Although some centres gave the correct answer of 1:2, there are others where apparent random guessing occurs or it was ignored all together.

Question 5 – Third Angle Projection and British Standards.

Most candidates attempted this question and all were successful in some part. It did permit differentiation as few were correct in all aspects of the question. It was intended to test the candidates ability to read and complete a plan elevation and apply BS dimensions.

- (a) Many candidates correctly added the inclined locking flap to the plan. It was a mirror image of the given left-hand flap.

The missing right locking flap was usually correctly drawn, but some failed to add the correct number and position of the short vertical lines representing its corners in the front elevation.

Three lines drawn between the locking flaps represented the centre card's vertical thicknesses. Again most candidates successfully added this feature, although a small number lost accuracy by making the lines too far apart.

- (b)
 - (i) There were very few correct symbols for 3rd Angle Orthographic Projection.
 - (ii) When attempted, many candidates successfully identified the length and width of the carrier box. Identifying the overall height was less well done, many candidates content to add dimensions to any vertical distance.

It is pleasing to note that this year many centres scored well by adding dimensions that complied, in the most part, with British Standards. Unfortunately some centres appear not to be teaching BS conventions to the detriment of their candidates.

This year it has been noticed that some non-BS dimensioning have been used. It is suspected that these originate in American computer software. Centres are reminded that whilst such programs are permitted in coursework, the Specification states that British Standards will be tested in the written paper.

Question 6 – Materials.

This question allowed the candidates to show their knowledge of materials and components used to make a corrugated card pet carrier box. Unfortunately many candidates failed to apply this context in their answers.

- (a) Most correctly identified the distinctive features of corrugated card and provided an adequate explanation of its construction. Candidates who drew multi-core corrugations were not penalised if their descriptions were correct.
- (b) It was in this section where many candidates listed the general properties of corrugated card rather than those properties which make it suitable for the stated use – a pet carrier box. To simply describe ‘light’ or ‘strong’ without relating that property to the context could not be fully rewarded. One word answers prevented any worth while mark being awarded.
- (c) This question was better answered with the weakness of wet card being the favourite disadvantage given.
- (d) The problem of an ‘adhesive free’ seam defeated many candidates. Some suggested a variety of different simple tabs or tongues and slots, but without glue they failed to meet the requirements of the Question as friction appeared to be the sole means of holding the pet box together. Other candidates offered ‘arrow head’ shaped tabs which were rewarded according to their potential for holding the seam in alignment and together. The intended answer was the use of heavy duty staples or stitching but only a few candidates employed these ideas in their solution.
- (e)
 - (i) Smart and new materials were highlighted in last year’s Autumn Training Meetings and are in the new Specification. Candidates either were familiar with the concept and scored well, or were unfamiliar and did not.
 - (ii) Many candidates deduced a connection with heat but failed to correctly describe the reaction of the ink with heat. It was confused with the application of metallic foil.
 - (iii) If part ii) was misunderstood then it was unlikely that a candidate could give another use for this ink. T-shirts, wine bottle labels and some postage stamps were amongst the correct responses.

Question 7 – Mechanisms

This question was intended to test whether the candidates could visualise and draw the movement of basic linkages used in a graphic products mechanism.

- (a) This part required the candidate to show if they understood how separate parts fit together to produce the desired movement. Examiners were trained to recognise the candidates’ responses as first ideas and judge their potential to work as desired after a little refinement. Marks were awarded according to this criteria.

There were many partially successful designs that gave the necessary movement. It was not a strict requirement that every detail, slot or pin joint should be in its optimum place. Marks were awarded as the design merited.

Common misunderstandings included the correct movement of the puppy’s ears in an arc, and not simply straight up and down, and that linkages were ‘glued’. Many candidates employed components not given in the question e.g. string, elastic bands.

