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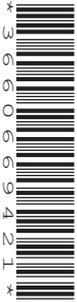
DESIGN & TECHNOLOGY

0445/11

Paper 1 Product Design

October/November 2023

1 hour 15 minutes



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.

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]

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