

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Question	Mark
1	
2	
3	
4	
5	
6	
7	
8	
TOTAL	



General Certificate of Secondary Education
June 2015

Design and Technology: Graphic Products

45501R

Unit 1 Written Paper

Wednesday 17 June 2015 1.30 pm to 3.30 pm

For this paper you must have:

- a black pen, a pencil, a ruler, an eraser, a pencil sharpener and coloured pencils.

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 answer 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.
- Section A relates to the context given 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 4.



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ANSWER IN THE SPACES PROVIDED**



Section A

Answer this question in the spaces provided.

Section A is about designing.

You are advised to spend 33 minutes on this question.

Design Theme: Prototype block modelling of children's hand held products based on the theme of wildlife.

Look at the Design Brief and Design Criteria below.

Design Brief

A company wants to introduce a new toothbrush for children.

Design Criteria

You have been asked to design the handle for the toothbrush.

The toothbrush handle must:

- be based on the theme of wildlife
- appeal to children up to the age of 10 years
- be suitable for small hands to grip.

Question 1 continues on the next page

Turn over ▶



- 1 (a)** Use the design criteria below to produce a series of annotated sketches which show the initial ideas and development of your designs for the toothbrush handle.

Design Criteria

The toothbrush handle must:

- be based on the theme of wildlife
- appeal to children up to the age of 10 years
- be suitable for small hands to grip.

Marks will be awarded for:

- effective use of the design criteria **[4 marks]**
- creativity and quality of the development, including an indication of colour **[10 marks]**
- notes explaining your sketches. **[3 marks]**



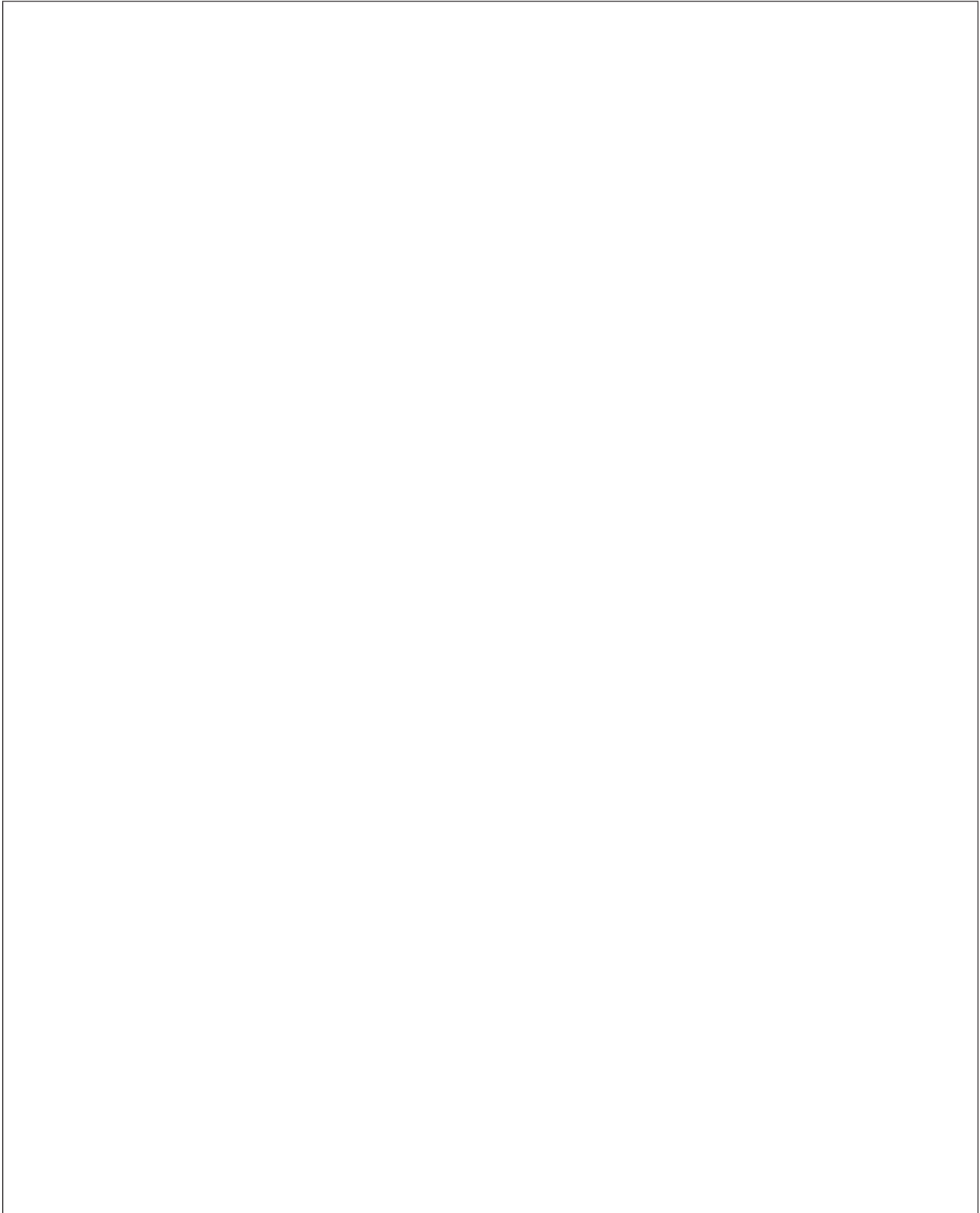
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0 5

