



# Cambridge IGCSE™

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## DESIGN & TECHNOLOGY

0445/13

Paper 1 Product Design

May/June 2020

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.

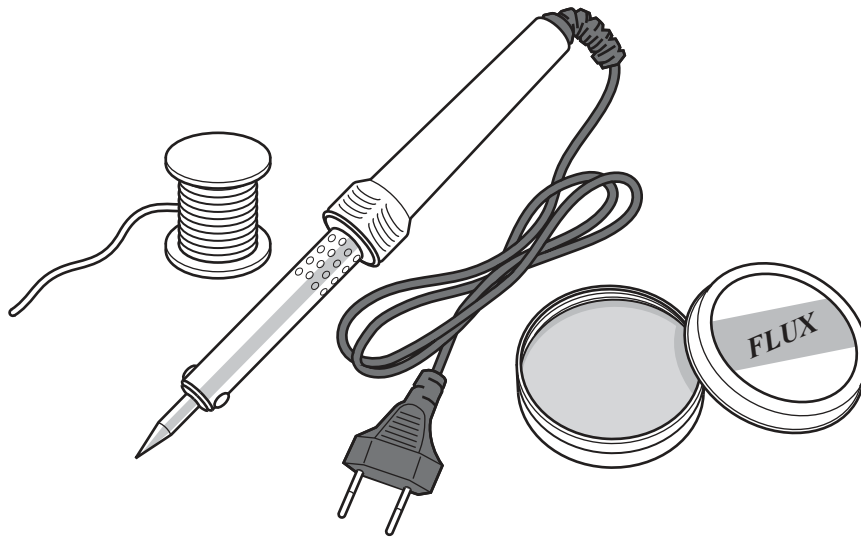
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This document has 4 pages. Blank pages are indicated.

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

**1 Problem:**

Several items are required when soldering.

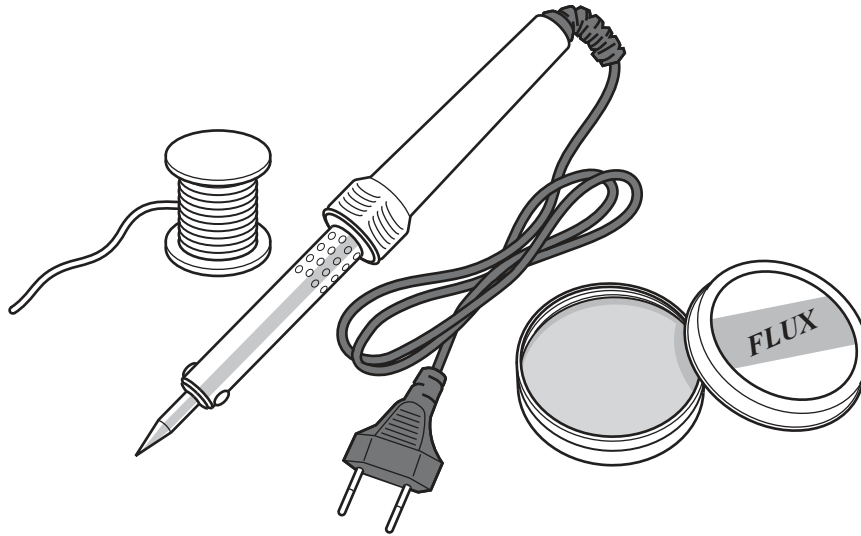


Design a portable unit that would hold the soldering items shown and include a safe resting point for the hot soldering iron.

- (a) List **four** additional points about the function of such a portable unit that you consider to be important. [4]
- (b) Use sketches and notes to show **two** ways of safely resting a hot soldering iron. [4]
- (c) Develop and sketch **three** separate ideas for the portable unit. [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 Problem:

The soldering items shown below are to be sold together in one package.

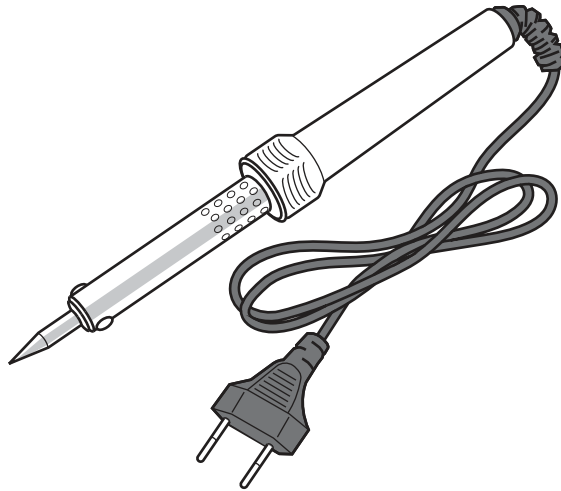


Design point of sale packaging for the three soldering items shown. Only the soldering iron should be visible inside the packaging.

- (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** closing methods for packaging of this type. [4]
- (c) Develop and sketch **three** separate ideas for the packaging. [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 Problem:**

Soldering irons are dangerous when hot.



Design a stand for a soldering iron that would indicate when the soldering iron is hot.

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