



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

**DESIGN AND TECHNOLOGY**

9705/13

Paper 1

October/November 2011

3 hours

Additional Materials: Answer Booklet/A4 Paper  
A3 Drawing Paper (3 sheets)  
Extra sheets of A3 drawing paper for candidates who have used up both sides of their 3 sheets  
A range of design drawing equipment

**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 on the Answer Booklet/A4 Paper provided.

**Section B**

Answer **one** question on the Answer Booklet/A4 Paper provided.

**Section C**

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

Use **both** sides of the paper.

You may request additional sheets of A3 paper, but only if you have used both sides of each of the 3 sheets provided.

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.

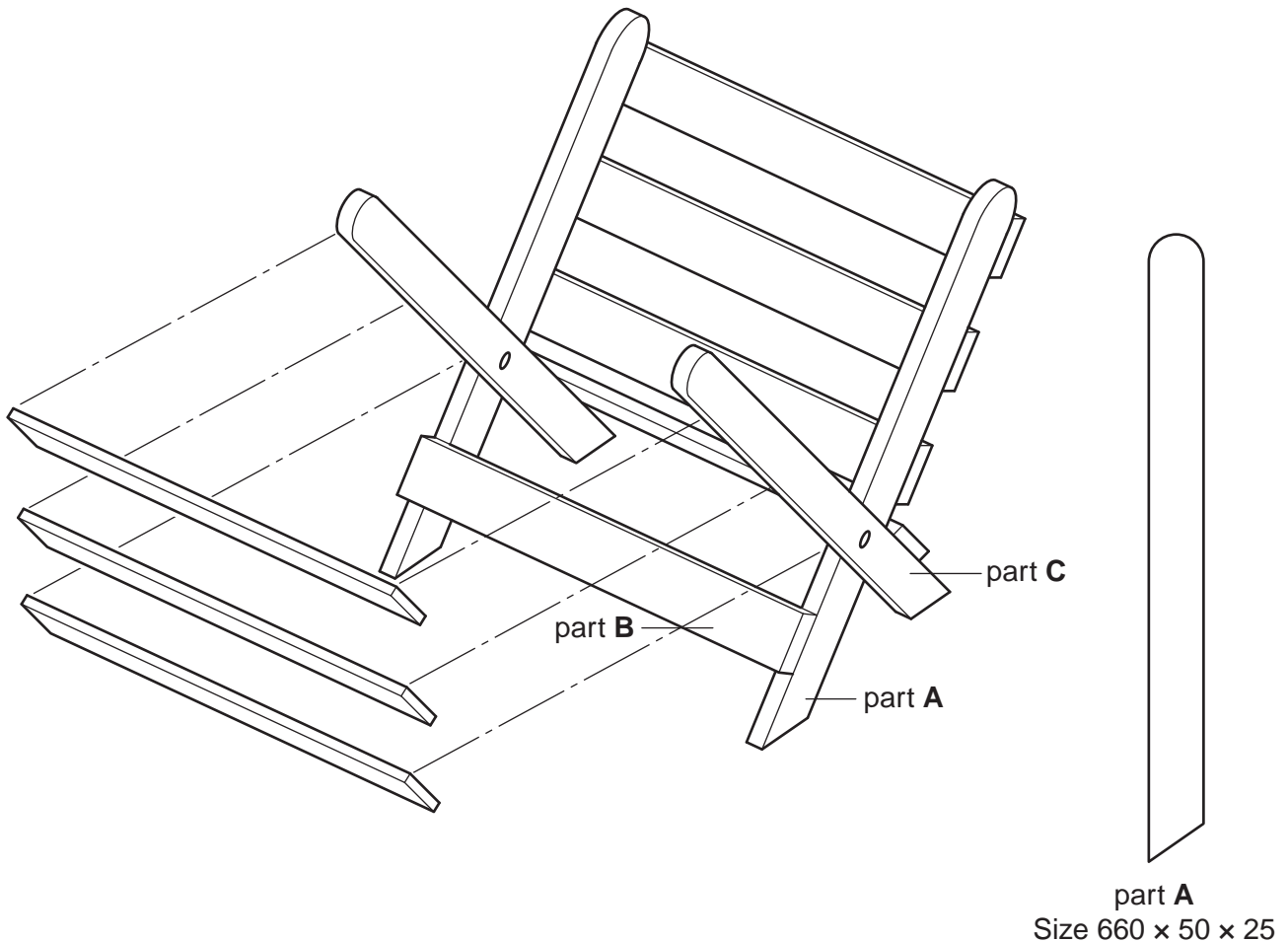
This document consists of **10** printed pages and **2** blank pages.