1 (b) In the space below, produce a coloured three-dimensional (3D) drawing of your final handle.

[10 marks]



1 (c) Evaluate the final toothbrush handle you have drawn in part **(b)** against **one** of the design criteria given on page 4.

[3 marks]

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1 (d) (i) Name a suitable block modelling material for a prototype of your toothbrush handle.

[1 mark]

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1 (d) (ii) Explain why the material you have chosen in part **(d)(i)** is suitable.

[2 marks]

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33

Turn over for the next question

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Section B

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

This question is about representing data.

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

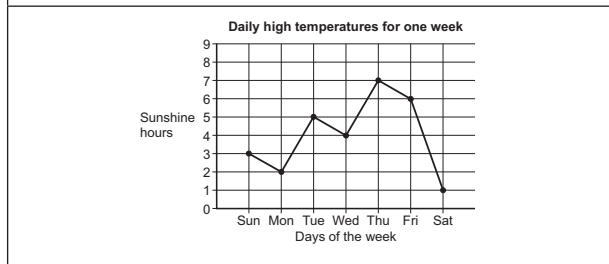
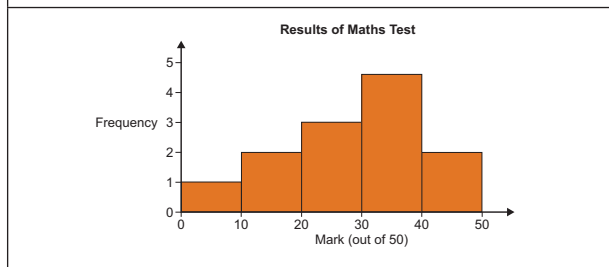
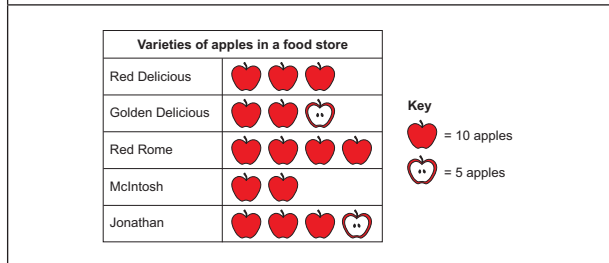
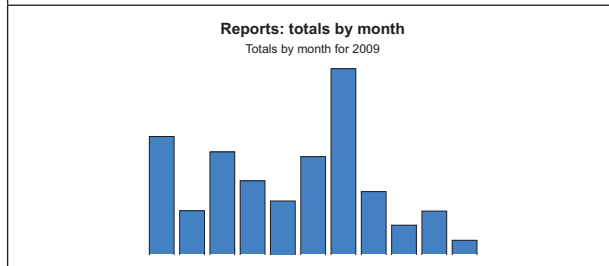
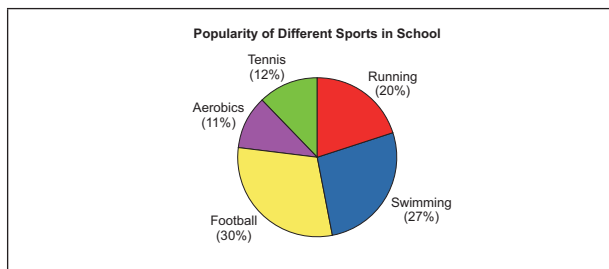
2 (a) Draw a line to match each method of representing data with its graphical form.

