

Surname		Other Names	
Centre Number		Candidate Number	
Candidate Signature			

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General Certificate of Secondary Education
Summer 2004

**DESIGN AND TECHNOLOGY
GRAPHIC PRODUCTS**

3543/F

F



Foundation Tier

Wednesday 16 June 2004 9.00 am to 11.00 am

In addition to this paper you will require:

- a pen, pencil, ruler, eraser, pencil sharpener and coloured pencils.
- Marker pens and 45/60 degree set squares may also be used.

For Examiner's Use			
Number	Mark	Number	Mark
1			
2			
3			
4			
5			
6			
7			
8			
Total (Column 1)	→		
Total (Column 2)	→		
TOTAL			
Examiner's Initials			

Time allowed: 2 hours

Instructions

- Use blue or black ink or ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions in the spaces provided.
- Detach the blue sheet from the back of the examination paper to use in between the sheets to prevent ink bleeding through to the next sheet.
- Do **not** hand in the blue sheet at the end of the examination.

Information

- The maximum mark for this paper is 125.
- Mark allocations are shown in brackets.
- Wherever calculations are needed you should show your working.
- All dimensions are given in millimetres unless otherwise stated.
- You are reminded of the need for good English and clear presentation.

Advice

Answer the questions in the order given.

Read the following information carefully before you begin the questions which follow.

CAR CARE PRODUCTS

A national chain of garages, called *AI Cars*, is to give buyers of its cars a free gift. The gift is a high quality, car air freshener in a specially designed box.

The car air freshener is in a vacuum formed insert inside the ‘tray’, which slides into a card sleeve. The sleeve is to be suitably decorated and finished to make a quality item.

An assembled gift box, without the car air freshener, is shown below (**Figure 1**).

