



# Cambridge IGCSE™

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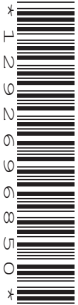
## DESIGN & TECHNOLOGY

0445/12

Paper 1 Product Design

May/June 2021

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

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### 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.

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This document has 4 pages.

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

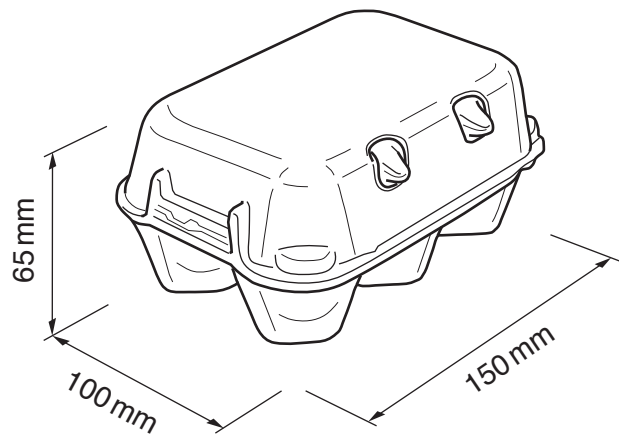
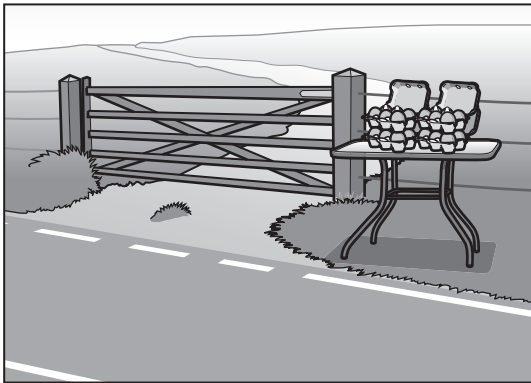
- 1 A farmer's family leave their muddy boots outside the door of the farm house.



Design a storage unit for eight pairs of boots which could be placed outside the farm house. Your design should include a method of removing excess amounts of mud.

- (a) List **four** additional points about the function of such a storage unit that you consider to be important. [4]
- (b) Use sketches and notes to show **two** methods that could be used to protect products from the weather. [4]
- (c) Develop and sketch **three** separate ideas for the storage unit. [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]

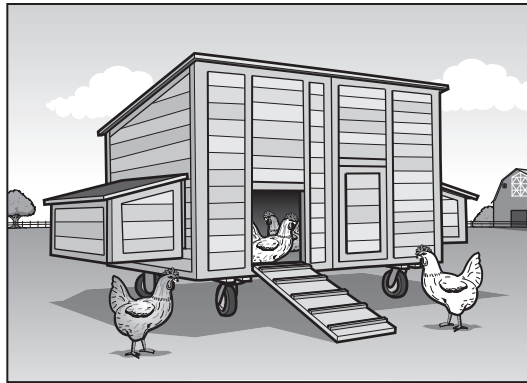
- 2 A farmer wishes to produce a roadside advertising stand for selling eggs.



Design an advertising stand. The stand should include a moving feature to attract people travelling along the road.

- (a) List **four** additional points about the function of such an advertising stand that you consider to be important. [4]
- (b) Use sketches and notes to show **two** methods that can be used to introduce movement into such an advertising stand. [4]
- (c) Develop and sketch **three** separate ideas for the advertising stand. [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 A farmer wishes to release chickens automatically from a hen house in the morning.



Design a system which will release the chickens automatically each morning.

- (a) List **four** additional points about the function of such a system that you consider to be important. [4]
- (b) Use sketches and notes to show **two** methods of opening and closing an entrance. [4]
- (c) Develop and sketch **three** separate ideas for the system. [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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