

Candidate Name	Centre Number	Candidate Number
		0



**GCSE**

141/04

**DESIGN AND TECHNOLOGY**

**PAPER 2**

**FOCUS AREA: RESISTANT MATERIALS**

**TECHNOLOGY**

**Higher Tier**

A.M. MONDAY, 2 June 2008

1½ hours

	Leave Blank
Question 1	
Question 2	
Question 3	
Question 4	
Question 5	
<b>TOTAL MARK</b>	

**ADDITIONAL MATERIALS**

You will need basic drawing equipment and coloured pencils for this examination.

**INSTRUCTIONS TO CANDIDATES**

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** questions.





Write your answers in the spaces provided in this booklet. Where the space is not sufficient for your answer, continue the answer at the back of the book, taking care to number the continuation correctly.

**INFORMATION FOR CANDIDATES**

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

Answer **all** questions in the spaces provided.

1. (a) Complete the table below by inserting the correct name for each of the saws shown and give a specific use for each saw. [8]

<i>Saw</i>	<i>Name</i>	<i>Use</i>
	<p>.....</p>	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
	<p>.....</p>	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
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	<p>.....</p>	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>

(b) The photograph below shows a fresh fruit product sold in a supermarket. The tray and the fork are made from plastic.



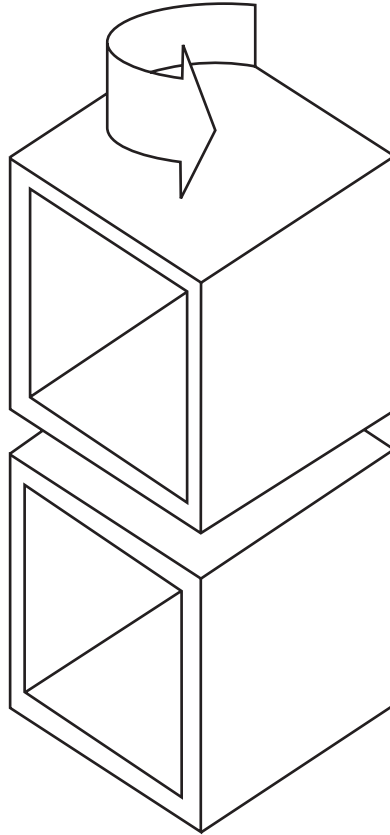
- (i) Name the process used to make the plastic tray. .... [1]
- (ii) Name the process used to make the plastic fork. .... [1]
- (iii) A mould is needed to make the tray. Describe **three** features that the mould must have if it is to work properly.

Feature 1: .....  
..... [2]

Feature 2: .....  
..... [2]

Feature 3: .....  
..... [2]

2. A design for a CD storage unit made from manufactured board is shown below. The storage unit has a painted finish and the top box will rotate through 360 degrees.



- (a) (i) Name a suitable manufactured board for making the unit. [1]

.....

- (ii) Name and sketch a suitable joint for making the box units.

Name of joint: ..... [1]

Sketch of joint: [3]

(b) Using notes and sketches show how a back panel could be attached to each box. [4]

(c) Using notes and sketches design a method to allow the top box to rotate freely through 360 degrees. [5]

3. The photograph shows a greenhouse constructed from Aluminium.



(a) Explain **two** reasons why Aluminium is a suitable material for the greenhouse.

Reason 1: .....  
..... [2]

Reason 2: .....  
..... [2]

(b) The greenhouse comes *flat packed* and is constructed using nuts and bolts. Give **two** advantages of this type of construction. [2]

Advantage 1: .....

Advantage 2: .....

(c) Wooden greenhouses are often made from Cedar. Explain why this is a suitable wood. [2]

.....  
.....

(d) Plastic is often used instead of glass in greenhouses. Name a suitable plastic and explain why it makes a good alternative to glass in a greenhouse.

