



DESIGN AND TECHNOLOGY

0445/12

Paper 1 Product Design

May/June 2019

MARK SCHEME

Maximum Mark: 50

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 International will not enter into discussions about these mark schemes.

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This document consists of **4** printed pages.

Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Question	Answer	Marks
1(a)	Accept any four additional suitable points – ease of access to vegetables, stable – can't topple over, weather proof appropriate materials for display of vegetables, security aspects, method of display e.g. flat or tiered, easy to clean. AOVR. 1×4	4
1(b)	Two methods to make portable – four wheels, two wheels, sack barrow style of unit, small/large wheels, track system, roller system, electrical propulsion with remote control. AOVR. 2×2	4

Question	Answer	Marks
2(a)	Accept any four additional suitable points – stability with weight of attached items, attractive to children, robust construction, ability to support plant, water/moisture issues, methods of fixing items. 1×4	4
2(b)	Accept drawings of any two methods – wire ties, sticky buds/spots, Velcro, tab and hook made in card, elastic band, split pin, double sided tape, transparent tape, shelf system made in card. AOVR. 2×2	4

Question	Answer	Marks
3(a)	Accept any four additional suitable points: safe to use, adapts to different sizes of apple, provides adjustable cutting surface, mechanical advantage of handle/motor over cutting energy required, hygienic to use, easy to clean, attractive to user. AOVR. 1×4	4
3(b)	Accept drawings of any two methods including – crank, screw thread and follower, cam and follower, chain and sprocket, rack and pinion. AOVR. 2×2	4

Question	Answer	Marks
1, 2, 3(c)	Any suitable ideas. At least three different ideas for maximum marks. Pro rata if fewer.	
	<p>Communication</p> <p>Simple drawings displaying a low standard or limited range of techniques. 0–2</p> <p>Clear drawings displaying a good standard and a range of techniques – shading, colour, annotation. 3–4</p> <p>High quality drawings using a wide range of techniques with clear annotation and detail. 5–6</p>	6
	<p>Suitability</p> <p>Simplistic designs showing outlines only. 0–2</p> <p>Rather more detail, sensible solutions that could work. 3–4</p> <p>Accurate solutions, good fitness for purpose, construction detail. 5–6</p>	6
1, 2, 3(d)	Evaluation of each of the ideas. At least 3 evaluations up to 2 marks each.	6
	Selection and justification. 1+1	2

Question	Answer	Marks
1, 2, 3(e)	<p>Quality of drawing</p> <p>Poor line quality, proportions, little detail 1</p> <p>Good line work, use of colour, proportions, some detail. 2–3</p> <p>High standard throughout with a range of techniques that show clearly all detail. 4</p> <p>Dimensions</p> <p>2 or 3 overall dimensions only. 1</p> <p>Additional detail dimensions. 1</p> <p>Construction detail</p> <p>A simplistic approach showing little or no detail of construction to be used. 0–2</p> <p>Most construction detail may be obvious from overall views or from some annotation. 3–4</p> <p>All construction detail will be clear with good annotation and additional detail drawings as necessary. 5–6</p>	<p>4</p> <p>2</p> <p>6</p>
1, 2, 3(f)	<p>Suitable specific materials stated. 1+1</p> <p>Appropriate reasons for choice. 1+1</p>	<p>4</p>
1, 2, 3(g)	<p>Suitable method described. 1</p> <p>Good detailed description of: Processes 0–3 Tools 0–2</p>	<p>6</p>