



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education  
Advanced Subsidiary Level and Advanced Level

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**DESIGN AND TECHNOLOGY**

**9705/01**

Paper 1

**October/November 2008**

**3 hours**

Additional Materials: Answer Booklet/Paper  
A3 Drawing paper (3 sheets)  
A range of design drawing equipment



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**READ THESE INSTRUCTIONS FIRST**

If you have been given an Answer Booklet, follow the instructions on the front cover of the Booklet.

Write your answers and working on the separate Answer Booklet/Paper provided.

Write your name, Centre number and candidate number on all the work you hand in.

Write in dark blue or black pen.

You may use a soft pencil, or coloured pencils/pens as appropriate, for any diagrams, graphs or rough working.

Do not use staples, paper clips, highlighters, glue or correction fluid.

**DO NOT WRITE ON ANY BARCODES.**

**Section A**

Answer **one** question.

**Section B**

Answer **one** question.

**Section C**

Answer **one** question on plain A3 paper.

You are advised to spend **30 minutes** on each of Sections A and B and **2 hours** on Section C.

At the end of the examination, fasten all your work securely together.

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

All dimensions are in millimetres.

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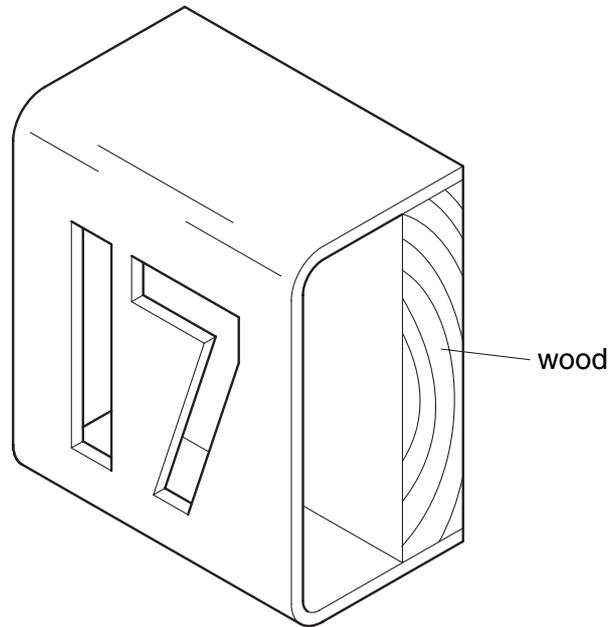
This document consists of **10** printed pages and **2** blank pages.



**Section A**

Answer **one** question from this section.

- 1 Fig. 1 shows a house number which is to be made in a school workshop.



**Fig. 1**

- (a) Name a suitable sheet material for making the bent part of the design and give **one** reason for your choice. [2]
- (b) Use notes and sketches to describe:
- (i) how the numbers could be cut out and the edges of the sheet material finished and polished; [6]
  - (ii) how the sheet material could be bent to the required shape; [6]
  - (iii) how the sheet material could be joined to the wood so that it could be easily removed. [6]

You must give details about the tools, equipment and processes involved and the safety precautions that have to be undertaken at each stage.