Name of plastic: ..... [1]

Explanation for choice: [2]

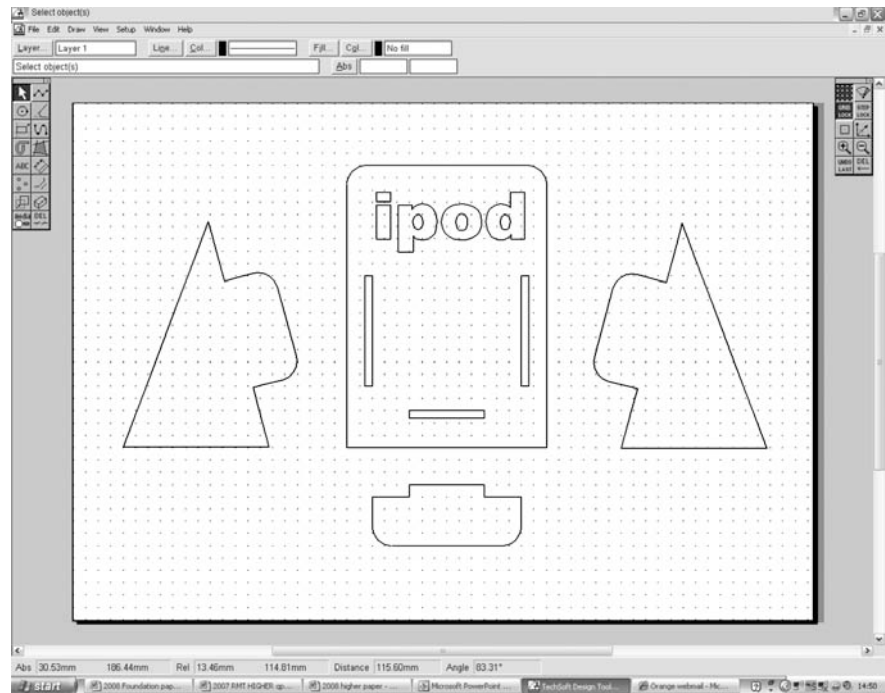
.....  
.....  
.....

(e) The greenhouse is a modular design which is available in a range of sizes.

Describe what the designer would need to consider so that the same basic design could be offered in a range of sizes. [4]

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

4. (a) The CAD diagram below shows the parts of the holder for an MP3 player. The holder is to be made from a 3mm thick A4 sized piece of plastic using CAM.



- (i) Name a suitable plastic for making the holder. [1]

.....

- (ii) Give **two** reasons for your choice. [2]

Reason 1: .....

Reason 2: .....

- (iii) Name a suitable CAM machine for making the holder. [1]

.....

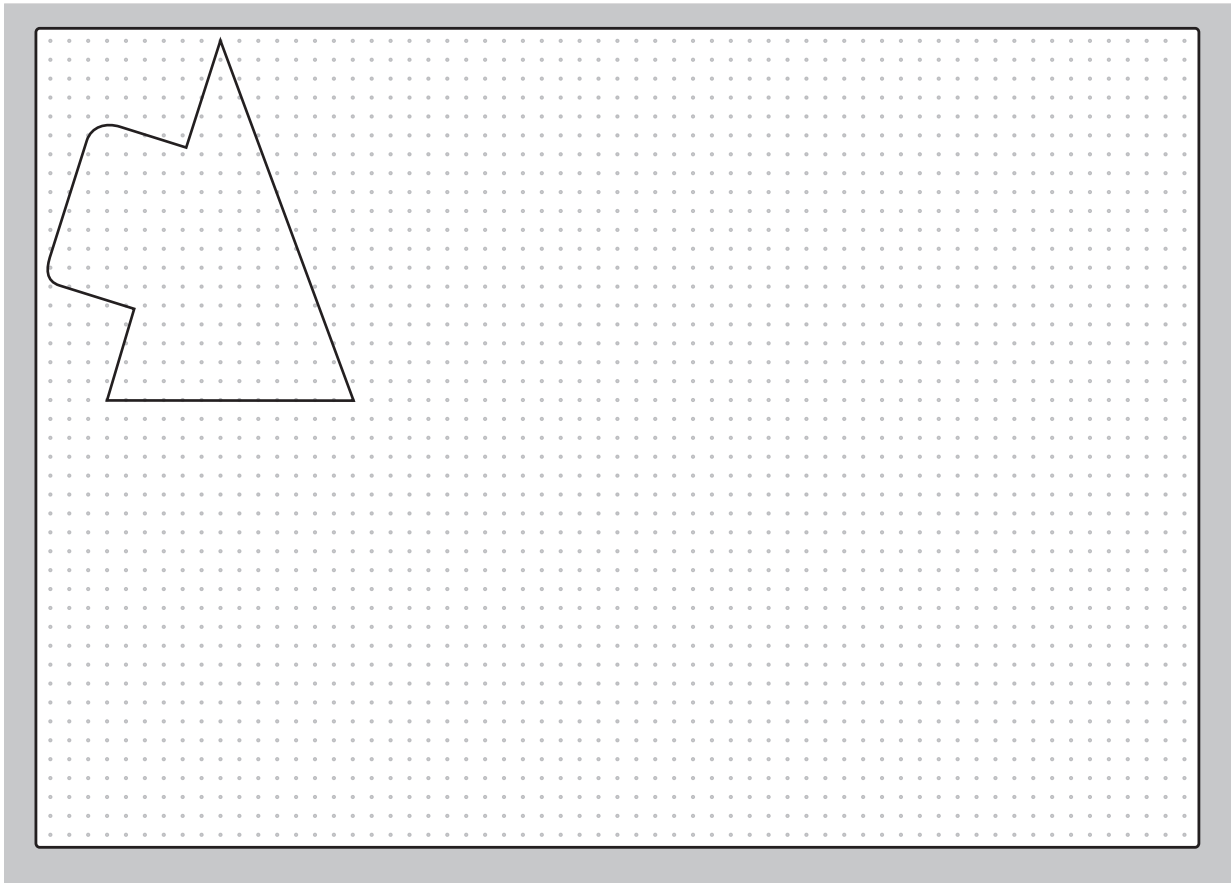
- (iv) Name **two** advantages of using a CAM machine to make the holder. [2]

