



DESIGN & TECHNOLOGY

Paper 1 Product Design

October/November 2023

1 hour 15 minutes

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.

This document has 4 pages.

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

- 1 Small children often find it difficult to reach a bathroom sink.



Design a freestanding device that will allow a child to safely reach a bathroom sink. The device must be collapsible to allow for ease of storage.

- (a) List **four** additional points about the function of such a freestanding device that you consider to be important. [4]
- (b) Use sketches and notes to show **two** methods of making products collapsible. [4]
- (c) Develop and sketch **three** separate ideas for the freestanding 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]

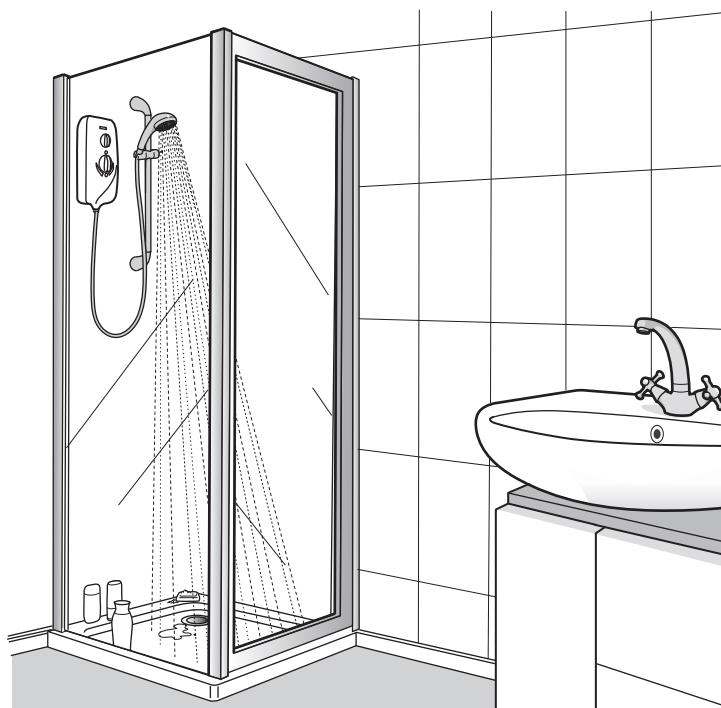
- 2 Children sometimes forget to regularly brush their teeth.



Design a product made from lightweight materials that will allow a child to record and display when they have brushed their teeth on each day of the week. The product should be engaging for children to use.

- (a) List **four** additional points about the function of such a product that you consider to be important. [4]
- (b) Use sketches and notes to show **two** ways in which daily events could be recorded and displayed. [4]
- (c) Develop and sketch **three** separate ideas for the product. [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 Limiting the amount of time spent using a shower helps to reduce water usage, which is good for the environment.



Design a device that indicates the amount of time spent using a shower. The device must alert the user when an allotted time has elapsed.

- (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** methods of giving an audible or visual alert. [4]
- (c) Develop and sketch **three** separate ideas for the 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]

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

Cambridge Assessment International Education is part of Cambridge Assessment. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which is a department of the University of Cambridge.