- (b) This piece of extended writing taxed many candidates. They were asked to explain how their mechanism worked rather than the ‘perfect’ answer. Many showed a weakness in recording a sequence of events.
- (c) It was evident that most candidates could not successfully visualise the assembly. The card strips were to be loosely joined yet glues were common, as were pins. Components were fixed without clearance holes. A range of split pins, star binders and paper fasteners were named and allowed, but clips and drawing pins were not.

The quality of sketching of the loose joint, either exploded or assembled, was disappointing even by those candidates who scored well on Question 2. This is a topic which centres may wish to address.

Question 8 – Environmental, Cultural and Social Issues

- (a) Many candidates recognised that some images and colours could be offensive in other societies and cultures. Examples were frequently given.
- (b)
 - (i) Some candidates ignored the context of the question - why blister packs are popular with retailers. Marks could not be awarded if reasons connected to manufacturing processes or costs were given. Popular correct answers included references to security, easy of display and visual attractiveness.
 - (ii) This was well attempted with the majority of candidates stating that customers benefited from seeing what they were about to buy. Unfortunately some candidates again missed the point and reiterated cheapness or ease of making.
 - (iii) Many candidates realised that blister packs tend to be extravagant with materials but had difficulty making a short coherent statement to that effect. Marks were awarded on merit.
 - (iv) Oil was the non-renewable resource used to make the ‘blister’ element of the pack and not as many candidates suggested ‘plastics’.
- (c)
 - (i) There was some misunderstanding about what a ‘land-fill’ site was. In simple terms it is an old quarry or gravel pit into which mainly household rubbish is put before it is buried and then possibly landscaped. It is more than a ‘rubbish dump’ or a ‘tip’. Marks were awarded according to the fullness of the answer.
 - (ii) It was pleasing to note that almost all candidates were familiar with the concept of ‘biodegradability’, although some had difficulty in expressing it. Some answers were very detailed and deserved more than the permitted maximum for the question.
- (d) This question was directed at exploring the social responsibility of a graphic designer when new products are being designed. Many candidates recognised this; but too many looked at the individuals’ personal practices e.g. recycling sketching paper, or use only ozone friendly aerosol sprays. Others focused on manufacturing by stating that only wood from managed forests should be used or factories must not pollute the atmosphere. While these are commendable observations they do not relate to the products which the designer creates. Preferred answers included reference to encouraging recycling, reusing old products, reduced packaging and less reliance on non-renewable materials.

Short Course

Tier F

The paper, as last year, was answered well and the work produced was of a similar standard. The majority of candidates completed the paper and achieved some degree of success in all questions. The marks achieved by most candidates were within the range 40 – 75 with a few below 30 and over 90.

Question 1 - Representing Data

- (a) In nearly every case candidates gained full marks for accuracy. Very few were unable to deduce the height of the hamster and bird bars from the scale given, a task possible with a basic school ruler.
- (b) A few candidates did not complete the key although the bar chart itself was coloured.
- (c) The quality of the rendering was generally good, neat, even and within the borders of the bars. When hatching was offered it was judged against the same criteria.

Question 2 – Designing

All candidates attempted this question, most achieving at least 75% of the marks available. The quality of sketching in most responses was adequate and the evaluation in both instances tended to be superficial. Most candidates adhered to black, white and one colour.

Letter style (Font):

In nearly all cases candidates produced two ideas for letter styles. However, there was not always evidence of development of the lettering. Most candidates created a style which was more than a simple single line.

Logo:

The majority of candidates produced two ideas, but development was frequently missing. The animal theme was evident in almost every case, although some candidates used images of bones and other animal related items such as dog kennels, feeding bowls and toys which could not be fully credited.

Box 3: Nearly all candidates gained full marks on this section.

Question 3 – Presentation

All candidates used the given elevation with only a small number extending their design on to the handle or colouring the given ventilation holes.

- (a) (i) Most candidates successfully used the given specification and brought it forward to this section.