Advantage 1: .....

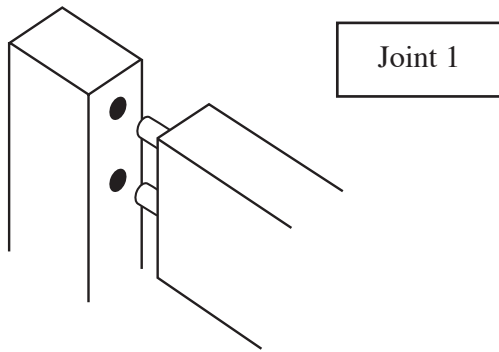
Advantage 2: .....



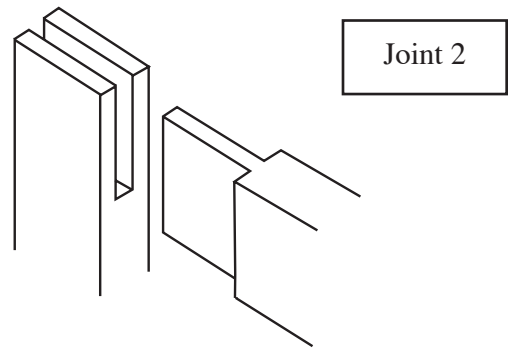
- (v) When the components in the original CAD diagram are cut out, a lot of plastic is wasted.  
On the grid below, accurately sketch how you would layout the components so that **two** holders could be made from the same size piece of plastic.  
One component has been drawn for you. [5]



(b) Drawings of four different wood joints are shown below. Insert the correct name for each joint. [4]



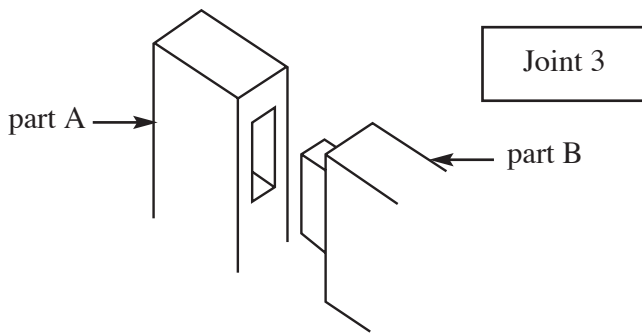
Joint 1



Joint 2

Name: .....

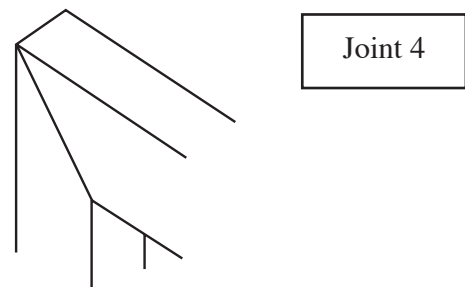
Name: .....



Joint 3

part A →

← part B



Joint 4

Name: .....

Name: .....

(c) Four basic steps for making joint 3 are shown below. Describe clearly how each step is carried out. Include the names of the tools you would use. [8]

<b><i>Mark out the joint</i></b>	
<b><i>Cut part A</i></b>	
<b><i>Cut part B</i></b>	
<b><i>Join permanently together</i></b>	

(d) Complete each sentence below by inserting the correct answer.