2 Fig. 2 shows a gate latch which is to be made in a school workshop.

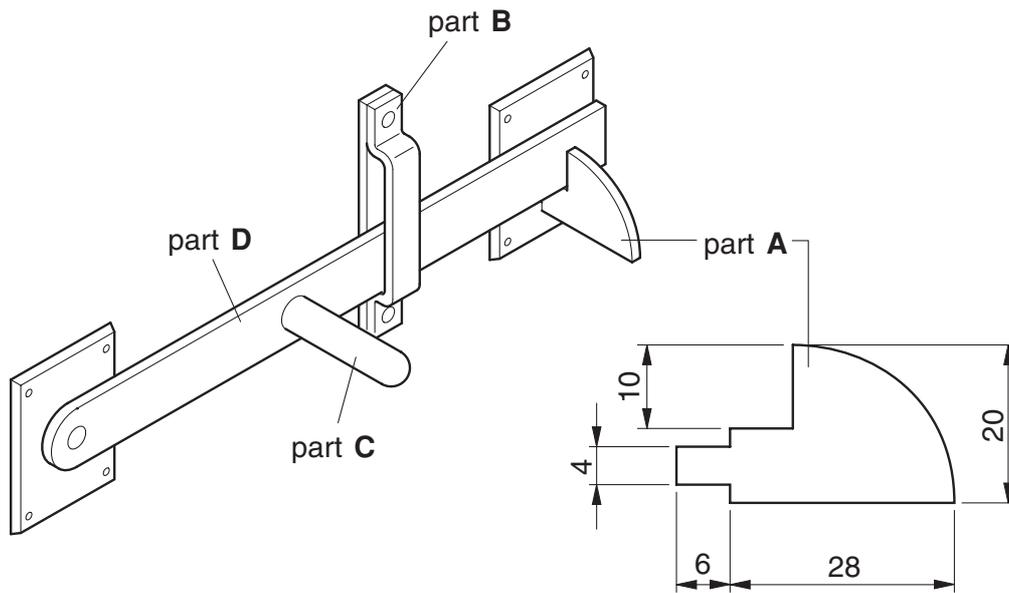
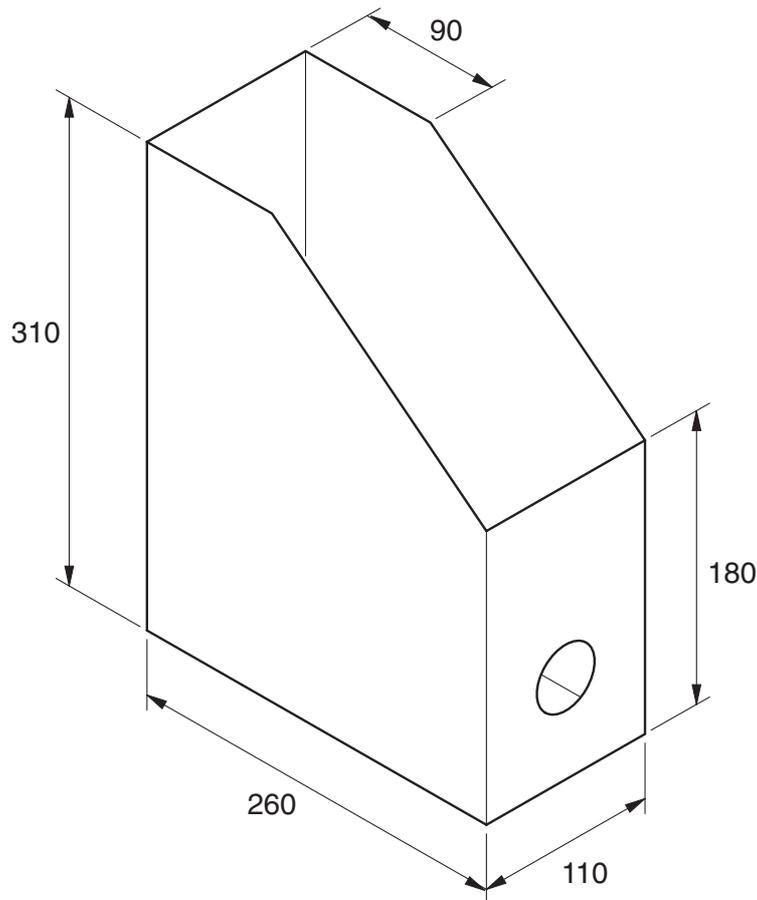


Fig. 2

- (a) Name a suitable metal for making the gate latch and give **one** reason for your choice. [2]
- (b) Use notes and sketches to describe:
  - (i) how part **A** could be cut out and the edges of the metal finished and polished; [6]
  - (ii) how a jig could be used to bend part **B**; [6]
  - (iii) how part **C** could be joined to part **D** so that it could be easily removed. [6]

You must give details about the tools, equipment and processes involved and the safety precautions that have to be undertaken at each stage.

- 3 Fig. 3 shows a magazine storage box which is to be made in a school workshop.