- (ii) Candidates produced generally satisfactory drawings of their designs. There were a few examples of very good quality drawing demonstrating controlled lines and differentiation of thickness.
 - (iii) In almost all cases the ideas from Question 2 were successfully brought forward accurately and gained full marks.
 - (iv) Layout in most cases was effective and satisfactory composition was evident. Poor spacing and crowded layouts were fortunately rare.
 - (v) The quality of colour was generally good with very few examples of no colour or using more than black, white and one other colour.
- (b) As in previous years dimensioning to British Standards caused most problems. The majority of the candidates did not attempt this part and the few that did gained more than two thirds of the marks.

Question 4 – Materials.

- (a) The majority of candidates understood the correct structure of corrugated card and produced acceptable sketches and correctly labelled their drawings.
- (b) Most candidates gained some marks in this section referring to the structure of the corrugated card and its context as a pet carrier box in their responses.
- (c) This part produced many incorrect responses with only a few candidates understanding what a smart material was. Likewise, there was limited success describing how a thermochromatic ink reacts.
- (d) Most candidates were aware of ‘flat pack’ and usually could explain an advantage to the manufacturer. Relating it to the manufacturer allowed some discrimination between responses.

Question 5 – Processes and Manufacturing.

- (a) Most candidates could visualise the workings of the toy and understood the function of the main pivots but few gained the mark for the pivot which would produce asymmetric movement.
- (b) Most correctly drew a paper fastener with varying degrees of quality. The name of the Fastener used was liberally interpreted to accommodate different student’s experiences.
- (c) Many candidates responded to this part by naming materials rather than equipment, or only gave the equipment and an incorrect safety consideration.

Question 6 – Quality Control and Computer Systems.

- (a) Nearly all candidates correctly answered this part of the paper.
- (b) A varied response to this section. There was only a partial understanding of the term CAM, and many candidates did not respond correctly to the advantage of a computer system in multiple production.

Question 7 – Environmental, Cultural and Social Issues.

- (a) Most candidates understood the significance of colours and images but failed to give an example in order to access full marks.
- (b)
 - (i) Nearly all candidates responded by suggesting signs and symbols were for advertising the product or informing the customers about the product in the package rather than being a universal language and being quick and easy to read.
 - (ii) This was generally well attempted, many candidates achieving at least over half marks.
- (c) Parts (i) and (ii) were generally well answered with many candidates showing some understanding of landfill sites and their disadvantages.
- (d) Many candidates successfully answered this part with varying degrees of success. The response to the glass bottle was usually better than those candidates who selected the carton.

Short Course**Tier H**

The paper allowed the majority of candidates to attempt all questions and skills and knowledge were applied effectively. There were very few blank sheets. The quality of the ‘design’ question was high but subject specific knowledge and application of techniques was rather disappointing. The examiners have noted that although the quality of ‘formal’ designing was generally good, the use of sketch designing as a means of communicating a solution to a practical problem were markedly poorer. A wide range of marks was noted ranging from below 40 to the low 90s.

Question 1 - Representing Data

This was particularly well done. Accuracy and quality of rendering was that expected from Higher Tier candidates.

Question 2 – Designing

As in the other papers, the required number of ideas were presented but evidence of the development of an ideas was rare. Evaluations were frequently superficial limited only to labelling or self congratulatory statements. Critical evaluations of the designs and ideas was not common.

- (a) Some imaginative letter styles were illustrated, but many were only single line drawings.
- (b) Logos gave some candidates the opportunity to draw cute, injured animals as well as some based on more traditional and well known charities. Sometimes non animal ideas were used and these did not meet the requirements of the given specification.

- (c) The ventilation vents required the candidates to be more creative if more than circular holes or slits were required. A pleasing number of responses displayed novel solutions with a variety of cut outs representing paws, bird's feet and dog's bones.
- (d) The vast majority of candidates obeyed the specification and limited the use of colour to black, white plus one other.

Question 3 – Presentation

Some excellent presentation drawings were suitably rewarded, drawing, layout and colour were faithfully applied. Only a few candidates strayed off the given front panel of the elevation on to the carrying handle.

