

# Examiners' Report

## June 2016

### GCSE Design & Technology: Graphics 5GR02 01

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## **Introduction**

The format and structure of this question paper is now well established. It is clear that teachers and candidates are familiar with the layout and have used past papers and previous examiners' reports during preparations for this examination.

On the whole candidate performance is improving on the two questions that assess QWC (Quality of Written Communication) by providing answers that have more structure.

Candidates' level of response to describe and explain type questions is showing improvement, with many now providing appropriate linked responses.

There was again evidence of candidates not selecting a response for one or more of the questions in the multiple choice section at the start of the paper. For this section, candidates are again reminded that it is good practice to select an answer, even if they are unsure.

Centres are asked to remind candidates the space made available for giving the answer has been specifically designed for length of response that is needed to gain maximum marks.

### Question 11 (a) (i)

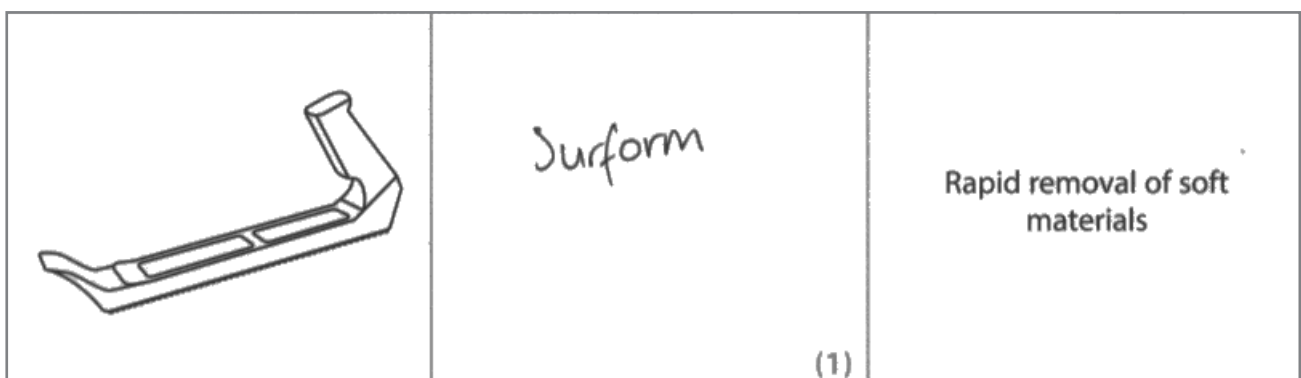
Most candidates achieved one mark for stating 'drawing curves' – those who elaborated (even through this was not necessary for the mark) seemed to have a good understanding of the use of this tool. A minority of candidates guessed incorrectly with a range of different answers.

### Question 11 (a) (ii)

Candidates seemed to be unfamiliar with an adjustable square as a draughting tool, with only a small percentage presenting the correct answer.

### Question 11 (a) (iii)

As with question 11a2, only a relatively small percentage of candidates achieved the mark available for this question. Candidates offered a range of possible responses including rasps, files and planes; however few gave the correct response of either surform or surform plane.



#### ResultsPlus Examiner Comments

This candidate has correctly identified the tool as a surform. In this instance, both surform and surform plane were acceptable responses, and gained equal credit.



#### ResultsPlus Examiner Tip

If possible make notes with pictures of all the tools and equipment you use throughout the course. This can be used as a revision aid before the exam.

### Question 11 (a) (iv)

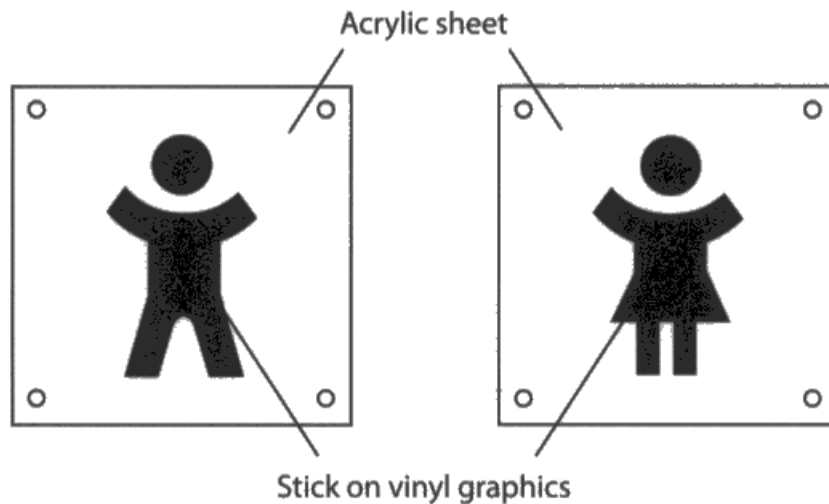
Many candidates answered this correctly, with most choosing to comment on the security uses of RFID or the ability to store information and be used for identification purposes. The whole range of answers suggested in the mark scheme were seen, including some that related to the tracking and detecting products within a workflow.

