

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Question	Mark
1	
2	
3	
4	
TOTAL	



General Certificate of Secondary Education  
June 2010

# Design and Technology: Short Course

# 45751

## Unit 1 Written Paper

Wednesday 26 May 2010 1.30 pm to 2.30 pm

**For this paper you must have:**

- a pen, a pencil, a ruler, an eraser and a pencil sharpener.

**Time allowed**

- 1 hour

**Instructions**

- Use black ink or black ball-point pen. Use pencil only for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

**Information**

- The maximum mark for this paper is 60.
- The marks for questions are shown in brackets.
- You are reminded of the need for good English and clear presentation in your answers. Quality of Written Communication will be assessed in question 1 (d).



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# 45751

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Answer **all** questions.

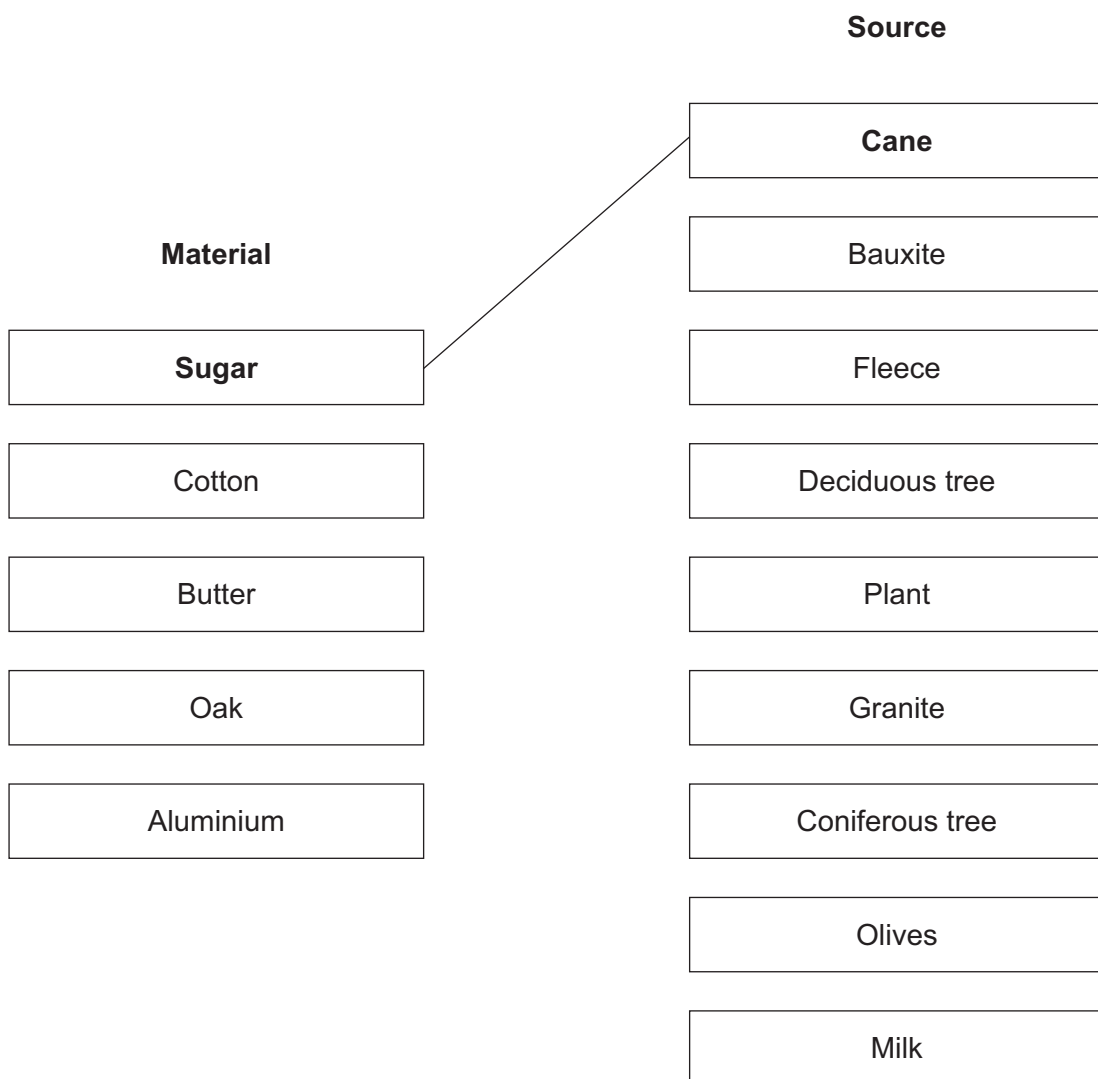
Question 1 is about materials and components.

You are advised to spend about 16 minutes on this question.

**1 (a)** Materials come from many different sources.

Use lines to connect the following materials to their source on the chart below.

An example has been completed for you.



(4 marks)

Question 1 continues on the next page

Turn over ►



1 (b) (i) Explain what is meant by the term 'renewable source'.

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

(2 marks)

1 (b) (ii) Give an example of a material which comes from a renewable source.

.....

(1 mark)

1 (c) The '6 R's' is often used when discussing the environmental impact of products.