**Fig. 3**

- (a) Name a suitable card for making the storage box and give **one** reason for your choice. [2]
- (b) Sketch, to an appropriate scale, the one piece development (net) required to make the storage box. [6]
- (c) Use notes and sketches to describe:
- (i) a method of joining the storage box together which enables it to be easily assembled without the use of glue or other additional materials; [6]
  - (ii) how CAM (computer aided manufacture) could be used to cut out the development (net) of the storage box. [6]

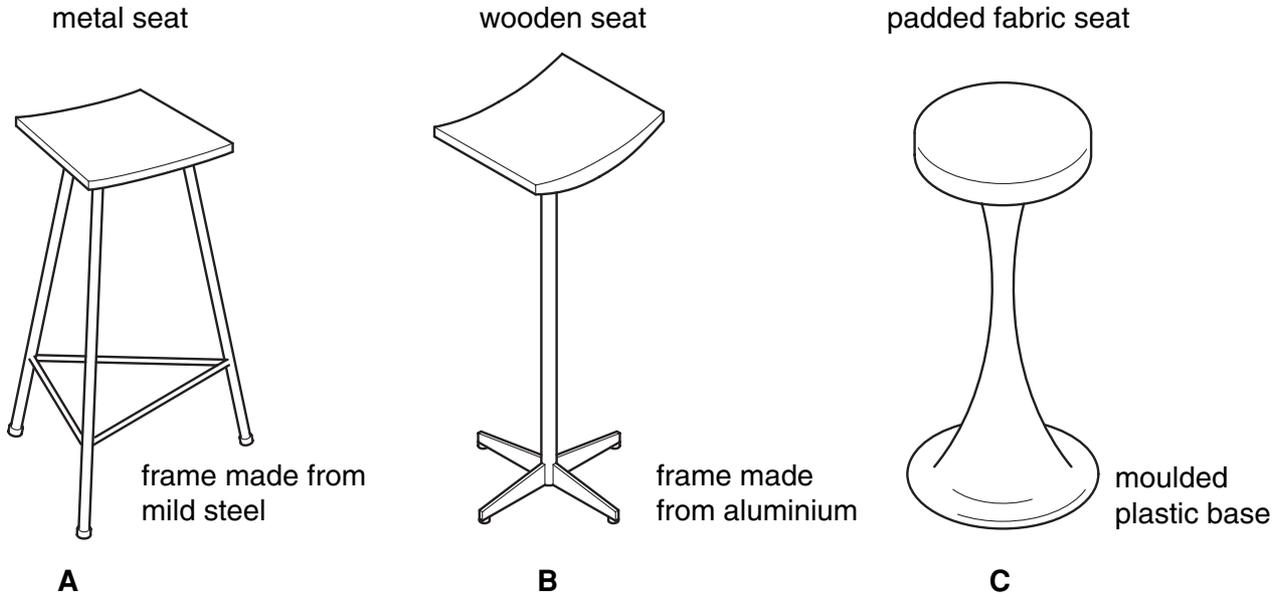
You must give details about the tools, equipment and processes involved and the safety precautions that have to be undertaken at each stage.

**Section B**

Answer **one** question from this section.

- 4 A hotel requires stools for an outdoor eating area. The stools will be used on a range of surfaces including sand, grass, and concrete paving.

A range of stool designs is shown in Fig. 4.

