

Wednesday 30 January 2013 – Afternoon

GCSE DESIGN AND TECHNOLOGY Resistant Materials

A564/01 Technical Aspects of Designing and Making

Candidates answer on the Question Paper.

OCR supplied materials:
None

Other materials required:
None

Duration: 1 hour 15 minutes



Candidate forename		Candidate surname	
-----------------------	--	----------------------	--

Centre number						Candidate number				
---------------	--	--	--	--	--	------------------	--	--	--	--

INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. HB pencil may be used for graphs and diagrams only.
- Answer **all** the questions in Section A **and** Section B.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Write your answer to each question in the space provided. If additional space is required, you should use the lined pages at the end of this booklet. The question number(s) must be clearly shown.
- Do **not** write in the bar codes.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is **60**.
- All dimensions are in millimetres.
- Your Quality of Written Communication is assessed in questions marked with an asterisk (*).
- This document consists of **16** pages. Any blank pages are indicated.

2
SECTION A

Answer **all** questions.

1 Fig. 1 shows an incomplete design for a child's desk made mainly from hardwood.

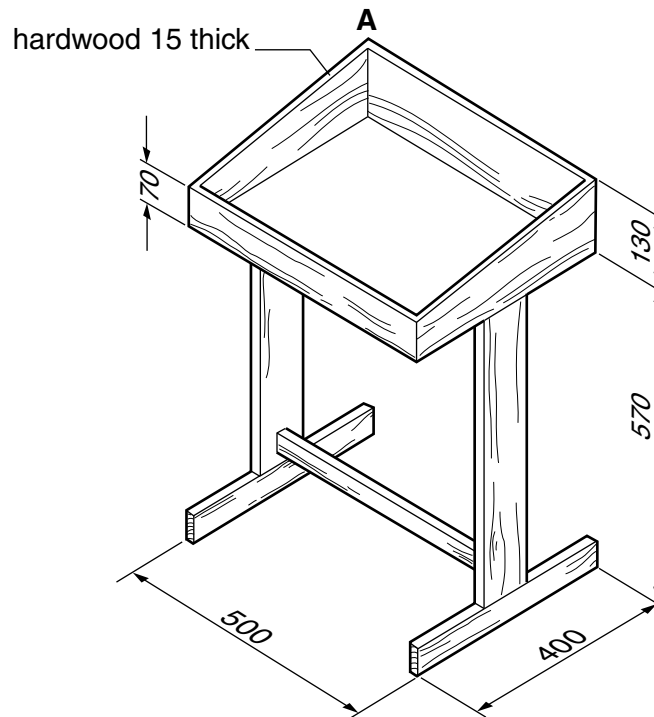


Fig. 1

(a) Give **three** specification points for a child's desk.

- 1
- 2
- 3

[3]

(b) Name and sketch a suitable joint, other than a butt joint, at corner **A**.

Name of joint

[3]

(c) A lid is needed for the desk.

(i) Tick (✓) the type of manufactured board most suitable for the lid.

Hardboard	Plywood	Chipboard

[1]

(ii) Tick (✓) the thickness of manufactured board most suitable for the lid.

3 mm	8 mm	15 mm

[1]

(iii) Use sketches and notes to show how the lid could be fitted to the desk.
The lid must open and close.
Include details of all constructions and fittings used.

[4]

- 2 Fig. 2 shows an exploded view of an incomplete model car that will be powered by a battery and a small electric motor.

