Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

DESIGN AND TECHNOLOGY **0445/12**

Paper 1 Product Design **October/November 2017**

1 hour 15 minutes

Candidates answer on the pre-printed A3 Answer Sheets.

Additional Materials: Standard drawing equipment and coloured pencils.

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READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name in the spaces on **both** printed Answer Sheets.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **one** question.
Write/draw your answers in the spaces provided on the Answer Sheets.
You may use a calculator.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total of the marks for this paper is 50.

This document consists of **4** printed A4 pages and **2** A3 Inserts.

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CAMBRIDGE International Examinations

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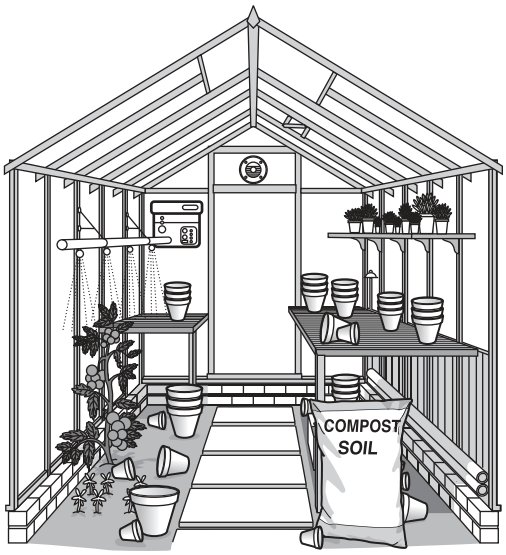
Answer **one** question only on the A3 pre-printed Answer Sheets provided.

1 Plant pots can be filled with compost soil.



Design a unit that can be used at a convenient height when a person is filling plant pots with compost soil. The unit should fold flat for storage.

(a) List **four** additional points about the function of such a unit that you consider to be important. [4]

(b) Show **two** different methods which could be used to provide a folding feature on such a unit. [4]

(c) Develop and sketch **three** ideas for the unit. [12]

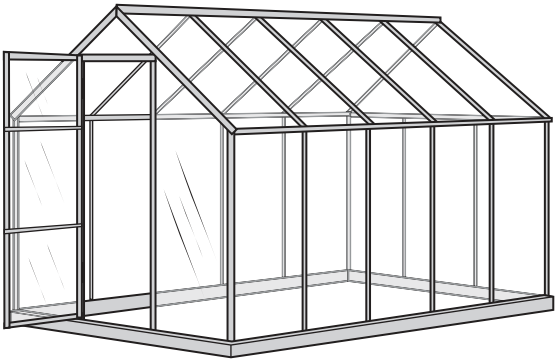
(d) Evaluate your ideas and justify why you have chosen **one** idea to develop more fully. [8]

(e) Draw, using a method of your own choice, a full solution to the problem. Include construction details and important dimensions. [12]

(f) Suggest **two** suitable specific materials for your solution and give reasons for your choice. [4]

(g) Outline a method used to manufacture **one** part of your solution. [6]

2 A company wishes to promote a range of greenhouses. Potential customers will receive the model in an envelope in flat-pack form.



Design a three dimensional (3D) flat-pack model of a greenhouse.

(a) List **four** additional points about the function of such a 3D model that you consider to be important. [4]

(b) Use sketches and notes to show **two** different methods of making a flat-pack 3D model pop up when released from an envelope. [4]

(c) Develop and sketch **three** ideas for the 3D model. [12]

(d) Evaluate your ideas and justify why you have chosen **one** idea to develop more fully. [8]

(e) Draw, using a method of your own choice, a full solution to the problem. Include construction details and important dimensions. [12]

(f) Suggest **two** suitable specific materials for your solution and give reasons for your choice. [4]

(g) Outline a method used to manufacture **one** part of your solution. [6]

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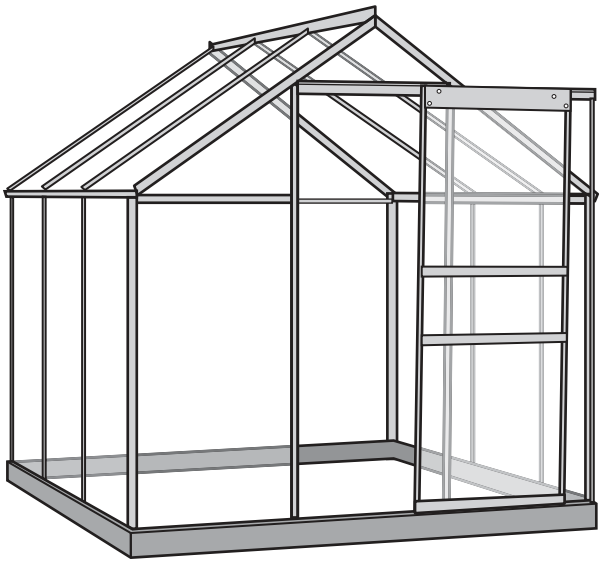
3 Greenhouse doors are left open during hot days.



Design a device which will automatically close a greenhouse door when the temperature falls.

(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** mechanisms which could be used to convert rotary to linear motion. [4]

(c) Develop and sketch **three** ideas for the device. [12]

(d) Evaluate your ideas and justify why you have chosen **one** idea to develop more fully. [8]

(e) Draw, using a method of your own choice, a full solution to the problem. Include construction details and important dimensions. [12]

(f) Suggest **two** suitable specific materials for your solution and give reasons for your choice. [4]

(g) Outline a method used to manufacture **one** part of your solution. [6]