**Section A**

Answer **one** question from this section on the Answer Booklet/A4 paper provided.

- 1 Fig. 1 shows a magazine rack, constructed from pine, which is to be made in a school workshop.

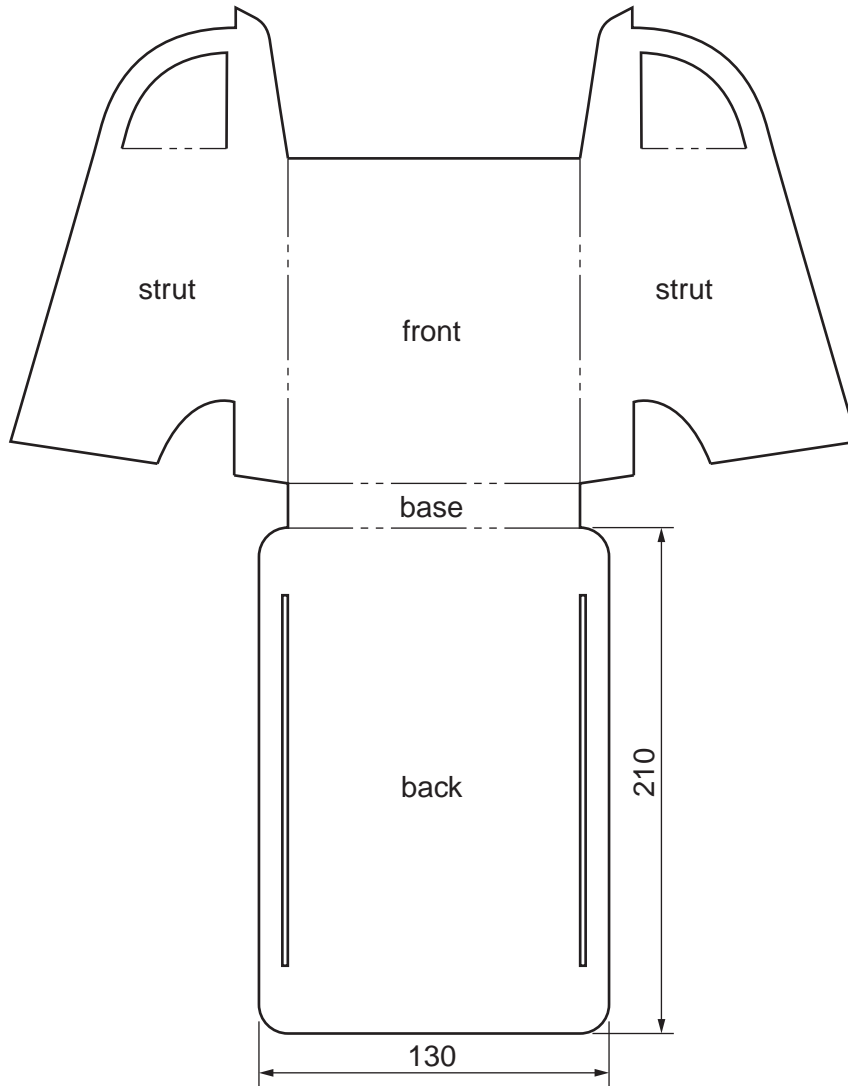


**Fig. 1**

- (a) Name a suitable finish that could be applied to the pine and give **one** reason for your choice. [2]
- (b) Use notes and sketches to describe:
- (i) how the ends of part **A** could be cut to shape and the edges of the wood smoothed; [6]
  - (ii) how parts **A** and **B** could be joined using countersunk screws; [6]
  - (iii) a method of joining parts **A** and **C** that allows the rack to fold flat. [6]

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

- 2 Fig. 2 shows the development (net) of a leaflet holder made from card.

