

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Question	Mark
1	
2	
3	
4	
5	
6	
TOTAL	



General Certificate of Secondary Education  
June 2010

# Design and Technology: Graphic Products

# 45501

Unit 1 Written Paper

Friday 11 June 2010 1.30 pm to 3.30 pm

**For this paper you must have:**

- a black fine-line pen, a pencil, a ruler, an eraser, a pencil sharpener, coloured pencils, a protractor, a compass and set squares.

**Time allowed**

- 2 hours

**Instructions**

- Use black ink or black ball-point pen. Use pencil and coloured pencils 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 marks for questions are shown in brackets.
- The maximum mark for this paper is 120.
- The question in Section A relates to the context referred to in the Preliminary Material that was previously issued.
- You are reminded of the need for good English and clear presentation in your answers. Quality of Written Communication will be assessed in Question 5.



J U N 1 0 4 5 5 0 1 0 1

**There are no questions printed on this page**

**DO NOT WRITE ON THIS PAGE  
ANSWER IN THE SPACES PROVIDED**



**Section A**

Answer this question.

Section A is about designing and is worth 35 marks.

You are advised to spend about 35 minutes on this question.

**Design Theme: Promotional packaging of confectionery**

- 1 Using the following Design Brief and Design Specification, design a promotional mail shot package.

**Design Brief**

A local confectionery company, called 'Jones', wants to launch its new range of chocolates with a soft fruit centre by posting a free sample of its products to local households.

**Design Specification**

The outer package for the chocolates must:

- hold six chocolates of the type shown below



Each individually wrapped chocolate measures 20 mm x 20 mm x 30 mm tall

- be able to fit through a standard letterbox measuring 200 mm wide by 40 mm high
- be manufactured from a suitable sheet material
- be easy to assemble from a one piece surface development (net)
- be easy to open and close.

**Question 1 continues on the next page**

**Turn over ►**



The design specification from page 3 is repeated below:

The outer package for the chocolates must:

- hold six chocolates, each measuring 20 mm x 20 mm x 30 mm tall
- be able to fit through a standard letterbox measuring 200 mm wide by 40 mm high
- be manufactured from a suitable sheet material
- be easy to assemble from a one piece surface development (net)
- be easy to open and close.

**1 (a)** Sketch with notes **two** creative ideas for the promotional mail shot packaging which clearly shows constructional details.

Marks will be awarded for:

- **two** creative ideas, (2 x 6 marks)
- quality of sketching, (3 marks)
- creative solutions, (3 marks)
- notes explaining the choice of material and constructional details. (2 marks)

Do **not** include any surface decoration.

**Idea 1**



**Idea 2**

**Question 1 continues on the next page**

**Turn over ►**



**1 (b)** To help protect the individual chocolates they need supporting and separating inside the package.

Sketch with notes, **two** methods of holding the chocolates securely inside the package.

*(2 x 3 marks)*



**1 (c)** Choose your best promotional mail shot package from part (a) and your best method of protecting the chocolates from part (b) and produce a 3D pictorial drawing of the complete assembled package.

Do **not** include any surface decoration.



(6 marks)

**1 (d)** Evaluate your complete assembled package from part (c).

.....

.....

.....

.....

(3 marks)

<b>35</b>

**Turn over ►**







2 (b) (ii) The plastic handle of the design folder could be said to be not very ergonomically designed.



What anthropometric data would help with the redesign of the plastic handle and why would this data help?

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

(2 marks)

2 (b) (iii) Using sketches and notes, redesign the handle to improve its ergonomic qualities.

(3 marks)

2 (b) (iv) Name a modelling material which could be used to prototype your handle in the graphics studio.

.....

(1 mark)

15

Turn over ►



This question is about designers and their influence on the modern world and is worth 13 marks.

You are advised to spend about 13 minutes on this question.

**3 (a)** Pair the designers with their field of design by drawing an arrow joining the two.

An example has been completed for you.

