

GENERAL CERTIFICATE OF SECONDARY EDUCATION

DESIGN AND TECHNOLOGY

1956/02

Resistant Materials Technology

Full Course

Paper 2 (Higher Tier)

Candidates answer on the Question Paper

OCR Supplied Materials:

None

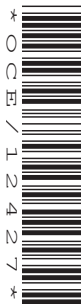
Other Materials Required:

None

Wednesday 26 May 2010

Afternoon

Duration: 1 hour 15 minutes



Candidate Forename		Candidate Surname	
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Centre Number						Candidate Number				
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INSTRUCTIONS TO CANDIDATES

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Answer **all** the questions.
- Do **not** write in the bar codes.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your Candidate Number, Centre Number and question number(s).

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 **50**.
- Dimensions are given in millimetres unless stated otherwise.
- This document consists of **12** pages. Any blank pages are indicated.

- 1 Fig. 1 shows three building blocks that are part of a set used by children. The building blocks are constructed from beech strips.

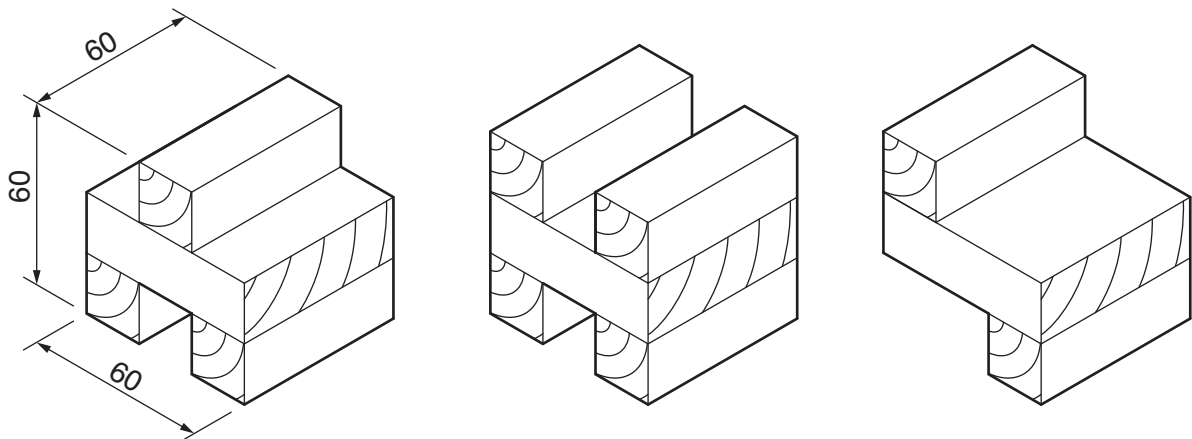


Fig. 1

- (a) Give **two** properties of beech that makes it suitable for the building blocks.

1..... [1]

2..... [1]

- (b) The building blocks could also be made from moulded plastic.

Give **two** reasons why consumers might prefer to buy moulded plastic building blocks rather than those made from beech.

1..... [1]

2..... [1]

- (c) The building blocks shown in Fig. 1 could have been designed using drawing instruments or CAD.

Give **two** advantages, other than speed, of using CAD to design the building blocks.

1..... [1]

2..... [1]

(d) Fig. 2 shows two strips of beech from which the building blocks are constructed.

