



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

CANDIDATE  
NAME

CENTRE  
NUMBER

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**DESIGN AND TECHNOLOGY**

**0445/33**

Paper 3 Resistant Materials

**October/November 2010**

**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 15 minutes.**

**READ THESE INSTRUCTIONS FIRST**

Write your Centre number, candidate number and name on all the work you hand in.

Write in blue or black pen.

You may use a soft pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, highlighters, glue or correction fluid.

**DO NOT WRITE IN ANY BARCODES.**

**Section A**

Answer **all** questions in this section.

**Section B**

Answer **one** question in this section.

You may use a calculator.

The total of the marks for this paper is 50.

The number of marks is given in brackets [ ] at the end of each question or part question.

For Examiner's Use	
Section A	
Section B	
<b>Total</b>	

This document consists of **15** printed pages and **1** blank page.



Section A

Answer **all** questions in this section.

- 1 (a) Name the type of plane shown in Fig. 1.

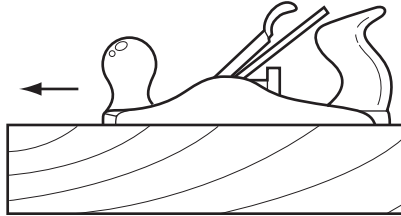


Fig. 1

..... [1]

- (b) Give **two** reasons why the wood in Fig. 1 should **not** be planed in the direction shown.

1 ..... [1]

2 ..... [1]

- 2 Fig. 2 shows a marking gauge.

- (a) Draw a steel rule against the marking gauge to show how the marking gauge would be set to the required distance.

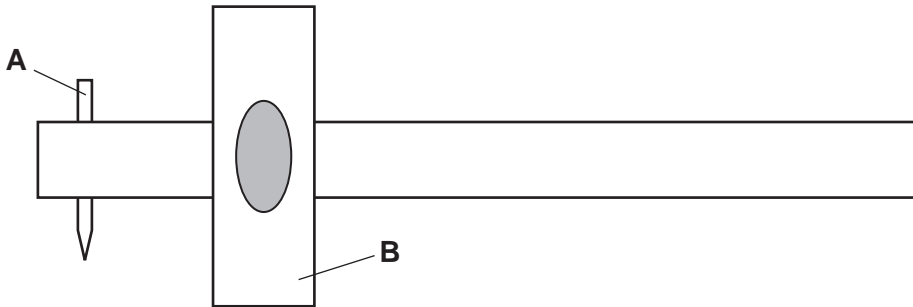


Fig. 2

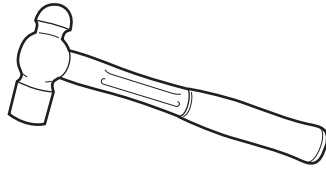
[2]

- (b) Name the parts of the marking gauge labelled **A** and **B**.

A ..... [1]

B ..... [1]

3 (a) Name the type of hammer shown below.



..... [1]

(b) Suggest **one** use for the hammer shown in (a).

..... [1]

4 Add sketches and notes to Fig. 3 to show how the corner butt joint could be strengthened.

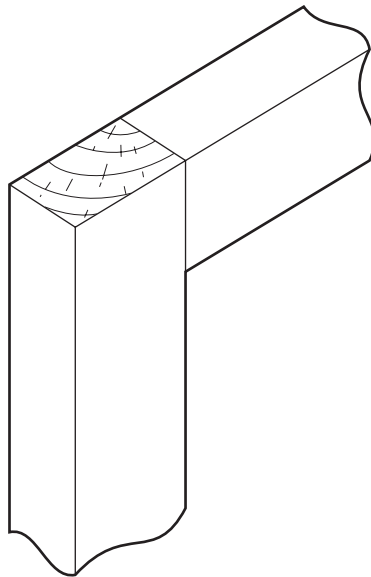


Fig. 3

[2]

5 Fig. 4 shows the end of a length of wood. Complete Fig. 4 to show a chamfered edge and a bevelled edge.

chamfered edge

bevelled edge

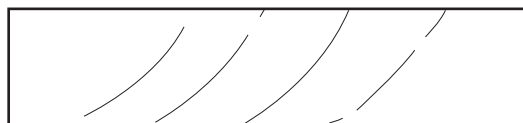


Fig. 4

[2]

6 Fig. 5 shows a variety of gear wheels made from a plastic.

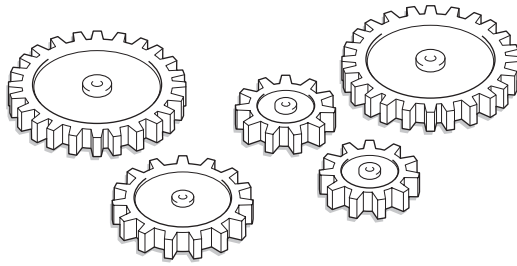


Fig. 5

(a) Name a specific plastic for the gear wheels.

