

Centre Number	Candidate Number	Name
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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

DESIGN AND TECHNOLOGY

0445/03

Paper 3 Realisation

October/November 2005

1 hour

Candidates answer on the Question Paper.
No additional materials are required.

To be taken together with Paper 1 in one session of 2 hours 45 minutes.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen in the spaces provided on the Question Paper.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer any **two** questions.
The number of marks is given in brackets [] at the end of each question or part question.
You may use a calculator.

If you have been given a label, look at the details. If any details are incorrect or missing, please fill in your correct details in the space given at the top of this page.

Stick your personal label here, if provided.

For Examiner's Use	
1	
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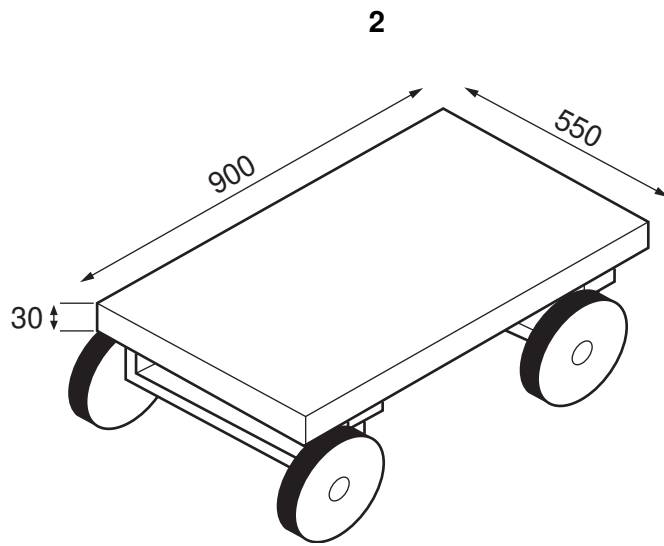


Fig. 1 (for Questions 1 and 2)

- 1 The **base** of a small trolley used to collect garden waste is shown in **Fig. 1**.
The trolley has four removable sides. One side is shown in **Fig. 2**.

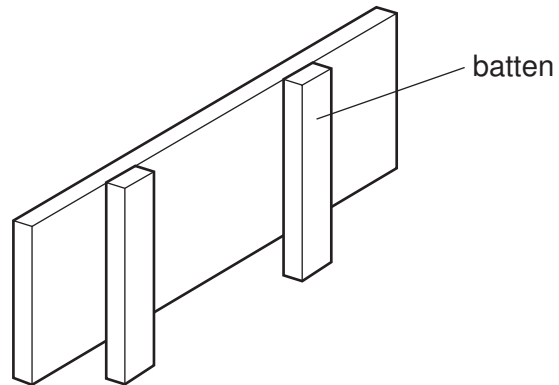


Fig. 2

- (a) Using sketches and brief notes, and listing the tools required, describe how the side could be constructed.

- (b) The battens on the sides of the trolley are slotted into brackets, which are fixed to the base. One of these brackets is shown in Fig. 3.

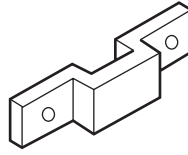
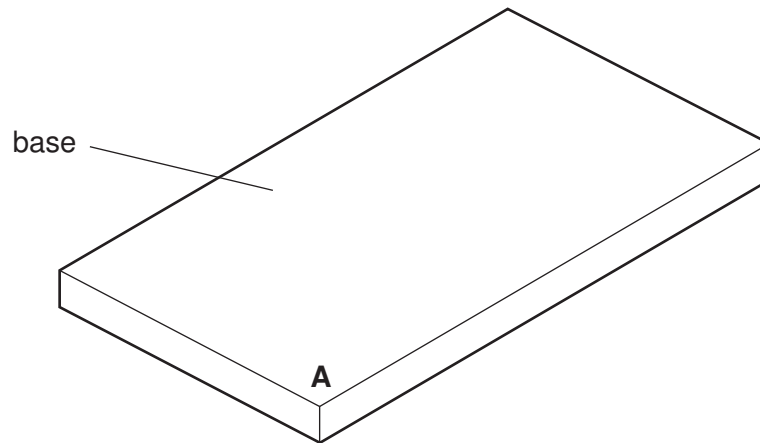


Fig. 3

On the base drawn below sketch the **corner** of the trolley at **A** with the brackets fixed and the sides slotted into place. Use brief notes to explain your sketch.



- (c) When the trolley is loaded with waste, the corners may be forced apart at the top. Design a fitting that could be used on each corner to make it secure. Show how the fitting can be attached to the sides. Suggest a suitable material from which the fitting could be made.

[10]

- (d) Complete the list of materials required for the trolley.