Designers	Field of Design
Harry Beck	Corporate Identity/branding
Alberto Alessi	Schematic drawings/maps
Jock Kinnear and Margaret Calvert	Product design
Robert Sabuda	Typography and road signs
Wally Olins	Paper engineering

(4 marks)

**3 (b)** Study the road warning sign below.

Figure 1



**3 (b) (i)** What does the repeated car symbol tell the driver?

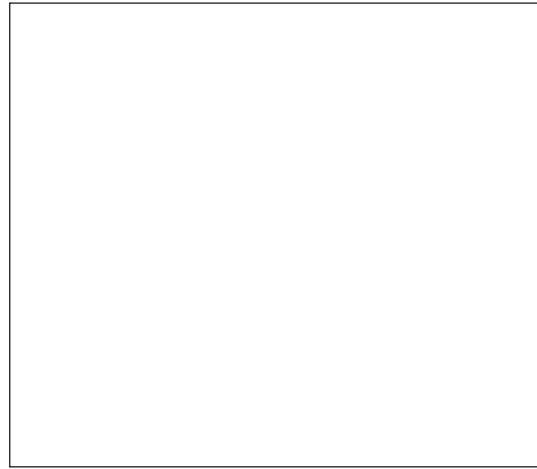
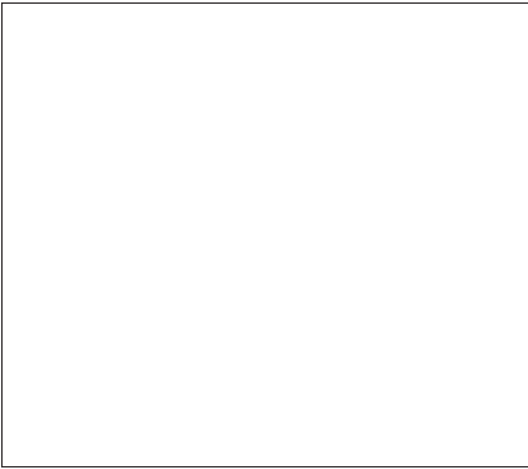
.....

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(1 mark)

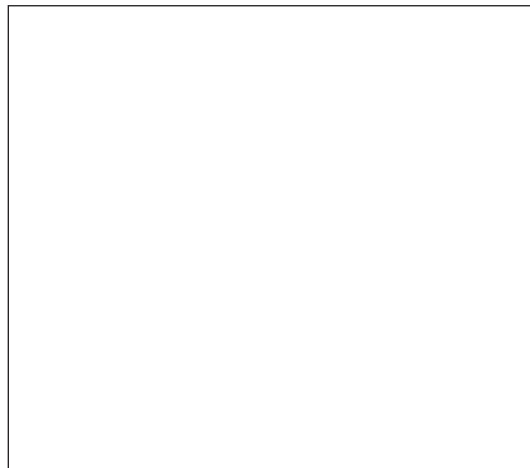


**3 (b) (ii)** In the spaces below, sketch **two** different ideas for a Design and Technology workshop sign in the same style as **Figure 1** which would warn pupils of a potential hazard in the room.



(5 marks)

**3 (b) (iii)** Using the best parts from both ideas above, produce a final presentation drawing of your Design and Technology warning sign.



(3 marks)

13

Turn over ►



This question is about packaging and the environment and is worth 24 marks.

You are advised to spend about 24 minutes on this question.

**4 (a)** Explain the **five** main reasons for packaging.

An example has been completed for you.

1 Storage

Explanation: *Products are packaged so they can be stored and stacked up on a supermarket shelf. This makes it easier to stack a quantity of the products.*

2 Promote

Explanation .....

.....

..... (2 marks)

3 Protect

Explanation .....

.....

..... (2 marks)

4 Preserve

Explanation .....

.....

..... (2 marks)

5 Inform

Explanation .....

.....