- (a)
 - (i) The specification was usually faithfully applied. However, a printing error on this page stated that 'a maximum of three colours' were to be used. If candidates had used more than black, white plus one other because of this confusion, *the candidates were not penalised*. The examiners were instructed to reward the response presented.
 - (ii) Many examples of good drawing were presented, feint, dark and sharp lines were evident.
 - (iii) Layout was usually satisfactory with only a minority of designs showing crowding or untidiness.
 - (iv) A range of proficiency in rendering was evident with examples ranging from excellent to poor. Marks were awarded accordingly.
- (b) Many candidates ignored this part. As in previous years when attempted it was not well done.

Question 4 – Evaluation and Modifying a Design.

Some candidates considered how strength and comfort could be improved. But the majority limited themselves to comfort.

- (a) The question asked for a development of ideas but candidates only offered one or two discrete ideas. Some evidence of ergonomics were shown A few candidates recognised that the size and position of the cut out improved the strength of the handle. The ideal solution of folding the cut out back on its self, thus radiusing the edge and adding extra layers of card to the edge of the cut out was appreciated by only a very few of the most able candidates.
- (b) The improved design was drawn on the given pet carrier handle. This was well done.

Question 5 – Surface development and dimensioning.

This short question tested the candidates' ability to read an orthographic projection drawing, and most candidates proved that they could.

Many candidates correctly added the inclined locking flap to the plan. The missing right locking flap was usually correctly drawn, but some failed to add the correct number and position of the short

vertical lines representing its corners in the front elevation. Three lines drawn between the locking flaps represented the centre card's thickness.

Question 6 – Materials.

- (a) All candidates were aware of corrugated card and most successfully communicated its construction with appropriate notes and sketches.
- (b) Many candidates who attempted this section tended to respond with generalisations about corrugated card rather than its suitability for a pet carrier box. Responses such as 'strong' or 'light' failed to be rewarded unless accompanied by a suitable explanation. The most popular disadvantage was related to the effects of wetness on the card.
- (c) A method of joining the tab to the box presented many problems to some candidates. Many candidates thought that a simple tab and slot, held by friction, would be adequate. Locking tabs or staples were the preferred solutions. The quality of sketching in this question was not well done, some were confused and difficult to interpret.
- (d) Smart materials is not a well recognised phrase and thermochromatic inks were rarely understood.

Question 7 – Environmental, Cultural and Social Issues

This question was intended to test the candidate's awareness of the new Assessment Objective and many candidates shown a good understanding of the basic concepts. Although Quality of Written Communication is not assessed in this paper, many responses were very difficult to read and hence reward, either because of the English or quality of hand writing.

- (a) This was well answered with an awareness of the potential of offending minorities clearly described usually related to race or religion.
- (b) Knowledge of the advantages and disadvantages of blister packs was again evident. However, some candidates did not always focus their responses on to the context given, on retailers not manufacturers, on consumers not retailers and on waste not appearance.
- (c) Many candidates appreciated the special features of 'landfill' over a general rubbish tip, and the term the term 'bio-degradable' was generally well understood.
- (d) The ways by which a graphic designer can reduce damage to the environment was usually well answered although some candidates confused re-cycling issues with re-using and refilling. Responses which gave two very similar reasons were not permitted as double rewarding would have resulted. Each reason had to be clearly distinct for maximum marks.

Coursework

General

2003 was the first cohort of candidates to complete the new Design and Technology Graphic Products specification.

- Many centres have amended their teaching schemes to address the 3 assessment objectives.
The assessment objectives state :-
- Candidates should be able to demonstrate their design and technology capability through acquiring and applying knowledge, skills and understanding:
 - a. *Of materials, components, processes, techniques and industrial practice;*
 - b. *When designing and making quality products in quantity;*
 - c. *When evaluating processes and products and examining the wider effects of design and technology on society;*
- These three assessment objectives form the basis of the assessments for this GCSE specification.
- Many centres had also started to address the recommendation that a design folder, associated prototypes and the creation of a final product or range of products should be completed within the recommended 40 hours.
This has required a different approach in centres, to ensure that only relevant and appropriate work is put forward for assessment.
- It is important to appreciate that the *Making Element* has double the value of the *Designing Element* in this and all the other Design and Technology Specifications.
- There should be a correlation between the time and effort spent on each of these assessment elements, (*Designing Skills* and *Making Skills*) and their respective values in the subject's holistic assessment.
- Within some centres adjustments were made due to the lack of rigour and quality exhibited by candidates within the *Making Element*

