



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

---

**DESIGN AND TECHNOLOGY**

**0445/12**

Paper 1 Product Design

**May/June 2018**

**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.

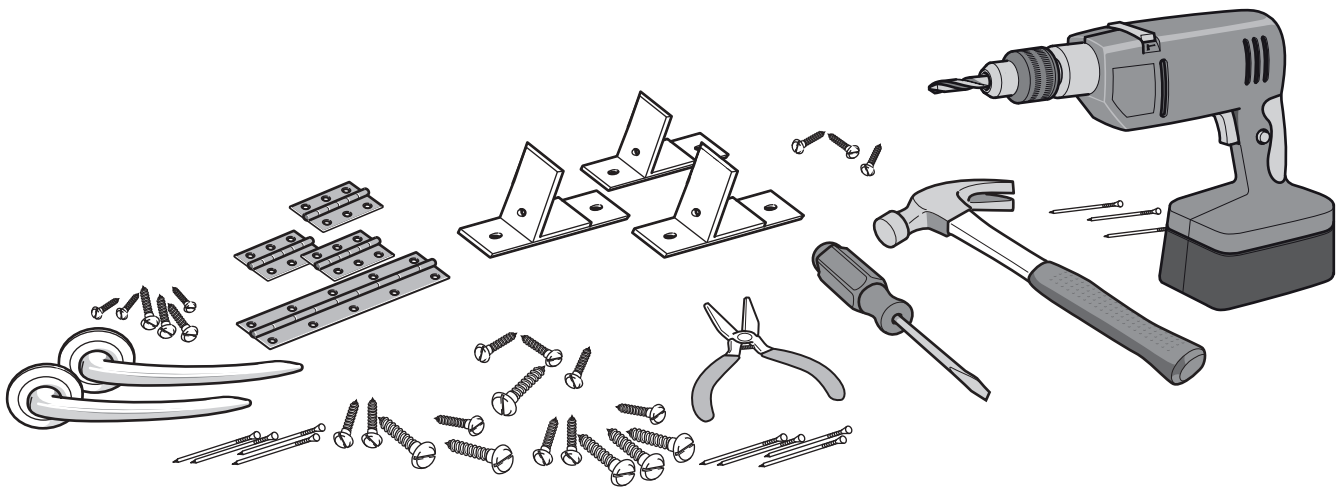
The total of the marks for this paper is 50.

---

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

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

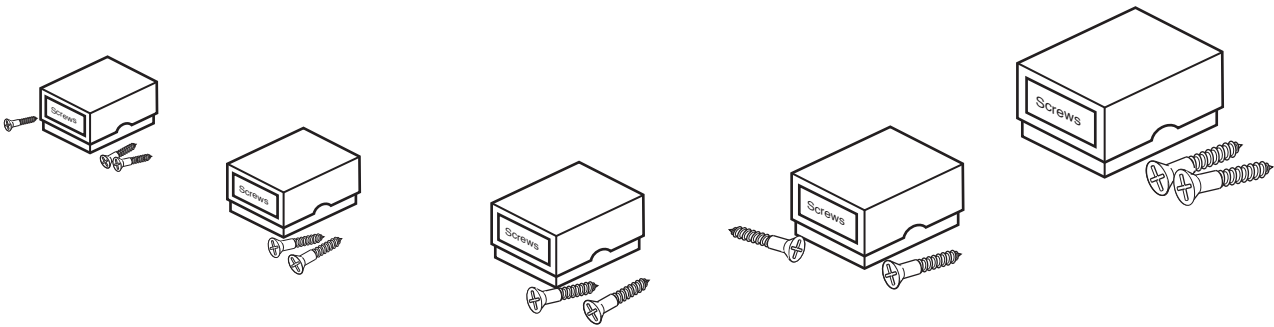
- 1 Repair workers need to transport a variety of items with them when they visit a house to fix a problem.



Design a portable unit that will organise repair items.

- (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** methods of making the unit portable. [4]
- (c) Develop and sketch **three** ideas for the portable 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 shop wishes to promote the sale of a new range of screws.



Design a free standing unit which will promote the sale of this new range of screws.

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

- 3 Shop owners sometimes have a mechanical puppet displayed in their shop window to attract attention.



Design a mechanical puppet which will promote the sale of a product in this shop.

- (a) List **four** additional points about the function of such a mechanical puppet that you consider to be important. [4]
- (b) Use sketches and notes to show **two** different mechanisms by which reciprocating movement can be achieved. [4]
- (c) Develop and sketch **three** ideas for the mechanical puppet. [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]

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge International Examinations Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at [www.cie.org.uk](http://www.cie.org.uk) after the live examination series.

Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.