



# Cambridge International AS & A Level

DESIGN & TECHNOLOGY

9705/11

Paper 1

October/November 2024

3 hours



You must answer on the answer booklet/paper.

You will need: Answer booklet/A4 paper                      Coloured pencils  
A3 drawing paper (2 sheets)                      Extra sheets of A3 drawing paper if needed  
A range of design drawing equipment

## INSTRUCTIONS

- Answer **three** questions in total:
  - 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 A3 drawing paper. Use both sides of the paper.
- You may request additional sheets of A3 drawing paper, but only if you have used up both sides of each of the 2 sheets provided.
- If you have been given an answer booklet, follow the instructions on the front cover of the answer booklet.
- Use a black or dark blue pen.
- Write your name, centre number and candidate number on all the work you hand in.
- Do **not** use an erasable pen or correction fluid.
- You may use an HB pencil, or coloured pencils as appropriate, for any diagrams, graphs or rough working.
- At the end of the examination, fasten all your work together. Do **not** use staples, paper clips or glue.

## INFORMATION

- The total mark for this paper is 120.
- The number of marks for each question or part question is shown in brackets [ ].
- All dimensions are in millimetres.

This document has **12** pages. Any blank pages are indicated.

## Section A

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

- 1 Fig. 1.1 gives details of a test tube rack.

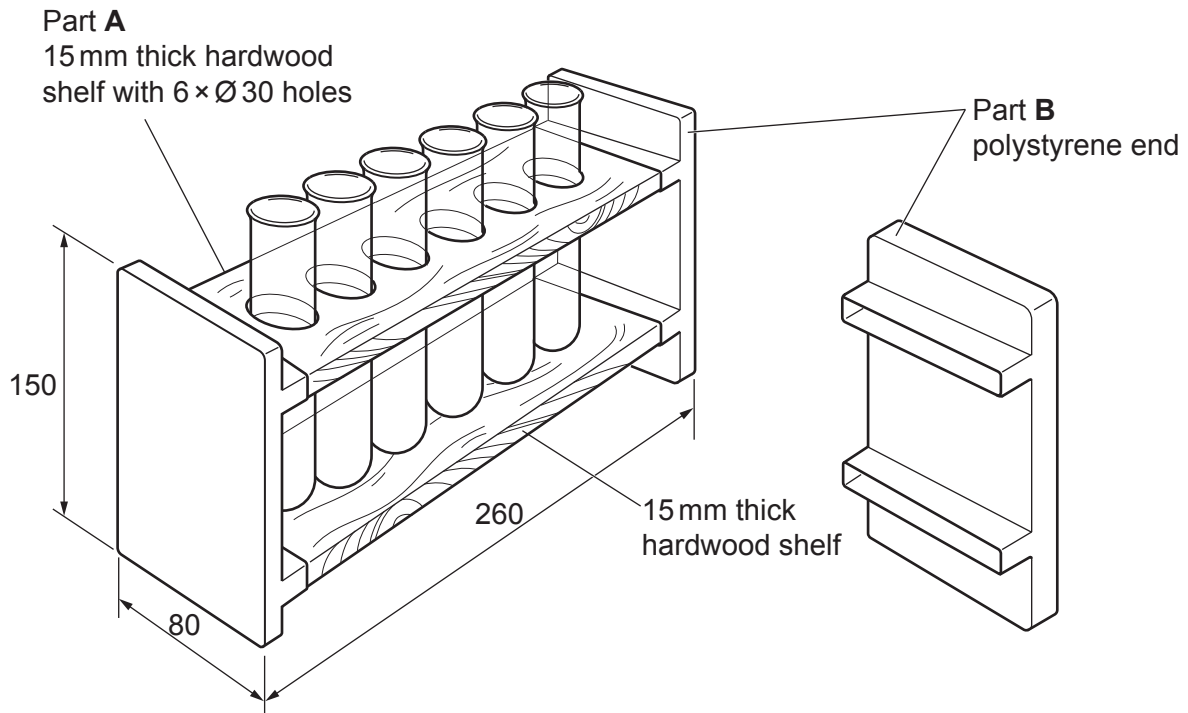


Fig. 1.1

- (a) Name a specific hardwood that could be used for Part A and give a reason for your choice. [2]

- (b) Use notes and sketches to describe:

- (i) how to mark out and drill the holes in Part A [6]

- (ii) how to make a batch of 5000 of Part B. [6]

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

- (c) The test tube rack is assembled by pushing the shelves into the ends. Use notes and sketches to describe a method of temporarily securing the shelves to the ends. [6]

- 2 Fig. 2.1 gives details of a package, for a light bulb, which is to be made in a school workshop.