[4 marks]

Graphical Form

Method

Line Graph
Histogram
Pie chart
Bar chart



Turn over ▶



2 (b) Describe **one** advantage of using a bar chart to represent data.

[2 marks]

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2 (c) The results of a questionnaire to find out which fruit is most popular in a school canteen are shown in **Figure 1** below.

Complete the pictograph in **Figure 2** using the data in the table below.

Each symbol in the pictograph represents 10% of the result.

Marks will be awarded for:

- accuracy of data
- use of symbols
- labelling the graph.

[4 marks]

[3 marks]

[3 marks]

Figure 1





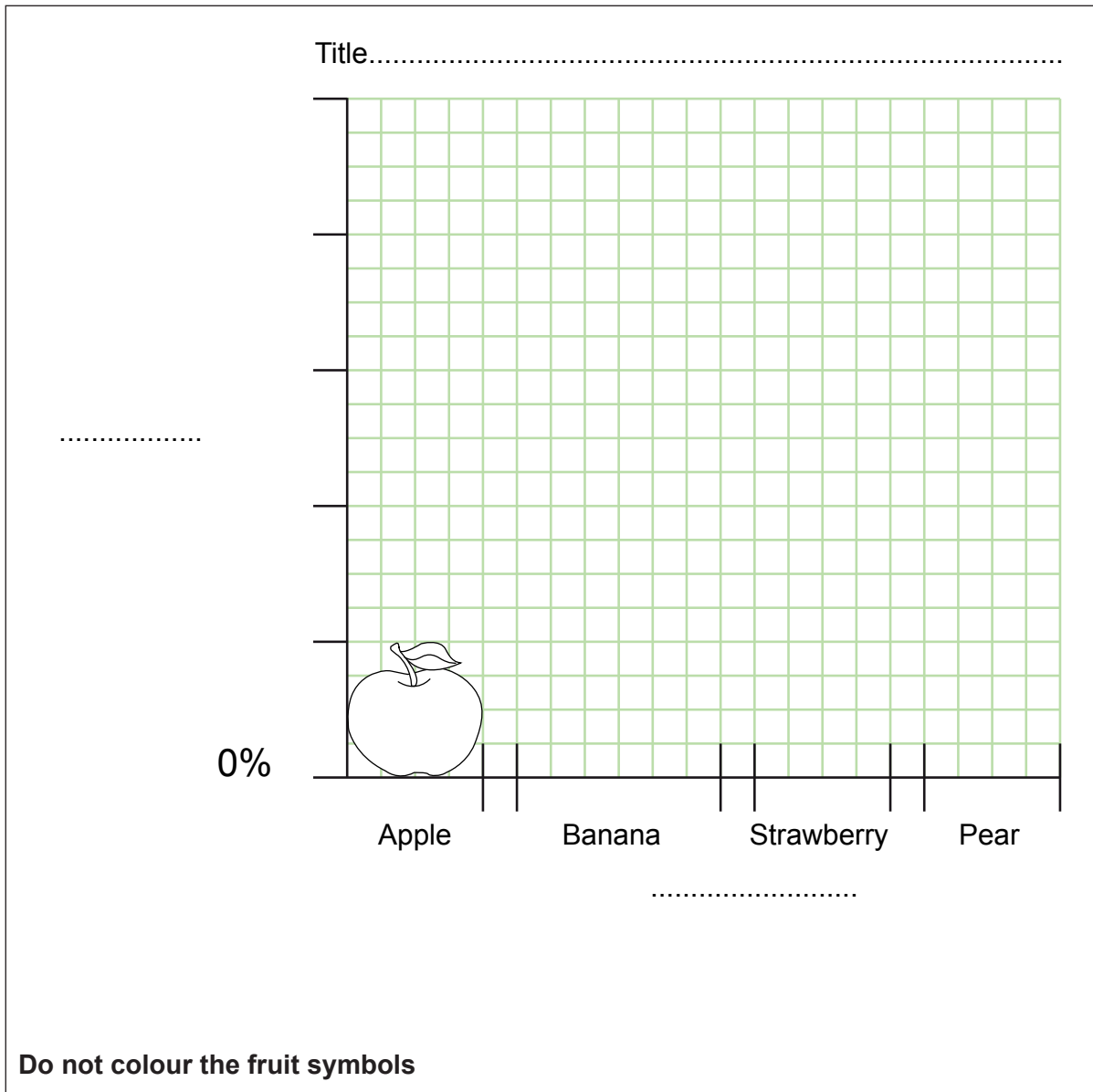
Fruit	Key	Percentage
Apple		20%
Banana		10%
Strawberry		30%
Pear		40%