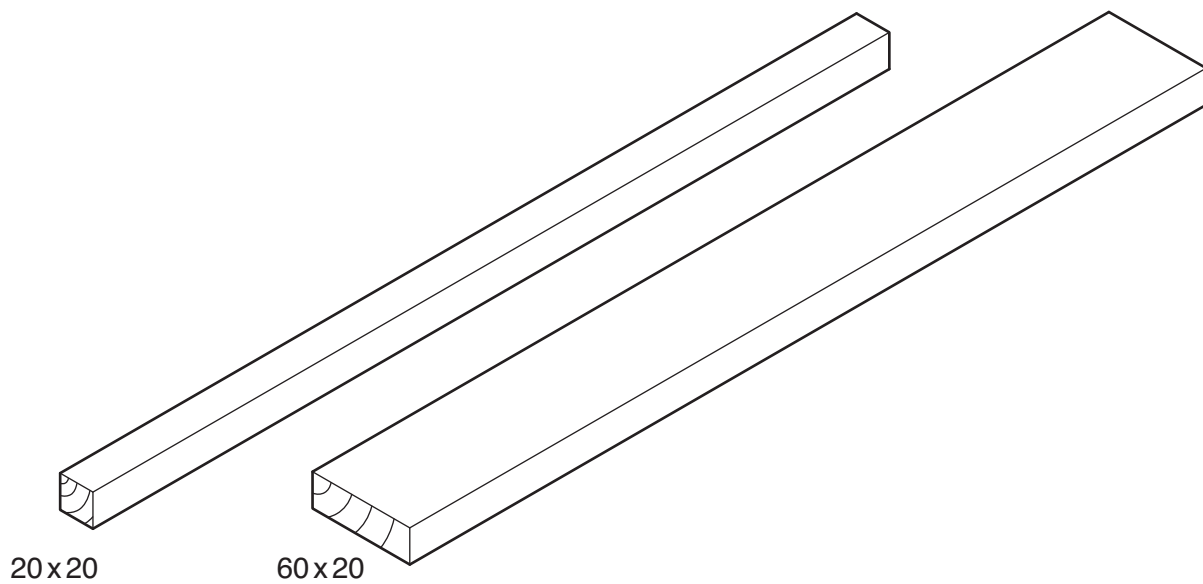


Fig. 2

Use sketches and notes to design a jig that could be used when sawing the strips of beech to length when making the building blocks.

The jig must:

- allow the beech strips to be held securely when being sawn;
- allow the beech strips to be sawn accurately to 60 mm in length;
- accommodate both 20 mm and 60 mm wide beech strips.

[4]

[Total: 10]

Turn over

- 2 Fig. 3 shows a photograph holder made from 5 mm thick acrylic. The rings are made from stainless steel.

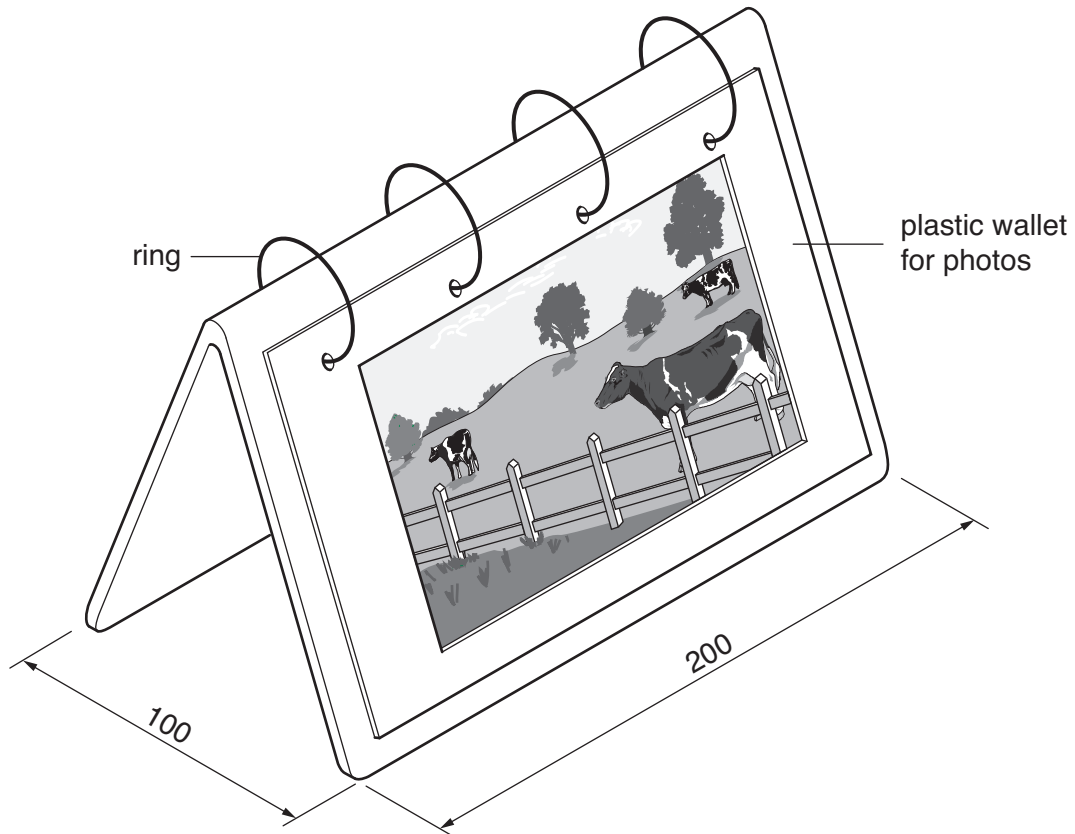


Fig. 3

- (a) State **two** design features of the photograph holder.

