

Candidate Forename						Candidate Surname					
Centre Number						Candidate Number					

**OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GENERAL CERTIFICATE OF SECONDARY EDUCATION**

1956/02

DESIGN AND TECHNOLOGY

RESISTANT MATERIALS TECHNOLOGY

Full Course

Paper 2 (Higher Tier)

WEDNESDAY 26 MAY 2010: Afternoon

DURATION: 1 hour 15 minutes

SUITABLE FOR VISUALLY IMPAIRED CANDIDATES

Candidates answer on the Question Paper

OCR SUPPLIED MATERIALS:

None

OTHER MATERIALS REQUIRED:

None

READ INSTRUCTIONS OVERLEAF

INSTRUCTIONS TO CANDIDATES

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes on the first page.
- 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.
- 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.

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

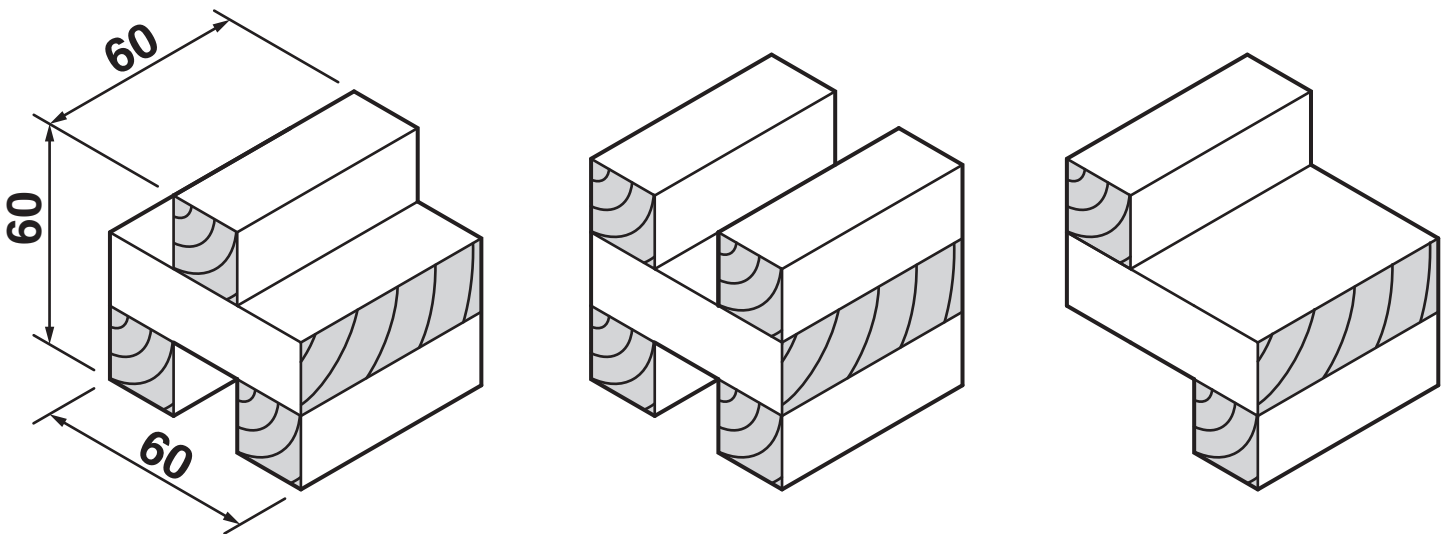


Fig. 1

- (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.