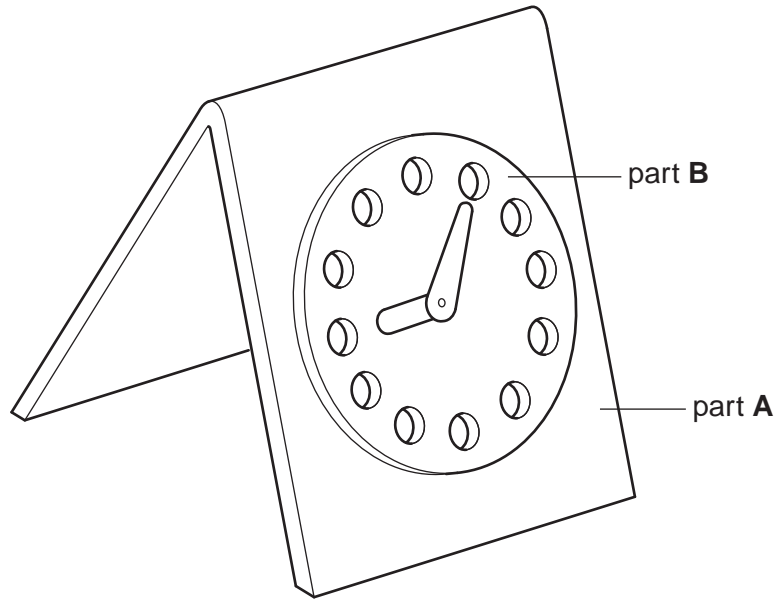


**Fig. 2**

- (a) State a suitable thickness of card for making the leaflet holder and give **one** reason for your choice. [2]
- (b) Sketch a pictorial (3D) view of the assembled leaflet holder. [6]
- (c) Use notes and sketches to describe how the development (net) could be cut out and the folds made to produce a one-off prototype of the leaflet holder. [6]
- (d) The leaflet holder will be mass produced using the die cutting process. Use notes and sketches to describe the die cutting process. [6]

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

- 3 Fig. 3 shows a clock which is to be made in a school workshop.



**Fig. 3**

- (a) Name a suitable sheet material for making parts **A** and **B** and give **one** reason for your choice. [2]
- (b) Use notes and sketches to describe:
- (i) how part **A** could be bent; [6]
  - (ii) how part **B** could be cut out and the edges of the sheet material smoothed and polished; [6]
  - (iii) how the holes in part **B** could be marked out and drilled. [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 on the Answer Booklet/A4 paper provided.

- 4 Fig. 4 shows a design for packaging a chocolate egg and a symbol that is printed on the back of the packaging.