1..... [1]
 2..... [1]

- (b) Give **two** properties of stainless steel that makes it suitable for the rings.

1..... [1]
 2..... [1]

- (c) (i) Use sketches and notes to show how the acrylic photograph holder could be batch produced. Do **not** include details of the rings.

[4]

- (ii) Describe **one** quality control check that would be carried out during production of the photograph holder.

.....

.....

..... [2]

[Total: 10]

3 Fig. 4 shows a design for a child's Go-Kart.

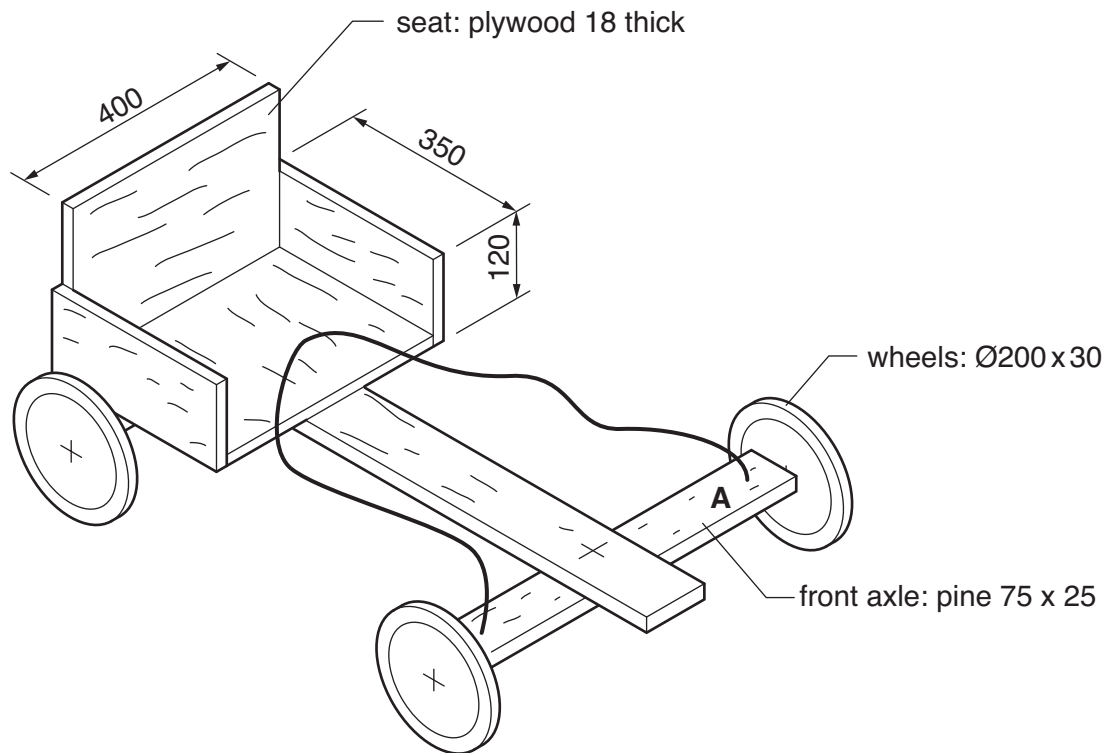


Fig. 4

(a) Give **two** examples of anthropometric data used in the design of the Go-Kart.

1..... [1]

2..... [1]

(b) Use sketches and notes to show how the front wheels could be fitted to part **A**.

[3]

- (c) Add sketches and notes to Fig. 5 to show a design for a hand-operated braking system for the Go-Kart.

The hand-operated braking system must:

- operate against one rear wheel
- include the use of a spring mechanism

Include details of materials, fittings and fixings used.