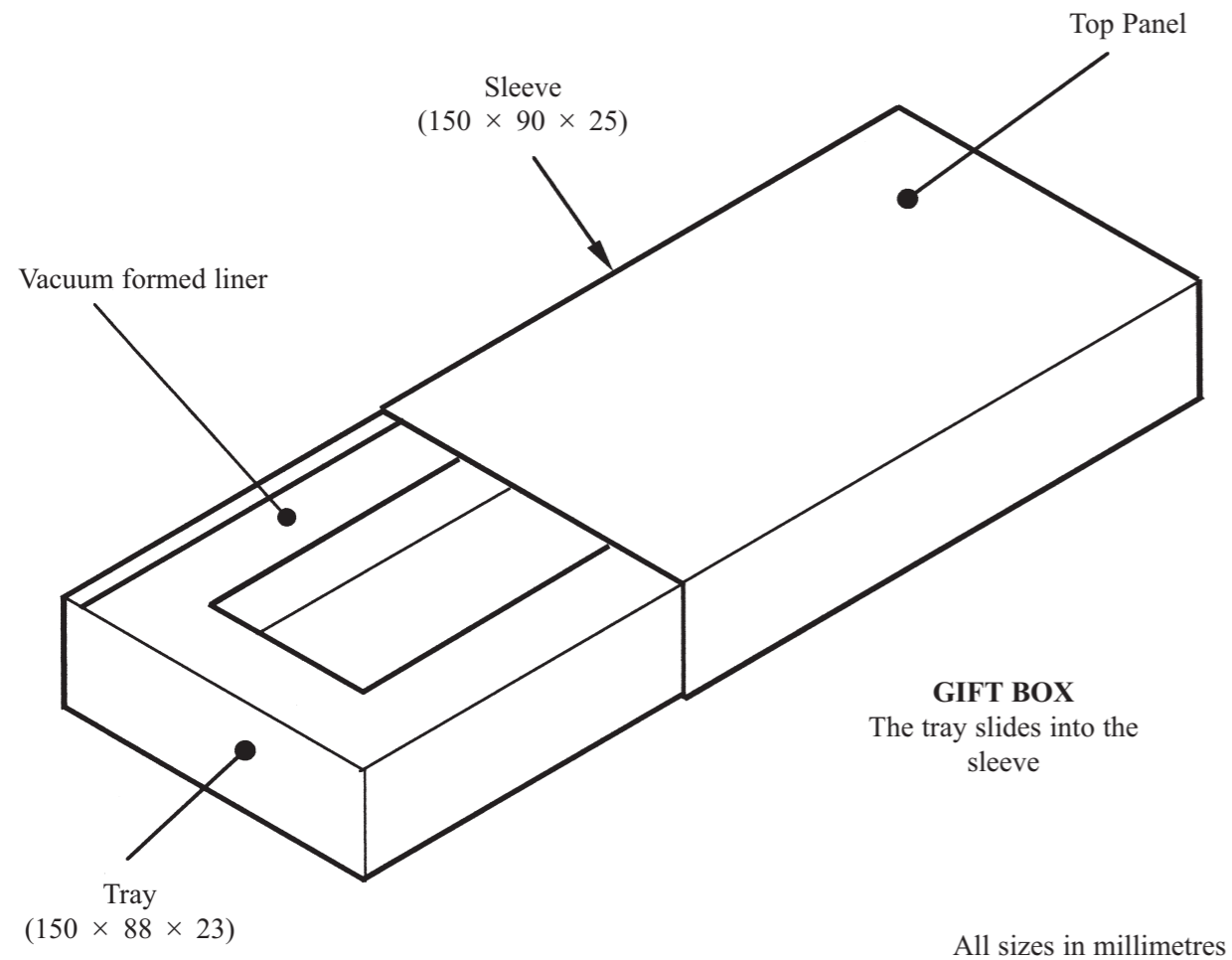


Figure 1

Question 1 is about representing data and is worth 6 marks.

Spend about 5 minutes on this question.

- 1 The car air freshener must have a pleasant perfume or fragrance. A survey was taken to find out which fragrances were most popular. The results are given below.

Results of survey	
<i>Fragrance</i>	<i>Percentage</i>
Fresh Flowers	30%
Sea Spray	10%
Mountain Breeze	40%
Summer Fruits	20%

Complete the bar chart (**Figure 2**) and key, in the same style, to show the results of the survey.

Marks will be awarded for:

- (a) accuracy; (3 marks)
- (b) colour quality; (2 marks)
- (c) key. (1 mark)