Designing

ICT

- Candidates have continued to exhibit a wide range of skills and techniques at the design stage. There is an increased range of ICT programs being integrated into candidates work. However it must be remembered that candidates need to exhibit a balance between graphical and ICT applications if they are to achieve the higher GCSE grades.

- It is essential for candidates using ICT to save the incremental stages involved in the development of their images or products. These need to be made available to the moderator. Professional standards are being created, however it is important to convey to the moderating team how the final products or images were achieved. This stops confusion. Often scanned images, clip art or other digital images are rewarded as being created by the candidate. By storing the incremental stages, candidate's work can be rewarded at a higher level.
- With many centres utilising the ProDeskTop program it must be remembered that the images created are 3D, but these images do not satisfy the requirements of the Making Skills assessment in this GCSE specification.
- ICT is being used throughout the specification and it is pleasing to see the growth of specialist programmes.

Research

- During the early part of their design work candidates are using programs to illustrate clients requirements. Creating tables and charts to show potential user preferences. This is a key element of a candidate's folder, centres have used this technique to ensure only relevant research has been included in the candidates design process.
- However some centres are still allowing candidates to create a proliferation of research information.
- At times the evidence presented by individual candidates has no relevance to the design situation being investigated by the candidate. This then has a tendency to reduce the time and effort placed by the candidate on the creation of ideas that are created to address the problems being covered.
- A key aspect of this GCSE specification aims to encourage candidates to only cover Research that is relevant to their problem. Candidates are also encouraged to carry out research throughout the design process. The design process is not a linear process.

Generation of Ideas

- Candidates need to be encouraged to express a range of potential ideas during the *Generation of Ideas* section of the coursework folder. These ideas need to relate to the specification that had been created to address the candidates selected design situation.
- In many centres the *Generation of Ideas* section has not had the emphasis placed upon this as a design skill that is needed to enable the candidates to be rewarded at the higher levels.

Development of a Solution

- Within the sub – section *Development of Solution*, many centres have started to encourage candidates to evolve one of their earlier ideas or to integrate the more successful elements into one final prototype, or a range of products. This stage is a key element used to create a successful outcome.

- Within this element of the candidates' design work, candidates achieving the higher grades have built into their ideas examples of how their graphic product would be produced in batch or mass production situations. This is seen as good practice.
- There has been a growth in candidates creating working drawings, using Hand Drawing or CAD programs to create orthographic drawings.
- Centres have also started to utilise 3D graphic programs, where candidates are creating virtual models of their selected solutions.

Planning

- With this specification the *Planning Element* has now been included as a design skill. This change has been introduced to avoid candidates completing this section retrospectively.
- Many centres are now ensuring that candidates present evidence for this section that has been created before production starts. This enables candidates to consider and plan out the most effective sequence that can be used for the construction of their product or products.

Quality

- A major tenet of this specification is the awareness of designing and making *quality* products in *quantity*. Many candidates are showing their awareness of mass and batch production techniques at this stage of the design process.
- The use of Flow Diagrams has been integrated into many candidates evidence this year. This has enabled candidates to also address how systems can be used to organise the production process. Feedback loops have been built into the process, this is a key feature where centres are creating references to *Quality Control* points. A range of programs have been used to create the flow diagrams, with many candidates accessing the correct symbols for Process Operations, Terminators etc. These have been used to create the final production runs for their selected products.