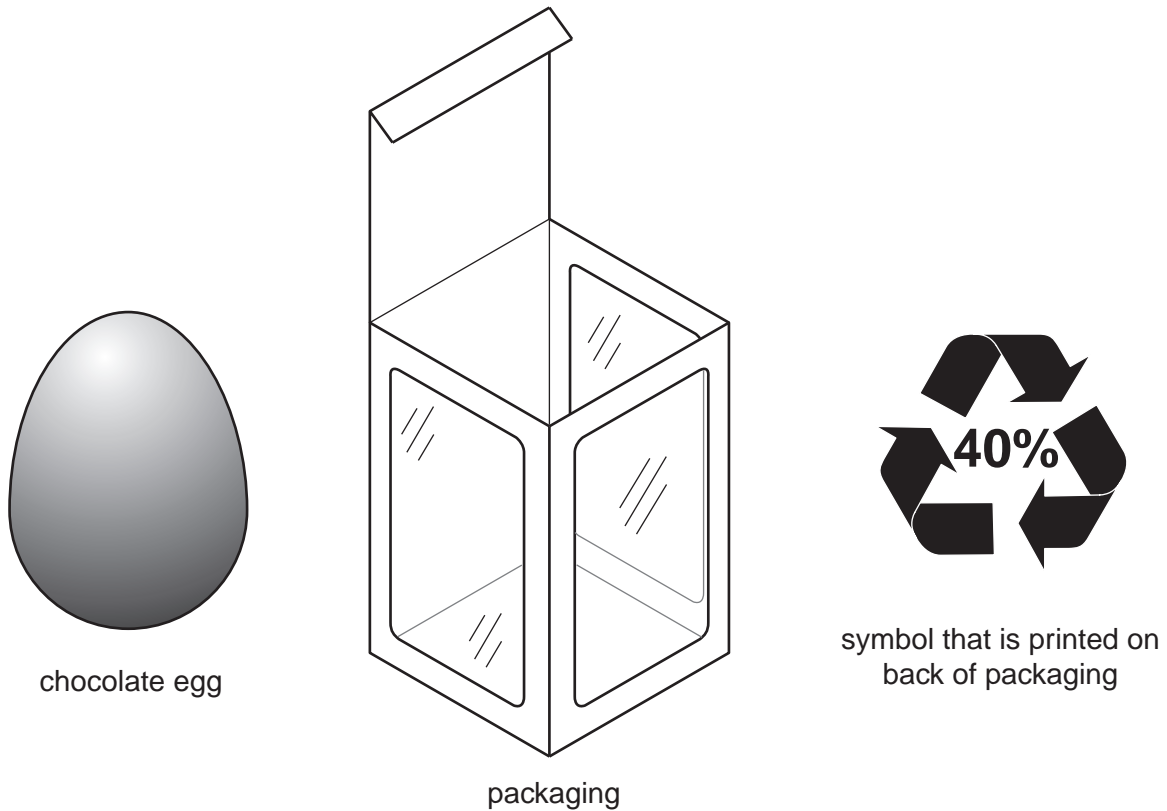


Fig. 4

- (a) Explain what the symbol means. [2]
- (b) Describe **two** problems with the design of the packaging. [4]
- (c) Using notes and sketches, explain how the design would need to be changed to overcome the two problems you have identified in (b). [6]
- (d) Discuss why packaging is often considered to be 'environmentally unfriendly'.

Your answer should:

- (i) analyse the given situation and identify three relevant issues raised by the question; [3]
- (ii) explain why you consider these issues to be relevant; [3]
- (iii) contain specific examples/evidence as support for your conclusions. [2]

