Cambridge Assessment International Education

Cambridge IGCSE™

DESIGN & TECHNOLOGY **0445/13**

Paper 1 Product Design **May/June 2025**

1 hour 15 minutes

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You must answer on the two pre-printed A3 answer sheets.

You will need: Two A3 pre-printed answer sheets (enclosed)
Standard drawing equipment
Coloured pencils

INSTRUCTIONS

- Answer **one** question.
- Use an HB pencil for any drawings and a black or dark blue pen for any writing.
- Write your name, centre number and candidate number in the space on **both** pre-printed answer sheets.
- Answer in the space provided on the answer sheets.
- Do **not** use an erasable pen, staples, paper clips, glue or correction fluid.
- Do **not** write on any bar codes.
- You may use a calculator.
- You may use standard drawing equipment, including coloured pencils.
- At the end of the examination, hand in your named A3 answer sheets. Do **not** fasten them together and do **not** punch holes in the sheets or tie with string.

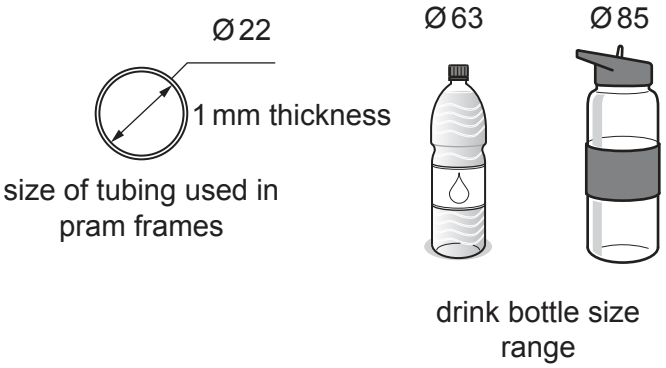
INFORMATION

- The total mark for this paper is 50.
- The number of marks for each question or part question is shown in brackets [ ].
- All dimensions are in millimetres unless otherwise stated.

This document has **4** pages.

Answer **one** question only on the A3 pre-printed answer sheets provided.

1 Parents often carry a drink bottle while taking their children out for walks in a pram or pushchair.



Design a drink bottle carrier to attach to the frame of a pram or pushchair. The bottle carrier must adapt to securely hold different sized drink bottles.

(a) List **four** additional points about the function of such a drink bottle carrier that you consider to be important. [4]

(b) Use sketches and notes to show **two** methods of temporarily attaching items securely to a round tube. [4]

(c) Develop and sketch **three** separate ideas for the drink bottle carrier. [12]

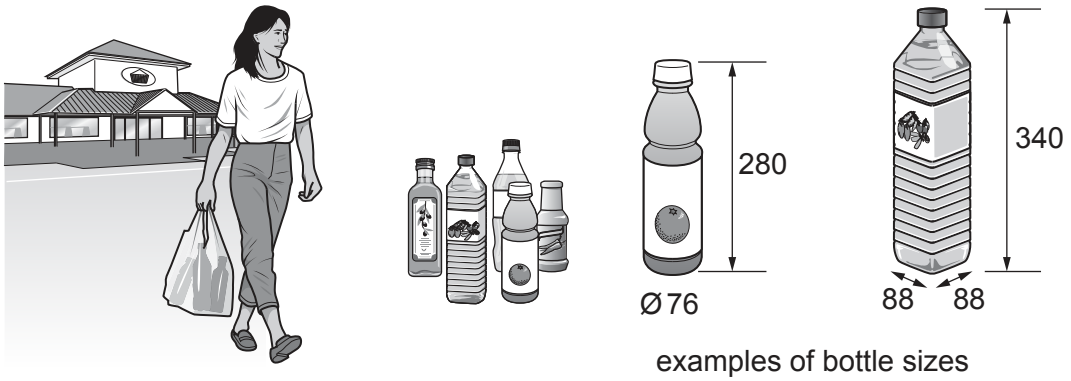
(d) Evaluate your three ideas. Choose **one** idea to develop further and justify your choice. [8]

(e) Draw, using a method of your own choice, a full solution to the design problem. Include construction details and important dimensions. [12]

(f) Suggest **two** suitable specific materials for the solution you have drawn in part **(e)** and give reasons for your choice. [4]

(g) Outline a method that could be used to manufacture **one** part of your solution drawn in part **(e)**. Include the names of the tools used. [6]

2 Customers find it difficult to carry bottles home from a supermarket.



examples of bottle sizes

Design a bottle carrying device that can hold up to **six** bottles of different sizes. The device must be made from lightweight graphic materials, fold flat for storage and be carried with one hand.

(a) List **four** additional points about the function of such a bottle carrying device that you consider important. [4]

(b) Use sketches and notes to show **two** methods of joining lightweight graphic materials without the use of adhesive. [4]

(c) Develop and sketch **three** separate ideas for the bottle carrying device. [12]

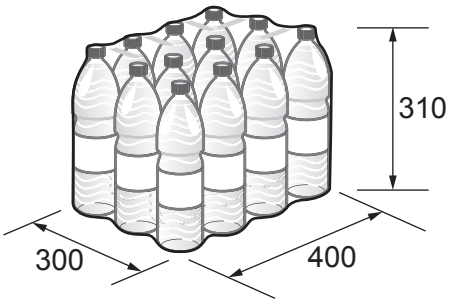
(d) Evaluate your three ideas. Choose **one** idea to develop further and justify your choice. [8]

(e) Draw, using a method of your own choice, a full solution to the design problem. Include construction details and important dimensions. [12]

(f) Suggest **two** suitable specific materials for the solution you have drawn in part **(e)** and give reasons for your choice. [4]

(g) Outline a method that could be used to manufacture **one** part of your solution drawn in part **(e)**. Include the names of the tools used. [6]

3 Multipacks of bottles are often heavy and difficult to handle when filling shop shelves.



Design a device that allows heavy multipacks of bottles to be moved around a shop. The device must allow a multipack of heavy bottles to be lifted to a height of 400 mm.

(a) List **four** additional points about the function of such a device that you consider to be important. [4]

(b) Use sketches and notes to show **two** mechanical methods of lifting an object. [4]

(c) Develop and sketch **three** separate ideas for the moving and lifting device. [12]

(d) Evaluate your three ideas. Choose **one** idea to develop further and justify your choice. [8]

(e) Draw, using a method of your own choice, a full solution to the design problem. Include construction details and important dimensions. [12]

(f) Suggest **two** suitable specific materials for the solution you have drawn in part **(e)** and give reasons for your choice. [4]

(g) Outline a method that could be used to manufacture **one** part of your solution drawn in part **(e)**. Include the names of the tools used. [6]