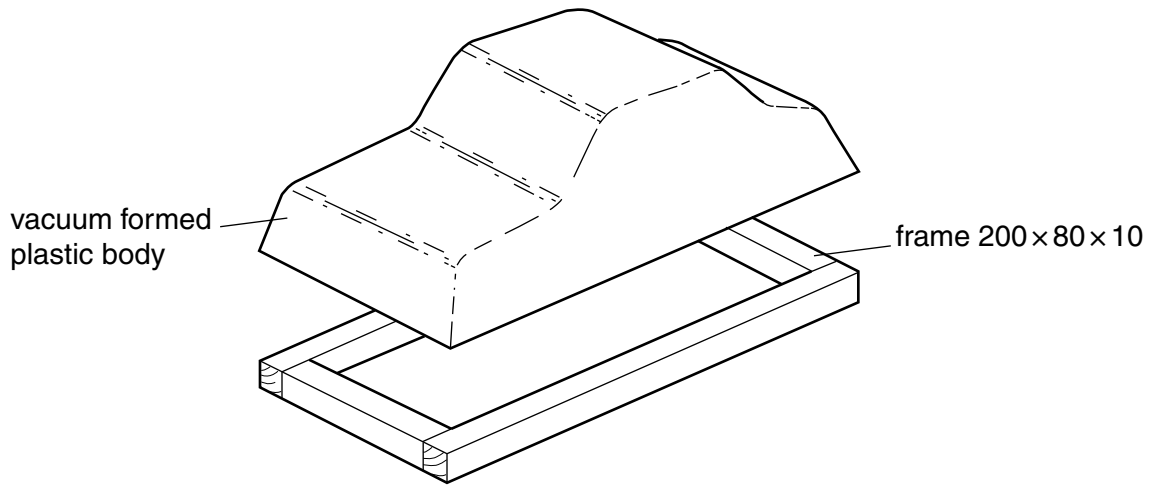


Fig. 2

- (a) Explain why weight is an important consideration in the design of the model car.

.....

.....

..... [2]

- (b) Tick (✓) the type of plastic most suitable for the vacuum formed plastic body of the car.

Polypropylene	Polystyrene	Nylon

[1]

- (c) Fig. 3 shows a fault known as ‘webbing’ that can occur during vacuum forming.

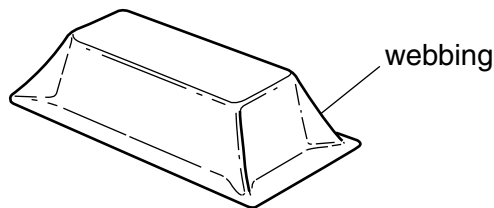


Fig. 3

Give **one** reason why webbing may occur.

..... [1]

(d) The parts of the frame are glued together using a glue gun.
Give **two** advantages of using a glue gun rather than PVA glue.

1

2 [2]

(e) Fig. 4 shows a solid plastic wheel that could be fitted to the model car.

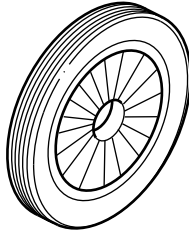


Fig. 4

Name the process used to manufacture the plastic wheel.

..... [1]

(f) The wheels could also be made from 4 mm thick manufactured board.
Explain how **one** wheel, Ø50, could be made from 4 mm thick manufactured board.

.....

.....

.....

..... [3]

(g) Name **two** fixings that could be used to attach the wheels to the frame of the model car.
The wheels must rotate.

1

2 [2]

- 3 Fig. 5 shows a photograph stand. The stand has a 15 mm thick hardwood base and photograph holders made from 2 mm thick acrylic sheet.