Figure 2



16

Turn over for the next question

Turn over ▶

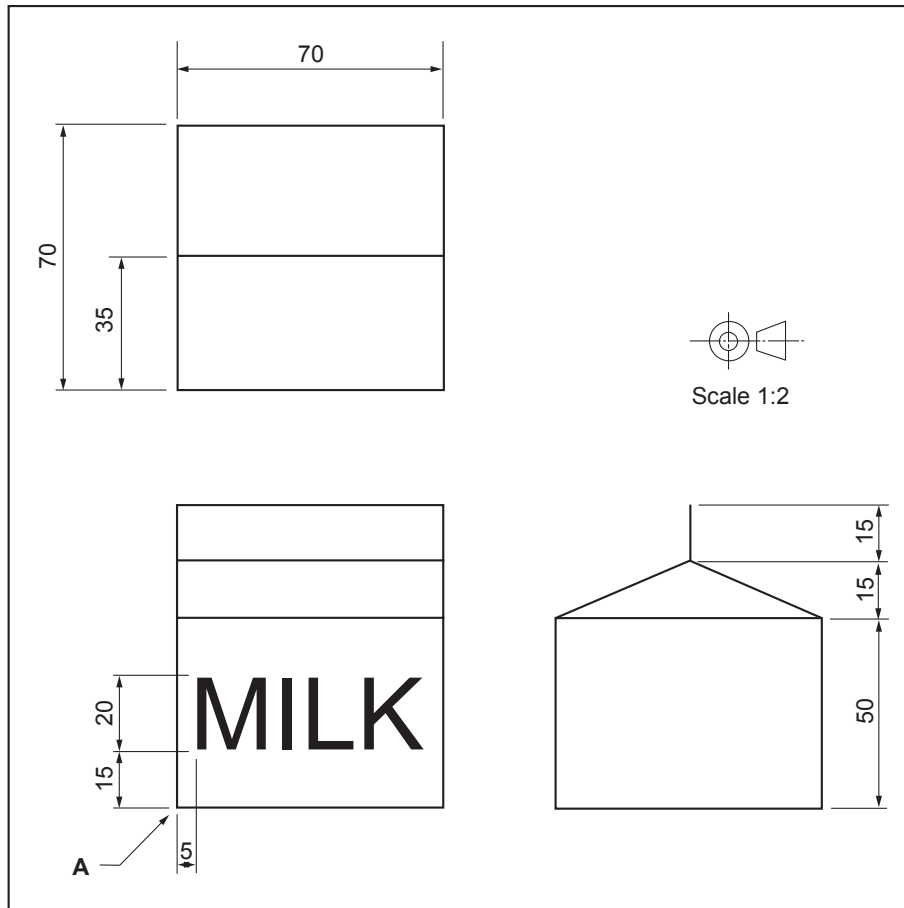


This question is about three-dimensional (3D) sketching.

You are advised to spend about 18 minutes on this question.

- 3 The orthographic drawing shown in **Figure 3** is of a milk carton.