Part	Material	Number
Base		
Sides		
Battens		
Brackets		
Screws to fix brackets		

[5]

- 2 The trolley in **Fig. 1** has two brackets shown in **Fig. 4** to which the axles and wheels are fixed.

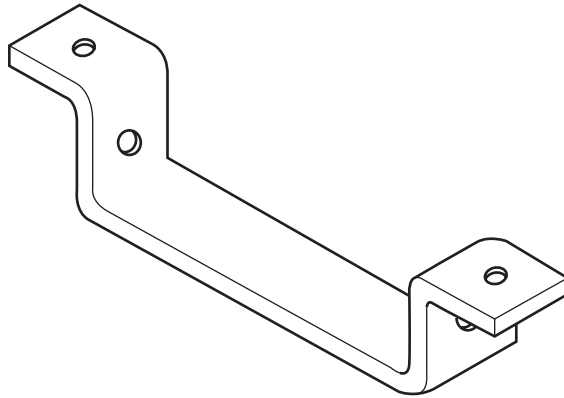


Fig. 4

- (a) Giving a suitable material for the brackets and listing the tools required, use sketches and brief notes to show how to:
- (i) mark out and cut the material;

(ii) mark out and drill the holes, include details of safety procedure to be followed

[7]

(iii) bend the bracket into shape.

[7]

(b) Using sketches and brief notes show a method of attaching one bracket to the base.

[4]

(c) The wheels are made of nylon fixed to a steel axle. Using sketches and brief notes, show how the wheels are fixed to prevent them from coming off and from rubbing against the bracket when in use.

[6]

3 A container used to hold notepaper is shown in **Fig. 5**.

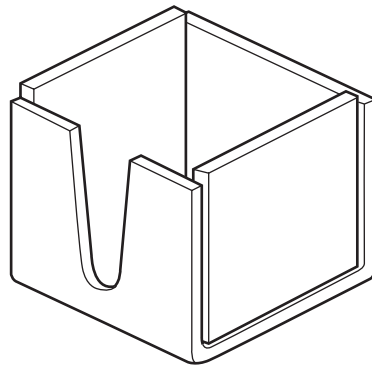


Fig. 5

The container is made by forming and slotting together two pieces of acrylic as shown in **Fig. 6**.

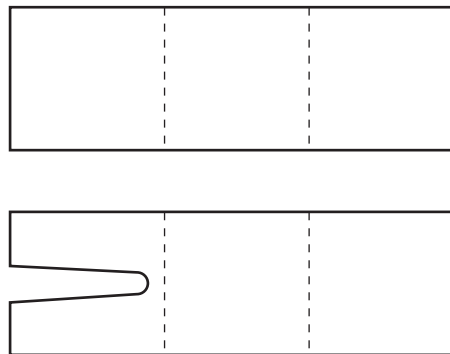


Fig. 6

(a) Explain:

(i) why masking tape is used on the acrylic when the slot is being drilled;

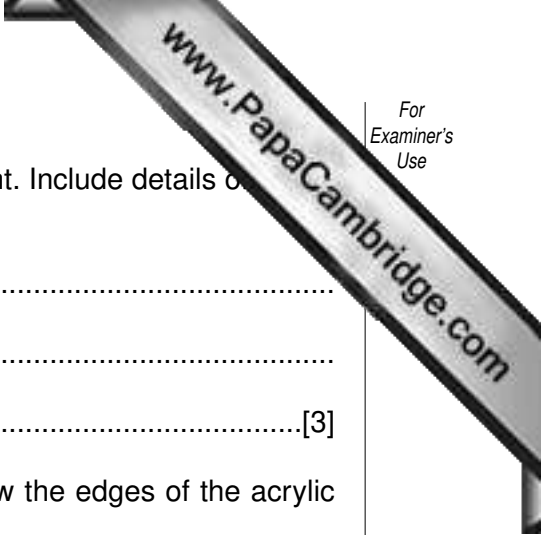
.....
.....[2]

(ii) why the material is clamped during drilling;

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

(iii) why soft jaws are used when holding the acrylic in a vice.

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



(b) Describe how the parts would be joined using a plastic solvent. Include details of precautions.

.....
.....
.....[3]

(c) Using notes and sketches and naming all tools, describe how the edges of the acrylic would be finished.

[3]

(d) Plastics are classified into two groups: thermoplastics and thermosetting plastics.

(i) Give **two** examples of a thermoplastic.