..... [1]

(b) Describe a property of your chosen plastic that makes it suitable for gear wheels.

..... [1]

(c) Name the manufacturing process by which the gear wheels would be produced.

..... [1]

7 Fig. 6 shows a table lamp made from metal.

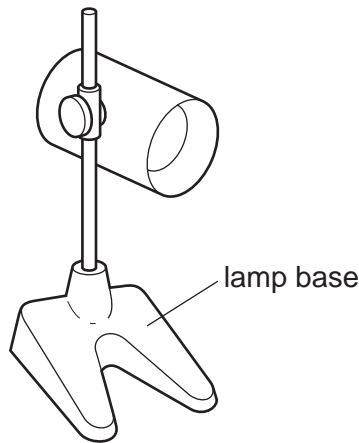


Fig. 6

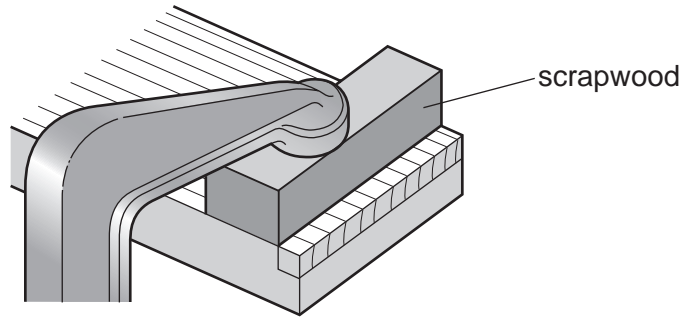
(a) Name the process used to make the lamp base.

..... [1]

(b) Name a suitable metal for the base.

..... [1]

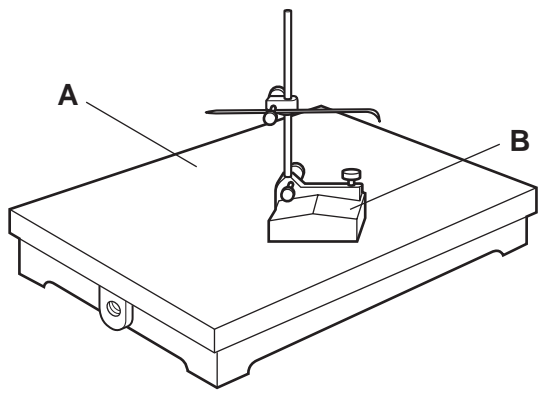
8 Give **two** reasons why scrapwood is used when cutting the lap joint shown below.



1 ..... [1]

2 ..... [1]

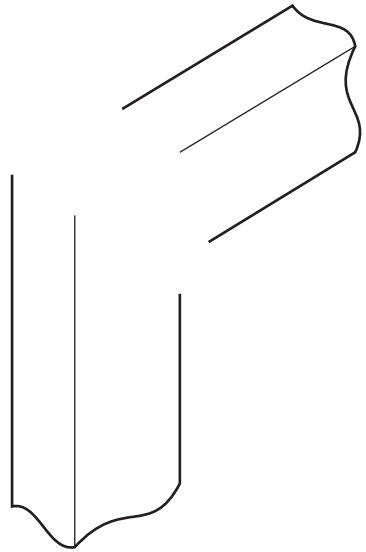
9 Name the marking out equipment shown below.



A ..... [1]

B ..... [1]

10 Complete the sketch below to show a corner halving joint.



[3]

Section B

Answer **one** question from this section.

