



# Cambridge IGCSE™

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## DESIGN & TECHNOLOGY

0445/13

Paper 1 Product Design

May/June 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

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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.

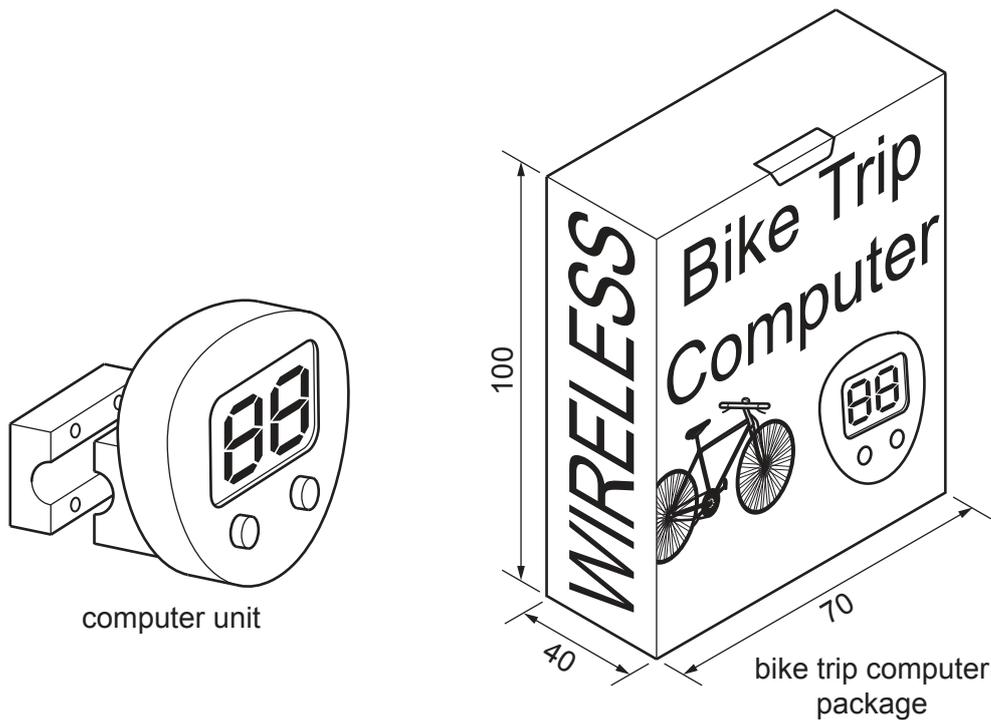
- 1 Cycling is popular for exercise and for commuting to work. Storing a bicycle in an apartment can be difficult.



Design a storage solution that allows a bicycle to be mounted off the floor to maximise space in an apartment.

- (a) List **four** additional points about the function of such a storage solution that you consider to be important. [4]
- (b) Use sketches and notes to show **two** methods of mounting different items off the floor. [4]
- (c) Develop and sketch **three** separate ideas for the storage solution. [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 Bike trip computers are widely available for sale in shops.



Design a freestanding point-of-sale display for a bike trip computer.

The display must allow customers to interact with a computer unit and include storage for 12 bike trip computer packages.

- (a) List **four** additional points about the function of such a freestanding point-of-sale display that you consider to be important. [4]
- (b) Use sketches and notes to show **two** methods of joining lightweight graphic materials together. [4]
- (c) Develop and sketch **three** separate ideas for the freestanding point-of-sale display. [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 Bicycles cannot be stored upright when left unattended without a support.



Design a device that allows a bicycle to be stored upright when left unattended in open spaces.

- (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 that could be used to provide an extending or folding mechanism. [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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