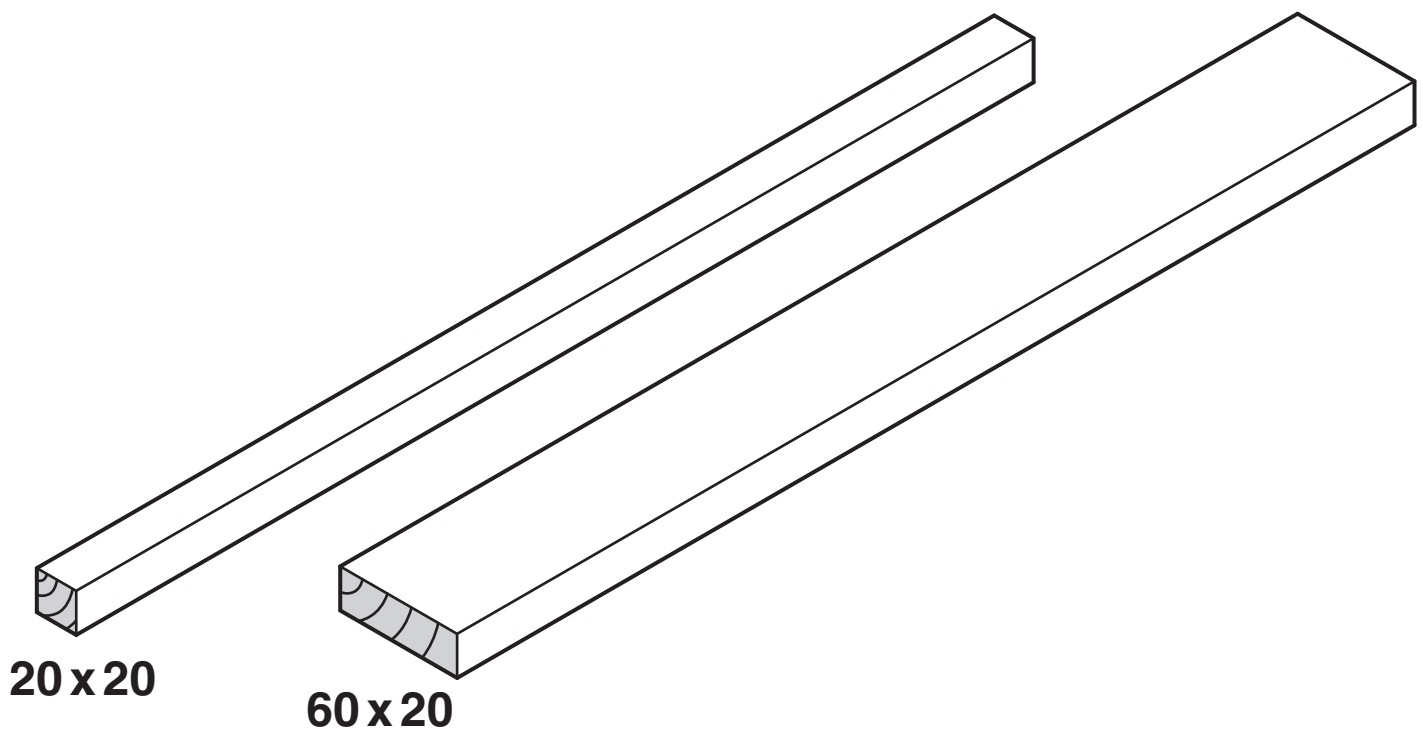


Fig. 2

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]