11 Fig. 7 shows a camping stool made from solid wood.

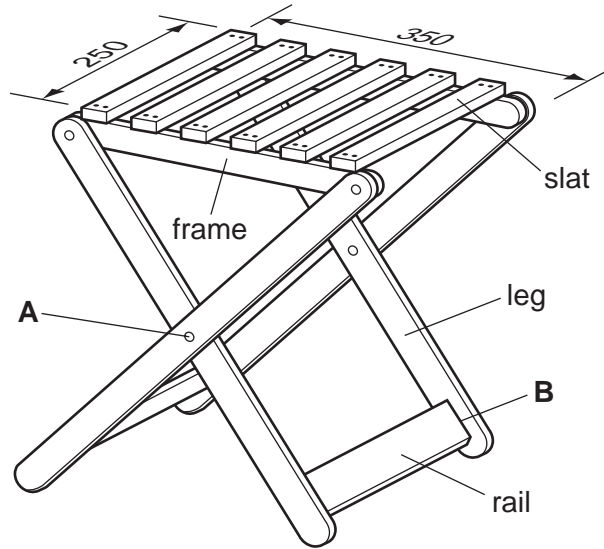


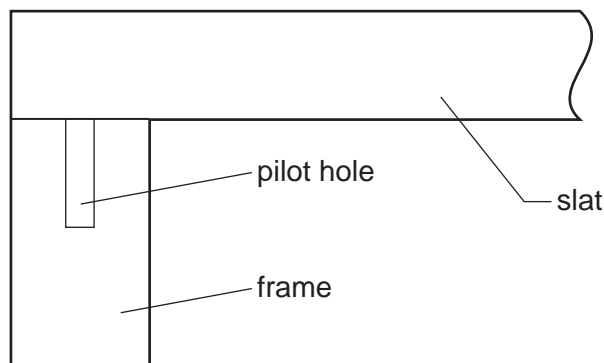
Fig. 7

(a) Suggest a suitable width and thickness for the slats.

Width ..... [1]

Thickness ..... [1]

(b) (i) Complete the drawing below to show how a countersunk head screw could be used to join a slat to the frame.

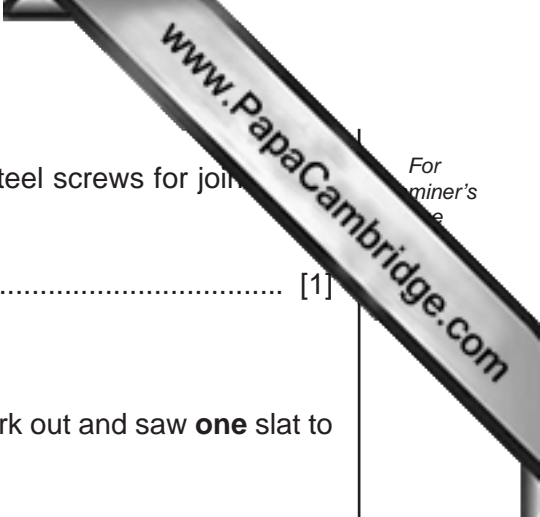


[2]

(ii) Give **two** advantages of using screws rather than nails for joining the slats to the frame.

1 ..... [1]

2 ..... [1]



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(iii) Give **one** advantage of using brass screws rather than steel screws for joining slats to the frame.

..... [1]

(c) The slats will be cut from a length of solid wood.  
Use sketches and notes to show how you would measure, mark out and saw **one** slat to length.

[5]

(d) Use sketches and notes to show how the legs are joined at **A**.

[3]



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(e) (i) Name and sketch a suitable construction that could be used to join a rail and leg

Name .....

Sketch

[3]

(ii) Use sketches and notes to show how the legs and rail would be clamped when glueing.

[3]



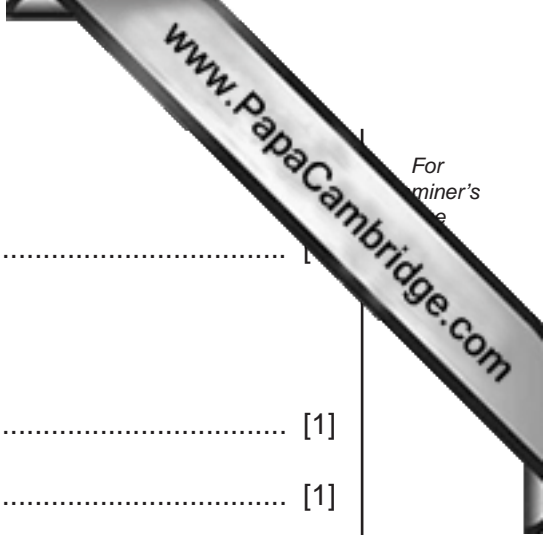
(f) (i) Name a suitable finish for the camping stool.