Industrial Practice

- Candidates need to relate *Industrial Practice* to their own particular project, this then makes the work relevant and of value. Some centres are still including generic information on this aspect of the specification that is copied from textbooks and is of no real value or enhances the candidates level for the design element. Any information that is transcribed into the candidate's folder must be acknowledged. The real value of this information is when candidates have utilised and then analysed the information, throughout the creation of their graphic product. A range of suitable areas that can be addressed for industrial practices have been outlined in the published documentation presented by AQA for this new specification.

Evaluation

- Evaluations have continued to create problems for some candidates. They have focussed upon the process that has been carried out, rather than focussing upon the product. Little credit is gained from the process being recorded in detail.
- Some centres have started to integrate *Client Appraisals* and *User Trips*, where the intended users of products have evaluated the function of the candidate's final design or prototype.
- Within successful evaluations candidates also consider how their product could be improved and how the product would have to be modified if it were to be batch or mass-produced.
- The evaluation element of *Design Skills* can also incorporate testing, centres have been creating early models or mock ups to test out candidates ideas, lessons learned have then been incorporated into their final product. The results of the tests have been included in the candidate's assessment for Evaluation, Testing and Modification.
- NOTE
The sub section - *Correction of Working Error* - is intended as a method for candidates to record changes incorporated into their Product during the actual manufacturing process. Many centres are recording this evidence in a Diary format.

Summary of Design

- Candidates are achieving higher grades, when they consider developing products that could be produced in *quantity* throughout the design process.
- Centres need to ensure research is relevant to the situation being developed and the research material is analysed to play an influential role in the *Generation of Ideas*.
- Detailed design drawings, that show a range of potential ideas in detail, is a key skill associated to this GCSE specification.
- ICT programs are to be utilised, but it is essential for candidates to exhibit a range of graphical techniques and not just work generated by using ICT

Making

- Candidates are continuing to create Quality Products. In many cases care has been exhibited and accurate constructions carried out that were appropriate for the material being used.
- With all of the Design and Technology GCSE specifications the making skills have a weighting value of double the designing skills. Some centres are allocating insufficient time for the *Making Element* in this GCSE specification. This needs to relate to the time, range and rigour exhibited by the individual candidates evidence.
- Models are encouraged at the formative stage of the design process; this has enabled candidates to test out principles and construction techniques. This has also enabled candidates to exhibit a wider range of making skills

- This year there has continued to be many examples of work created to a professional standard. High levels of competence have been demonstrated in the manufacturing skills and also the graphic skills used to enhance and embellish the graphic products.
- Many centres have started to integrate ICT skills into the final products. There are examples of CAM being used to prototype and then amend products before a final solution is manufactured. *This is often linked to a range of graphic programs used to enhance the final product. It must be remembered that throughout the candidates evidence there needs to be a balance between ICT applications and non ICT graphical techniques.*
- During the moderation of candidates work during 2003 the major area for changes being identified by moderators, has been in the *making skills*.
- There have been occasions where the levels being awarded in the centre have been harsh. This has resulted in the moderator remarking the making skills higher. However in the majority of cases centres have been lenient in their interpretation of AQA's standards.
- Exemplar Projects have been published for Grade A and C – Full Course and Grade C – Short Course. This is the standard used by the moderating team for the life of this specification.
- The vast majority of centres have guided their candidates with the choice of design situation. This has resulted in graphic products being created that reflect the requirements of this specification.
- Resistant Materials have been used appropriately in most centres. When centres have used inappropriate materials for the construction of the candidates outcomes, it has been due to design situations being selected that do not fulfil the aims and objectives of this Design and Technology Specification. There are however some centres that are still allowing candidates to embark on inappropriate areas, which resulted in products that are not suitable for this specification.
Centres that fall into this category have been informed directly by their appointed moderator on the form CAW/FB (GCSE) and Continuation Sheet.
- Many centres have integrated the Quality Assurance and Quality Control work into candidate's evidence. This has been covered most effectively when candidates have considered the implications of this aspect from the very beginning of the design process.
- Many centres and candidates have started to integrate bought components into the manufactured outcomes. This helps in many cases to create a professional standard. However when candidates use artefacts that helps to destroy the scale created by their own product, such as plant pots and scaled trees intended for dioramas then no real credit can be awarded for these items.
- All centres registered with AQA have access to a coursework advisor. This person has the brief to help and advise on all aspects relating to a centres and candidates coursework.