Figure 3



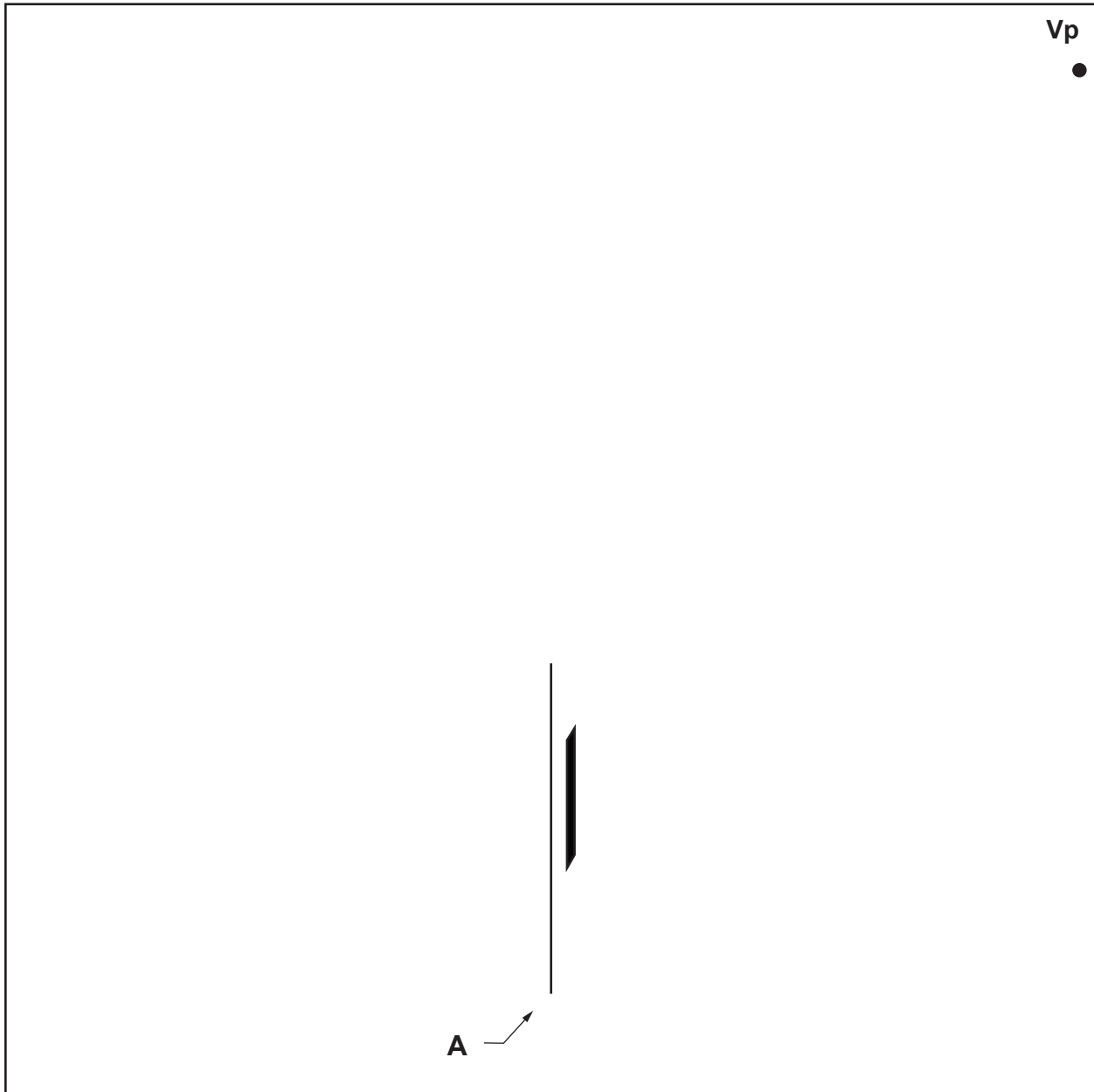
Dimensions are given in millimetres (mm)



- 3 (a)** Using the information in **Figure 3**, complete a full-size one point perspective drawing of the milk carton. The front corner of the carton has been drawn for you at point A in **Figure 4**.

[12 marks]

Figure 4



- 3 (b)** Complete the word 'MILK' on the carton panel. The stem on the left hand side of the letter 'M' has been completed for you. Estimate any sizes not given.

[6 marks]

18

Turn over ▶







This question is about the scale of production.

You are advised to spend about 6 minutes on this question.

5 Below is a list of different types of production methods.

Complete the table below.