.....

(ii) Give **two** reasons for your choice.

1 ..... [1]

2 ..... [1]



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12 Fig. 8 shows a spice rack made from acrylic.

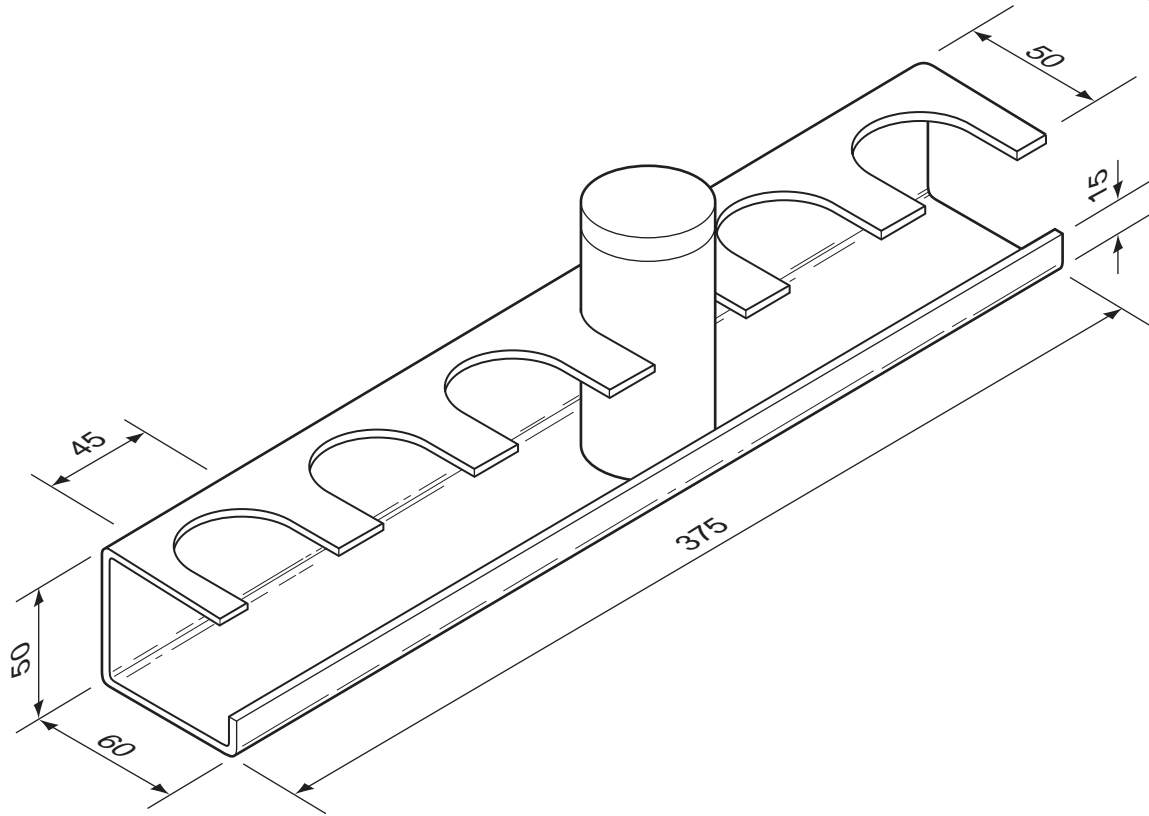


Fig. 8

(a) Complete the development (net) below to show the bend lines for the spice rack.



[3]

(b) Give **two** reasons why it would be useful to make a model of the spice rack making it in acrylic.

1 ..... [1]

2 ..... [1]

(c) Use sketches and notes to show how **one** slot could be produced in the acrylic.

[6]

(d) (i) State why acrylic sheet is covered with paper or plastic when purchased.

..... [1]

(ii) Give **one** reason why acrylic does **not** need an applied finish.

..... [1]

(iii) Describe how the edges of acrylic would be finished.

