UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

6225179871

DESIGN AND TECHNOLOGY **0445/32**

Paper 3 Resistant Materials **May/June 2011**

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.

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Section A	
Section B	
Total	

This document consists of **13** printed pages and **3** blank pages.

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Section A

Answer **all** questions in this section.

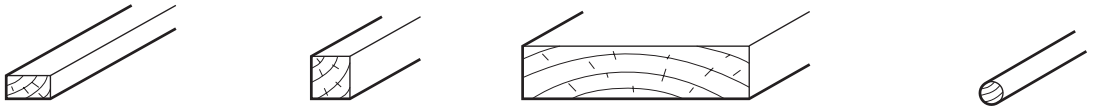
1 Give **three** pieces of information needed when buying nuts and bolts.

1 ..... [1]

2 ..... [1]

3 ..... [1]

2 Fig. 1 shows four standard timber sections.



....

Fig. 1

Choose the correct name from the list below for each of the standard timber sections.

plank **quadrant** **strip** **dowel** **square** **bead** [4]

3 Complete the drawing below to show a mitre square.



[2]

4 Fig. 2 shows a veneer being cut from a log.

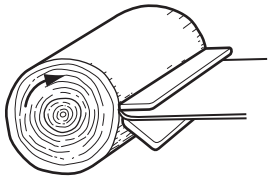


Fig. 2

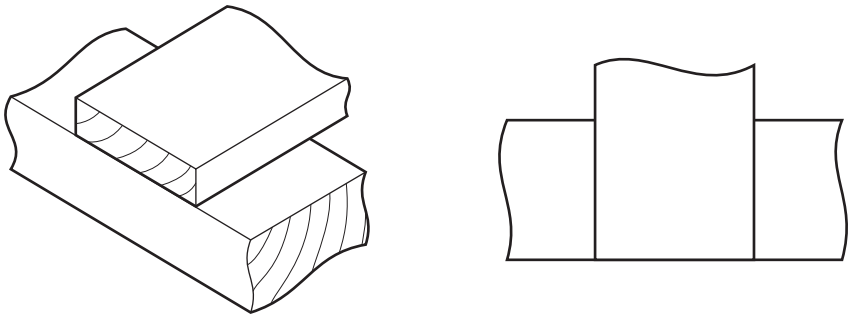
Give **two** reasons why veneers are used in the furniture industry.

1 ..... [1]

2 ..... [1]

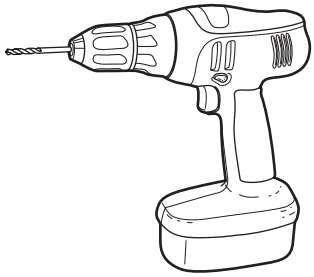
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5 Complete **either** of the drawings below to show what is meant by 'staggered' nailing.



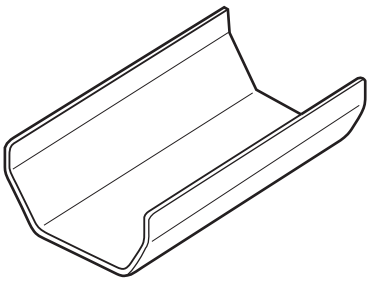
[2]

6 **(a)** Name the process used to produce the plastic body of the drill shown below.



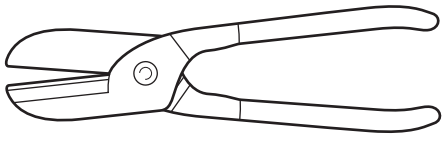
..... [1]

(b) Name the process used to produce the plastic guttering section shown below.



..... [1]

7 **(a)** Name the tool shown below.



..... [1]

(b) Describe **one** use for the tool named in **(a)**.