### Question 11 (b) (i)

Candidates responded fairly well to this question, describing suitable reasons for the use of acrylic for the sign. However it is clear from their responses that students need to take their answers one further step in order to evidence their knowledge and understanding, especially the relationship between materials and their applications.

Durability, weight, and waterproof were common answers here, but a full range of correct answers was seen with many candidates showing understanding of properties.

(b) The drawings below show two acrylic signs for the changing rooms in a school.



(i) Give **two** reasons why acrylic is a suitable material for the signs.

(2)

1 Water resistant

2 durable



#### ResultsPlus Examiner Comments

This answer correctly identifies two reasons for using acrylic, when related to a specific application, for the full 2 marks.



#### ResultsPlus Examiner Tip

Avoid generic responses such as 'cheap' or 'strong' when a question asks for reasons why a material is suitable for a given application.

## Question 11 (b) (ii)

Generally a well answered question with most candidates considering the needs of people with disabilities, visual impairment, and those with a literacy or language barrier. Many candidates also recognised the fact that symbols were faster and clearer to read in pressured circumstances. In general, marks were lost in this question when candidates did not make three points, rather than for giving an incorrect answer.

There were a small number of responses which indicated that symbols were used because this make the sign more 'aesthetically pleasing' which is not necessarily true.

(ii) Give **three** reasons why signs often have graphic symbols rather than words.

(3)

- 1 So that people who speak different languages can still understand the sign's meaning
- 2 So it can be seen clearly from a distance
- 3 Easier for people with sight problems to understand.



**ResultsPlus**

**Examiner Comments**

A good response that achieves all three marks through the identification of three distinctly different points.



**ResultsPlus**

**Examiner Tip**

Where a range of reasons or points are asked for, try to make sure that there is variety in the reasons, and they are not similar to each other.

### Question 11 (b) (iii)

Candidates' knowledge and understanding of applying symbols to the sign was evidenced across a range of techniques with screen printing stated on many occasions.

The question is starting to "ramp-up" in difficulty by asking for two examples of applying the symbol, and has a barred response that is given in the stem (question).

A good range of answers seen with many gaining 2 marks. Candidates lost out through repeating the question (e.g. putting 'vinyl cutting' or 'stika/sticker machine' as an answer) or for giving clearly unsuited processes (e.g. offset lithography, gravure, foil blocking).

(iii) One method of producing the graphic symbols for an acrylic sign is by using a vinyl cutter.

Sticker  
machine

Give **two** other methods of producing the graphic symbols for an acrylic sign.

(2)

1 screenprinting

2 engraving



**ResultsPlus**

**Examiner Comments**

This candidate has approached the 'give' question in an appropriate way. It is acceptable for a give/state/name question to have single word or short phrases as answers. This candidate has identified two appropriate methods of producing a symbol for the sign; furthermore they have noted that a Sticker/Stika machine is used for vinyl cutting and is thus not an appropriate response.



**ResultsPlus**

**Examiner Tip**

Candidates should aim to look carefully at the key points of the question rather than just listing everything they know related to a topic.

## Question 11 (b) (iv)

This question required candidates to explain two advantages of using a vinyl cutter to produce the symbols rather than producing them by hand. It was positive to see many candidates developing their answer in order to achieve the second mark for each advantage. Common responses related to the symbols being able to be produced faster, making them more cost effective or that signs can be cut many times but will always be identical.

(iv) Explain **two** advantages of making the graphic symbols on a vinyl cutter rather than producing them by hand.

(4)

1 Faster process / produces much more at a time than when doing it ~~with~~ by hand.

2 ~~can be~~ All the products made will be exactly identical.



### ResultsPlus Examiner Comments

This candidate has identified that the symbol is produced much quicker or can be produced more at a time for one mark.

The second response states 'all the products made' (indicating that multiple symbols are produced) 'will be exactly identical' gaining two marks.



### ResultsPlus Examiner Tip

Some candidates lost out by simply listing lots of advantages, with no development to their answer. For explain questions there must be some development of answers.



