

Examiners' Report
June 2013

GCSE Design and Technology
Graphic Products 5GR02 01

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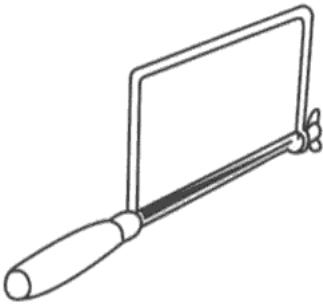
Introduction

This is the fourth year this paper has been sat and the pattern and format of the paper is well established to centres and candidates. It was pleasing to see a good standard of responses from a number of candidates. It was apparent that teachers had prepared their candidates well and that the majority had at least attempted all the questions on the paper. Few blank responses were seen and teachers should continue to encourage their candidates to not give up when they encounter a difficult question. Poor hand-writing and poor use of grammar continues to be a problem for some candidates. Candidates are reminded to keep their answers within designated areas and use concise sentences or bullet points where appropriate. 'Explain' style questions continue to cause problems for some candidates and teachers are advised to prepare candidates in the use of the following command words:

- Give, State, Name (1 mark) - These type of questions will usually appear at the beginning of the paper or question part and are designed to ease candidates into the question with a single statement or short phrase for one mark.
- Describe, Outline (2+ marks) - These types of questions are straight forward. They require candidates to describe something in detail. Some questions may also ask candidates to use notes and sketches, therefore, marks can be gained with the use of a clearly labelled sketch.
- Explain, Justify (2+ marks) - These types of questions require candidates to respond in a little more detail – single statements will not achieve full marks. A valid point should be made and then justified.
- Evaluate, Discuss, Compare (4+ marks) - These type of questions are designed to 'stretch and challenge' candidates. These questions require candidates to make a well balanced argument, usually involving both advantages and disadvantages.
- Compared to previous years, candidates did not perform as well on the multiple choice questions on this paper. Candidates would benefit from practicing this format regularly, they make great lesson introductions, plenaries and homework exercises.

Question 11 (a) (i)

A large number of candidates incorrectly answered with the generic term Cut/Saw followed by a variety of materials. A more detailed answer using the saw for cutting at different angles and shapes was needed to gain 1 mark.

	Coping saw	to saw off pieces of wood wood (1)
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ResultsPlus Examiner Comments

This question required more detail and the primary purpose of using this saw is missing. 0 marks.



ResultsPlus Examiner Tip

Try to avoid using the question as the answer, e.g. 'coping saw is for sawing wood.'

Question 11 (b) (i)

This 'give' type question requires a one word or short phrase answer and asks for 3 properties that make it suitable as a food container.

Most candidates scored 1 or 2 marks with most candidates failing to identify a third property. A number of candidates were confused about what is a property of aluminium.

(i) Give **three** properties of aluminium that make it suitable for the food container.

(3)

- 1 water proof.
- 2 ~~Doesn't~~ ~~Don't~~ ~~rust~~ Light weight material
- 3 durable material



ResultsPlus
Examiner Comments

Good clear answers in this example. 3 marks.

(i) Give **three** properties of aluminium that make it suitable for the food container.

(3)

- eco friendly and aesthetically pleasing
- 1 it has a surface ~~its~~ easy that does not rust
 - 2 it is more reactive than the tin it coats so the food is not spoilt.
 - 3 It bends at room temperature when at the correct thickness so you can access the tin contents.



ResultsPlus
Examiner Comments

This example serves to demonstrate the importance of limiting 'Give' answers to one word or phrase and keeping answers within the designated area. 1 mark awarded for "does not rust".



ResultsPlus
Examiner Tip

Only a key word is required for a 'Give' type question, e.g. in the answer: "malleable to allow for easy shaping", the word malleable is sufficient to gain the 1 mark that is available.

If you need more space to complete an answer ask for an additional sheet to attach to your paper.

Question 11 (b) (ii)

This question was done well by many candidates but points must be developed otherwise candidates will lose marks. Many candidates therefore, scored only 1 of the 2 marks available with the most popular response being that the steel will rust.