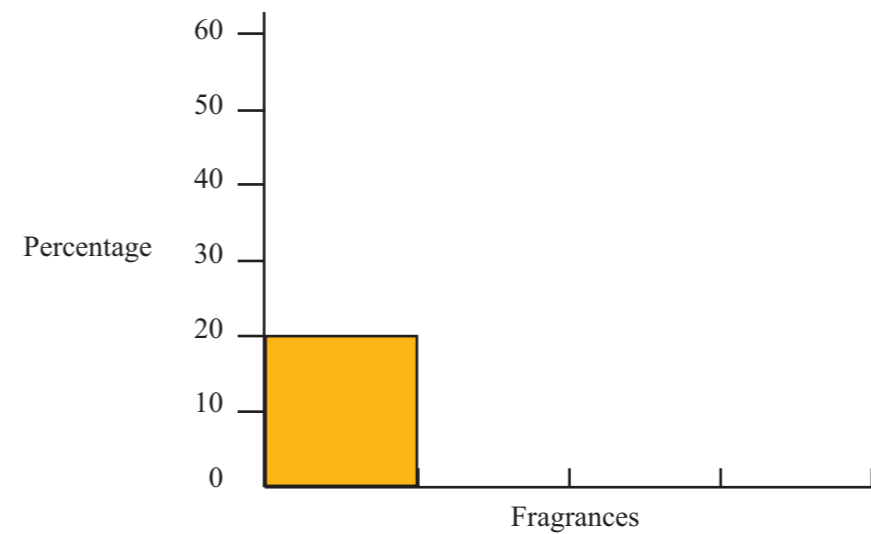


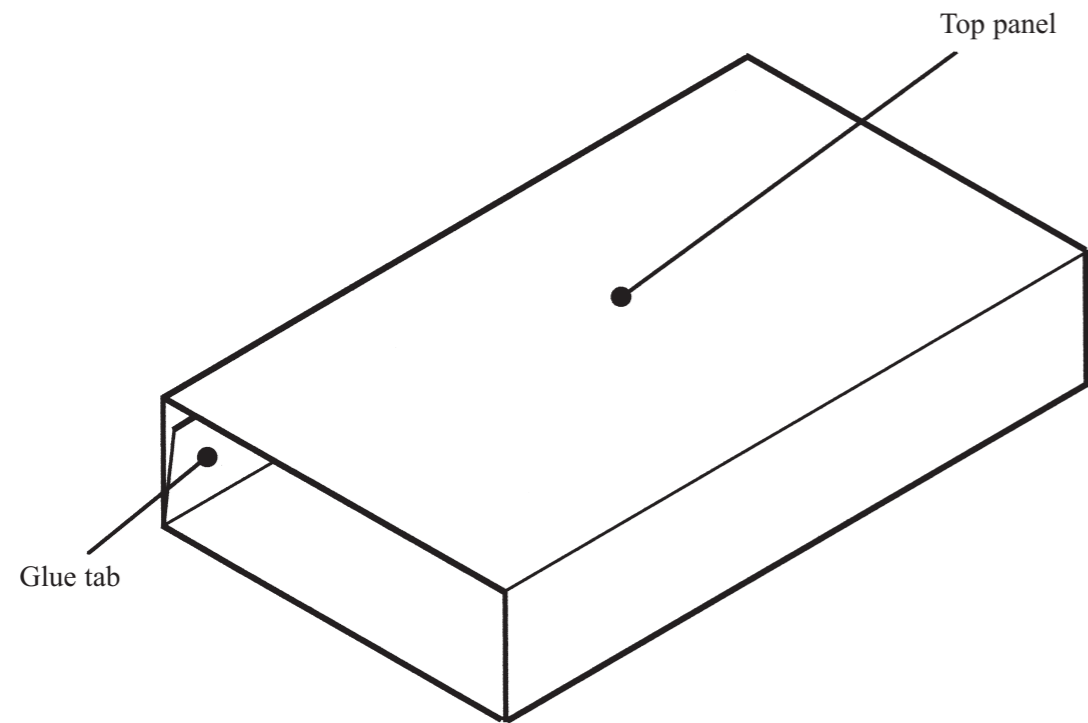
Figure 2

KEY	
	Fresh Flowers
	Sea Spray
	Mountain Breeze
	Summer Fruits

Question 2 is about designing and is worth 15 marks.

Spend about 15 minutes on this question.

The pictorial drawing below (**Figure 3**) shows the card sleeve of the gift box. The **top panel** is to be printed with suitable graphic detail and relevant information.



GIFT BOX SLEEVE

Figure 3

Do NOT put your designs on this diagram

DO NOT ANSWER ON THIS SHEET

- 2 You are asked to make the gift box **top panel** appealing to customers. It is to be decorated with a suitable design and information.

The following specification has been provided by *A1Cars (A1C)* to help you:

The **top panel** must:

- have **graphic detail** which suggests **mountains**;
- use **colours** which gives the impression of a quality product;
- have a **logo** based on the letters **A1C**;
- use **embossing** to enhance the sleeve's design.

Sketch a variety of images and ideas that meet this specification.

Add notes to explain your ideas.