..... [1]

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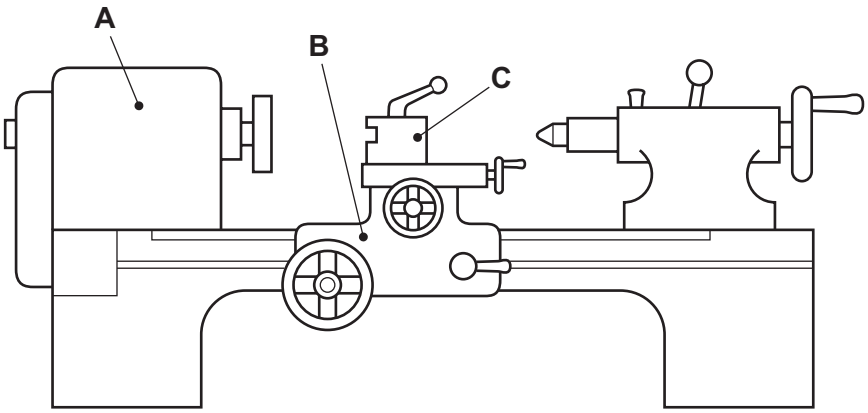
8 Complete the drawings below to show a countersunk head screw, a raised head screw and a round head screw.



countersunk head raised head round head

[3]

9 Name the parts **A**, **B** and **C** of the centre lathe labelled below.



Part **A** ..... [1]

Part **B** ..... [1]

Part **C** ..... [1]

10 Two signs used in a workshop are shown below.



Sign **A**



Sign **B**

State what each sign means.

Sign **A** ..... [1]

Sign **B** ..... [1]

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Section B

Answer **one** question from this section.

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11 Fig. 3 shows a trolley used at home.
The trolley is manufactured as a flat pack for self-assembly.

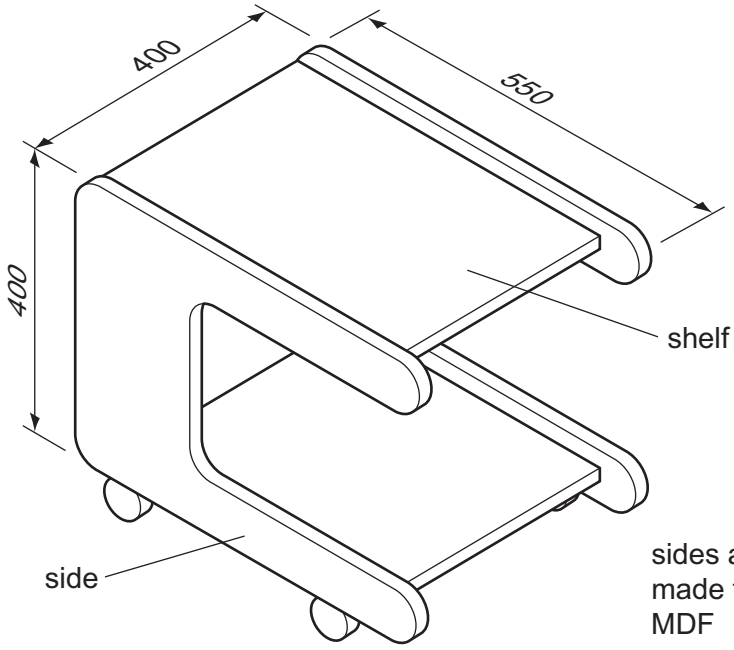


Fig. 3

(a) Give **two** reasons why flat pack self-assembly furniture is popular.

1 ..... [1]

2 ..... [1]

(b) Give **two** reasons why some flat pack self-assembly furniture is sold without a finish.

1 ..... [1]

2 ..... [1]

(c) The trolley is made from MDF.

(i) Give **two** reasons why MDF is more suitable than solid wood for the trolley.

1 ..... [1]

2 ..... [1]

(ii) Give **two** advantages of using MDF rather than plywood for the trolley.

1 ..... [1]

2 ..... [1]

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[Turn over

(d) Fig. 4 shows one side of the trolley marked out ready to be cut to shape.

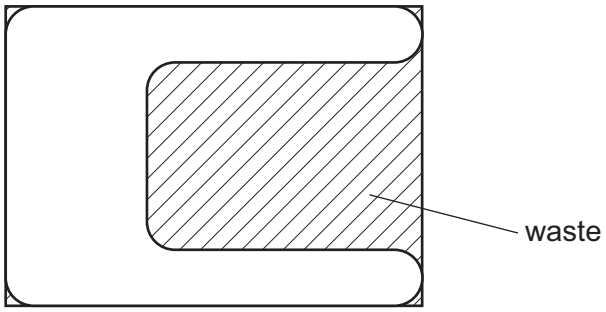


Fig. 4

(i) Use sketches and notes to show how:

- the shape could be cut out;
- the sawn edges could be made smooth.

