



Cambridge IGCSE™

DESIGN & TECHNOLOGY

0445/11

Paper 1 Product Design

October/November 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

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.

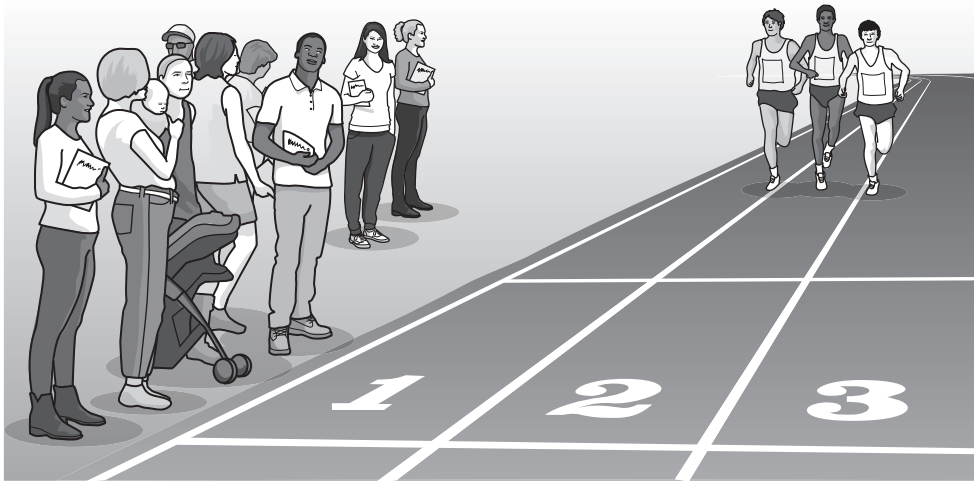
INFORMATION

- 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.

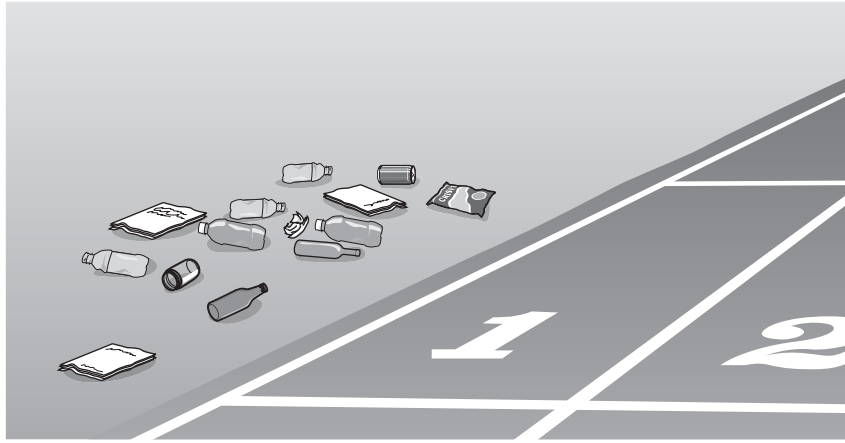
- 1 People attending outside sports events often have nowhere to sit.



Design a portable seat that could be used by one person. The seat must include provision for holding an A4 size programme for the event.

- (a) List **four** additional points about the function of such a portable seat that you consider to be important. [4]
- (b) Use sketches and notes to show **two** methods of joining materials to allow for folding or adjustment. [4]
- (c) Develop and sketch **three** separate ideas for the folding seat. [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 Litter can create a problem when many people attend outdoor events.



Design a temporary litter collection and removal system that could be taken away easily after the event has finished.

- (a) List **four** additional points about the function of such a litter collection and removal system that you consider to be important. [4]
- (b) Use sketches and notes to show **two** temporary joints suitable for semi-resistant materials. [4]
- (c) Develop and sketch **three** separate ideas for the litter collection and removal 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]

- 3 It can be tiring holding an umbrella when it rains for a long time.



Design a portable device that would hold an umbrella when in use so that both hands would be free.

- (a) List **four** additional points about the function of such a portable device that you consider to be important. [4]
- (b) Use sketches and notes to show **two** mechanisms that could be used to grip cylindrical shapes. [4]
- (c) Develop and sketch **three** separate ideas for the portable 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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