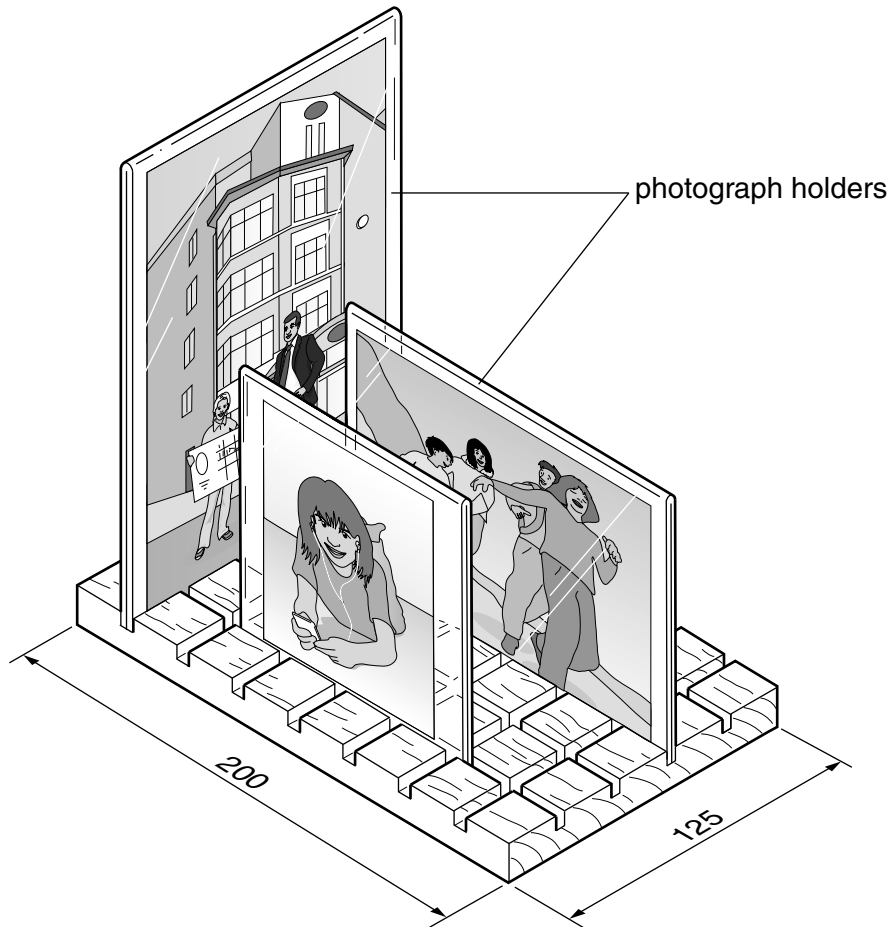
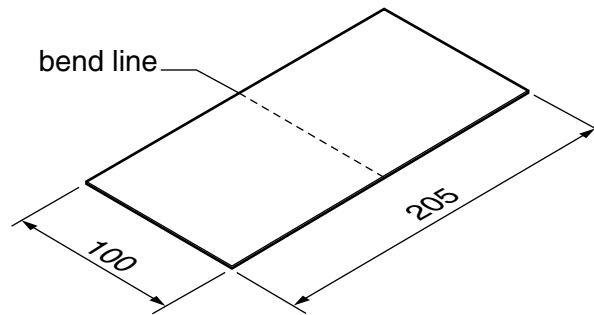


Fig. 5

- (a) State **one** advantage of using a thermoplastic such as acrylic rather than a thermosetting plastic for the photograph holders.

..... [1]

- (b) The acrylic sheet used to make one photograph holder is shown below. The acrylic has been marked out ready to bend to shape.



- (i) Name **one** tool or item of equipment that could be used to mark out the bend line.

..... [1]

- (ii) Use sketches and notes to show how the acrylic sheet could be bent to shape.
Name all the tools and equipment used.

[4]

SECTION B

Answer **all** questions.