Name all the tools and / or equipment used.

[8]

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(ii) State **two** safety precautions that would be taken when cutting out the shape.

1 ..... [1]

2 ..... [1]

(e) Use sketches and notes to show how KD (knock-down) fittings could be used to join **one** shelf to **one** side.

[4]

(f) The design of the sides of the trolley results in a lot of waste material.

Use sketches and notes to show how the shaped side of the trolley could be made using separate pieces of solid wood.

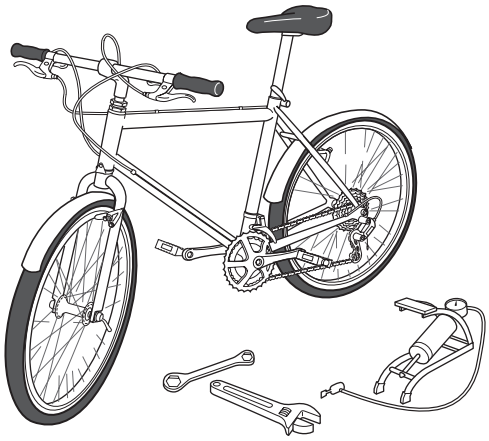
Show clearly the grain direction on the separate pieces of solid wood.

[3]

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12 Cyclists often need to carry out maintenance to their cycles.



(a) State **two** important items of information you would need to find out before designing a cycle maintenance stand.

1 ..... [1]

2 ..... [1]

(b) Fig. 5 shows an incomplete design for a cycle stand made from mild steel.

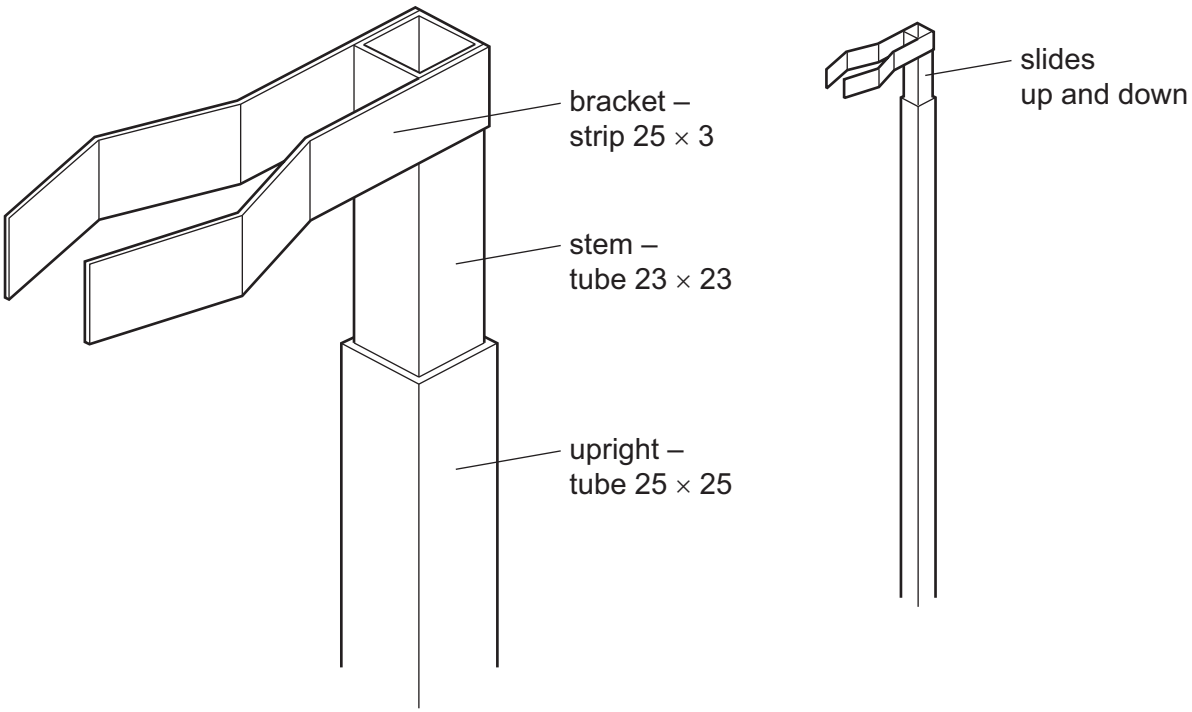


Fig. 5

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Use sketches and notes to show the following stages when making the cycle stand:

- marking the mild steel tube to length;
- cutting the mild steel tube to length;
- squaring the ends of the mild steel tube.