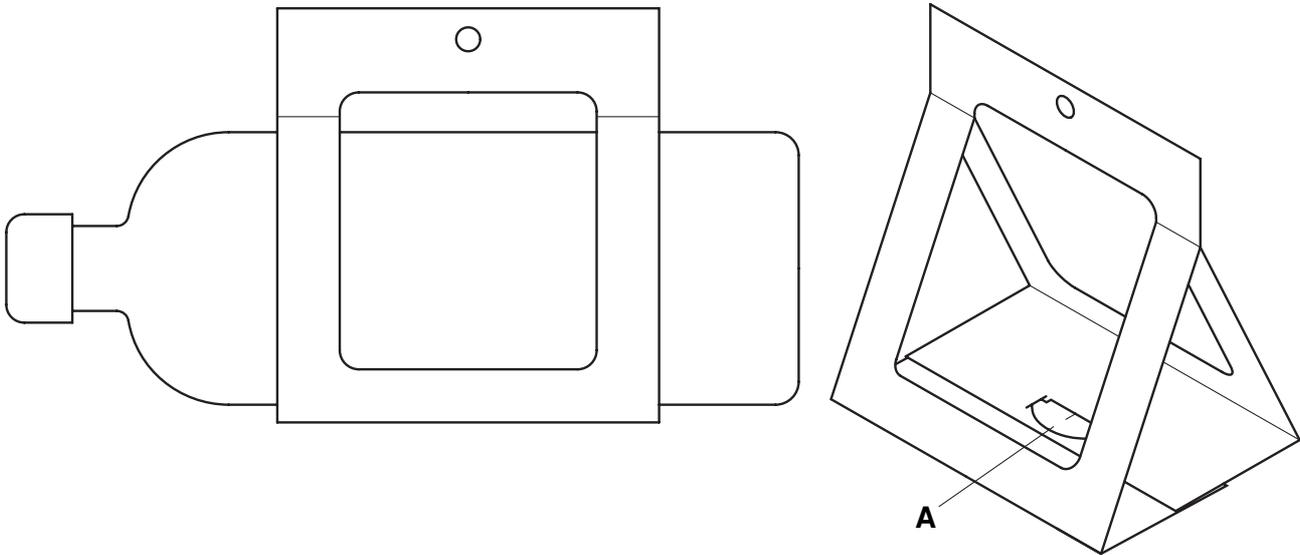


**Fig. 4**

- (a) Explain why design **A** has rails at the bottom joining the legs together. [2]
- (b) The use of ferrous metal in design **A** has caused problems.  
Describe **two** problems that could occur when a ferrous metal is used outside. [4]
- (c) Explain how the two problems that you have identified in (b) could be overcome. [6]
- (d) Discuss the suitability of the three stool designs for use by the hotel. Your answer should:
- (i) analyse the given situation and identify three relevant issues raised by the question; [3]
  - (ii) explain why you consider these three issues to be relevant; [3]
  - (iii) contain specific examples/evidence as support for your conclusions. [2]

5 Fig. 5 shows a design for packaging and carrying a glass bottle.

The packaging is made from card.



**Fig. 5**

- (a) Explain the function of the design feature shown at **A**. [2]
- (b) Describe **two** problems with the design. [4]
- (c) Explain how the two problems that you have identified in (b) could be overcome. [6]
- (d) Discuss how manufacturers and retailers address the issues associated with the disposal of packaging. Your answer should:
- (i) analyse the given situation and identify three relevant issues raised by the question; [3]
  - (ii) explain why you consider these three issues to be relevant; [3]
  - (iii) contain specific examples/evidence as support for your conclusions. [2]

