



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

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**DESIGN AND TECHNOLOGY**

**0445/12**

Paper 1 Product Design

**October/November 2016**

MARK SCHEME

Maximum Mark: 50

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**Published**

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2016 series for most Cambridge IGCSE<sup>®</sup>, Cambridge International A and AS Level components and some Cambridge O Level components.

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- 1 (a) Accept any **four** additional suitable points – hygienic, lightweight, easy to clean, easy to transport/carry, waterproof, collapsible for storage, keep items cool.  
Accept other valid responses. 1 × 4 [4]
- (b) Accept drawings of any **two** ways of joining the materials at right angles – butt, lap, housing, dovetail joint, weld, braze, solder, temporary/permanent fittings.  
Accept other valid responses. 2 × 2 [4]
- 2 (a) Accept any **four** additional suitable points – hygienic, easily stored when not in use, quick to use, disposable material, lightweight, airflow.  
Accept other valid responses. 1 × 4 [4]
- (b) Accept drawings of any **two** waterproofing methods – plastic coating, impregnated with oil, specialist paint/varnish, plastic laminate, waxing  
Accept other valid responses. 2 × 2 [4]
- 3 (a) Accept any **four** additional suitable points – corrosion resistant, stable, accommodates specific items, quick assembly method, surface finish, easy to clean, hygienic, lightweight  
Accept other valid responses. 1 × 4 [4]
- (b) Accept drawings of any **two** levelling methods – adjustable legs, screw-in feet, triangular base, use of blocks/packing pieces.  
Accept other valid responses. 2 × 2 [4]

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### Questions 1, 2 and 3

- (c) Any suitable ideas. At least **three different** ideas for maximum marks. Pro rata if fewer.
- Communication**
- |  |     |
|--|-----|
| Simple drawings displaying a low standard or limited range of techniques                             | 0–2 |
| Clear drawings displaying a good standard and a range of techniques – shading/colour/annotation etc. | 3–4 |
| High quality drawings using a wide range of techniques with clear annotation and detail              | 5–6 |
- Suitability**
- |   |          |
|---|----------|
| Simplistic designs showing outlines only                          | 0–2      |
| Rather more detail, sensible solutions that could work            | 3–4      |
| Accurate solutions, good fitness for purpose, construction detail | 5–6 [12] |
- (d) Evaluation of each of the ideas. At least 3 evaluations up to 2 marks each. Selection and justification. (1+1) 0–6  
2 [8]
- (e) **Quality of drawing**
- |  |     |
|--|-----|
| Poor line quality, proportions, little detail                                    | 1   |
| Good line work, use of colour, proportions, some detail                          | 2–3 |
| High standard throughout with a range of techniques that show clearly all detail | 4   |
- Dimensions** 2 or 3 overall dimensions only – 1  
Additional detail dimensions – 1 2
- Construction details**
- |  |          |
|--|----------|
| A simplistic approach showing little or no detail of construction to be used                             | 0–2      |
| Most constructional detail may be obvious from overall views or with some annotation                     | 3–4      |
| All constructional detail will be clear with good annotation and additional detail drawings as necessary | 5–6 [12] |
- (f) Suitable **specific** materials stated. (1+1) 2  
Appropriate reasons for choice. (1+1) 2 [4]
- (g) Suitable method described. 1  
Good detailed description of: processes 0–3  
tools. 0–2 [6]

[50]