Name all the tools and / or equipment used.

[9]

(c) (i) Use sketches and notes to design a base to support the upright tube.

[3]

(ii) Describe how the base you have designed could be made in a school workshop.

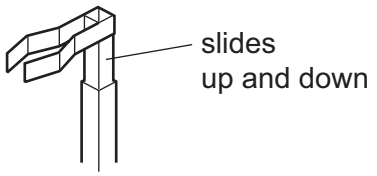
.....

.....

.....

..... [3]

(d) The stem can slide up and down inside the upright tube as shown in Fig. 5.
Use sketches and notes to show how the stem could be adjusted and locked at **any** height inside the upright tube.



[4]

(e) (i) Name a suitable finish for the cycle stand.

..... [1]

(ii) Describe how the mild steel tube would be prepared before the finish is applied.

.....

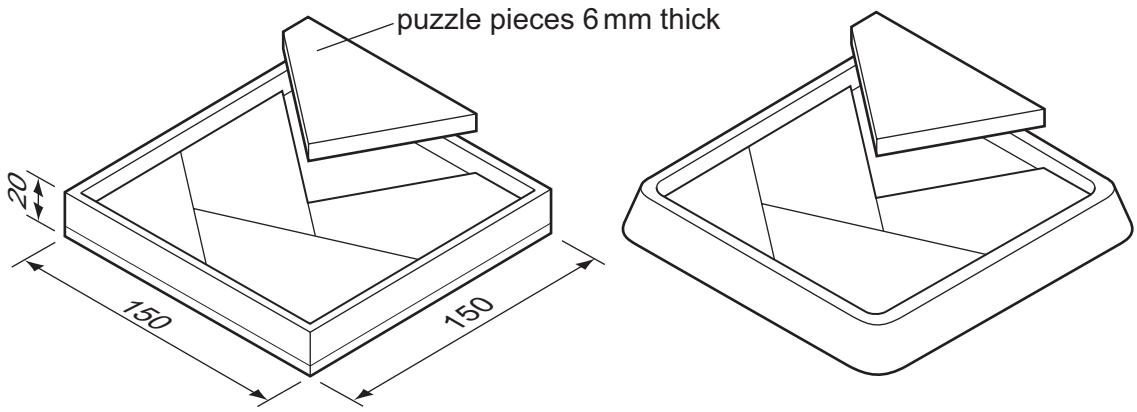
.....

.....

..... [3]

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13 Fig. 6 shows two tray designs for a puzzle.
Tray **A** is made from wood and Tray **B** is made from plastic.



Tray **A** Tray **B**

Fig. 6

(a) Give **two** reasons why acrylic would be a suitable material for the puzzle pieces.

1 ..... [1]

2 ..... [1]

(b) Fig. 7 shows the puzzle pieces to be cut from one piece of acrylic.

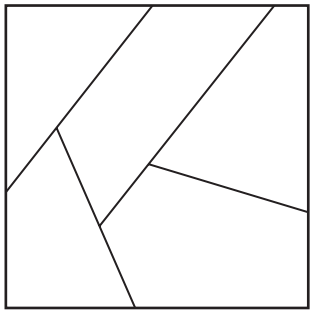


Fig. 7

Use sketches and notes to show how the puzzle pieces could be cut out.

[3]

(c) Sketch and name a suitable corner joint for Tray **A**.

[2]

Name of joint ..... [1]

(d) Tray **B** will be produced by vacuum forming.

(i) Name a suitable plastic, other than acrylic, for the tray.

..... [1]

(ii) Describe **three** important considerations when making a former for vacuum forming.

1 ..... [1]

2 ..... [1]

3 ..... [1]

(iii) Use detailed sketches and notes to show how Tray **B** would be vacuum formed.

[7]

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(e) (i) State which of the two trays would be more suitable for quantity production.

..... [1]

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

1..... [1]

2 ..... [1]

(f) Use sketches and notes to show how Tray **A** could be made more suitable as a travel puzzle.

[3]

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