## Question 11 (c)

This question was answered somewhat poorly; however most candidates did attempt it. There appeared to be some confusion over the meaning of the question, with the lowest scoring responses coming when candidates had not read the question properly, and related their answer to advantages for the manufacturer, or discussing the general advantages of the Internet for sales or marketing.

The most common answer tended to discuss the ability to create a design 'how they wanted it' which generally needed a little more detail to gain the mark.

- (c) The manufacturer of the door signs uses the internet for marketing and sales, which allows customers to design their own door signs.

Describe **two** advantages for the customer of using the internet to design their own door signs.

(4)

- 1 It is easily accessible anywhere on most devices - convenient as you don't need to go anywhere.
- 2 The necessary tools will all be on the website so the customer can create a personalised design without any assistance.



### ResultsPlus Examiner Comments

This candidate has provided two linked responses, both gaining both of the marks available. They have expanded each point appropriately to give depth to their response.



### ResultsPlus Examiner Tip

Specific answers scored much more highly on this question, where candidates had thought of a key point and then explained it in detail and related the answer directly to the scenario in the question.

## **Question 12**

The vast majority of candidates attempted this question with very few blank pages. Most candidates showed a lot of imagination displaying some creative and well-presented design ideas but many struggled to design to the given specification, thus were only able to access mid-range marks.

It was somewhat difficult to award marks to some candidates who demonstrated poor communication skills, with annotation and written notes being difficult to read due to poor hand writing.

Whilst no marks are awarded for the quality of sketches, candidates ought to be reminded that graphics need to be clear and well annotated against the specification given as this certainly assists in the awarding of marks. Some candidates however lost marks due to lack of detail and repetition in the second design, where in many cases, they did not offer alternative materials, printing or finishing methods and simply noted identical solutions.

Hold the egg upright: Lots of candidates were clear on showing how the egg would be held upright, showing vacuum formed trays, folded card holders, as well as more creative methods. Candidates lost out here when they did not make the method clear – those with supplementary sketches or nets were much more likely to gain marks.

Allow the egg to be seen: Many candidates did not score marks for both designs here – many simply changing the material used for their window, rather than specifying a different method.

Have a closable lid: Slightly more successful than the previous point, but some candidates seemed to struggle to come up with different closing methods. Those that gained marks were well drawn, often using additional sketches to show their lid separately. In a number of cases, some good quality 3D drawings were used here.

Egg theme: Some very creative ideas here showing dragons, dinosaurs and breakfast themes! Many candidates were able to come up with two different themes here, which were demonstrated through sketches and annotation. Some candidates relied too heavily on annotation here, with a simple note stating 'egg theme' with no sketched element. Where the question asks for a graphic image, this must be shown on the drawing.