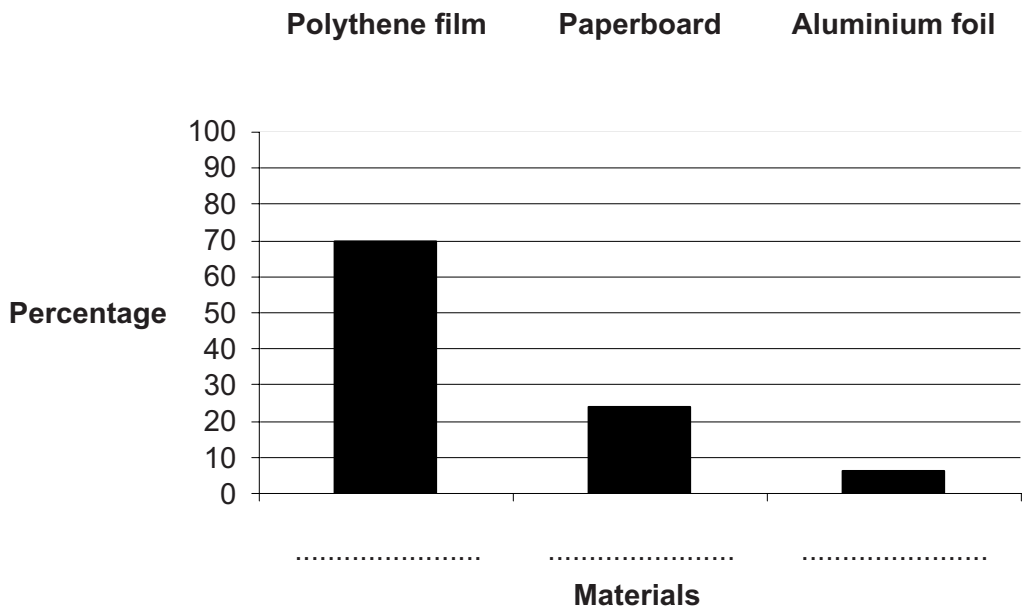
..... (2 marks)



4 (b) 'Tetra Pak' cartons are made up of three different materials: Polythene film, Paperboard and Aluminium foil.



The chart below shows the proportion of each material used to make an average Tetra Pak carton. Label the columns of the chart using the appropriate materials below.



(2 marks)

4 (c) Give **one** advantage and **one** disadvantage of using Tetra Pak cartons.

Advantage .....

..... (1 mark)

Disadvantage .....

..... (1 mark)

Question 4 continues on the next page

Turn over ►



**4 (d)** Symbols are often displayed on packaging to give information.

**4 (d) (i)** Explain why symbols and not words are used. Give an example to support your answer.

.....

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.....

(3 marks)

**4 (d) (ii)** Study the following symbols which appear on some product packaging. Give their exact meaning and an example of a product on which they might be found.

Symbol	Meaning	Example
	<p>.....</p> <p>.....</p> <p>.....</p> <p>(2 marks)</p>	<p>.....</p> <p>.....</p> <p>.....</p> <p>(1 mark)</p>
	<p>.....</p> <p>.....</p> <p>.....</p> <p>(2 marks)</p>	<p>.....</p> <p>.....</p> <p>.....</p> <p>(1 mark)</p>
	<p>.....</p> <p>.....</p> <p>.....</p> <p>(2 marks)</p>	<p>.....</p> <p>.....</p> <p>.....</p> <p>(1 mark)</p>



**Turn over for the next question**

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ANSWER IN THE SPACES PROVIDED**

**Turn over ►**



This question is about Disassembly and is worth 14 marks.

You are advised to spend about 14 minutes on this question.

**5 (a)** Complete the labelling of the package shown below. An example has been completed for you.

- |                 |             |                    |
|-----------------|-------------|--------------------|
| Name of Company | Front panel | Bar code           |
| Dust flap       | Glue flap   | Energy information |

(6 marks)







This question is about card engineering and is worth 19 marks.

You are advised to spend about 19 minutes on this question.

**6** Gift cards can be purchased from shops and credited with a set amount of money.

The gift card below forms a greetings card when the top flap is removed.



**6 (a)** Why is it important that designers understand moral, social and cultural issues when designing graphics for such cards?

.....