This candidate has said that steel will rust which is correct for 1 mark and continued to give the consequences. In this case the candidate went on to explain that the rust would make the food unsafe to eat for the second mark.

(ii) Explain **one** disadvantage of using steel as the material for the food container.

(2)

Steel will start to rust over time so the food will not be safe to eat.



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Examiner Comments

For Explain/Describe type questions, points need to be developed. Candidates can do this by using words or phrases such as 'which means', and 'therefore' these will then lead candidates on to making a statement.

Question 11 (b) (iii)

Only a few candidates managed to score 1 out of the 2 marks available. The majority of candidates appeared to have very little knowledge about rapid prototyping. Many did not attempt to answer or stated printing/production methods.

(iii) The food container was modelled using rapid prototyping.
Name **two** different forms of rapid prototyping. (2)

1. 3D printing
2. laser cutting



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Examiner Comments

One mark awarded for 3D printing.



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Examiner Tip

Knowing the name of a process makes for easy marks.

Question 11 (b) (iv)

Although some candidates might have little knowledge of rapid prototyping there is always a chance of gaining some marks for 'explain' type questions. There are some common elements between modelling in general and modelling with rapid prototyping.

The word rapid was misinterpreted in this question with most candidates answering incorrectly by talking about mass production.

(iv) Explain **one** advantage of modelling the food container using rapid prototyping.

(2)

would be much faster meaning more could be done in a shorter amount of time.



ResultsPlus

Examiner Comments

Rapid prototyping is far from rapid and can take 8 hours to complete a model.



ResultsPlus

Examiner Tip

Candidates should ensure that they read and understand the whole question before writing their answers.

Question 11 (c)

This question required the core or primary information contained within the bar code. Most candidates answered incorrectly with price and stock levels which is secondary information generated by the company data base.

Question 11 (d)

This question was not answered well with candidates confusing DTP and CAD/CAM.

One of the most common answers was 360 degree viewing and it is quicker/faster/easy to change but not qualified.

(d) The box was designed using desktop publishing (DTP).

Explain **two** advantages for the designer of using DTP to design the box.

(4)

1. able to go back to the saved design and edit it easily and apply changes.
2. The design can be sent from the computer to a manufacturer very easily and very quick.



ResultsPlus

Examiner Comments

Overall a good answer however, stating 'easily' and 'very quick' was insufficient to gain the candidate full marks.