Summary of Making

- Candidates achieving the higher grades in the *Making Element* had created evidence that showed quality and the rigour expected from a candidate working on a Design and Technology specification

- Digital images have been used to good effect to illustrate on going changes and modifications implemented to improve the final product.
- Candidates have shown care and expertise in a wide of construction techniques associated to Graphic Products.

Administration

The new specification introduced a new range of procedures for recording candidate's assessments, in the vast majority of centres everything was completed on schedule and correctly. However the following points need to be reiterated:

- Centres with less than 20 candidates should send:
Candidate Design Folders, - Including the completed Candidate Record Forms,
Centre Declaration Sheet,
Centre Mark lists and any other additional information to the moderator by the Specified Dates.
- When ICT programs are used these need recording on the *Candidate Record Form*.
- Some centres are rewarding candidates, when there is no evidence, high levels have been awarded for evaluations, planning of making etc when there is no evidence available, this distorts the holistic assessment made for each particular element
- For centres with more than 20 candidates the Centre Mark List needs posting to the moderator by the specified date. The moderator then selects the sample to be used for moderation.
- The majority of centres returned the selected sample quickly, however some centres took up to 14 working days to return the design folders, this creates problems when moderators are having to work to a very strict time schedule.
- Design folders need to be posted in Rank Order, High to Low, not in candidate number order.
- A key element of a successful moderation procedure is that centres undertake to standardise candidates within a centre – creating an accurate rank order.
- The holistic levels allocated to both the final designing grade and the final making grade need recording on the *Candidate Record Form*. This is to enable a matrix check to be carried out for individual candidates.
- The Grades should be refined by stating whether the grade falls into the High, Medium or Low category.
- There has been far more accuracy this year with centres using the matrix, only a minority of centres had problems with the matrix.
- With the new format used for recording a candidates total on the *Centre Mark List* it is essential for candidates that are withdrawn to be identified by placing 'X' in the third square. Plus highlighting the 'X' section with pencil on the centres OMR form.
- Centres are still posting design work in heavy wallets; these may be an ideal storage unit for candidates transporting work to and from home. But for the moderation process they prove to

be heavy and bulky. Another problem is that in some cases more than 2 or 3 sheets (back to back) are included in each leaf, this can mean that valuable evidence put forward can be missed during the moderation process.

- Many centres are using the *Candidate Record Form* to highlight where best practice or evidence is located within a candidate's folder. This practice is seen as a good use of the *Candidate Record Form*.
- Prototypes / mock ups need to be retained in centres. These are of value.
- In many centres the candidate annotation is clear and helpful.

Short Course

- Centres entering candidates for the short course have continued to create detailed design folders and the associated practical outcomes in many cases.
- With the short course it is essential to take on board all of the key points covered in the full course.
- Relevant and in many cases directed research is needed if candidates are to complete their own work within the 20 hours allocated for designing and making their selected product.
- Centres have carefully considered what type of project is suitable for a short course. The successful design projects have to enable candidates to exhibit a wide range of techniques in a relatively short space of time.

Summary

- The coursework continues to allow candidates to exhibit a wide range of designing and making skills. Often creating work of a professional standard.
- Primary research gains far more credit than reams of copied or downloaded information that is not referred to as the design project is developed.
- Candidates restricting themselves to one outcome, can restrict the range and level of skills that they can demonstrate. Therefore candidates should consider creating a range of interlinked or themed products.
- Candidates that do not have access to CAD/CAM facilities need to show an awareness of this production technique. They need to show how their product could or would be manufactured using this technology.
- The *Making Element* of this GCSE specification should represent approximately 24 hours of the candidates allocated time.