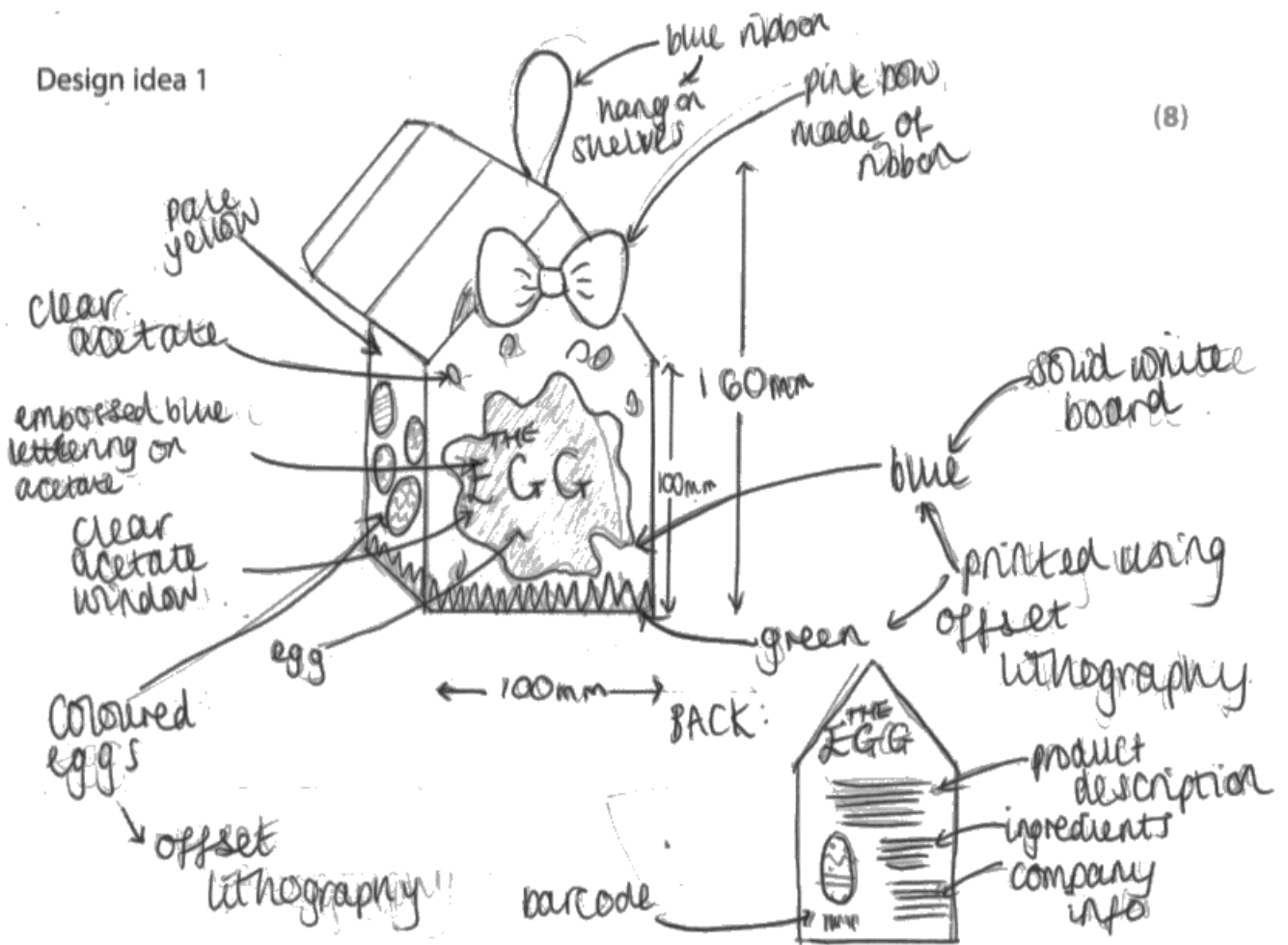
Hang on display: Many candidates were familiar with the Euroslot and used it effectively and appropriately in their designs. Alternatives such as ribbons/string and simple holes were also used. Most candidates gained both marks here.

Recyclable Material: Most candidates showed knowledge (if not an understanding) of suitable materials. Some candidates still using generic terms e.g. plastic or cardboard, missing out on key marks, but most offered folding box board, solid white board and corrugated card as well as naming plastics.