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Examiner Tip

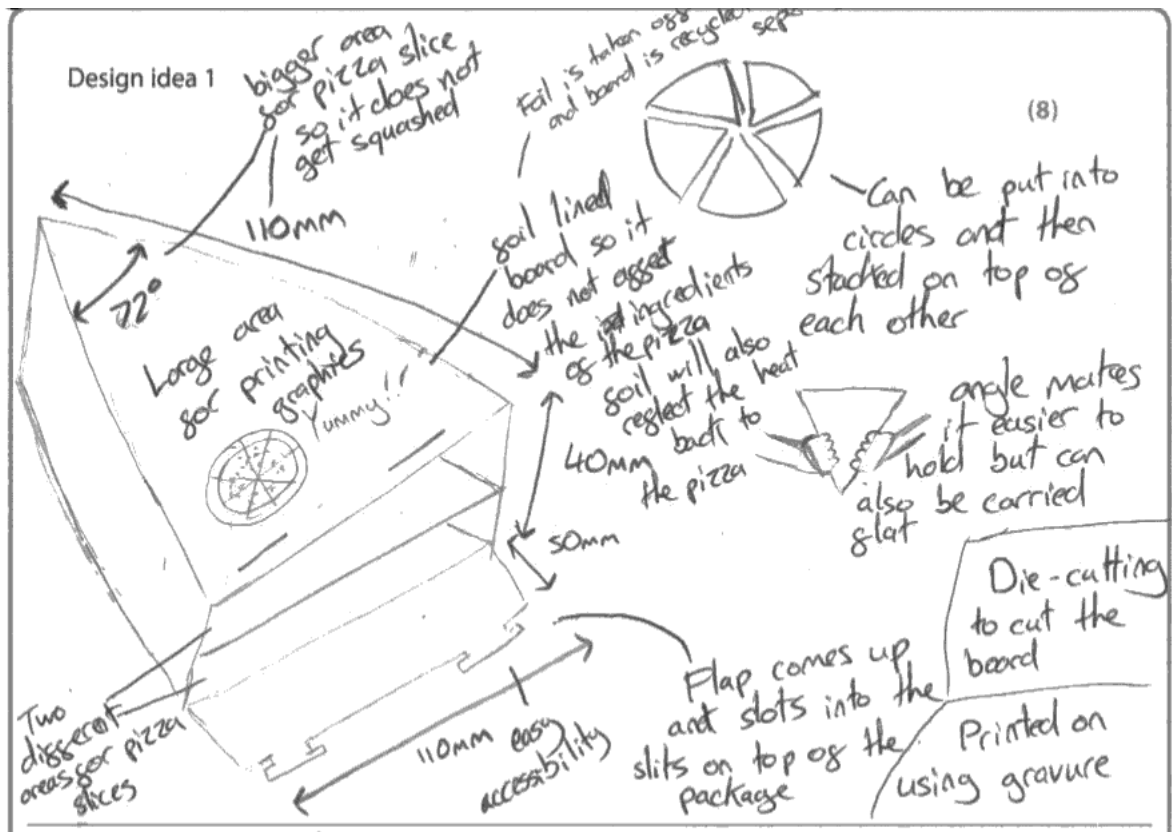
Avoid using generic terms such as 'easy', 'quick', 'fast' without providing more details.

Question 12

A good spread of marks indicated that this question was accessible to most candidates. It was a well-known product and a number approached the designs from using existing products. This did not preclude candidates from gaining marks. A number of candidates offered very similar designs and failed to gain the relevant marks on the second design. Graphic skills varied tremendously, there were no marks allocated to this, however, improving this skill will enable the candidates to communicate their ideas clearly.

For each specification point:

1. Most designs clearly showed and/or indicated how two slices of pizza were accommodated and all designs were of a "box" nature.
2. Many did not clearly show how the lid was retained.
3. Whilst a good number of candidates stated/sketched the insulating material others did not and only stated "keeps the pizza warm".
4. Handles/finger grips, hands were shown often in the first design but not the second for only 1 mark. A number of candidates made a basic statement "easy to carry" which did not gain any marks.
5. Almost all candidates achieved the mark for the image on the first design, with the vast majority gaining it for a different image on the second design. Some candidates simply stated "graphic image here".
6. This was the most poorly answered part of the question. Only a small number of candidates sketched how the container would stack. The better candidates showed how more complex containers would tessellate.
7. Print method was usually stated correctly. However, a number of candidates stated "printed by a commercial printing process". Candidates often missed this mark in the second design because they repeated the process.
8. The majority of candidates gained this mark although a number simply stated "recyclable" without any reference to the material. "Foil" was often quoted but no material description with it. Candidates often missed this mark in the second design because they repeated the process.



Design idea 2

area for graphics

Hawaiian theme!!

lid holds the pizza slices and keeps them warm

180mm

150mm

underside of lid

Two components
• lid
• partitioned box

box shape is easy to stack ~~each~~ in big quantities and easy to carry

lid and box made from corrugated cardboard. Provides safety and insulation as the holes trap air and keep it warm. Is also excellent for printing on. Can be recycled.

Printed on using gravure or offset lithography as most inks are accepted

Partition keeps the slices separate

(8)

Pizza is inserted in both ends to hold two slices

(Total for Question 12 = 16 marks)



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Examiner Comments

This candidate has presented two different ideas to a very good standard overall. The designs are easy to see and the short, brief notes help to convey information and detail such as materials and processes.

13 marks



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Examiner Tip

Do not try to write too much, keep notes brief and to the point. It is good practice to include dimensions when drawing design ideas.