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

(e) Holes will be drilled in the spice rack so that it can be fixed to a wall. There is a risk that the acrylic could be damaged when drilling the holes.  
State **three** precautions you would take to prevent this damage.

- 1 ..... [1]
- 2 ..... [1]
- 3 ..... [1]

(f) Use sketches and notes to show how the spice rack could be produced from a single piece of acrylic **after** the slots have been cut out.

13 Fig. 9 shows a novelty CD rack based on the shape of a hedgehog. The rack is supplied as flat pack for self-assembly.

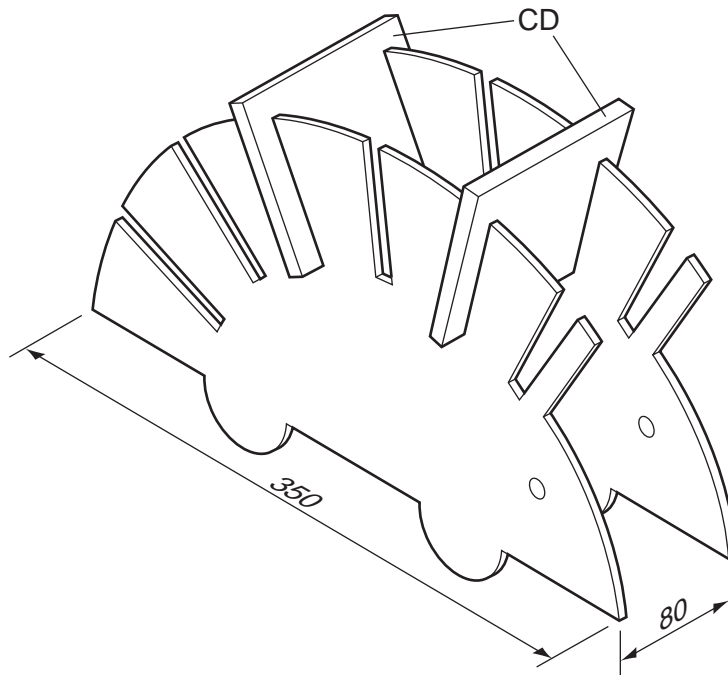


Fig. 9

The CD rack could be made from **either** sheet metal **or** manufactured board.

(a) (i) Name a suitable, specific sheet metal **or** manufactured board for the CD rack.

..... [1]

(ii) Give a reason for your choice.

..... [1]

(iii) Suggest a suitable thickness for your chosen sheet material.

..... [1]

(b) State **two** items of research a designer would need to find out before designing the CD rack.

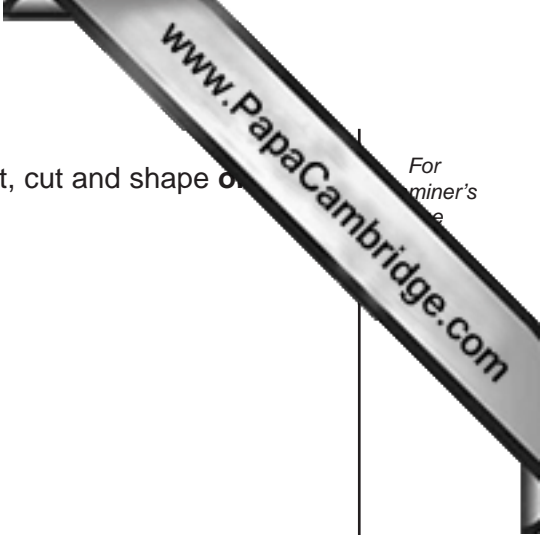
1 ..... [1]

2 ..... [1]

(c) Give **two** reasons why it would be useful to use a template when making a batch of 10 CD racks.

1 ..... [1]

2 ..... [1]



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(d) (i) Use sketches and notes to show how you would mark out, cut and shape one of the CD racks. Name the tools and/or equipment used.

[6]

(ii) Describe **two** safety precautions you would need to take when carrying out any process in (d)(i).

1 ..... [1]

2 ..... [1]



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- (e) Use sketches and notes to show how the two sides of the CD rack could be joined together. Any fittings used must **not** be seen on the outside of the CD rack.

[6]

- (f) (i) Describe how you would prepare the sides of the CD rack for finishing.

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

- (ii) Name a suitable finish and give a reason for your choice.

Finish ..... [1]  
Reason ..... [1]