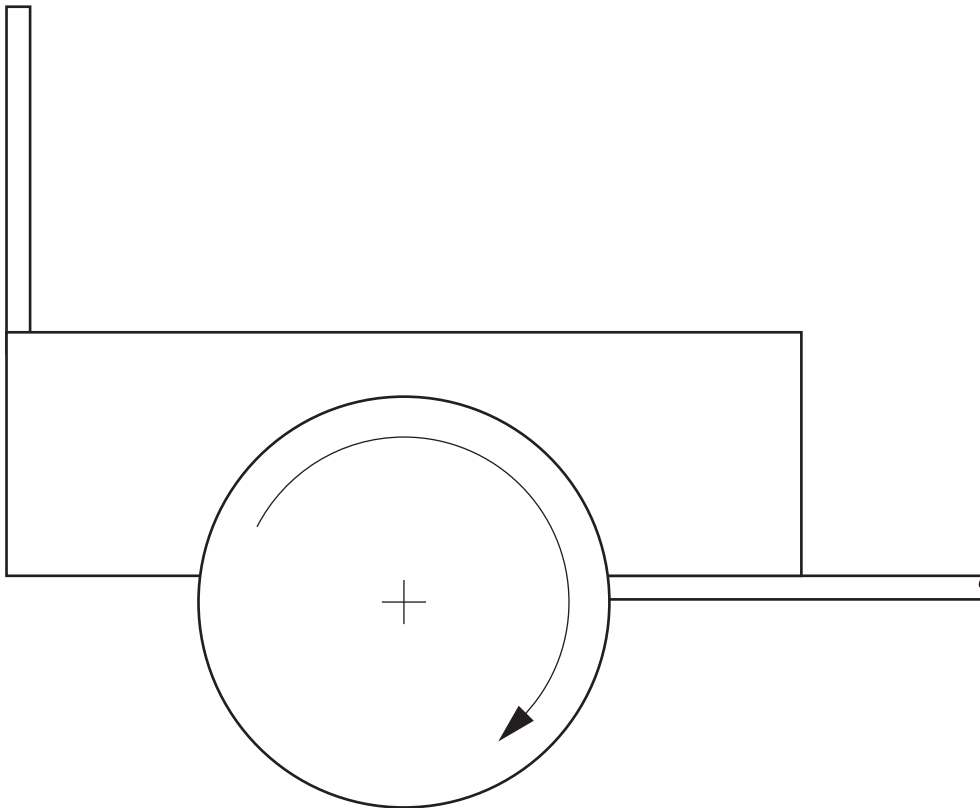


Fig. 5

[5]

[Total: 10]

Turn over

- 4 Fig. 6 shows an incomplete design for a wall mounted tea towel holder. The tea towel holder has a beech back and aluminium rails.