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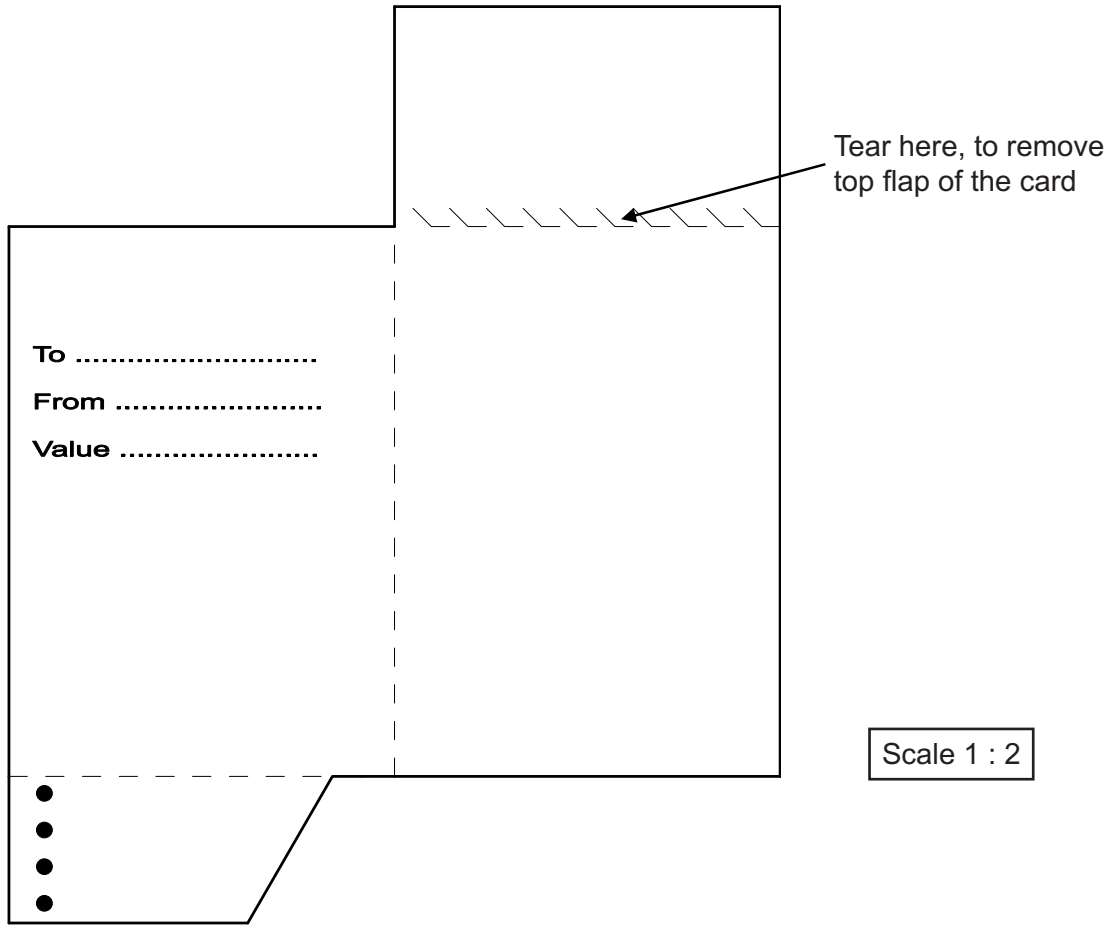
.....

.....

(3 marks)



**6 (b)** The surface development (net) for the gift card can be cut out from a single piece of A4 card.



**6 (b) (i)** Complete the key. An example has been completed for you. (3 marks)

Key	
Perforated line	\ \ \ \ \
Glue area	
Cut line	
Fold line	

**6 (b) (ii)** What is the meaning of Scale 1 : 2 on the drawing above?

.....

.....

(2 marks)

**Turn over ►**

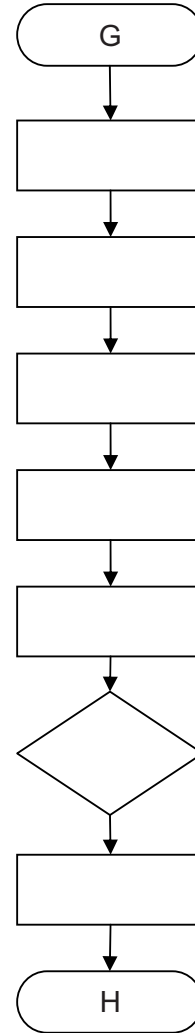


**6 (c) (i)** Below is a list of stages involved in cutting out and assembling by hand the surface development (net) for the gift card in a school's graphics studio.

The list is in the wrong order.

Complete the flow chart by placing the stages in the correct order.

- A – Crease the fold lines
- B – Assemble the net
- C – Glue the tab
- D – Fold the sides
- E – Cut out the surface development (net)
- F – Mark out the surface development (net)
- G – Start
- H – Finish
- I – Is it glued correctly?



(7 marks)

**6 (c) (ii)** Add a feedback loop to the flowchart above which will check the glue tab has sufficient glue applied to allow the gift card to be assembled. (3 marks)

**6 (d)** Which commercial process is used to cut out large numbers of the gift cards?

..... (1 mark)

**END OF QUESTIONS**

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