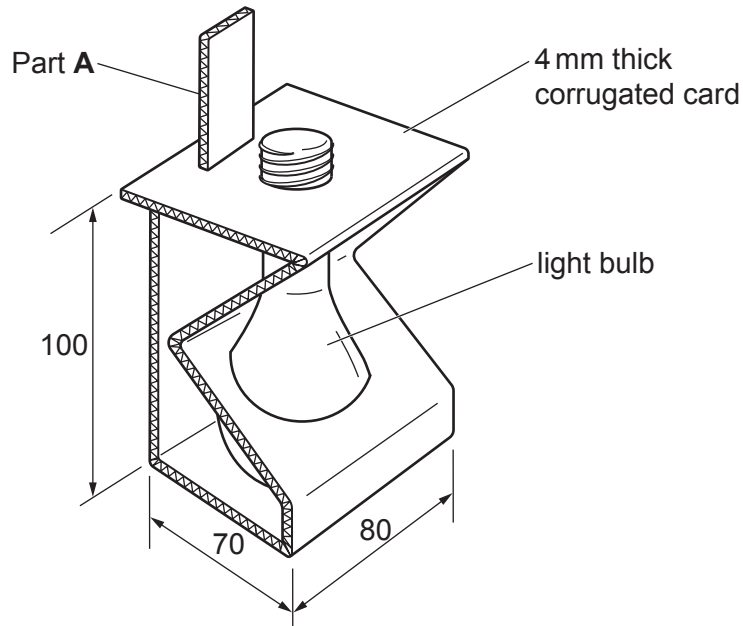


Fig. 2.1

- (a) Give **two** reasons why corrugated card is a suitable material for the package. [2]
- (b) Use notes and sketches to show the shape of the one-piece development (net) required to make the package. [6]
- (c) Use notes and sketches to show how the development (net) could be marked out and cut from a sheet of 4 mm thick corrugated card. [6]

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

- (d) Use notes and sketches to show how Part **A** could be modified to hold the package together and provide a means of hanging the package on a display rack. No additional materials are to be used. [6]

