Pearson Edexcel

# Examiners' Report
# Principal Examiner Feedback

## Summer 2023

Pearson Edexcel GCE
In Design & Technology (1DT0)
1B: Papers & Boards

**Edexcel and BTEC Qualifications**

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

**Pearson: helping people progress, everywhere**

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2023
Publications Code 1DT0_1B_2306_ER
All the material in this publication is copyright
© Pearson Education Ltd 2023

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom

Introduction
This is the third full cohort of candidates has taken the reformed (9-1) GCSE Design Technology given the disruptions to learning because of COVID.

There are six different material specialist papers on offer, each with a common core in Section A which was worth 40 marks and a Section B worth 60 marks based on one of the six material areas; Metals, Papers and Boards, Polymers, Systems, textiles and Timbers.

Question 1 (a)(i) A generally well answered question, with a good number of candidates offering a correct response, mostly related to the material being an electrical insulator, appropriate within the context of the question.

It is important to stress here that these opening four small questions are about the properties of materials in the context of the product or component given in the table and therefore generic properties will not be accepted. Waterproof is an example of the more generic type of response seen but in the context of a PCB, being waterproof is not appropriate given the circuit would fail before the PCB is potentially damaged by the water. Candidates often stated characteristics of materials or products instead of properties. A clearer understanding of the difference between these is needed.

Question 1 (a)(ii) This question was generally well answered with light/lightweight being the most popular correct response. In respect of the comments made above about characteristics rather than properties, an example here for the balsa wood toy plane would be ‘easily cut’ which is a characteristic of the material and not a property.

Question 1 (a)(iii) Most candidates answered this question correctly with hard or resistance to corrosion being the most popular answers seen. Many candidates made reference to the scissors being sharp.

Question 1 (a)(iv) Many candidates were not able to recall a relevant property of the solid white board book cover. When correct responses were observed, they were mostly related to the materials rigidity or printability.

Question 1 (b)(i) A generally well answered question, with many candidates scoring at least 1 mark for recognising that the company could be much more flexible in how they run and control their business and business decisions. Lots of reference to being able to keep profits within the company but lots of misconceptions related to not having to pay tax or stick to the rules.

Question 1 (b)(ii) The first of the maths based questions where very many candidates were able to correctly work out the mass the investment would be £45,000. Many responses were seen whereby candidates had simply multiplied the £150,000 by 1.3 to get an answer of £195,000. Had they then taken away the original sum of money they would have had a correct answer of £45,000 for the full 2 marks.

Question 2 (a) This question was overwhelmingly poorly answered with isometric being offered most frequently.

Question 2 (b) This was answered reasonably well with the most common answers being responses related to the concrete being fireproof or related to the concrete being heavy and therefore stable.

Question 2 (c) This was answered reasonably well with the most common answers being responses related to the availability of the candles and users likely to have some at home already given they were of a standardised size.

Question 2 (d) This maths question provided some challenge, especially at the point at which unit conversion took place making the numbers manageable for candidates. It is important to note here that candidates should always be encouraged to show their full working out for all maths questions. In this instance if a candidate had an answer of 163 or a factor of 10 of 163 then it may still have been possible to be able to award 3 of the 4 marks due to error carried forward (ECF) with the issue being related to the conversion of units. It was encouraging to see more candidates showing a logical sequence to their work in how they laid their responses out, giving a note to explain what they were doing, such as volume of cuboid and volume of cylinder for example. This approach is to be encouraged as much as possible.

Question 3 (a) A good number of candidates were correctly able to identify a softwood with pine or cedar being the most frequently seen correct responses.

Question 3 (b) A mixed set of responses from candidates with a good number scoring at least 1 mark, most commonly for softwoods growing faster or softwoods being cheaper. On many occasions, responses were observed offering softwoods grow fast and are cheaper. This type of response can only be awarded 1 mark because the question is an 'Explain' type question which requires a linked justification. The example cited above is essentially two give responses.

Question 3 (c) Nearly all candidates attempted this question with a reasonable proportion getting the correct answer of $1/10^{th}$ or a version of that such as 10/100ths or $30/300^{th}$ for example. The most commonly observed incorrect response was a calculation to show how much timber had been used i.e. $9/10^{th}$.

Question 3 (d) This appeared to be a very well answered question with candidates most commonly coming up with a response relating to the fact that the mild steel fixing would corrode for 1 mark. Fewer linked responses were observed but when seen, appropriate reference to the frame coming apart or the joint failing were in evidence.

Question 3 (e) A mixed set of responses but a good number of correct responses seen for the full 4 marks, most often due to the material being impact resistant and then either being lightweight or its ability to be recycled, with fully linked justifications.

Question 4 (a) Generally answered well with a reasonable proportion of candidates demonstrating some knowledge of polyester, with waterproof being the most frequently observed correct response with the linked justification of protecting the laptop inside from liquids and rain.

Question 4 (b) A maths question with a very large proportion of candidates being awarded full marks for a correct answer of 128g that had been calculated using a range of methods.

Question 4 (c) Many candidates offered a definition of a LCA as opposed to an explanation of an outcome of a LCA that could help reduce the environmental impact of the laptop bag.