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

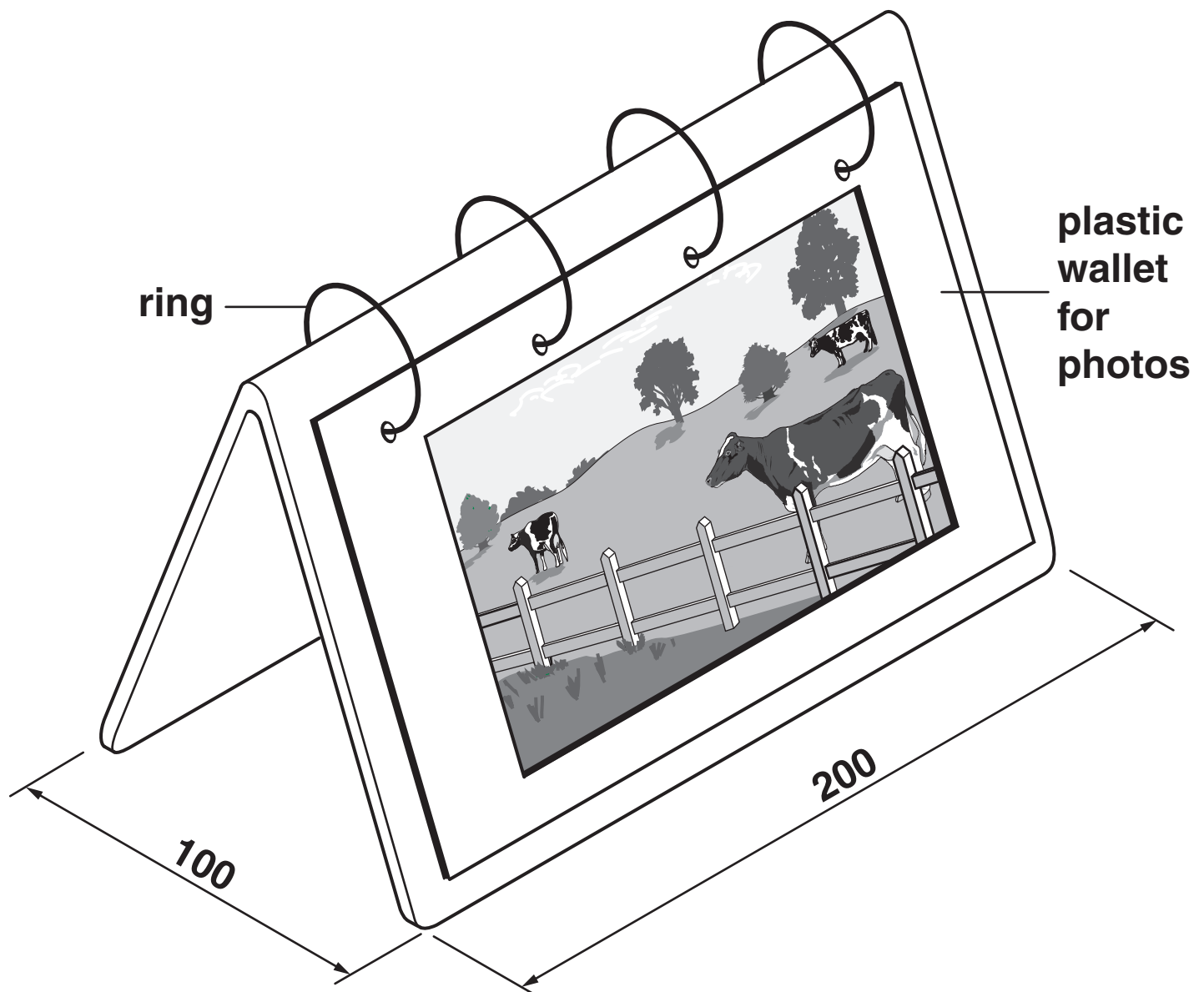


Fig. 3

- (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.