3 Fig. 3.1 gives details of a clamp which is to be made in a school workshop.

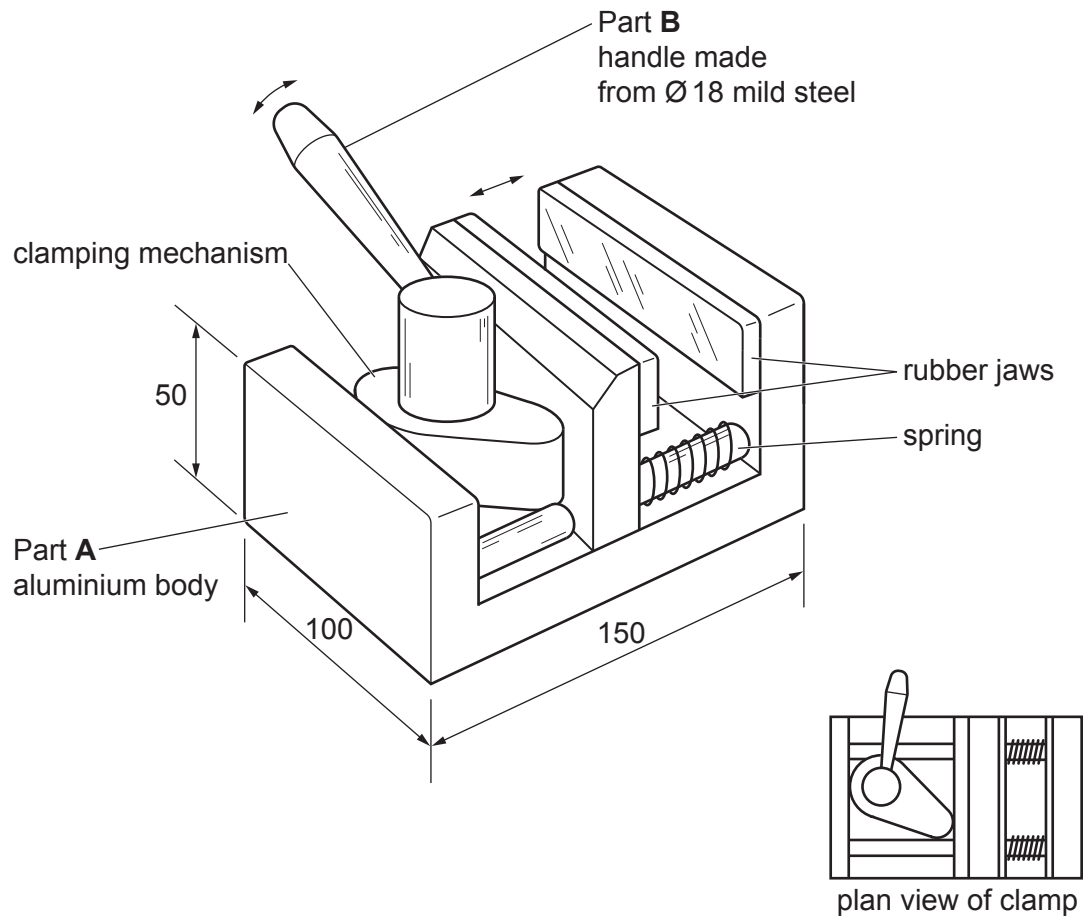


Fig. 3.1

- (a) Explain **one** reason why the clamp has rubber jaws. [2]
- (b) Use notes and sketches to describe:
- (i) a method of making Part A, the aluminium body [6]
  - (ii) a method of making Part B, the handle. [6]

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

- (c) Use notes and sketches to describe how the clamping mechanism works. [6]

## Section B

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

- 4 Fig. 4.1 shows an incomplete design for a bathroom cabinet.