Question 4 (d) This question worked very well as a discriminator at the end of Section A. Many candidates failed to read this question carefully enough before starting their response. Many talked solely about remote working with its pros and cons but did not relate that to the features of a laptop. Some even purely discussed laptop bags. Many candidates failed to expand their answers to enable marks to be awarded e.g. "They are portable" rather than "they are more lightweight and compact which means they are easily portable". Many candidates discussed Apps and software rather than the laptop itself which was not always creditable. Many candidates wrote a page describing the features of ‘Teams’ or ‘Zoom’. The question performed well by providing a range of responses about fair trade across the whole range of marks available.

1B – Section B

5a

On the whole the candidates answered this question reasonably well. Although the question states that they were not being assessed on graphical skills, without clear drawings it is very difficult for candidates to communicate their understanding.

Common mistakes included misreading the question and not providing space for three **additional** boxes, only the original three, and those that did allow for six boxes didn't always ensure the additional three were fully visible (i.e. they had two layers very close together, or additional surface area was not added, often cramming in the extra three boxes to the existing space.). Candidates also frequently missed marks by not providing a method for transporting the display (although often they still showed a method of stopping the boxes from falling off) and although a price display method was included in most responses, many lost marks for not providing a specific method to show the price.

Most responses included a good balance of sketches and written annotation.

5b

This question was relatively well answered, with candidates commonly identifying the confusion of not having a clear start and end points, and the lack of cover to keep the balls in along with the impact of this. A large proportion expanded their answers with respect to health and safety issues such as swallowing the balls. A significant number incorrect responses related to the properties and features of the materials, for example the weight of the steel balls, weight and durability of the card.

6a

Many candidates were too vague with this question and provided characteristics that apply to most boards, for example they stated that it was 'easy to fold' or 'easy to print on'. This meant that the responses were rarely awarded the full four marks. The stiffness response was often replaced with strong, tough, rigid or durable. The most common area where marks were awarded was around good printability, but many didn't fully explain what this meant e.g. describing the surface or some would just say that it could be printed upon, without mentioning the vivid / true representation of colour. Very few answers made reference to the ability to score/crease the board.

6b

This question was answered reasonably well by most candidates. Some candidates provided machine based methods for cutting the net out and quite a few didn't include securing the box with an adhesive.

Some candidates described marking out the net with drawing instruments and pencil. Most commonly, two marks were awarded for outline being cutout and fold lines being scored. Many left out scoring and simply indicated that the card could be bent along a ruler with hands which limited the marks awarded. With gluing as part of a response, it was mostly onto tabs, but many didn't go on to get the full four marks by not giving a description of how the tabs were folded back into the box and fixed down.

Generally, diagrams and written annotation was combined well. Many candidates mentioned safety rules and cutting mats showing knowledge of the processes involved.

6c

Many candidates seemed to just repeat the question, suggesting that the best way not to cause offense was not to use anything offensive. Many did recognize the need to research but did not always explain how this would impact design choices. Others suggested appropriate adaptations but did not suggest how the designers would know this. Very few gained both marks due to a lack of linked responses.

6d

A large number of candidates confused the concept of 'manufacturing methods' with 'production methods' and talked about 'batch' or 'continuous' production.

The most common answers were laser cutting and die cutting as methods. Plotter-cutting was much rarer. Most candidates did not justify their choice of method, instead giving generic reasons rather than specific ones for the product being manufactured. Some candidates explained that die cutting allows multiple simultaneous cuts. A number of candidates also explained how the method was done, rather than justifying it as an appropriate choice.

7a

The majority of candidates correctly identified staple (or staples). There were very few incorrect answers.

7b

Candidates were able to give often give a benefit of the use of CAM such as being able to produce smooth circles or that the wheels would be identical, however the most commonly seen answers were those that referred to the ability for all the wheels to be identical. There were some good linked responses which made refence to perfectly round wheels and running smoothly but these were in the minority, as many of the candidates did not link their answer to the operation of the toy.

7c

This was generally answered well. Many candidates were confused about the isometric nature of the response. Some marks were awarded for alternative approaches if the measurements matched the original elevation drawing. The most common mark to be dropped was for that of overall thickness of 5mm. Occasionally, the position of the top or bottom cuts were out by 10mm. Linework was generally accurate and using the isometric paper to the correct scale.

7d

Those that understood the question answered this reasonably well. A surprising number of candidates understood a template to be a model. Several discussed advantages rather than disadvantages.

Most responses tended to identify one disadvantage with more common answers considering inaccuracy of the original template and correct location. Very few candidates were able to get the full six marks. Some misunderstood the purpose of the template and saw it as being an overall issue that would affect the design.

8a

Most candidates answered this question very well, although there was a significant number of blank responses. Most candidates who achieved two marks made reference to insulation and gave a relevant expansion. A few candidates included details of the material being, again with a second mark for a justification linked to preventing leaking.

8b

This question was challenging, with few candidates achieving marks. The focus of most responses was on the aluminium foil, but not always relating to its availability. Cost was mentioned as an explanation, but not as a reason.

8c

Although most candidates attempted this question, many discussed checks that would have been completed prior to production, such as the suitability of the choice of materials or the design rather than quality control checks during production. Often a correct check was suggested but without any technical justification.

8d

Many candidates focussed on the environmental issues rather than social factors. Travel between China and Japan, sustainability and the environment and continuous production seem to be the most common issues discussed, leading to marks in the lower mark bands. Many candidates repeated the information in the table which gains no credit. The evaluation of the takeaway box design in relation to social factors was often lost, many candidates giving priority to the table data. Most answers resulted in an unbalanced evaluation of the information/issues with judgements that show a limited awareness of the interrelationships between factors or competing arguments. It was rare to see a conclusion.