6 Fig. 6 shows a range of methods that can be used to support shelves.

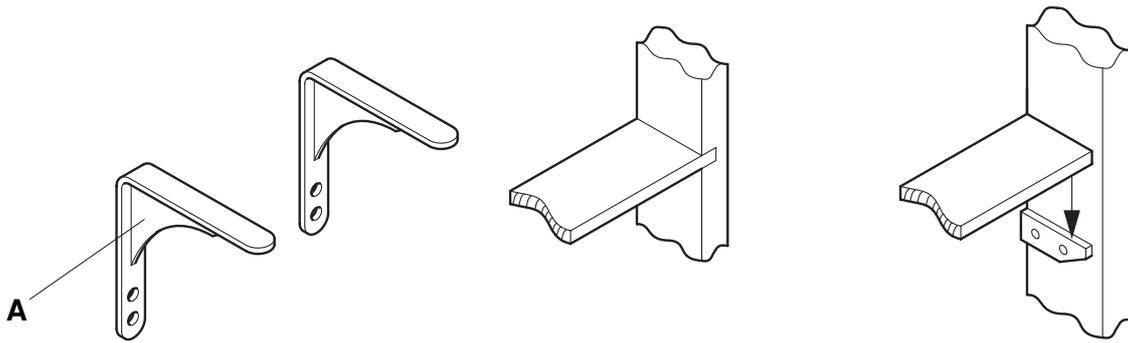


Fig. 6

- (a) Explain the function of the design feature shown at **A**. [2]
- (b) Describe **two** problems that could occur with wooden shelves when they are full of books. [4]
- (c) Explain how the two problems that you have identified in (b) could be overcome. [6]
- (d) Discuss the merits of testing designs and materials before manufacturing a product. Your answer should:
- (i) analyse the given situation and identify three relevant issues raised by the question; [3]
  - (ii) explain why you consider these three issues to be relevant; [3]
  - (iii) contain specific examples/evidence as support for your conclusions. [2]

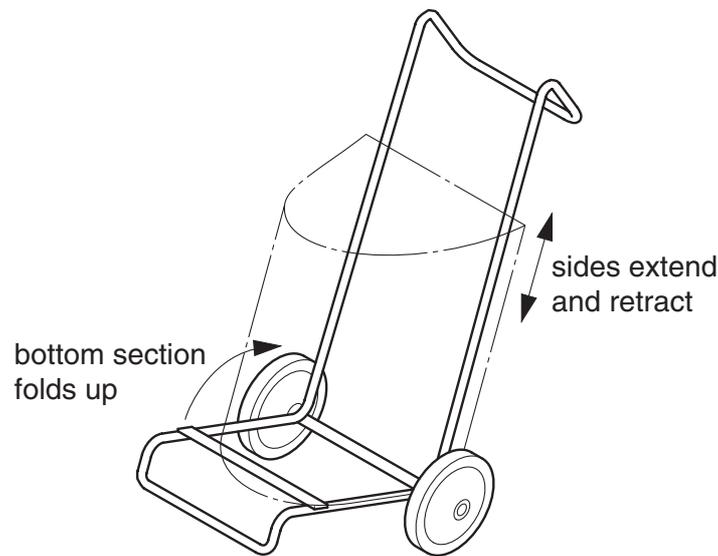
**Section C**

Answer **one** question from this section.

You should use one side of A3 plain paper for **each** of the five parts **(a) – (e)** of the question that you choose to answer.

Where you are asked to **develop** an idea you must show using bold sketches and notes the development, reasoning and composition of a range of ideas into a single design proposal. You must give details about materials, construction and other relevant technical aspects.