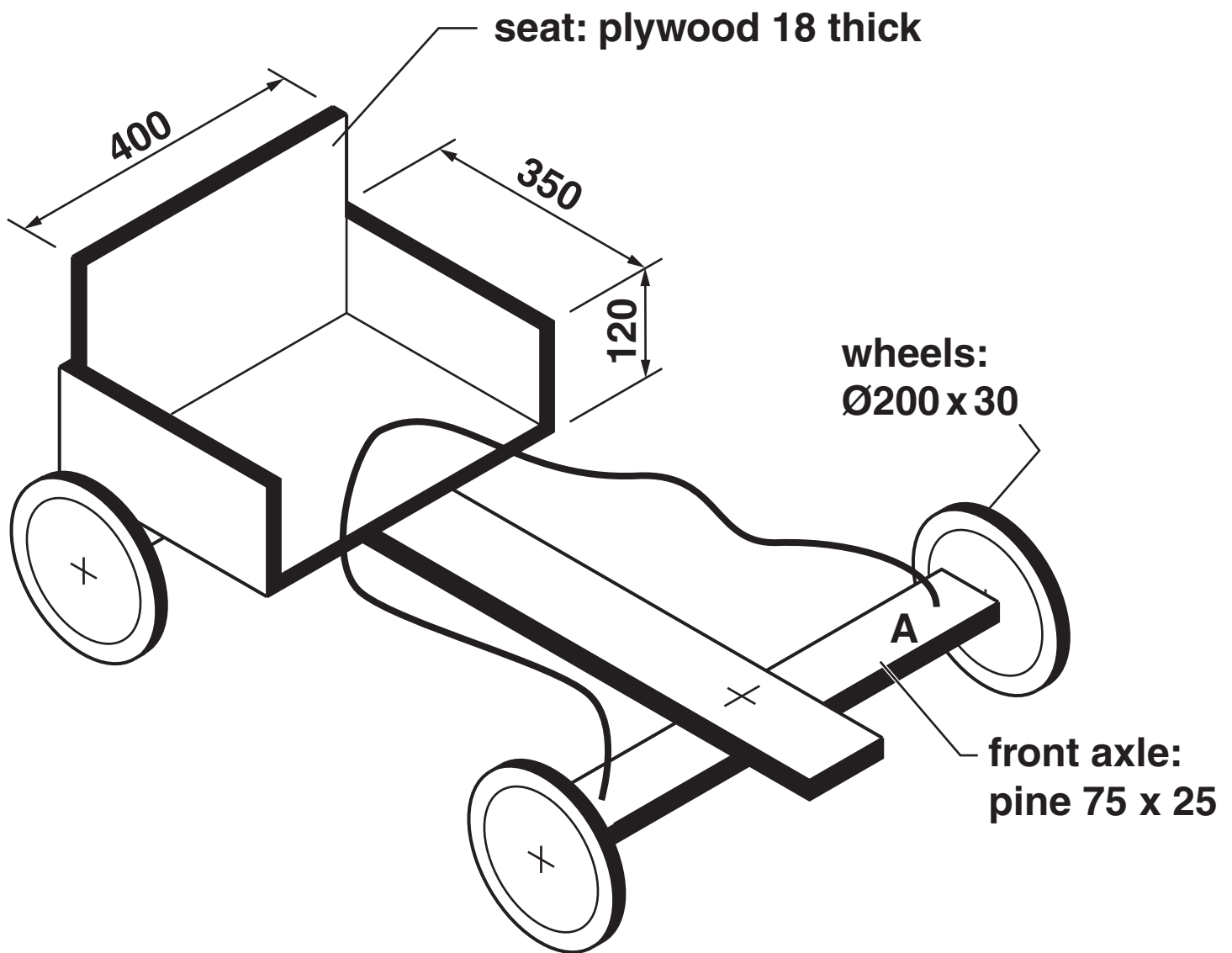


Fig. 4

(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.

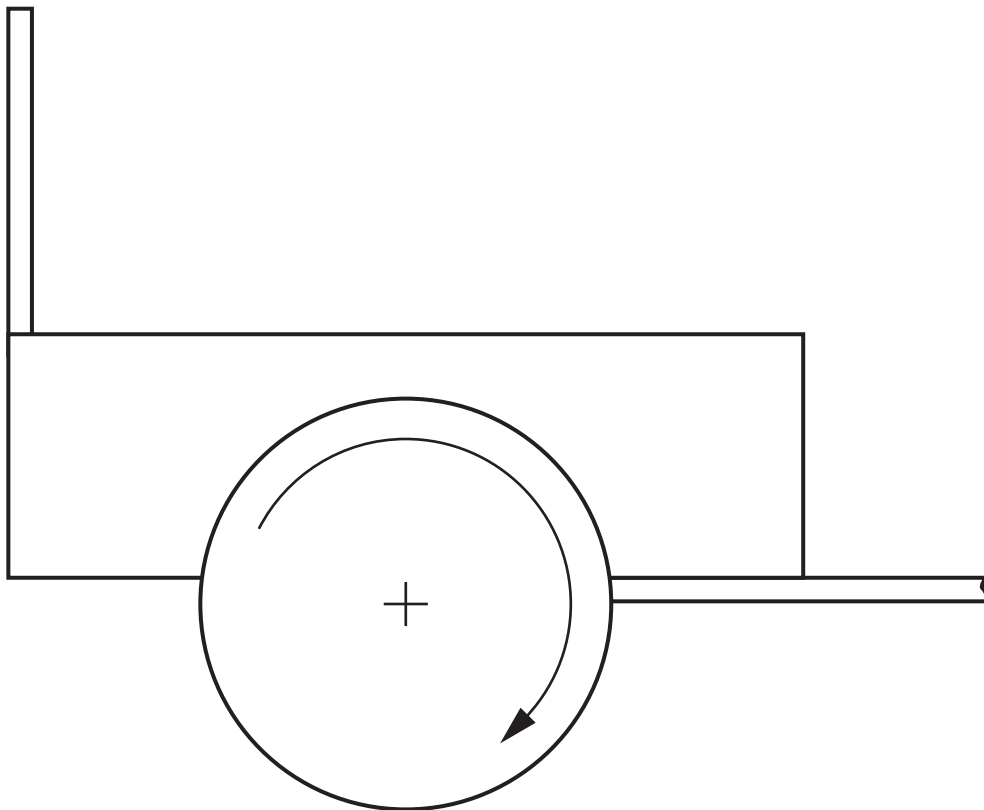


Fig. 5

[5]
[Total: 10]

- 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.