4 Fig. 7 shows a barbecue made mainly from 1.5 mm thick mild steel sheet.

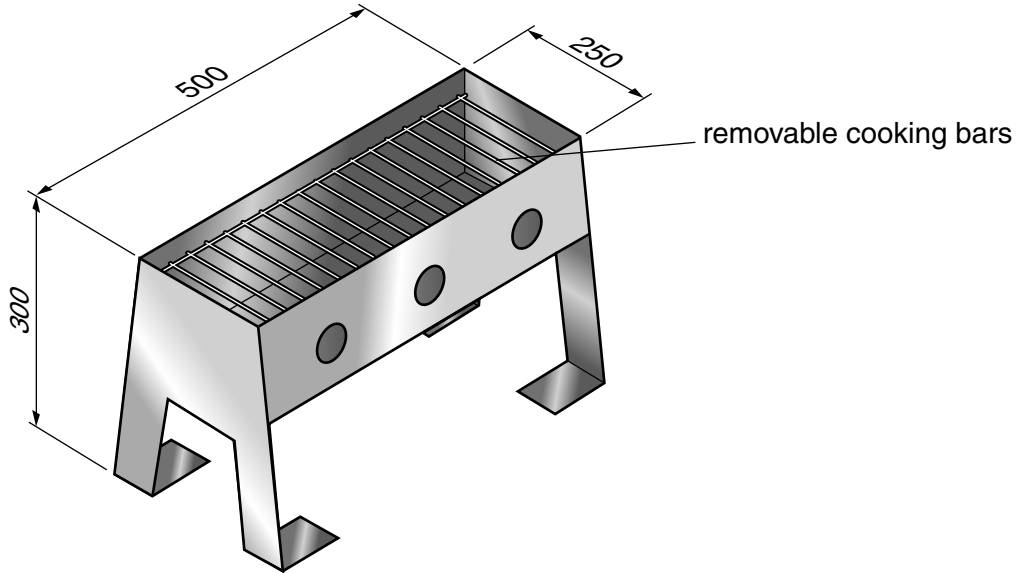


Fig. 7

(a) Tick (✓) **two** properties of mild steel sheet that make it suitable for the barbecue.

Good Insulator	Resistant to Heat	Does Not Rust	Easy to Bend to Shape

[2]

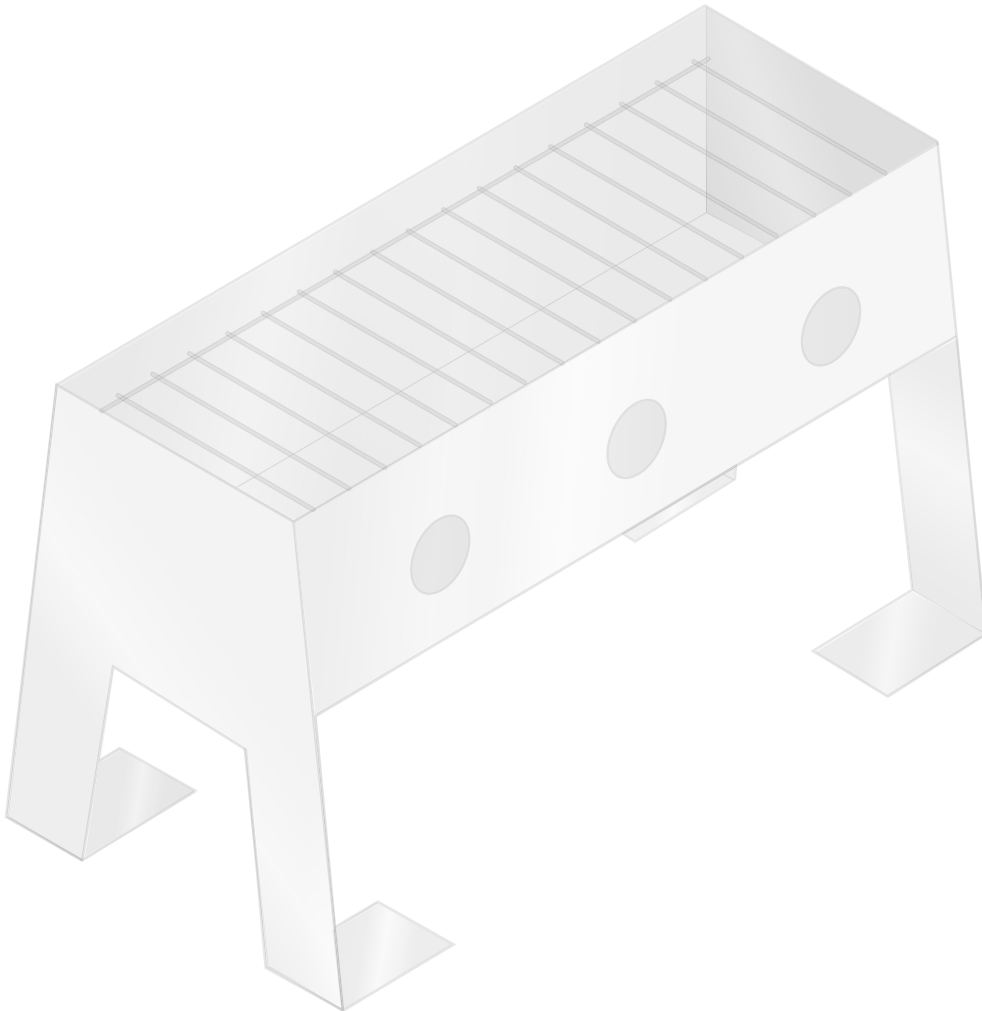
(b) Give **one** reason why the mild steel sheet would require a finish.