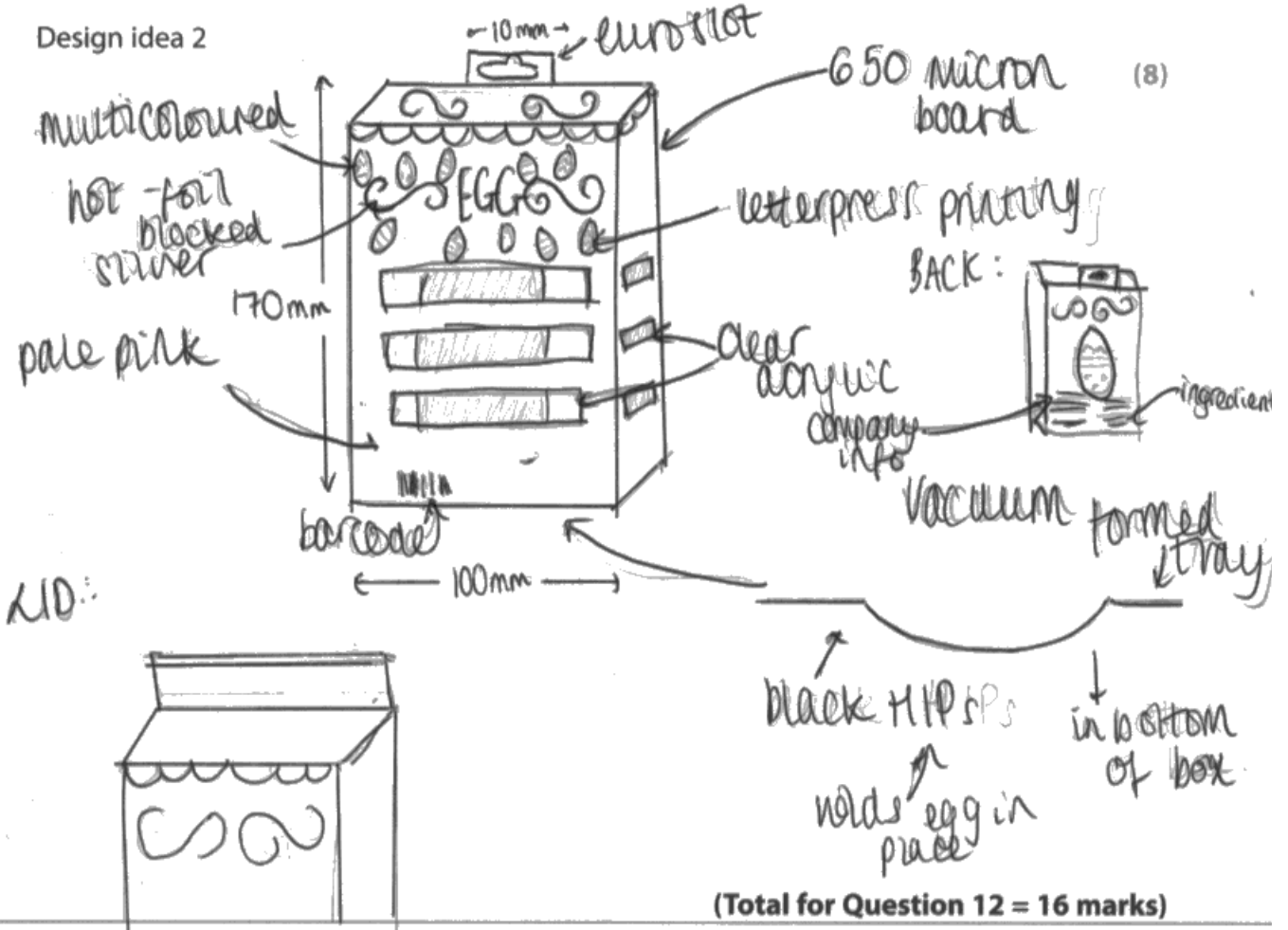
Commercial Printing Method: Commercial printing methods were well demonstrated although often not necessarily appropriate for the chosen material. Screen printing, flexography and offset lithography were often used. 'Stereolithography' was often suggested as a printing process, suggesting some confusion with similarly named processes. The application of vinyl was also occasionally suggested as a printing process ('printed by vinyl').

Finishing Process: Candidates seemed to have a generally good understanding of finishing processes, giving appropriate and well-chosen methods. Occasionally, candidates appeared to have knowledge of the processes but did not use correct terminology (e.g. 'gloss finish' rather than 'varnishing').

Design idea 1



Design idea 2



(Total for Question 12 = 16 marks)



## ResultsPlus

### Examiner Comments

The candidate has provided two distinctly different approaches, gaining 7 and 4 marks respectively.

The designs are clearly represented, with concise and appropriate notes and annotation to explain how each design fulfils the specification requirements. The candidate has lost some marks for inappropriate processes (letterpress in design idea 2), the repetition of eggs on both designs, and the use of windows on both.



## ResultsPlus

### Examiner Tip

Ensure your two designs are completely different so the materials and methods used to achieve each specification point in the 1st design are not used in the 2nd design.

### Question 13 (a)

A generally well answered question for which candidates were often able to give specific and valid properties of PVC which makes it suitable as a charity collection box. Candidates who gained credit for a valid property mostly stated 'durable', 'impact resistant' and 'lightweight', with few candidates stating plasticity, fluidity, inert or flexibility.

- 13 The drawing below shows a hand held collection container made from polyvinyl chloride (PVC).



- (a) Give **two** properties of PVC that make it suitable for the collection container.

(2)

- 1 ..... *Lightweight* .....  
2 ..... *Durable* .....



## ResultsPlus

### Examiner Comments

The candidate has identified two valid properties of PVC that make it suitable for the hand held collection container, rather than simply properties of PVC.



## ResultsPlus

### Examiner Tip

As always, candidates should avoid using generalised answers such as 'strong' when asked to give properties of a material.

### Question 13 (b)

Most candidates gave concise, clear and well thought out answers here; an appropriate and relevant point was stated with a related reason given. A number of candidates gave more than one answer or gave a list of points without describing – this is not the most efficient use of time and only gains credit for the first answer given. It is not possible to gain more than one mark for a list of reasons when the question asks candidates to 'Describe one reason....'