Candidates should ensure that their second idea is different to the first one in that the design specification points are resolved in a different way to the way they have been solved for the design idea 1.

Question 13 (a)

This question was well answered by most candidates, giving the property and the justification, usually 'impact resistance' and 'absorbing knocks' so the mug does not break.

(a) Give **two** properties of expanded polystyrene that make it a suitable material for use as a packaging material.

For each property, justify your answer.

(4)

Property 1

Good impact resistance

Justification

So that the product does not break as easily

Property 2

Lightweight

Justification

So that the packaging can be more easily transported



ResultsPlus

Examiner Comments

A well answered question with the benefit of doubt given to the candidate for the second justification.

4 marks

Question 13 (b)

Well answered by almost all candidates. However, some candidates failed to give an explanation.

Question 13 (c) (i)

Well answered by almost all candidates. However, some candidates failed to give an explanation.

Question 13 (c) (ii)

Well answered by almost all candidates. However, some candidates failed to give an explanation.

Question 13 (d)

Whilst most candidates were able to evaluate the "user requirements" very few adequately evaluated "sustainability" mostly referring to recycling.

A large number of candidates discussed issues such as properties/cardboard sleeve/weight/protection (presumably simply repeating their answers from questions 13(a), 13(b) and 13(c)) rather than focusing on the user requirements and sustainability issues demanded by the question.

Many candidates identified the problem of the item shifting when packaged with paper/card.

Quite a few candidates began the discussion of a relevant point well by discussing one packaging type but did not follow through by mentioning the second packaging.

Knowledge of recycling varied with some identifying paper/card as easier to recycle but many stating that polystyrene was also easy to recycle. Better candidates identified polystyrene as oil based.

There was a great deal of irrelevant padding and reiteration, which in many answers, whilst filling the given space, did not achieve more than 1 or 2 marks.

Centres should be advised that candidates using tabulated/listed answers are unlikely to be awarded high marks as this type of answer does not meet all the requirements of the Quality of Written Communication question. T

hose candidates who were prepared and had been well briefed on this type of question and covered this topic well.

If candidates are using word processors for this style of question then the spell checker, grammar checker and access to the internet should be disabled.

Evaluate packaging material A compared with packaging material B in terms of user requirements and sustainability.

(6)

Packaging material A is designed to the shape of the China mug. It should therefore be tailored to the requirements of the mug. Such as being impact resistant, to absorb the energy from a fall if ever

occured. Light weight, so that the box which it comes in does not need to be excessively heavy for the people to carry. Also, a reduction in weight means it would cost less to send in the post, reducing the cost of the product. However the expanded polystyrene needs to be manufactured every time for when it must be used. This adds to the overall cost of the product. There will be harmful emissions produced from the production of the expanded polystyrene, contributing to the greenhouse gas problem and becoming closer to the limit of the amount of pollutants allowed to be polluted. Packaging material B is able to get into very small gaps of the mug. Allowing it to insulate it's self from a variety of falls and collisions. This is because it is shredded, ^{paper, foam, cardboard} so it is flexible and small enough to fit into ^{small} spaces. It is economically viable, as the paper / cardboard which is left over or needs to be recycled can be used for this. When the cardboard reaches the maximum number of times it can be printed on it can be used for this. This saves money, energy needed to produce the paper / cardboard and the amount of fumes produced from making cardboard / paper will hence be reduced, resulting in a reduction of greenhouse gas emissions. However it is not esthetically pleasing to the eye. Also a certain standard is expected from companies and this is below.

(Total for Question 13 = 16 marks)



ResultsPlus Examiner Comments

This response demonstrates a good level of Quality of Written Communication. Some good points have been made and conveyed using high level language in a clear and concise fashion.

6 marks.



ResultsPlus Examiner Tip

The amount of space provided here is sufficient to be able to respond to the question and to be able to score the full 6 marks available. Answers should be concentrated on the two areas specified, in this question they are "user requirements" and "sustainability".

