

DESIGN AND TECHNOLOGY

Paper 1 Product Design

0445/11 May/June 2019 1 hour 15 minutes

Candidates answer on the pre-printed A3 Answer Sheets.

Additional Materials: Standard drawing equipment and coloured pencils.

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 pages and 2 A3 Inserts.

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

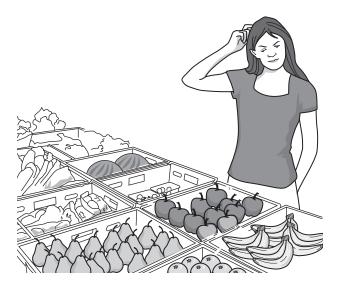
1 Some people grow apples in their own garden but then have nowhere to store the apples once picked.



Design a storage unit that will be positioned in a garden shed and provide good air circulation for the apples.

- (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 would allow good air circulation in a storage unit. [4]
- (c) Develop and sketch three ideas for the storage 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 Fruit is sent long distances around the world so that it can be available out of season in many countries. This increases costs and adds to air pollution.



Design a portable display to be positioned in a shop that would encourage people to buy and eat fruit grown locally.

- (a) List four additional points about the function of such a portable display that you consider to be important.
- (b) Use sketches and notes to show two ways of joining lightweight materials temporarily. [4]
- (c) Develop and sketch three different ideas for the portable display. [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]

3 It can be difficult to pick apples that are high in a tree.



Design a device that would allow apples high in a tree to be picked without the use of steps or ladders.

- (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 mechanical gripping methods. [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]

[6]

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

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