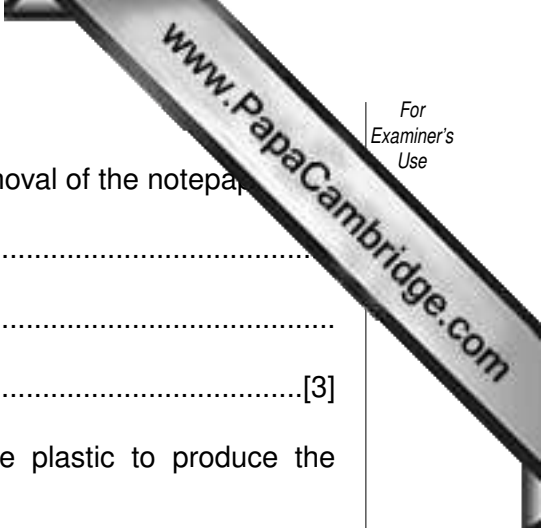
.....
.....[2]

(ii) Give **two** examples of a thermosetting plastic.

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

(iii) What is the difference between thermoplastics and thermosetting plastics?

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



(e) Describe **two** features of the container that allow for easy removal of the notepad.

.....

.....

.....[3]

(f) Using notes and sketches, show how you would form the plastic to produce the container.

[9]

4 Fig. 7 shows an air vent on the roof of a workshop. The air vent is made from sheet metal.

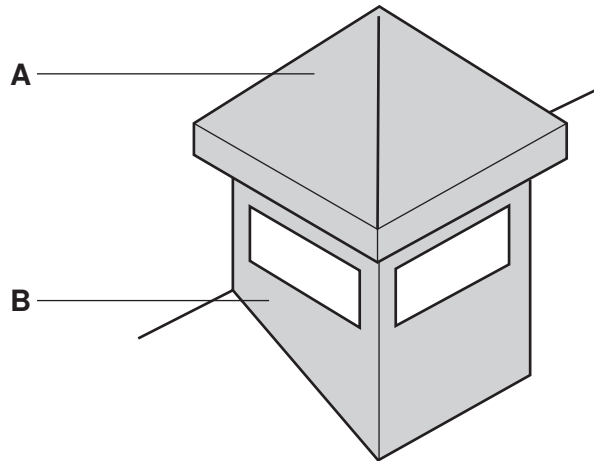


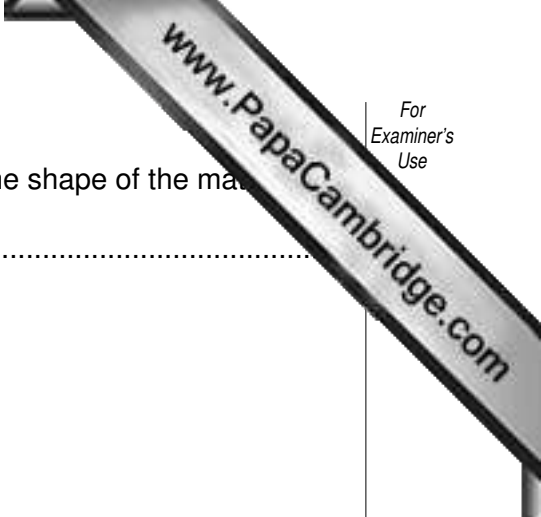
Fig. 7

(a) Give **two** reasons why sheet metal would be a suitable material for the air vent.

1[1]

2[1]

(b) The vent is made from two parts, **A** and **B**. Part **A** is the top of the vent; part **B** consists of the four sides. Using notes and sketches, describe how part **B** could be formed from **one** piece of sheet metal.



(c) Name and sketch **two** tools that would be used to mark out the shape of the material.

(1) Name

Sketch

[3]

(2) Name

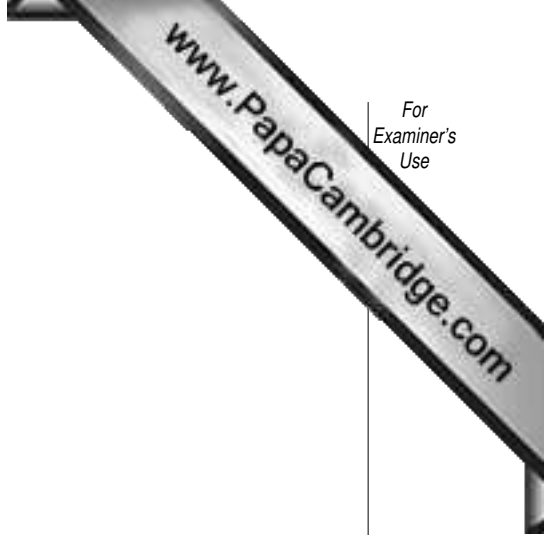
Sketch

[3]

(d) Use notes and sketches to describe the following stages in producing and forming the finished air vent:

(i) cutting the sheet metal to shape to form part **B**;

[5]



(ii) making the edges of the metal safe;

[3]

(iii) bending **one** corner of part **B**;

[3]

(iv) making the final joint after part **B** has been formed, without using heat.

[3]

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