Mark Ranges and Award of Grades

Although component grade boundaries are provided, these are advisory. Candidates' final grades depend on their total marks for the subject. In particular, A* is determined on candidates' total marks, not on each component, and candidates do not have to obtain 95 marks on the coursework component in order to gain grade A* on the subject as a whole.

Full Course

Foundation tier

Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
3543/F	125	140	70.2	18.1
3543/C	95	210	102.5	41.1
Foundation tier overall 3543	--	350	172.8	50.1

		Max. mark	C	D	E	F	G
3545/F boundary mark	raw	125	84	70	57	44	31
	scaled	140	94	78	64	49	35
3543/C boundary mark	raw	95	59	47	35	24	13
	scaled	210	130	104	77	53	29
Foundation tier scaled boundary mark		350	217	178	140	102	64

Higher tier

Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
3543/H	125	140	86.1	15.6
3543/C	95	210	163.4	33.6
Higher tier overall 3543	--	350	249.42	41.7

		Max. mark	A*	A	B	C	D	allowed E
3543/H boundary mark	raw	125	100	93	86	80	62	--
	scaled	140	112	104	96	90	69	--
3543/C boundary mark	raw	95	95	84	71	59	47	--
	scaled	210	210	186	157	130	104	--
Higher tier scaled boundary mark		350	311	283	251	220	173	149

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Provisional statistics for the award

Foundation tier (29,751 candidates)

	C	D	E	F	G
Cumulative %	19.2	47.9	70.3	85.1	94.6

Higher tier (38,359 candidates)

	A*	A	B	C	D	allowed E
Cumulative %	4.3	22.7	51.6	77.4	95.0	97.4

Overall (68,110 candidates)

	A*	A	B	C	D	E	F	G
Cumulative %	2.4	12.9	29.2	52.1	74.6	85.7	92.1	96.2

Short Course

Foundation tier

Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
3553/F	100	120	60.2	13.8
3553/C	95	180	80.7	37.8
Foundation tier overall 3553	--	300	140.8	43.9

		Max. mark	C	D	E	F	G
3553/F boundary mark	raw	100	66	55	44	34	24
	scaled	120	79	66	53	41	29
3553/C boundary mark	raw	95	60	48	36	24	12
	scaled	180	114	91	68	45	23
Foundation tier scaled boundary mark		300	185	152	119	86	53

Higher tier

Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
3553/H	100	120	76.1	12.7
3553/C	95	180	131.7	33.7
Higher tier overall 3553	--	300	207.8	40.8

		Max. mark	A*	A	B	C	D	allowed E
3553/H boundary mark	raw	100	80	74	68	62	53	--
	scaled	120	96	89	82	74	64	--
3553/C boundary mark	raw	95	95	83	71	60	48	--
	scaled	180	180	157	135	114	91	--
Higher tier scaled boundary mark		300	269	242	215	188	155	138

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Provisional statistics for the award

Foundation tier (1,495 candidates)

	C	D	E	F	G
Cumulative %	15.1	41.1	63.5	79.4	93.5

Higher tier (1,874 candidates)

	A*	A	B	C	D	allowed E
Cumulative %	3.4	21.2	45.9	72.1	91.0	94.4

Overall (3,369 candidates)

	A*	A	B	C	D	E	F	G
Cumulative %	1.9	11.8	25.6	46.8	68.1	79.9	87.0	93.2

Definitions

Boundary Mark: the minimum (scaled) mark required by a candidate to qualify for a given grade. Although component grade boundaries are provided, these are advisory. Candidates' final grades depend only on their total marks for the subject.

Mean Mark: is the sum of all candidates' marks divided by the number of candidates. In order to compare mean marks for different components, the mean mark (scaled) should be expressed as a percentage of the maximum mark (scaled).

Standard Deviation: a measure of the spread of candidates' marks. In most components, approximately two-thirds of all candidates lie in a range of plus or minus one standard deviation from the mean, and approximately 95% of all candidates lie in a range of plus or minus two standard deviations from the mean. In order to compare the standard deviations for different components, the standard deviation (scaled) should be expressed as a percentage of the maximum mark (scaled).