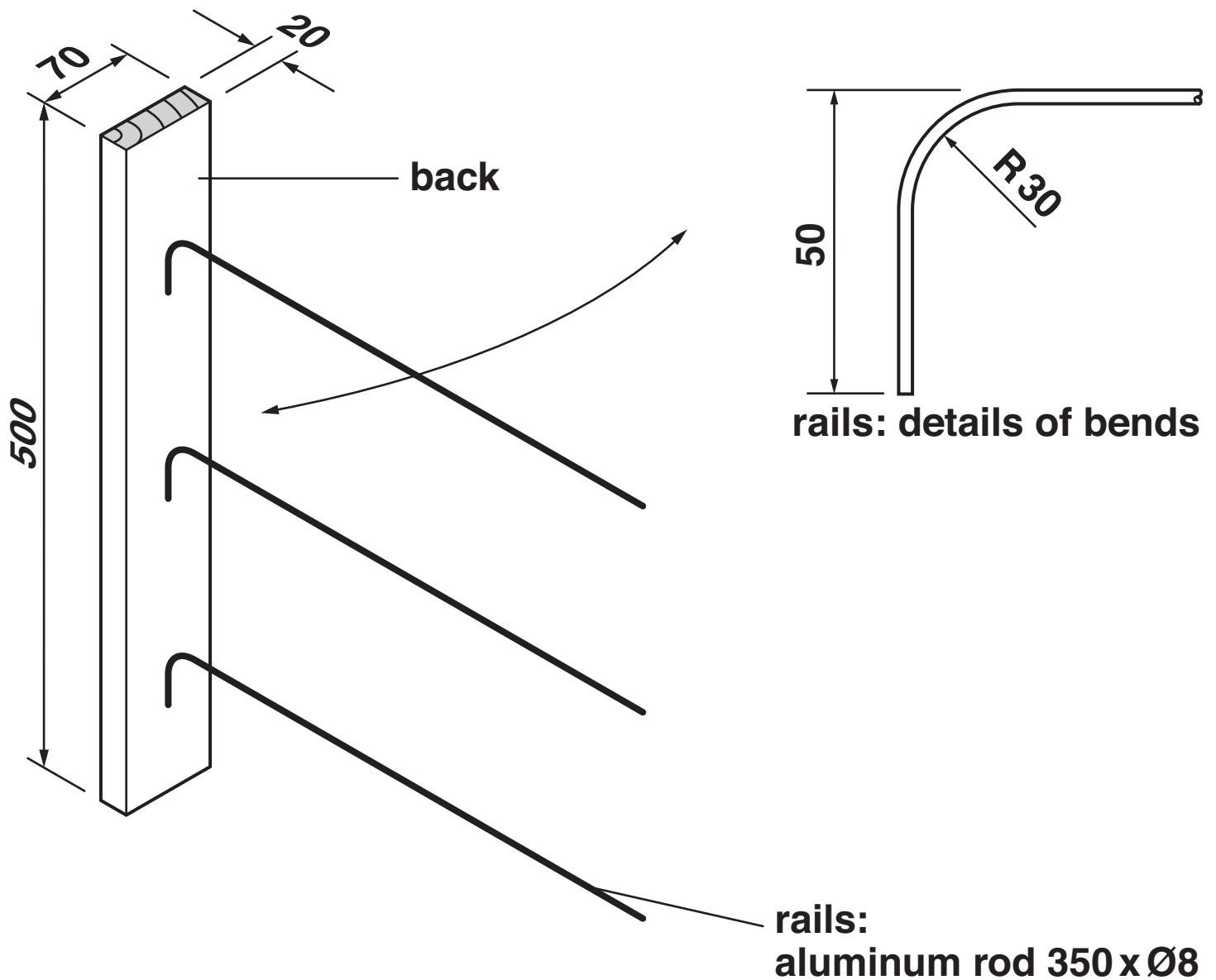


Fig. 6

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

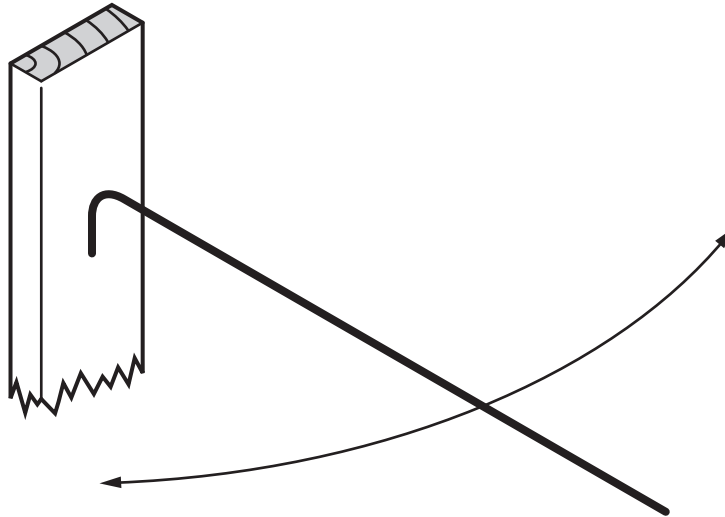
1 _____ [1]

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.**

[3]

- (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]

- 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.