(b) Describe **one** reason why PVC is a better choice of material for the collection container than steel.

(2)

Over time, because steel is ferrous, it will  
corrode <sup>/rust</sup> and therefore will not last as long as  
a PVC container which doesn't rust or  
corrode.



#### ResultsPlus Examiner Comments

Two marks are awardable for this response. One mark is given for 'steel is ferrous' which is then linked later to 'a PVC container which doesn't rust or corrode'. Despite one part of the response relating to steel and the other PVC, there is a clear link and therefore credit is given to the candidate.



#### ResultsPlus Examiner Tip

Linking parts of a response using 'therefore' or 'because' is an acceptable approach for answering describe questions.

### Question 13 (c)

Whilst candidates appear to have good understanding of the uses and related benefits of CAD, when asked to relate this to a specific situation candidates tend to achieve lower marks. A large number of candidates relied on the 'easy to edit and change' approach in order to gain the marks, reinforcing the suggestion that there is a rather limited understanding of the use of CAD for designing in a commercial setting.

(c) The collection container was designed using CAD software.

Describe **one** advantage of using a CAD system to design the hand held collection container.

(2)

The designs can be saved electronically and then be sent for later use and development or to be sent to the manufacturer for production. This reduced the overall time of production. The design stage to the production stage.



#### ResultsPlus Examiner Comments

The response includes a number of linked concepts, which relate to the ability to save a design and then send this to a manufacturer. Whilst the mark scheme does not explicitly state 'save and send' this is a description of 'exporting' the file. Candidates are given credit for valid statements that, whilst not exactly as presented in the mark scheme, are nonetheless valid and correct.



#### ResultsPlus Examiner Tip

Try to avoid statements such as 'CAD reduces or eliminates human error' or that CAD is in some way 'easier' than designing by hand. These relate to the experience and competence of the individual not the software.

### Question 13 (d) (i)

Most candidates correctly justified the use of a sealed container and a small money slot to keep the contents secure. Where full marks were not achieved, the answer had little or no development to explain exactly how features such as 'it is fully sealed' or 'has a small money slot' would keep the money secure.

(d) Explain why the container is successful in meeting the following specification points:

(i) keeping the money inside secure

(2)

The lid ~~is~~ is on the top of the container and is kept upright until emptied. The coins cannot fall out through the hole at the top.



#### ResultsPlus Examiner Comments

The candidate has linked the sealed lid and the fact the container is kept upright to the prevention of coins from falling out. This is an appropriate expansion to gain the second mark.



#### ResultsPlus Examiner Tip

As with all describe/explain questions try to make best use of linking words or phrases.

### Question 13 (d) (ii)

Many candidates simply repeated the question stem and talked about how the container was comfortable; candidates are reminded that no marks can be awarded where they are repeating information already given.

The most common response was a description of the shape of the container with some development as to how that would assist the user. Very few candidates specifically referenced ergonomics or anthropometrics in their answer, which implies that a large proportion of candidates lacked the knowledge and understanding of more technical terminology related to graphic products.

(ii) fitting comfortably in the hand.

(2)

The cone shape of the bottom part of the container can be gripped easily.



#### ResultsPlus Examiner Comments

This response looks to be simplistic, however the candidate has correctly identified the cone shape (1 mark) and links this to being able to be gripped easily (1 mark). This is an example of a question where the response should be 'what is the feature' linked to 'how does it help meet the specification'.



#### ResultsPlus Examiner Tip

Be concise in your answer avoiding unnecessary words.

### Question 13 (e)

Candidates appeared to be well prepared for this type of question and higher achieving candidates provided some excellent, detailed and well written answers.

Although the question clearly states 'evaluate', many candidates used this opportunity to compare the two designs extensively, rather than to evaluate them in the context requested (form and performance). Often candidates did not pick up on the fact that the two container types would be used in different situations, meaning that (for example) where carton board was used for container B, this was not necessarily a negative point as it would not need to be weatherproof as it is designed for use inside.

There were far fewer tabulated responses this year which helped many candidates in demonstrating their quality of written communication.

A good range of responses was offered but many candidates tried too hard to list or mention as many aspects as they could without any real depth of answer. Higher scoring responses tended to focus on fewer points but in more detail. Many candidates also structured their answers carefully (sub headings etc.) to make it easier for examiners to allocate marks. Centres are advised to consider the mark scheme and the level descriptors when preparing candidates for this type of question.

Evaluate **container A** and **container B** in terms of form and performance requirements.