[7]

The four wood joints are examples of ..... joints.
A suitable adhesive for gluing the joints is .....
..... is a suitable Hardwood for joint 2.
A suitable Softwood for joint 4 is .....
A ..... square is used to mark out the 45 degree angle on joint 4.
A tool needed to accurately mark out joint 2 is a ..... gauge.
Joint 4 is often used to make ..... frames.

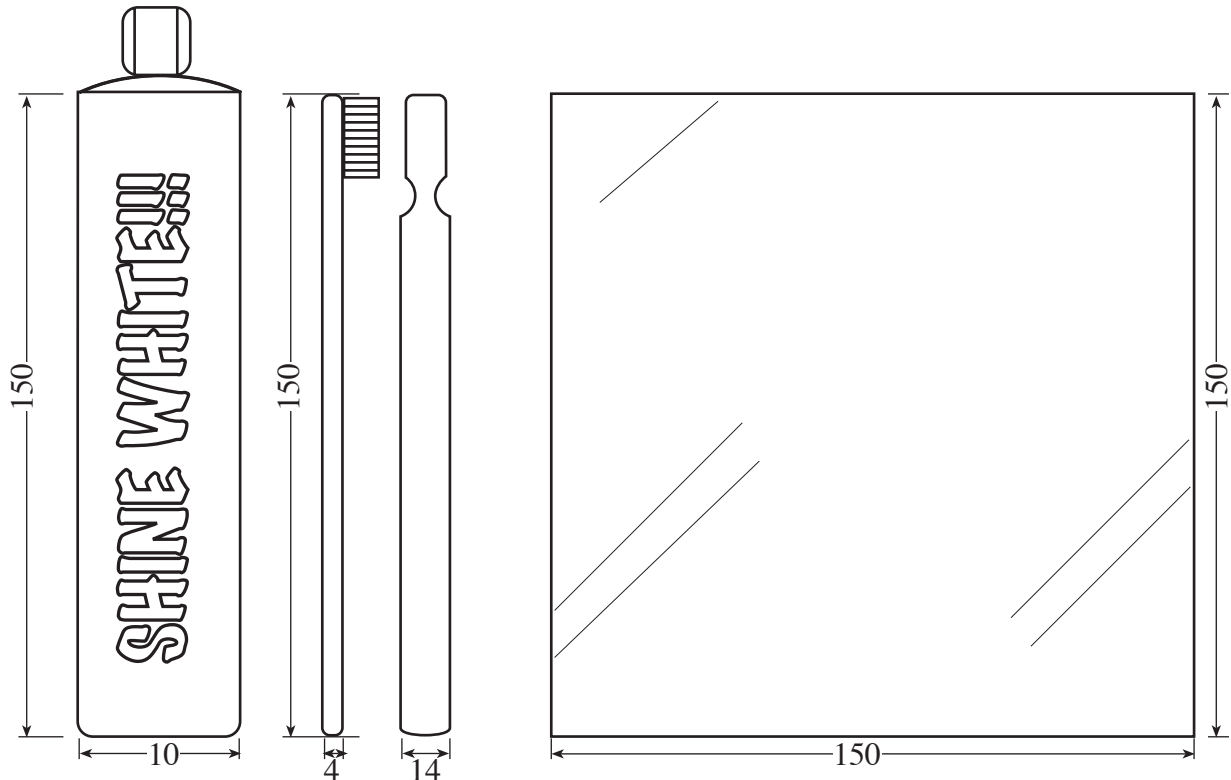
5. You have been asked to design a free standing 'bathroom tidy' that must incorporate the following items:

four toothbrushes;

one tube of toothpaste;

one 150mm x 150mm mirror.

All dimensions in millimetres.



**NOT TO SCALE**

### Specification

*The design must:*

- be freestanding;
- hold four toothbrushes, one tube of toothpaste and include a mirror;
- be small enough to sit on a window sill;
- be aesthetically pleasing.

Sketch your solution on the opposite page.

### Marks will be awarded for:

- |  |     |
|--|-----|
| (i) clear details of the overall design of the bathroom tidy showing how the mirror, toothbrushes and paste are held in place; | [6] |
| (ii) show how the design can fit onto a small space;   | [2] |
| (iii) constructional details of the stand;   | [6] |
| (iv) reference to the materials, components and processes used;  | [3] |
| (v) three critical dimensions;   | [3] |
| (vi) quality of communication.   | [5] |