..... [1]

(c) Give **one** reason why the cooking bars shown in Fig. 7 are removable.

..... [1]

- (d) (i) Use sketches and notes to show modifications to the barbecue that would make it easier to carry. Include details of any fittings and/or materials used.



[5]

- (ii) Explain why an understanding of ergonomics is important when designing a means of carrying the barbecue.

.....

.....

.....

.....

..... [3]

- 5 Fig. 8 shows a garden seat made from softwood. The garden seat is sold as flat-pack for self-assembly.

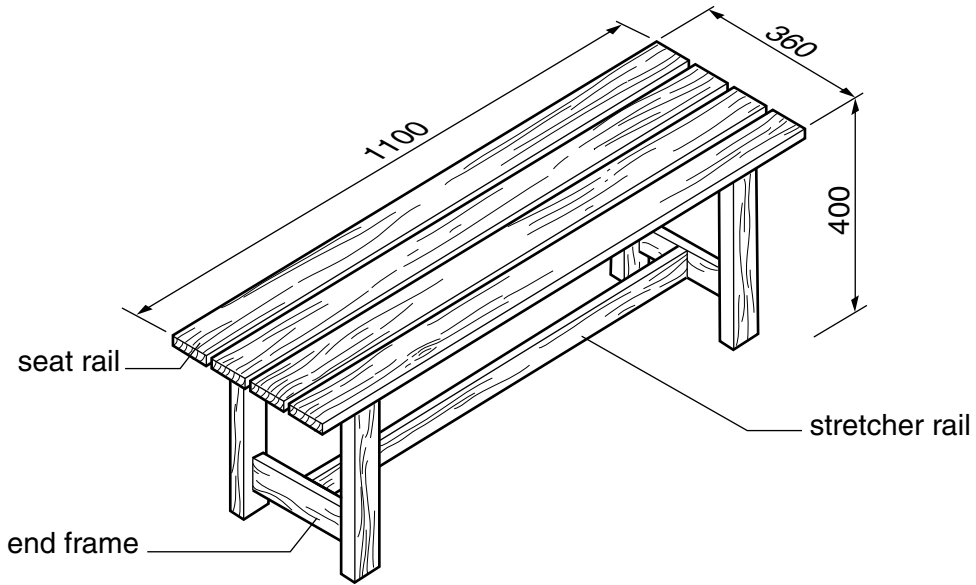


Fig. 8

- (a) Give **two** advantages to the environment of using softwood rather than hardwood for the garden seat.

1

2

[2]

- (b) The table below shows two fittings used in the construction of the garden seat. Complete the table by naming each fitting and stating where each would be used.

Fitting	Name of Fitting	Where it will be Used

[4]

ADDITIONAL ANSWER SPACE

If additional answer space is required, you should use the following lined page(s). The question number(s) must be clearly shown in the margins.

A large area of lined paper for writing answers. It features a vertical margin line on the left side and horizontal dotted lines for writing. The lines are evenly spaced and extend across the width of the page.

PLEASE DO NOT WRITE ON THIS PAGE



Copyright Information

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download from our public website (www.ocr.org.uk) after the live examination series.

If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact the Copyright Team, First Floor, 9 Hills Road, Cambridge CB2 1GE.

OCR 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.