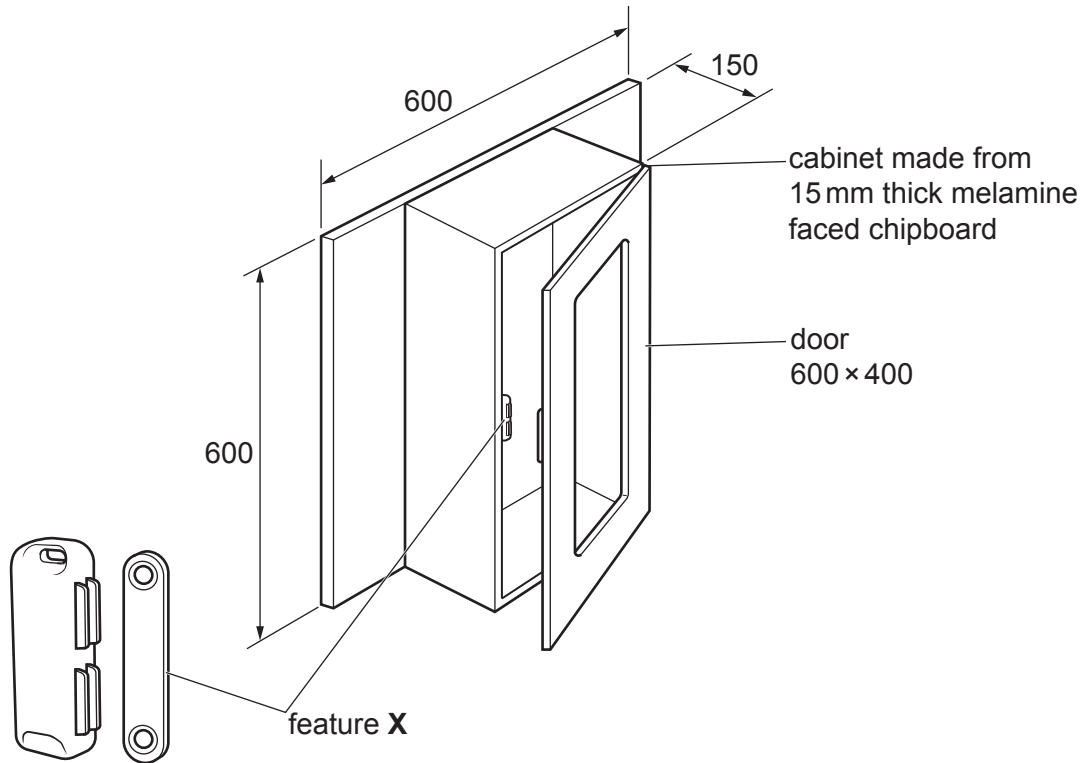


Fig. 4.1

- (a) Explain the function of the design feature shown at X. [2]
- (b) Identify and describe **two** problems with the bathroom cabinet. [4]
- (c) Use notes and sketches to explain how the design for the bathroom cabinet would need to be changed to overcome the **two** problems you have identified in **part (b)**. [6]
- (d) Discuss why manufacturers of furniture, such as the bathroom cabinet, produce products that are fully assembled with permanent fixings. 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 to support your conclusions. [2]

5 Fig. 5.1 shows an incomplete design for a package for chocolates.

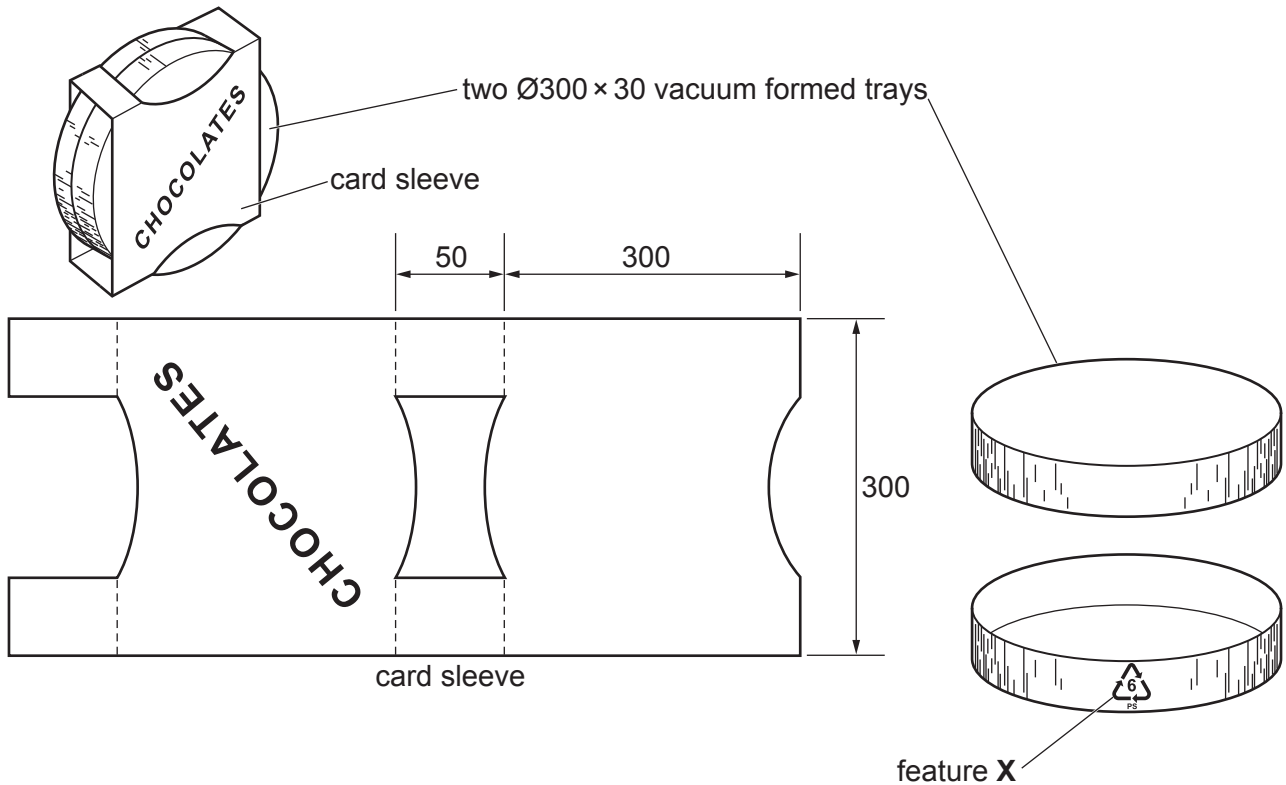


Fig. 5.1

- (a) Explain the function of the feature shown at X. [2]
- (b) Identify and describe **two** problems that make the package for chocolates unsuitable for use. [4]
- (c) Use notes and sketches to explain how the package for chocolates would need to be changed to overcome the **two** problems you have identified in **part (b)**. [6]
- (d) Discuss why designers of packages should consider environmental issues. 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 to support your conclusions. [2]