Marks will be awarded for:

- | | |
|-------------------------------------|------------|
| (a) a variety of images; | (10 marks) |
| (b) use of colour and line quality; | (2 marks) |
| (c) evaluating your ideas. | (3 marks) |

ANSWER QUESTION 2 ON THE NEXT SHEET

Question 2 continues on Sheet 3

Question 2, continued

Use the specification on Sheet 2 for the **top panel** of the gift box:

- In box 1 sketch **three** designs which suggest **mountains**; (6 marks)
- Indicate the **colours** to be used to suggest a quality product; (1 mark)
- In box 2 develop **one logo** based on the letters **A1C**; (3 marks)
- In box 3 show where **embossing** can be used to enhance your designs; (2 marks)
- **evaluate** your ideas. (3 marks)

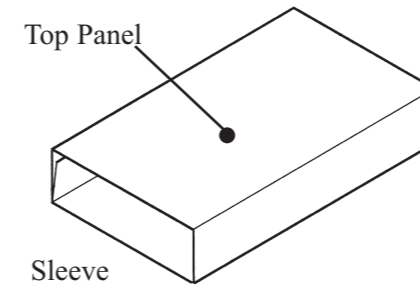


Figure 4

Box 1, sketch **three** designs which suggest **mountains**. Indicate **colours** to be used to suggest a quality product.

Evaluation

.....

Box 2, develop **one** logo based on the letters **A1C**.

Evaluation

.....

Box 3, show how **embossing** could be used to enhance your design.

Evaluation

.....

Question 3 is about presentation and is worth 27 marks.

Spend about 25 minutes on this question.

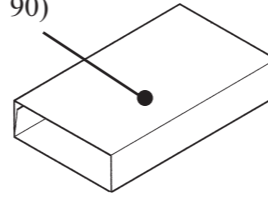
- 3 (a) Use the given corner to draw a full size outline of the **top panel** of the gift box. *(2 marks)*
- (b) From Question 2 combine your best ideas and draw a final coloured presentation drawing of the top panel of the gift box.

This question is worth 19 marks.

Marks will be awarded for:

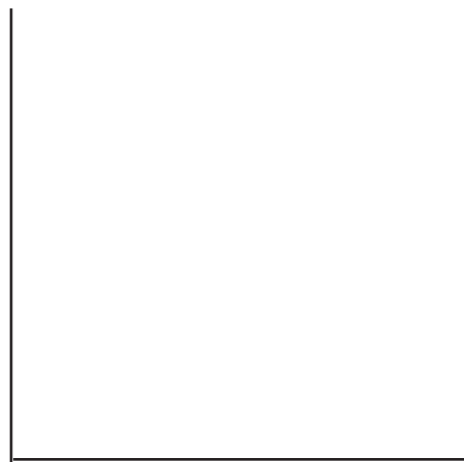
- (i) use of the specification; *(4 marks)*
- (ii) quality of drawings; *(3 marks)*
- (iii) ideas from Question 2; *(2 marks)*
- (iv) suitable layout; *(5 marks)*
- (v) quality of colouring. *(5 marks)*

Top Panel
(150 × 90)



Pictorial drawing of the sleeve

Figure 5



A corner of the top panel

- (c) The bottom panel of the sleeve is to be printed with information for the consumer.

Name and explain **two** different pieces of consumer information that could be included on this product.

- (i) Example 1 – suitable information.

.....
(1 mark)

Reason for this information.

.....
.....
.....
.....
(2 marks)

- (ii) Example 2 – suitable information.

.....
(1 mark)

Reason for this information.

.....
.....
.....
.....
(2 marks)

Question 4 is about manufacturing and is worth 17 marks.

Spend about 18 minutes on this question.

4 The tray of the gift box has to hold the car air freshener securely.

This is done by vacuum forming an inner tray liner (Figure 6).

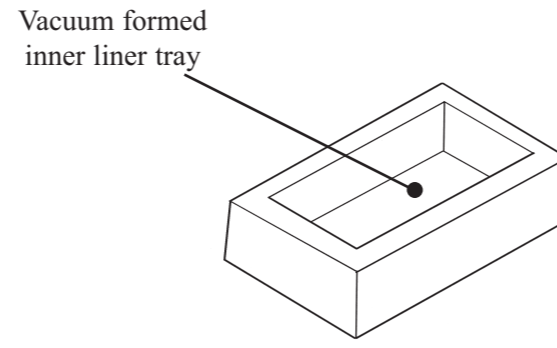


Figure 6

(a) (i) Name the group of plastic materials used for vacuum forming.