(6)

Container A	Container B
Injection moulded in PVC	Carton Board Flat pack box
<ul style="list-style-type: none"><li>This container's form fit comfortably within a hand and can be transported in one hand.</li></ul>	<ul style="list-style-type: none"><li>This container's form is a box shape and is designed to sit on a counter of a shop.</li></ul>
<ul style="list-style-type: none"><li>Both containers can collect money due to them both having slots for money in the top</li></ul>	
<ul style="list-style-type: none"><li>This container is using a strong material revealing it is expecting to store a <sup>lot</sup> of money.</li></ul>	<ul style="list-style-type: none"><li>This container is made from a board material which is weaker and is not expecting to hold as much money.</li></ul>



• This container looks as if its trying to appeal to a wide target market with its neutral look

• This container is <sup>harder</sup> ~~harder~~ to transport in bulk because it cannot be compressed

• This containers target market looks at younger children.

• This container can be flat packed and transported in bulk because it takes up less space.

(Total for Question 13 = 16 marks)



### ResultsPlus Examiner Comments

Using tables, grids, and even bullet points will often be a disadvantage in this type of question.



### ResultsPlus Examiner Tip

Avoid using a tabulated format in this type of question.

Evaluate container A and container B in terms of form and performance requirements.

(6)

container A ~~was~~ was clearly designed ~~to~~ to be carried and its form reflects that - it has a thinner base so that it is comfortable to hold. container B's form however suggests that it was intended to sit on a flat surface as it has no handle or means of carrying it easily. Because container B is only made from carton board it has far less impact resistance so if it were dropped or it fell it could break and the donations would not be secure - this is not the case for container A as it is made from PVC. As ~~the~~ container B is a 'flat pack box' it could easily have

images printed onto it that would attract people's attention or encourage them to donate money. It is possible to have images or lettering on container A but it may require for another material (say like vinyl) to be printed onto and then stuck onto the container.



**ResultsPlus**  
Examiner Comments

This answer is a much better attempt by providing several points and some explanation on most of those points. The response is well structured and has achieved a mark in the higher mark band.



**ResultsPlus**  
Examiner Tip

This type of question takes practice to be able to achieve the high level marks. Candidates must include all of the aspects given in the question to achieve full marks; in this case form and performance requirements for both containers.

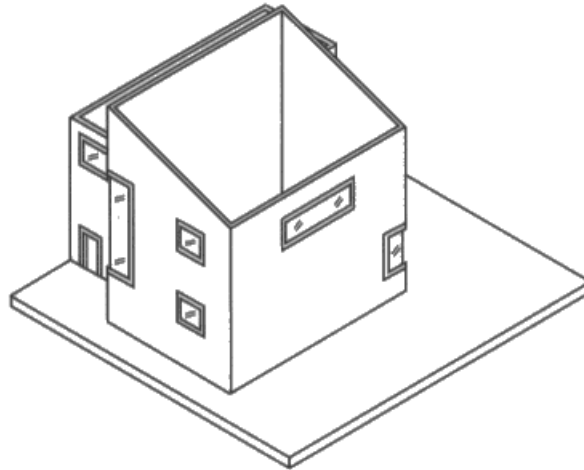
### Question 14 (a) (i)

Candidates were required to identify two advantages of jelutong for an architectural model. Many candidates achieved good marks by giving two suitable advantages.

The range of advantages given here by candidates indicated a good level of knowledge about the material. As noted for previous questions, the lowest scores went to those who relied on generalisations of which 'strong' was the most common, or gave advantages that were not appropriate for an architectural model.

14 The drawing shows a pictorial view of an architectural model.

The walls have been made from jelutong.



(a) (i) Give **two** advantages of using jelutong to make the walls of the model.

(2)

1 Jelutong is a strong material

2 Jelutong is easy to cut



**ResultsPlus**  
Examiner Comments

Whilst 'easy to cut' is appropriate for one mark, no credit is given for 'strong material'.



**ResultsPlus**  
Examiner Tip

Carefully consider your response especially if the answer seems obvious, such as 'strong' for a type of wood.

## Question 14 (a) (ii)

Whilst it was clear from the candidate response that there was a knowledge of the use of Styrofoam for modelling, this tended to be limited to a recognition that it was lightweight and could explain the advantages of this, but the second advantage was often missing or related to aspects such as cost; candidates are reminded that in many cases cost is relative. There was a lack of depth to the answers given to this question; 'easy to shape' was common but with little further development.

Lower scoring answers were often short answers which did not 'explain' as requested in the question.