6 Fig. 6.1 shows an incomplete design for a battery-operated alarm clock.

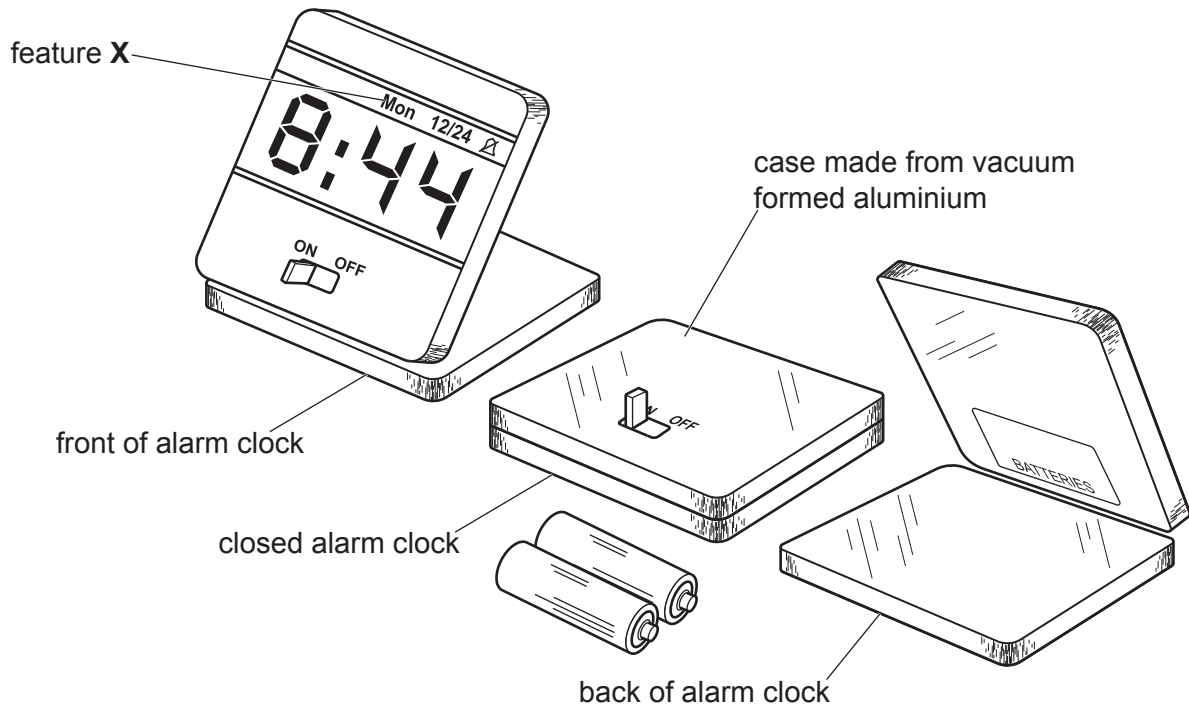


Fig. 6.1

- (a) Explain the function of the design feature shown at X. [2]
- (b) Identify and describe **two** problems with the battery-operated alarm clock. [4]
- (c) Use notes and sketches to explain how the battery-operated alarm clock would need to be changed to overcome the **two** problems you have identified in **part (b)**. [6]
- (d) Discuss how the colour of products influences customers. 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 to support your conclusions. [2]

### Section C

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

You are provided with two sheets of plain A3 paper. You should use **both** sides of the paper. **Each** of the four parts (a) – (d) of the question you choose to answer should take up one side of 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 solution. The design proposal should be annotated to give details about materials, joining methods and important sizes.