(Re-use, Reduce, Recycle, Repair, Refuse, Rethink)

Choose **one** of the above terms and explain how it can help the environment.

Term .....

Explanation .....

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

(3 marks)



1 (d) Until recently carrier bags were given away for free by all supermarkets.  
Consumers are now encouraged to use bags similar to those shown below.



Using the '6 R's', evaluate the impact of the bags shown above on the environment.

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(6 marks)

Turn over ►



Question 2 is about the process of designing.

You are advised to spend about 21 minutes on this question.

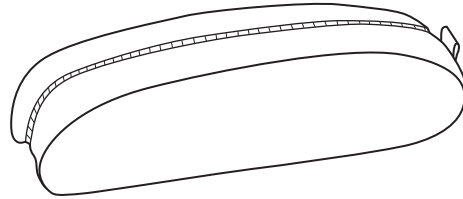
**2 (a)** Designers use different strategies to help them develop their ideas.

One strategy is to modify an idea that already exists.

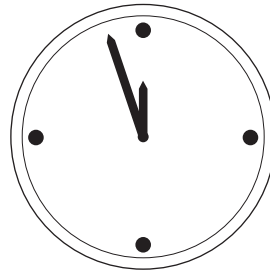
**Product Description**

**Existing product**

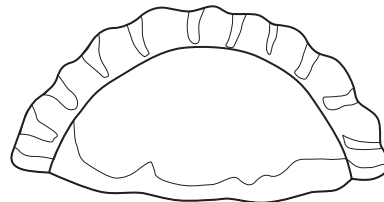
**Pencil case for a young child**



**Child's wall clock**



**Healthy option pastry**



On the opposite page you should change **one** of the existing products show above.

Marks will be awarded for meeting the requirements below.

- Change the design idea for **one** of the products to fit the product description.
- Add notes to your design to explain the changes you have made.
- Your design must be possible to make using equipment and processes which you are familiar with.

You will be asked to describe in more detail how you would make this product in part (b).



Design changes/modifications that I would make to the existing product that I have chosen:

(6 marks)

**Question 2 continues on the next page**

**Turn over ►**



**2 (b)** Produce a step-by-step plan to explain how your idea in part (a) would be made in a school.

Include in your answer the information detailed below which would allow someone else to make your design:

- dimensions, size or weight (2 marks)
- materials or ingredients (2 marks)
- processes for making and assembly (6 marks)
- names of tools and equipment to be used. (3 marks)

**2 (c)** Explain how Information and Communication Technology could be used in the design or manufacture of your product.

.....

.....

.....

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(2 marks)

21
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Question 3 is about evaluating the suitability of products.

You are advised to spend about 11 minutes on this question.

3 Designers need to take into account both the function and aesthetic requirements of their products.

The pictures below show three designs for Wellington boots for different users.



Reproduced with kind permission of www.weegooseberry.com



Reproduced with kind permission of www.welly4u.ie



Reproduced with kind permission of www.jiunlimited.com/en

3 (a) Boots are commonly made from Polyvinyl Chloride (PVC).

Explain why this material is suitable for this type of footwear.

.....

.....

.....

.....

(2 marks)

3 (b) Identify **three** functional requirements of the boots.

1 .....

.....

2 .....

.....

3 .....

.....

(3 marks)

Question 3 continues on the next page

Turn over ►



**3 (c)** Identify **and** discuss the aesthetic differences between the boots shown.

.....

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*(3 marks)*

**3 (d)** The top of **boot A** has a particular design feature incorporated into it.

Describe the feature **and** explain its function.

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*(3 marks)*

<b>11</b>



Question 4 is about using formers and moulds to help make two or more identical products.

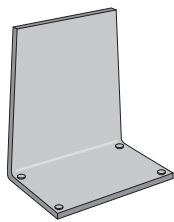
You are advised to spend about 12 minutes on this question.

**4** The information below will help you with your answer.

- Liquids are poured into moulds and allowed to set to make a shape.
- Materials are laid over formers and pressure applied to make a shape.

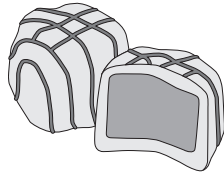
**4 (a)** Choose **two** products and insert a tick to show whether they would be made using a former or a mould.

**Acrylic bookend**



Mould  Former

**Hand finished chocolate**



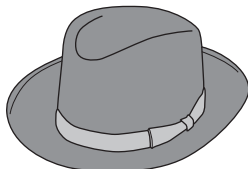
Mould  Former

**Pewter pendant**



Mould  Former

**Felt hat**



Mould  Former

(2 marks)

Question 4 continues on the next page

Turn over ►



- 4 (b)** Choose one of the products from part (a) and use notes **and** sketches to show what the mould or former used to make it would look like.

Chosen product .....

(3 marks)



4 (c) Name a suitable material which could be used for a mould or former.

.....  
(1 mark)

4 (d) Using notes **and** diagrams, explain how you would use the mould or former to make your chosen product.

(4 marks)

4 (e) Describe a safety requirement that would be put into place when making the product **and** explain why it is needed.

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

(2 marks)

**END OF QUESTIONS**

12
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