.....
(1 mark)

(ii) Name a specific plastic material that can be used in a vacuum former.

.....
(1 mark)

(b) (i) In the spaces below name the main stages of Vacuum Forming in correct order. (3 marks)

(ii) Using the same style, draw these stages in the process of vacuum forming a tray liner. (6 marks)

The first stage has been completed for you. It is not necessary to label every drawing.

(c) Explain why some moulds used in vacuum forming have tapered sides.

.....
.....
(2 marks)

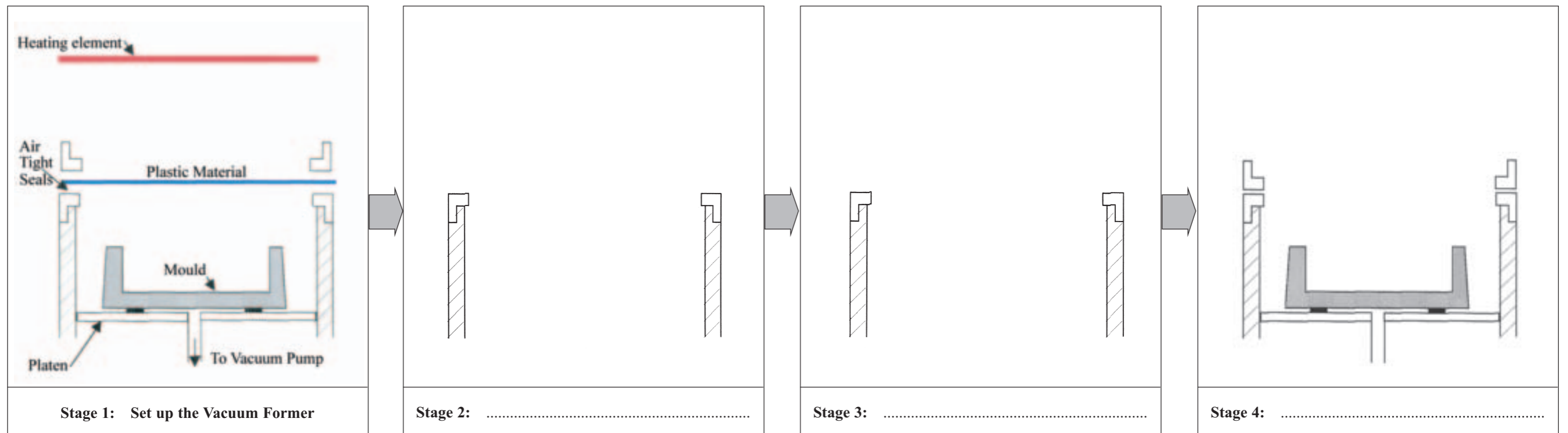
(d) Quality control is part of manufacturing.

(i) Explain why Quality Control is carried out in manufacturing.

.....
.....
(2 marks)

(ii) Explain how the quality of the vacuum formed trays could be checked.

.....
.....
(2 marks)



Question 5 is about enlargements and British Standards and is worth 10 marks.

Spend about 7 minutes on this question.

5 One type of car air freshener is cut from a thin foam type material and hung from the car's rear view mirror. An outline has been drawn but must be enlarged before final production.

(a) Enlarge the given design (**Figure 7**) on to the larger grid opposite. (5 marks)

(b) Using British Standard conventions, add to the enlarged outline:

- the overall width, and
- the overall height.

(4 marks)

(c) Give the scale used.