7 Fig. 7.1 shows details of a tray for serving sandwiches, and a card label.

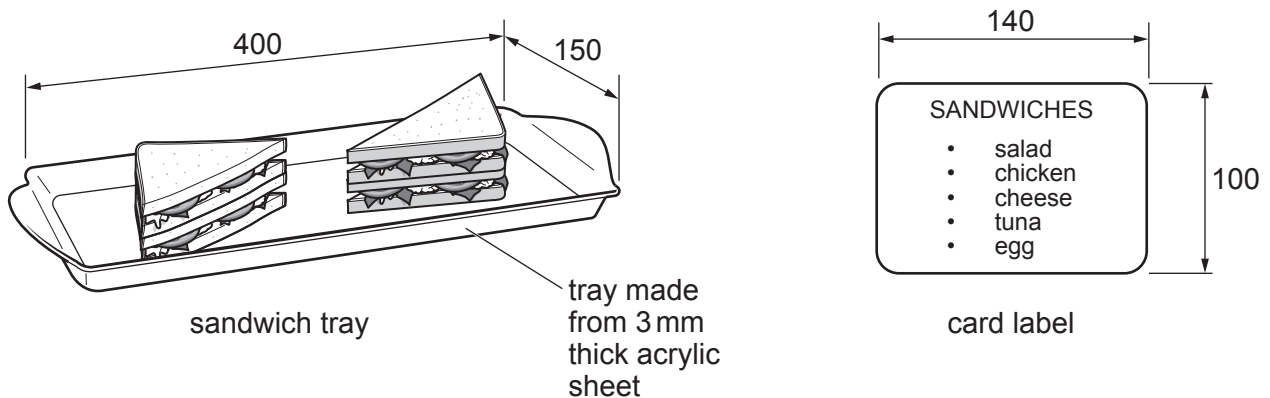
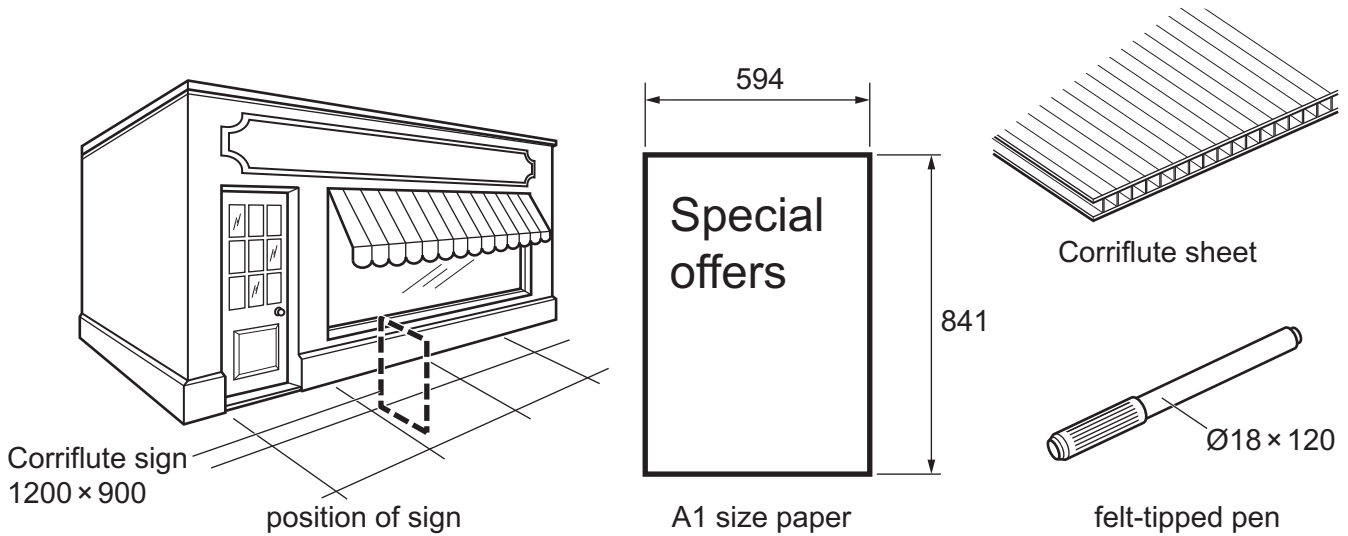


Fig. 7.1

- (a) Use notes and sketches to **develop** a design for a frame that supports **two** sandwich trays of the type shown in Fig. 7.1. It must be possible to easily remove the trays for cleaning. [20]
- (b) Use notes and sketches to **develop** a design for a base that attaches to the frame designed in **part (a)** and allows the frame to rotate. [20]
- (c) Use notes and sketches to **develop** a design for a handle or handles that can be attached to the frame designed in **part (a)**. The handle or handles must include a holder for the card label which shows the different types of sandwich. [20]
- (d) Produce a pictorial (3D) rendered drawing of the complete stand for sandwiches which shows all of the features that you have designed in **parts (a) – (c)**. [20]

- 8 Fig. 8.1 shows details of a freestanding sign that is to be made from Corriflute. The sign will be used outside a shop to advertise special offers.