5 Fig. 5 shows a range of designs for storing CDs.

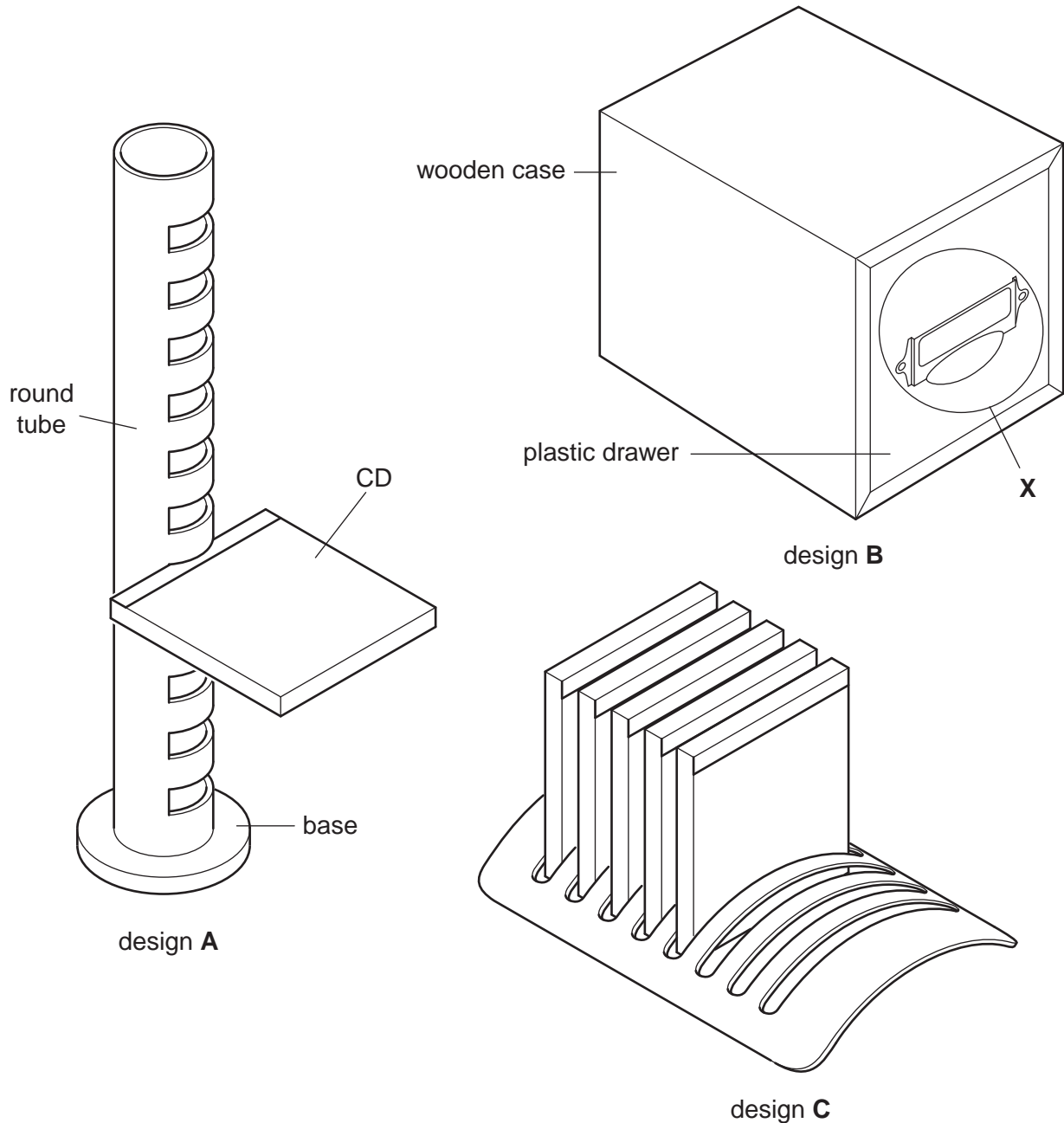


Fig. 5

- (a) Explain the purpose of the design feature shown at X. [2]
- (b) Describe **two** problems with design A. [4]
- (c) Using notes and sketches, explain how the design would need to be changed to overcome the two problems you have identified in (b). [6]
- (d) Discuss the ways in which a designer would use a prototype model of a CD storage system to test the design before the final product is manufactured.

Your answer should:

- (i) analyse the given situation and identify three relevant issues raised by the question; [3]
- (ii) explain why you consider these issues to be relevant; [3]
- (iii) contain specific examples/evidence as support for your conclusions. [2]

- 6 Fig. 6 shows a range of designs for free-standing advertising boards. Businesses stand these boards outside their premises.