(1 mark)

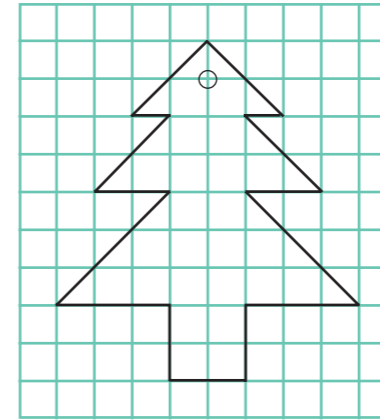
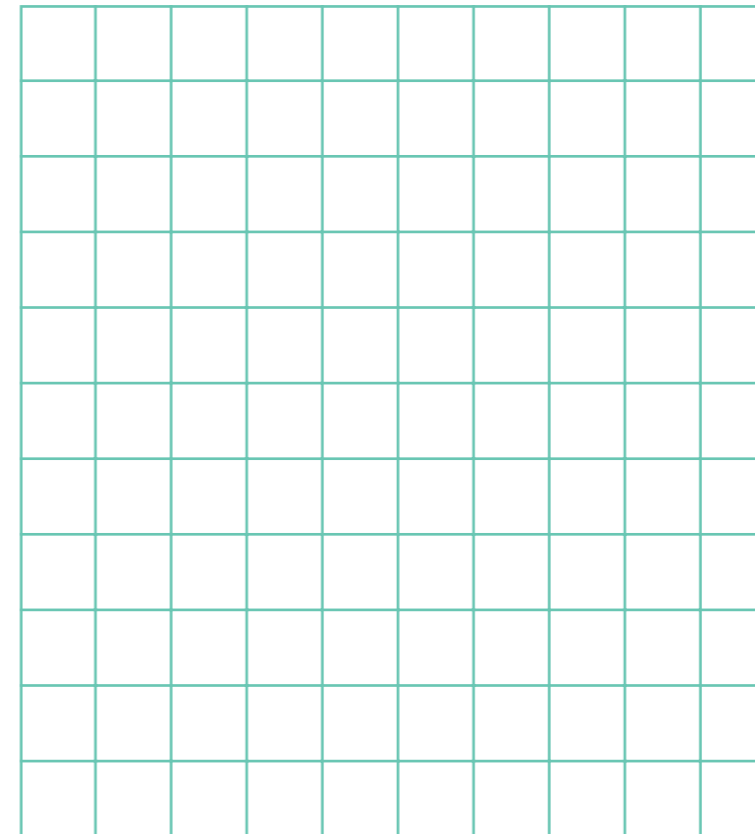


Figure 7



Scale _____ : _____

Question 6 is about materials and is worth 9 marks.

Spend about 10 minutes on this question.

6 Materials have properties which make them suitable for different uses.

(a) Study the list of materials below and give a different reason why each is suitable for the given use.

One example has been completed for you.

Materials	Typical Use	Reason
Vegetable Protein Board	Fast food box	<i>Biodegradable – rots away in time</i>
Polystyrene sheet	‘Blister’ packs	
Foam core board	Architectural models	
Acrylic sheet	Shop signs	
Corrugated Board	Packaging	
Block Foam	Model buildings	

(5 marks)

(b) Smart materials have replaced more traditional materials. The forehead thermometer (**Figure 8**) is an alternative to a glass thermometer.



Reproduced by kind permission of The Boots Company PLC

Figure 8

Explain how a smart material is used in this type of thermometer.

.....

.....

.....

.....

.....

.....

(4 marks)

Question 7 is about Computer Aided Designing and Manufacturing and is worth 15 marks.

Spend about 15 minutes on this question.