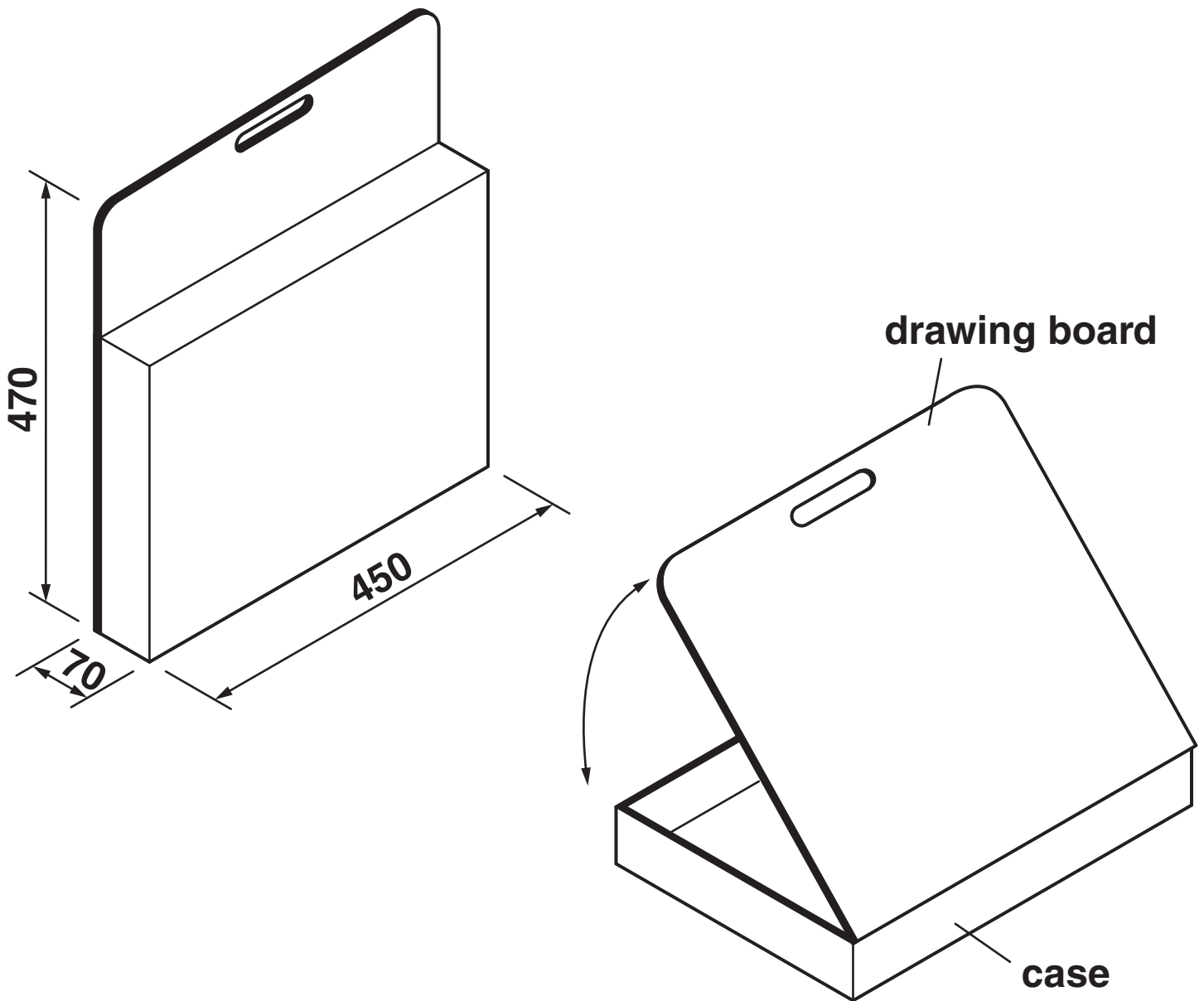


Fig. 7

- (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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