



**Cambridge Assessment International Education**  
Cambridge International General Certificate of Secondary Education

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**DESIGN AND TECHNOLOGY**

**0445/13**

Paper 1 Product Design

**May/June 2019**

**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.

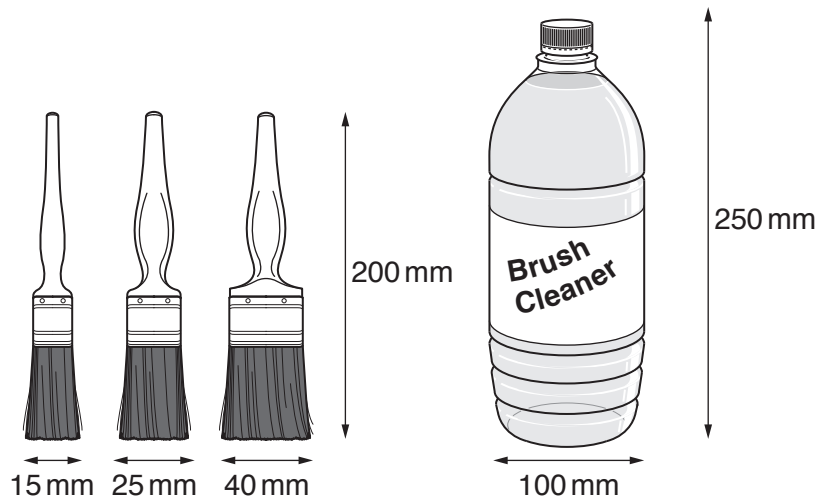
The total of the marks for this paper is 50.

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

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

- 1 Painters need to clean and look after their brushes after they have finished painting.

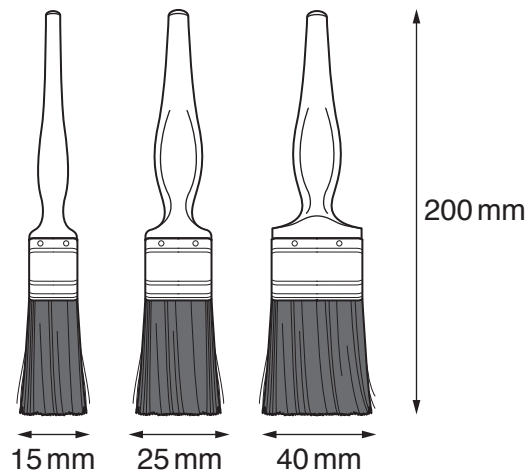


Design a portable holder for the three paint brushes and the bottle of brush cleaner shown.

- (a) List **four** additional points about the function of such a portable holder that you consider to be important. [4]
- (b) Use sketches and notes to show **two** types of carrying handle. [4]
- (c) Develop and sketch **three** ideas for the portable holder. [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

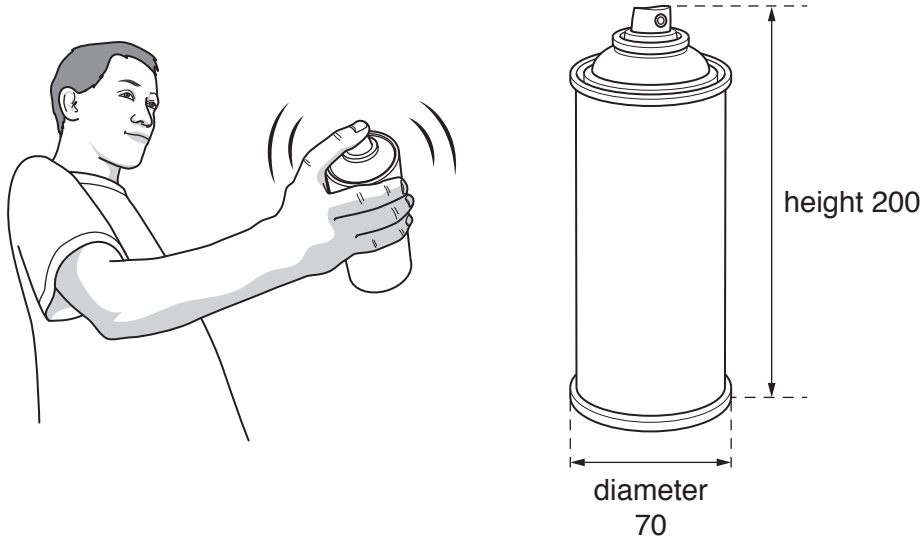
- 2 High quality paint brushes need to be well-packaged for sale so that they do not get damaged.



Design packaging for the three paint brushes shown so that they can be sold as a set in shops.

- (a) List **four** additional points about the function of such packaging that you consider to be important. [4]
- (b) Use sketches and notes to show **two** methods of making contents visible in packaging. [4]
- (c) Develop and sketch **three** different ideas for the packaging. [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 is important to shake spray paint cans vigorously before they are used.



Design a device that will shake a spray paint can so that the contents are mixed well.

- (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** types of movement that would be effective in such a device. [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]

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