An example has been completed for you.

Scale of production and example	Describe the production method
<p>One-off production</p> 	<p>One-off production is when only one of the product is made. It is usually a unique or specialised product.</p>
<p>Batch production</p> 	<p>[2 marks]</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
<p>Mass production</p> 	<p>[2 marks]</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
<p>Continuous production</p> 	<p>[2 marks]</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>

Turn over ▶



This question is about the use of colour.

You are advised to spend about 10 minutes on this question.

6 (a) Colours are often referred to as primary or secondary. Explain the difference between primary and secondary colours.

[3 marks]

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6 (b) Study the signs below.

Figure 5



Figure 6



Explain how colour is used to help communicate the meaning of these signs.

6 (b) (i) Figure 5

[2 marks]

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6 (b) (ii) Figure 6

[2 marks]

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6 (c) Giving an example, explain why the use of colour is important when considering the aesthetics of a product.

[3 marks]

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10

Turn over for the next question

Turn over ▶



This question is about quality control and industrial processes.

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

7 (a) Explain what is meant by the term just in time (JIT) when printing a graphic product.

[3 marks]

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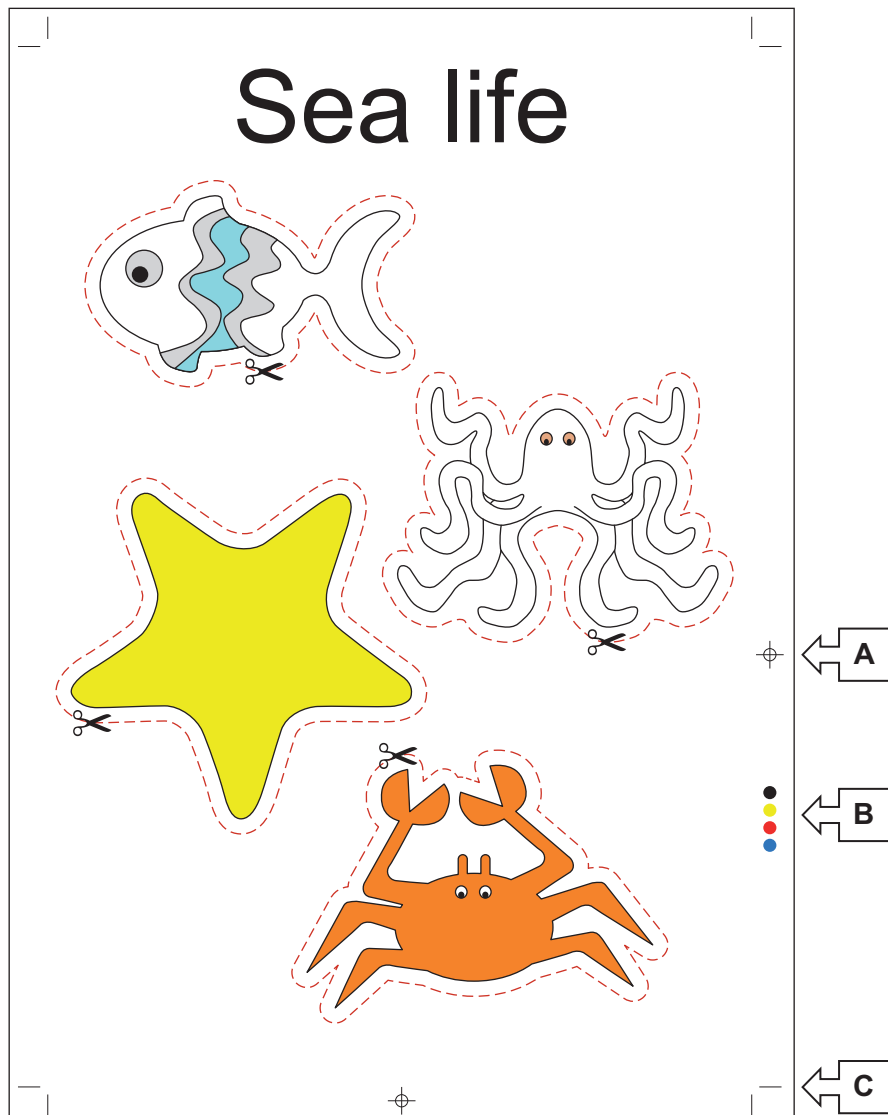
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7 (b) Figure 7 shows a printed page from a child's sticker book before it is trimmed and assembled into a complete book.