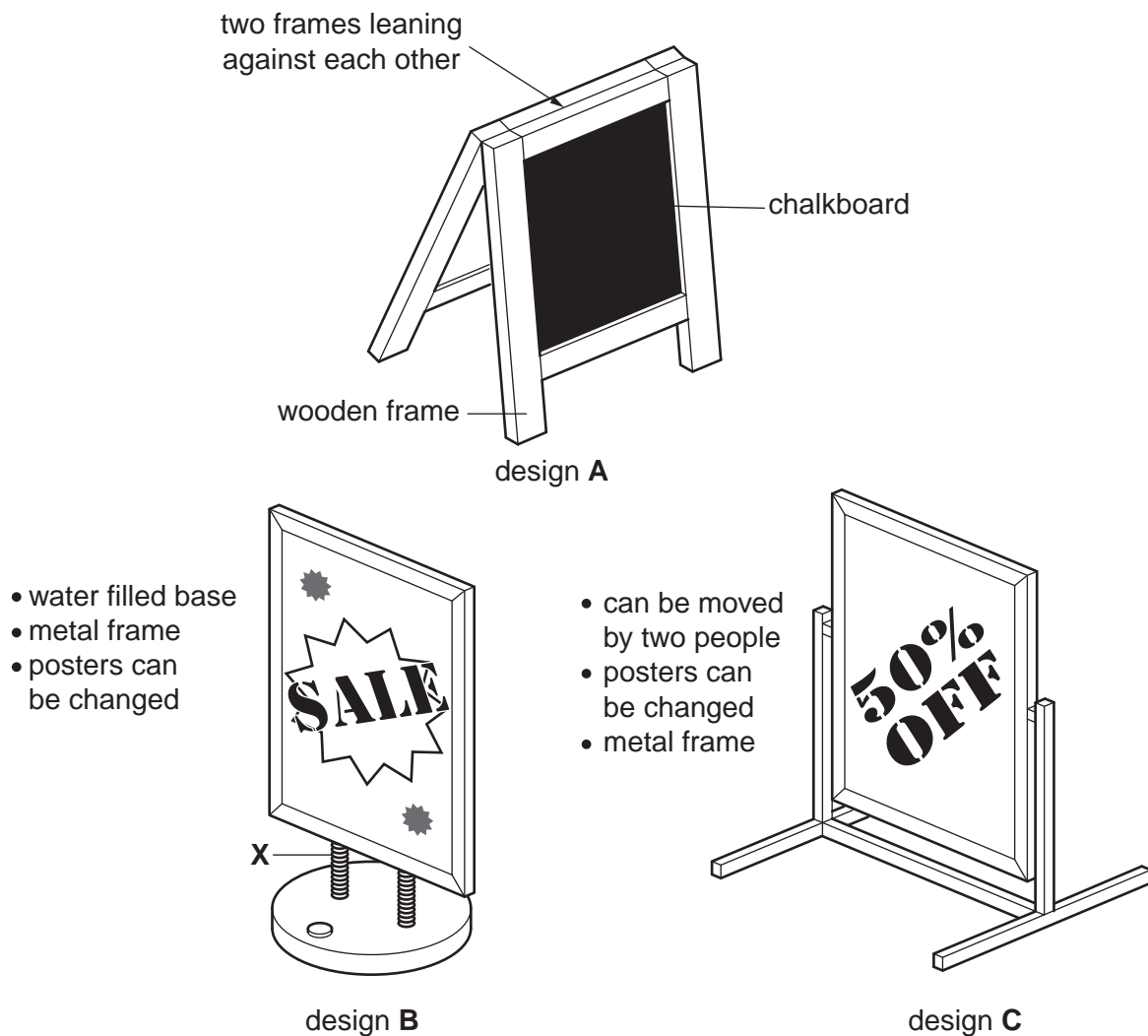


Fig. 6

- (a) Explain the function of the design feature shown at X. [2]
- (b) Describe **two** problems with design A. [4]
- (c) Using notes and sketches, explain how the design would need to be changed to overcome the two problems that you have identified in (b). [6]
- (d) Discuss why cafés, restaurants and small local shops frequently prefer to use advertising boards like the one shown in design A rather than designs like B and C.

Your answer should:

- (i) analyse the given situation and identify three relevant issues raised by the question; [3]
- (ii) explain why you consider these points to be relevant; [3]
- (iii) contain specific examples/evidence to support your conclusions. [2]

Section C

Answer **one** question from this section on the plain A3 paper provided.

You are provided with three sheets of plain A3 paper. You should use **both** sides of the paper. **Each** of the five parts **(a)–(e)** of the question that you choose to answer should take up one side of the paper.

When you are asked to **develop** a design you must show, using notes and sketches, the development and evaluation of a **range** of ideas into a single design proposal. The design proposal should be annotated to give details about materials, joining methods and important sizes.