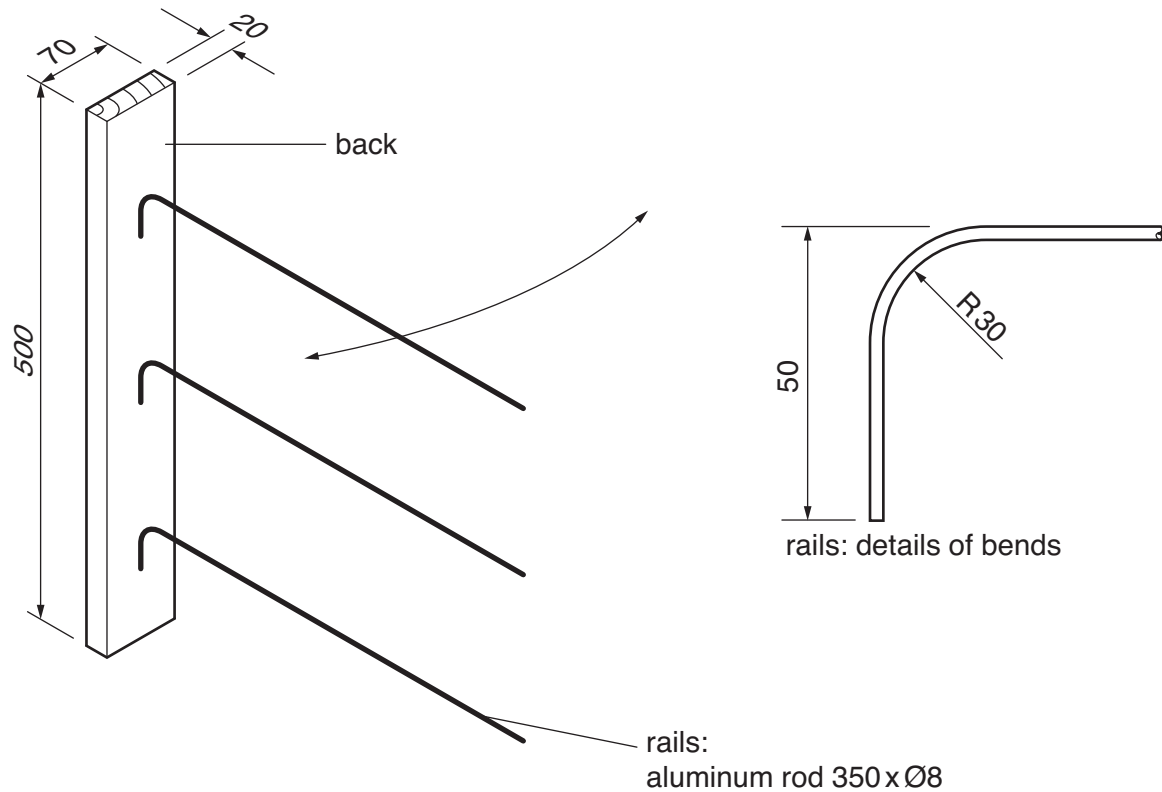


Fig. 6

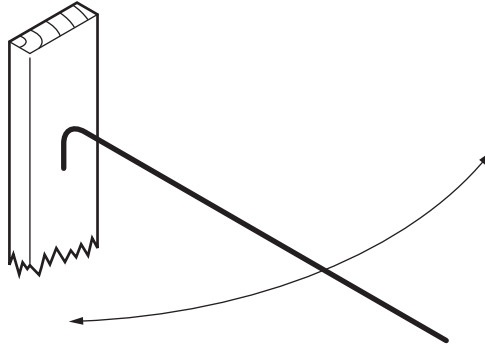
- (a) Give **two** properties of aluminium that make it suitable for the rails.

1..... [1]

2..... [1]

- (b) Use sketches and notes to show a bending jig that could be used to form the bend at the end of each rail.

- (c) Use sketches and notes to show how **one** rail could be attached to the beech back and allowed to move as shown below.
Include details of materials, fittings and fixings used.



[5]

[Total: 10]

Turn over

- 5 Fig. 7 shows views of an incomplete design for a drawing equipment case and drawing board. The case and drawing board are made from 15 mm thick manufactured board.

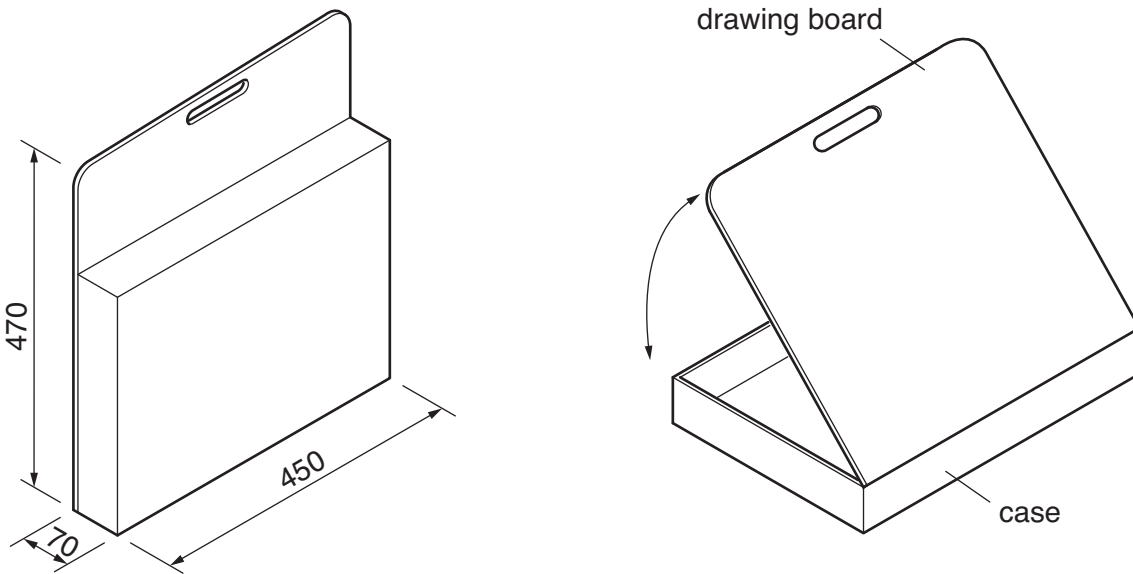


Fig. 7

- (a) Name a **single** hinge that could be used to join the drawing board to the case.

..... [1]

- (b) Use sketches and notes to show how the drawing board could be secured to the case when carried.

[3]

- (c)** In use, the drawing board needs to be able to be tilted to three different angles.
Use sketches and notes to show how the drawing board could be tilted and held in each position.
Include details of materials, fittings and fixings used.

[6]

[Total: 10]

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