Figure 7



The marks around the edge of the page have different meanings.

Give the name of each mark labelled in **Figure 7**. Explain how each mark is used.

[3 marks]

Label A

Use

.....

[3 marks]

Label B

Use

.....

[3 marks]

Label C

Use

.....

7 (c) (i) The starfish is going to be foil blocked.

Explain this special printing effect.

[2 marks]

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7 (c) (ii) Explain why foil blocking increases the cost of producing the sticker book.

[2 marks]

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This question is about equipment and stencils.

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

8 Give **two** safety precautions that are necessary when using the following equipment.

8 (a) Craft knife **[2 marks]**

Precaution 1

Precaution 2

8 (b) Aerosol spray **[2 marks]**

Precaution 1

Precaution 2



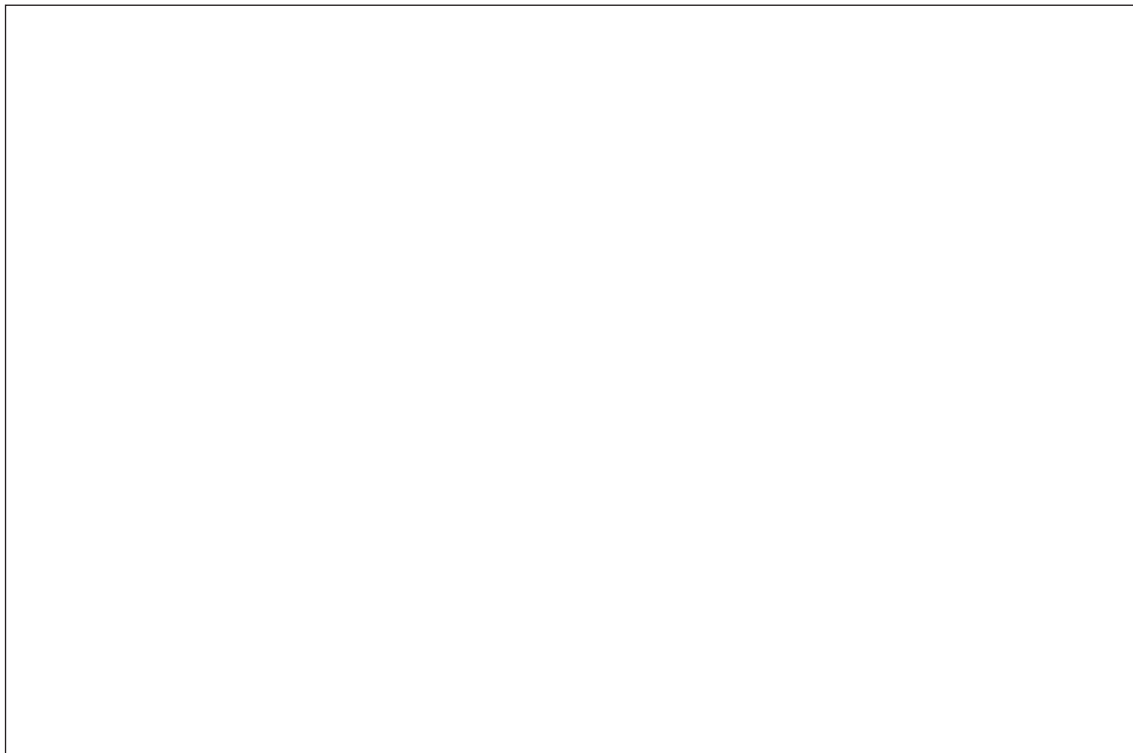
8 (c) Study the picture of the sailing boat shown below.



A designer wants to make a stencil of the sailing boat. The stencil will be used to put a painted border around the walls of a nursery.

Draw a suitable stencil of the sailing boat in the box below.

[6 marks]



Turn over ▶



8 (d) Explain how Computer-Aided Manufacturing (CAM) equipment could be used to produce a stencil.

[3 marks]

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END OF QUESTIONS



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