(ii) Styrofoam™ is often used for modelling 3D graphic products.

Explain **two** advantages of using Styrofoam™ to model 3D graphic products.

(4)

- 1 Styrofoam is very light which means the model can easily be transported and lifted.
- 2 Styrofoam is also very easy to cut so the model shape can be easily formed and developed.



### ResultsPlus Examiner Comments

A concise answer that relates to the specific use of Styrofoam for modelling. The candidate has given two detailed explanations that each gain two marks.



### ResultsPlus Examiner Tip

Questions get more difficult towards the end of the exam paper and require higher level answers. In this instance two different explanations are required for full marks.

### Question 14 (b) (i)

Candidates tended to perform well on this question. There was generally a good understanding of the drawbacks of one-off production here; however there was occasional repetition of points where candidates had not been clear in their answers. In general, candidates considered the time, the cost and the skill involved with the production of such models.

(b) Architectural models are made as a one-off.

(i) Give **three** disadvantages of making an architectural model as a one-off.

(3)

1 It is expensive

2 It is quite labour intensive

3 It wastes materials



**ResultsPlus**  
Examiner Comments

This response includes one of the misconceptions held by many candidates that a one-off material wastes materials. The other two points are however valid and achieve one mark each.

## Question 14 (b) (ii)

Candidates presented answers that indicated they had a working understanding of the use of 3D printing, possibly as a result of first-hand experience.

Many candidates could therefore correctly identify two advantages of 3D printing. These advantages were not always explained fully, and some weaker candidates listed all they knew with little or no development of ideas. Where the question gained full marks, candidates had clearly explained how each advantage would benefit the manufacturer.

(ii) Architectural models can now be 3D printed.

Explain **two** advantages of using 3D printing to make architectural models.

(4)

- 1 More accurate instead of doing it from Jelutong / by hand it can be accurately done from 3D printing.
- 2 More rapid so you can 3D print it alot more faster so you can get the end product more quickly.



### ResultsPlus Examiner Comments

This response has two distinct advantages, both of which are explained in detail. There is an appropriate link between the accuracy of using the 3D printer compared to manual manufacture, and an advantage related to speed that links to providing the end product more quickly. The responses are concise and do not include any 'padding'.



### ResultsPlus Examiner Tip

To gain full marks, candidates must ensure that the point and the explanation are linked.

## Question 14 (c)

Most were able to attempt this question and there was a noticeable reduction in bullet pointed answers compared to this type of question last year, which supported many candidates in showing off their technical knowledge. A good range of advantages were discussed, with stronger answers selecting a smaller number of points and discussing them fully to explain how these could be of use to an architect. Weaker answers relied on a larger range of points but with less justification, missing out the opportunity to really show their depth of knowledge and understanding.

A small number of candidates did not read the question properly and answered with regard to a 'real' 3D printed model.

\* (c) Discuss the advantages for architects of producing 3D virtual models when designing new buildings.

You can make virtual models incredibly realistic and be able to look at the insides of the building to see how it would look if it was in real life, it would have more detail than a ~~real~~ prototype. This also means you can view it at different angles, to see what it would look like from anywhere. If any changes needed to be made to the model, you could make them easier and wouldn't have to start again meaning that it is more time efficient and will save money as you wouldn't have to pay for more materials for another model. The model may need to be sent to different people to view it, if it's online it can be sent immediately ~~and so~~ so won't take a long time to get there. Also, it can't be damaged when sending like it might if it was a real object. <sup>(6)</sup>



**ResultsPlus**  
Examiner Comments

This is a detailed response that considers a number of points in depth, rather than lots of points superficially. The candidate has shown a detailed understanding of a number of advantages, which is appropriate for the award of a mark in the higher mark band.



**ResultsPlus**  
Examiner Tip

As with Q13e, tabulated answers tended to lack detail or depth. Centres must be advising candidates to present their answers in such a way that candidates are developing relevant points, an approach that is essential to achieving high marks.

## **Paper Summary**

Based on their performance on this paper, candidates are offered the following advice:

- Describe/explain type questions – candidates must support their answers in order to access the full marks available and are advised to practise using linking words or phrases.
- Candidates should pay more attention to the questions that assess Quality of Written Communication (QWC) and learn to be concise with their answers.
- There is enough space provided for each question in the question paper; there should be no need to include further additional sheets for answers.
- Avoid using words from the stem (question) in answers.
- Prepare for the exam by revising the whole specification, including the processes, materials and technical drawing aids that are listed.



## **Grade Boundaries**

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