7 Fig. 7 shows an incomplete idea for a push-along toy aeroplane.

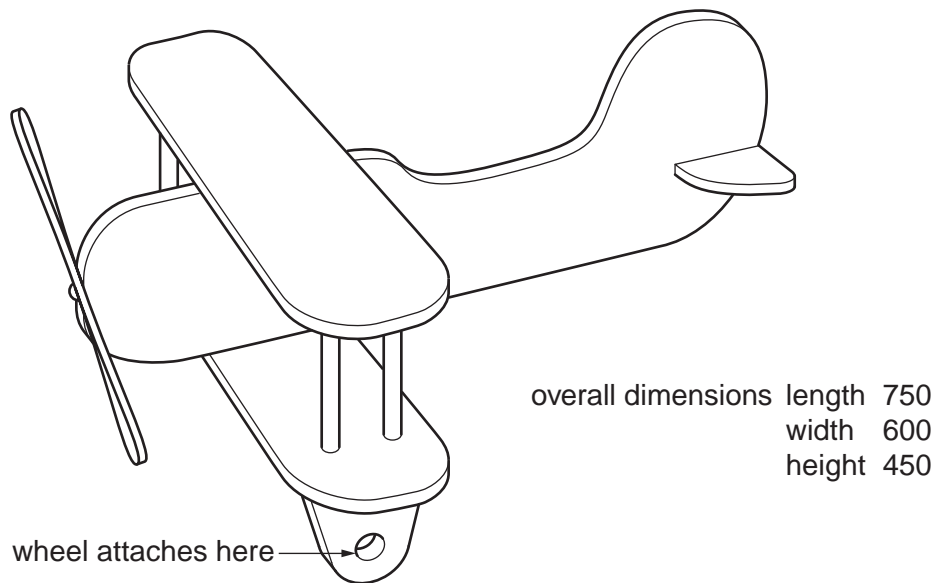


Fig. 7

- (a) Using notes and sketches, **develop** a design which allows a child to sit comfortably on the aeroplane when it is being pushed along. [16]
- (b) Using notes and sketches, **develop** designs for footrests and hand holds that a child could use when sitting on the aeroplane. [16]
- (c) Using notes and sketches, **develop** a design for the aeroplane's two front wheels. The design must include a method of attaching the wheels to the aeroplane. [16]
- (d) Using notes and sketches, **develop** a design which allows an adult to push the aeroplane along without having to bend down. [16]
- (e) Produce a pictorial rendered drawing of the complete toy aeroplane which shows all of the features that you have designed in **(a)–(d)**. [16]



- 8 Fig. 8 shows an incomplete idea for a free standing display stand to hold DVDs. The stand will be manufactured in flat pack form from 5 mm thick corrugated cardboard.