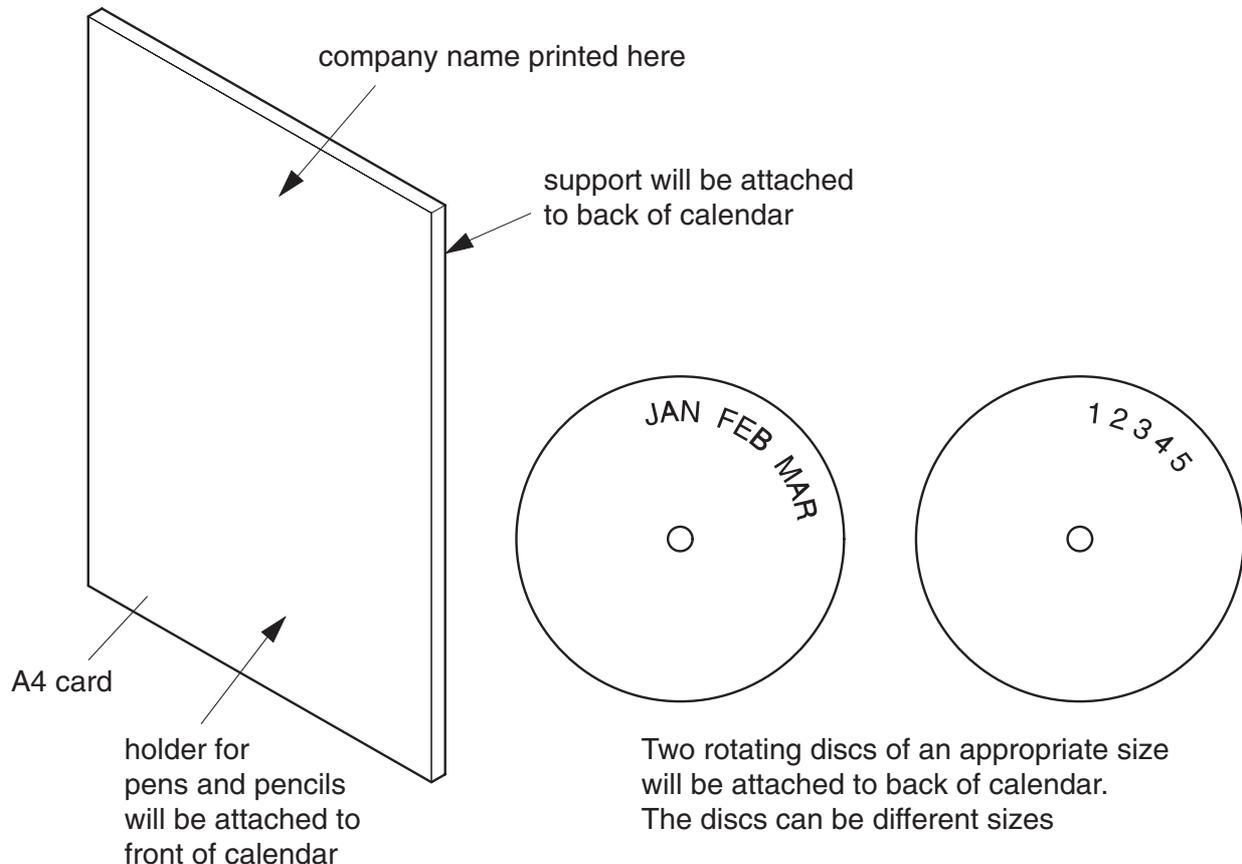
- 7 Fig. 7 shows an incomplete idea for a trolley to transport a garden rubbish bin. Most of the trolley is made from metal. The wheels have a 12 mm hole in their centre.



**Fig. 7**

- (a) Using notes and sketches, **develop** the idea to show a design feature which attaches the wheels to the trolley and allows them to be easily removed. [16]
- (b) Using notes and sketches, **develop** the idea to show a design feature which allows the bottom section of the trolley to fold up when not in use. [16]
- (c) Using notes and sketches, **develop** the idea to show a design feature which allows the sides to extend and retract so that the handle can be fixed at different heights. [16]
- (d) Using notes and sketches, **develop** the idea to show a design feature which securely attaches different size bins to the trolley. [16]
- (e) Produce a pictorial rendered drawing of the complete trolley which shows all of the features that you have designed in **(a) – (d)**. [16]