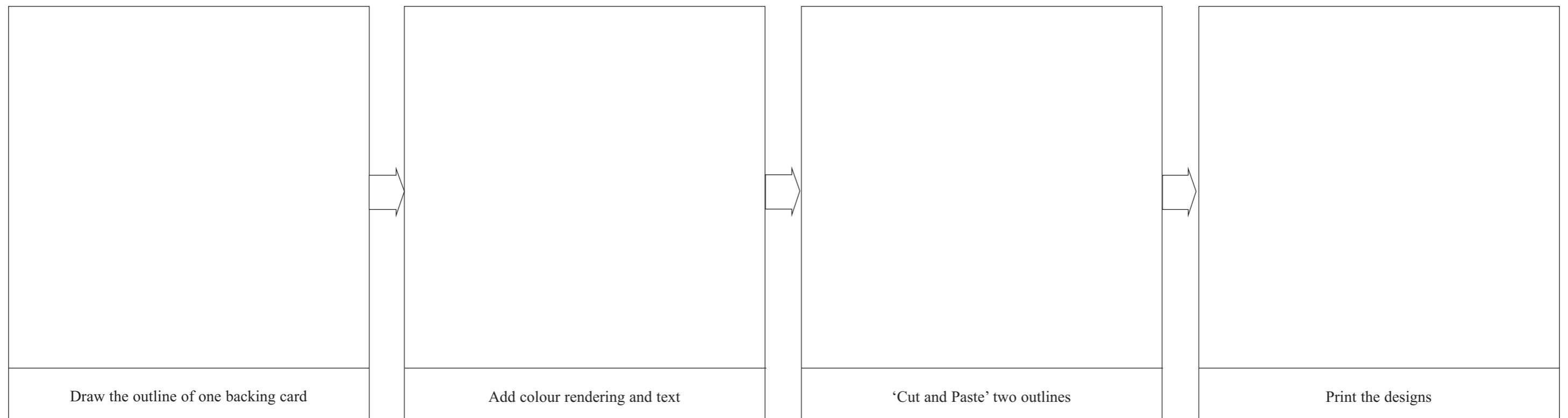
7 The car air freshener shown (Figure 9) is a 'blister' pack.



Figure 9

The backing card has a distinctive shape. **Three** identical backing cards are to be printed and cut from **one** sheet of A4 material.

(a) In the spaces below, use sketches and notes to illustrate the main stages in designing and printing the backing card using a CAD/CAM system. (9 marks)



(b) Explain **one** advantage of CAD over hand drawn methods.

.....
.....
(2 marks)

(c) (i) Explain **one** advantage of using CAM in batch production.

.....
.....
.....
(2 marks)

(ii) Explain **one** disadvantage of using CAM in batch production.

.....
.....
.....
(2 marks)

Question 8 is about environmental and social issues and is worth 26 marks.

Spend about 25 minutes on this question.

8 Figure 10 shows three different car air fresheners inside their packaging.



Figure 10

(a) Give two reasons why air fresheners are contained inside sealed packages.

Reason 1

.....

Reason 2

.....

(4 marks)

(b) (i) Are the transparent parts of the packages in Figure 10 made from renewable or non-renewable material?

Explain your answer.

They are made from materials

because

.....

(2 marks)

(ii) After opening, the packages shown in Figure 10 are thrown away.

Explain the long term effect on the environment of the following materials if they are not correctly disposed of.

the backing card:

.....

.....

(3 marks)

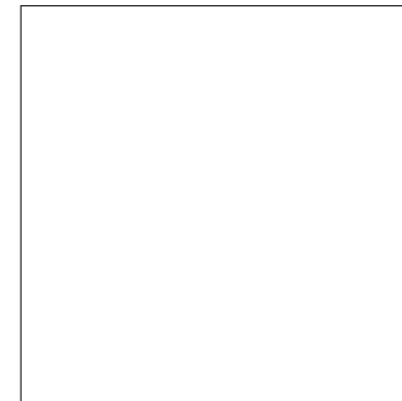
the transparent materials:

.....

.....

(3 marks)

(c) In the box below draw and colour a symbol which shows that a package contains 50% recycled material.



(5 marks)

(d) Give one reasoned advantage and one reasoned disadvantage of using recycled paper and board.

(i) Advantage:

Reason:

.....

(2 marks)

(ii) Disadvantage:

Reason:

.....

(2 marks)

(e) (i) Explain why recycled card should not be used for food packaging.

.....

.....

.....

(2 marks)

(ii) Explain one unwanted effect on the local environment that is near to a "fast food" shop.

.....

.....

(2 marks)

(iii) How can a graphic designer of fast-food packaging encourage people to care for their local environment?

.....

(1 mark)

END OF QUESTIONS

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