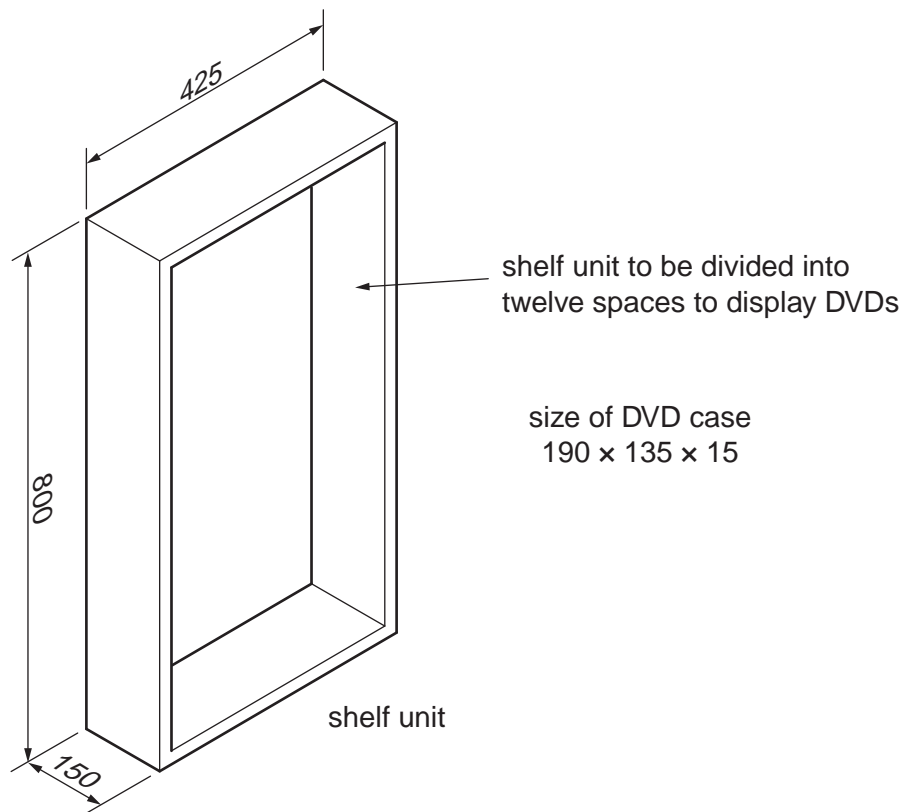
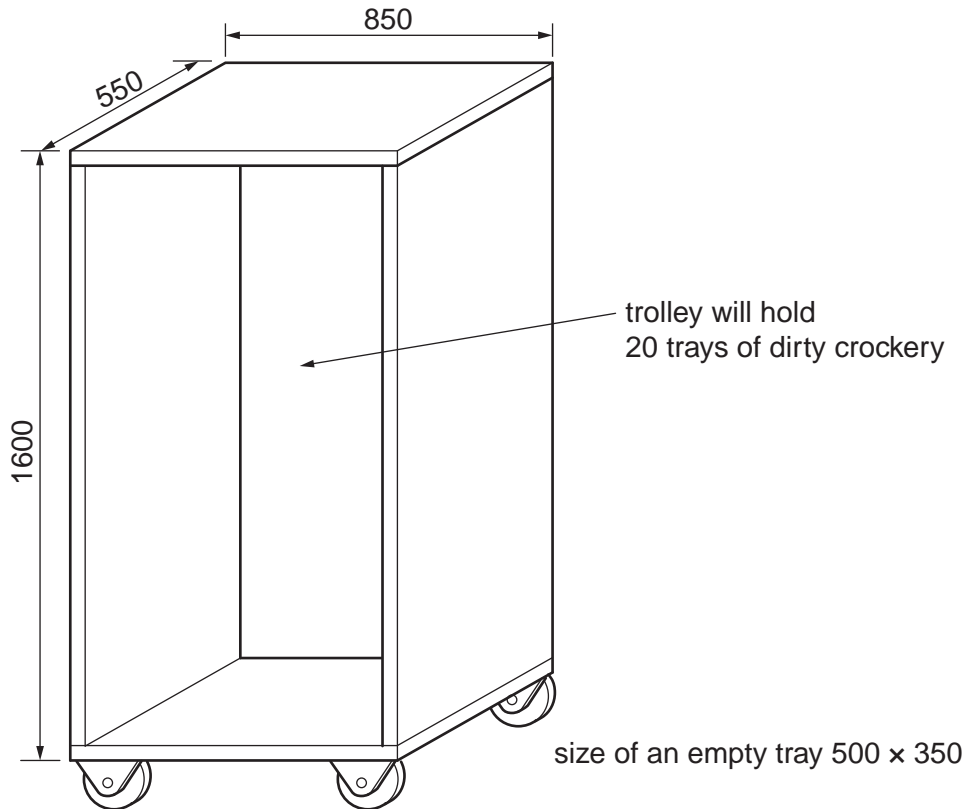


Fig. 8

- (a) Using notes and sketches, **develop** a design for a base unit which supports the shelf unit at a height of 500 millimetres above the ground. The design must include a method that joins the base unit to the shelf unit but allows it to be removed and replaced without causing damage to either unit. [16]
- (b) Using notes and sketches, **develop** a design which divides the shelf unit into twelve spaces. The design must include a method that joins the dividers to the shelf unit but allows them to be removed and replaced without causing damage to either the dividers or the shelf unit. [16]
- (c) Using notes and sketches, **develop** a design for a holder for entry forms for a competition to win a portable DVD player. This must be capable of being attached to the display stand without the use of glue or any other additional materials. [16]
- (d) Using notes and sketches, **develop** a design for the lettering to go on the display stand. This should consist of the title of the DVD 'Midnight in the City' and should be in a style that reflects the title. [16]
- (e) Produce a pictorial rendered drawing of the complete display stand which shows all of the features that you have designed in (a)–(d). [16]

- 9 Fig. 9 shows an incomplete idea for a tray-clearing trolley. Students using a school canteen will return trays, crockery and litter to the trolley.



**Fig. 9**

- (a) Using notes and sketches, **develop** a design which allows 20 trays full of dirty crockery to be put in the trolley. [16]
- (b) Using notes and sketches, **develop** a design for a handle that allows the trolley to be pushed and pulled. [16]
- (c) Using notes and sketches, **develop** a design for a waste bin which could be attached to the trolley. The bin must have a lid that can be easily opened and closed. [16]
- (d) Using notes and sketches, **develop** a design which allows the waste bin to be attached and easily removed from the trolley without the use of any tools. [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]



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