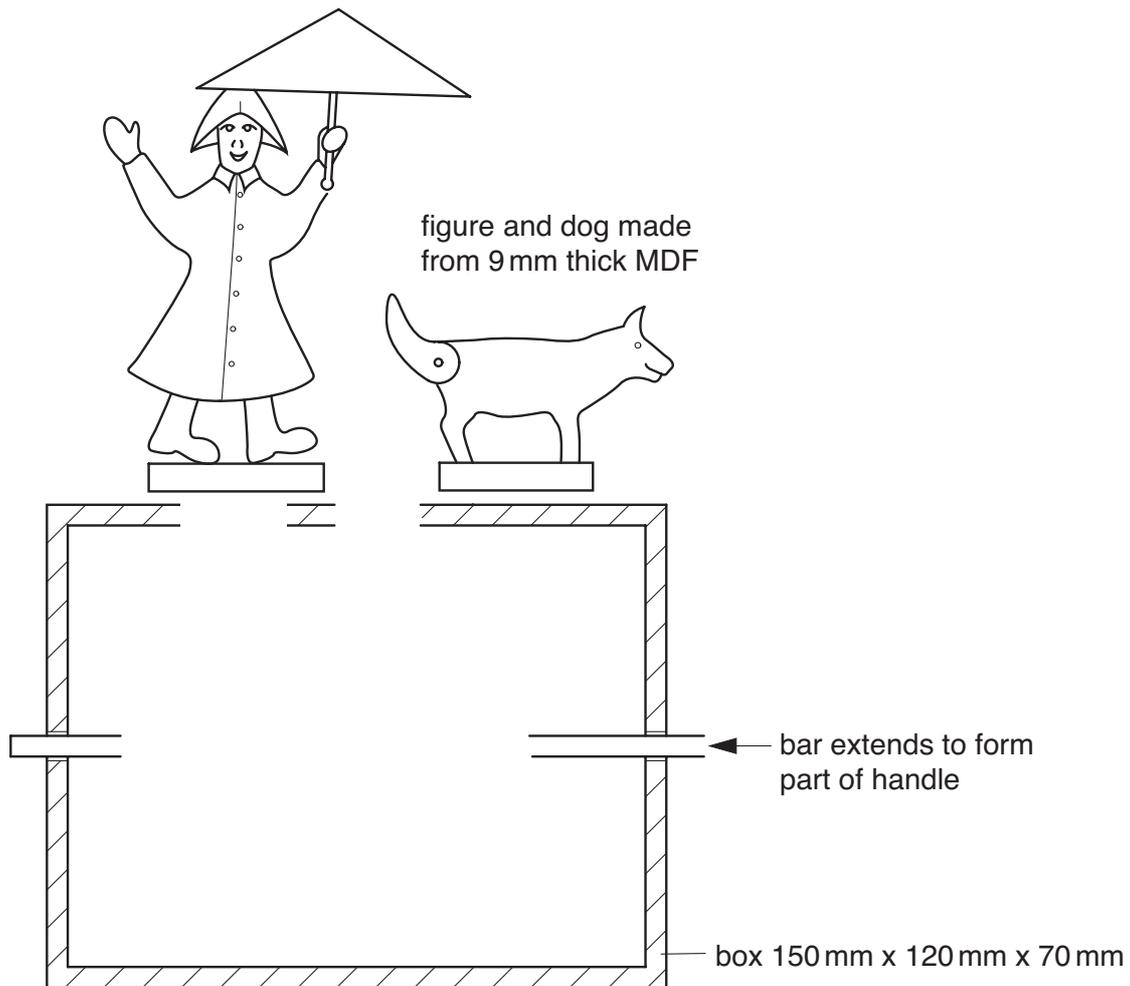
- 8 Fig. 8 shows an incomplete design for a promotional desk top calendar which a company called 'Group C Design' will post to its clients in a flat-pack form. Most of the calendar is made from card.



**Fig. 8**

- (a) Using notes and sketches, **develop** design features which will attach the discs to the back of the calendar and allow different dates to be seen on the front of the calendar as the discs rotate. [16]
- (b) Using notes and sketches, **develop** a design for a holder for pens and pencils which can be easily attached to the front of the calendar without the use of glue or other additional materials. [16]
- (c) Using notes and sketches, **develop** a design for a support which folds out from the back of the calendar and locks securely in place to prevent the calendar falling backwards. [16]
- (d) Using notes and sketches, **develop** a design for the company's name 'Group C Design' which will be printed at the top of the calendar. [16]
- (e) Produce an exploded pictorial rendered drawing of the complete calendar which shows all of the features that you have designed in (a) – (d). [16]

- 9 Fig. 9 shows an incomplete idea for a mechanical toy. Most of the toy is made from wood.



**Fig. 9**

- (a) Using notes and sketches, **develop** the idea to show a design feature which makes the figure go round when the handle is turned. [16]
- (b) Using notes and sketches, **develop** the idea to show a design feature which makes the tail of the dog go up and down when the handle is turned. [16]
- (c) Using notes and sketches, **develop** a design for the box. The front and back of the box must be enclosed. The front must be made from a see-through material and the back must be removable. [16]
- (d) Using notes and sketches, **develop** a design for the handle. The handle must be comfortable to use and include a feature which prevents the bar being pulled out of the box. [16]
- (e) Produce a pictorial rendered drawing of the complete mechanical toy which shows all of the features that you have designed in (a) – (d). [16]



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