Question 14 (a) (i)

Most candidates only managed to get 1 or 2 marks for this question, many candidates demonstrated very little understanding of the working characteristics of vacuum forming. Almost all described the basic workshop equipment but omitted the stretching of the plastic before vacuum forming and using compressed air to release the formed plastic from the mould.

(a) The inner tray is made using vacuum forming.

(i) In the space below, use both notes and sketches to describe the vacuum forming process for the inner tray.

(4)

1. A mould is made. Small holes need to be made to make sure the plastic gets pulled through.

2. Placed onto the vacuum former and then lowered down by using the lever.

3. Acrylic is placed on top then clamped down. It is slowly heated until it becomes pliable.

4. The mould is lifted and the air is sucked out, pulling the acrylic down over the mould.

Labels in sketches: heater, acrylic, mould, lever, vacuum former.



ResultsPlus
Examiner Comments

This candidate used sketches and annotation effectively describing the mould and the vacuum forming sequence in sufficient detail to be awarded the full 4 marks.

Question 14 (a) (ii)

Most candidates recognised only one advantage of vacuum forming, the inner tray of a chocolate box, and the most common answers were generic such as easy, fast, mass produced/production. Some did not attempt the question leaving a blank space.

Question 14 (b) (i)

Most candidates only managed to score 1 or 2 marks by identifying an advantage/disadvantage of hot foil blocking but did not give a description.

(i) Describe **one** advantage and **one** disadvantage of finishing the box lid with hot foil blocking. (4)

Advantage

looks attractive + Expensive therefore the chocolate tray will look expensive

Disadvantage

Expensive and will increase the price of the product



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Examiner Comments

The first answer although a little muddled was just sufficient to gain 2 marks for "looks attractive" and "looks expensive". The disadvantage was well answered for the candidate to score the full 4 marks.

Question 14 (b) (ii)

Many candidates did not show any real understanding of the topic and the most common answers referred to production processes and gloss paint/finishes.

(ii) Give **two** finishing techniques other than hot foil blocking that could be used on the box lid. (2)

1. Varnishing

2. Laminating



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Examiner Comments

'Give' type questions only need one word or short phrase answer, this candidate scored the full 2 marks.



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Examiner Tip

Knowing the name of processes makes for easy marks.

Question 14 (c)

A number of candidates did not answer this question, presumably because they ran out of time.

Overall there were very few in depth answers most gave a list type answer of several relevant points. However, some candidates were able to draw conclusions from their evaluation with some good discussions about open cast mining, deforestation, landfill issues and habitat.

Some candidates' responses included nebulous answers relating to 'global warning' or 'saving the animals' but without making the link to recycling. A few candidates discussed disadvantages of recycling as well as advantages, which was not asked for in this question.

*(c) Everyone in today's society is encouraged to recycle their waste.

Discuss the advantages of recycling for the environment.

(6)

Most people in every day life like today love to recycle. We do this for a reason, one of the main reasons it is that we are saving the environment, stopping pollution and using land to dig up other sources. Also we are running out of sources as the world moves on this is due to the rapid increase in population. While the population is increasing we pollute areas of the world causing a problem for the environment. Today lots of logos have been produced to advertise recycling and what good it is for our country. It mainly has advantages because it saves us money, saves the environment and doesn't kill off animals habitat via pollution. However in graphics

it is a big deal because everyone now wants packaging that is recyclable because we don't keep the packaging we throw it so we benefit all recycling products because we can use them again, it save the environment from pollution and saves us money and resources every minute.



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Examiner Comments

This response lacked clarity and enough links to achieve a high score. The points made on running out of resources/ population increase, landfill and animals/ natural habitat scores 2/3 marks and giving the benefit to the candidate this answer was awarded 3 marks.

Paper Summary

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

- Describe / explain type question require more practice. Candidates must support their answers in order to access the full marks available
- Candidates should pay attention to the questions that assess Quality of Written Communication
- There is enough space provided in the question paper for your answers, if you do need more space additional sheets should be attached with treasury tags
- Familiarise yourself with the format of the multiple choice questions and practice these type of questions regularly

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