**Fig. 8.1**

- (a) Use notes and sketches to **develop** a design for a freestanding Corriflute sign of the size shown in Fig. 8.1. The sign must be formed from a one-piece development (net). [20]
- (b) Use notes and sketches to **develop** a design for a method to prevent the freestanding Corriflute sign designed in **part (a)** from blowing away in the wind. The method must **not** attach to the pavement or front of the shop. [20]
- (c) Use notes and sketches to **develop** a design for a method of attaching an A1 size sheet of paper onto the freestanding Corriflute sign designed in **part (a)**. The method of attachment must also include a means of holding the felt-tipped pen shown in Fig. 8.1. [20]
- (d) Produce a pictorial (3D) rendered drawing of the freestanding Corriflute sign which shows all of the features that you have designed in **parts (a) – (c)**. [20]

- 9 Fig. 9.1 shows an incomplete design for a child's game. The gantry moves along the top of the tray and then lowers the magnet to pick up the metal discs.

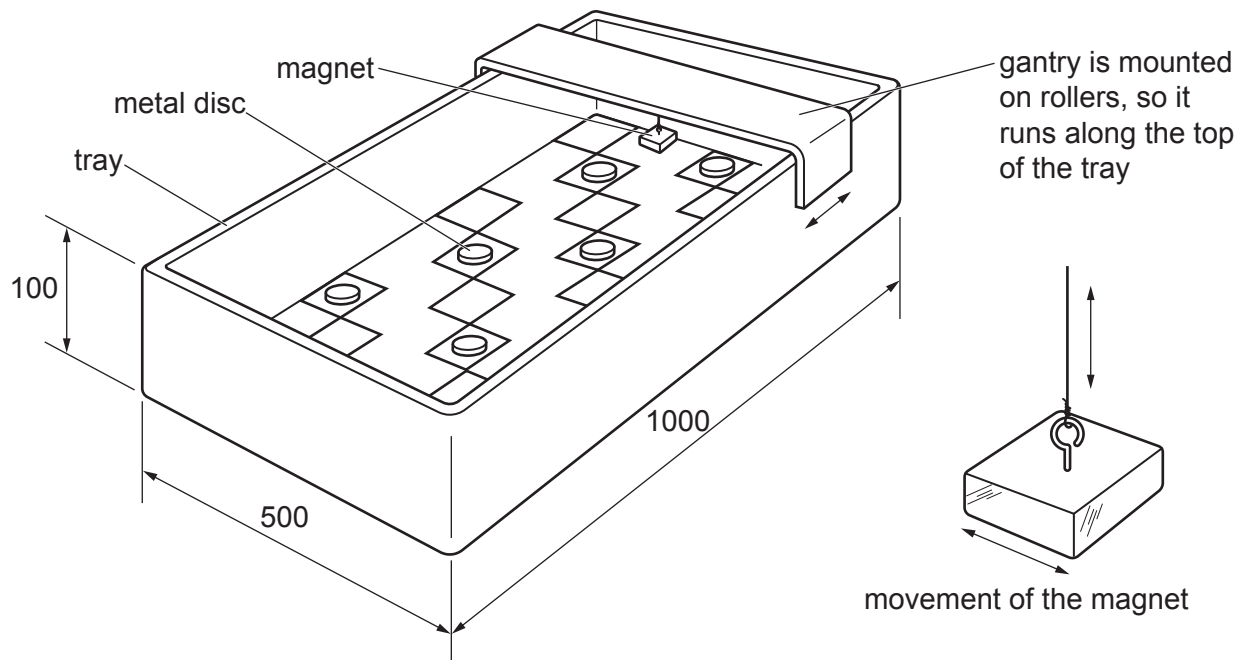


Fig. 9.1

- (a) Use notes and sketches to **develop** a design for a mechanism that will move the magnet backwards and forwards along the gantry. The magnet must stop at any position along the gantry. [20]
- (b) Use notes and sketches to **develop** a design for another mechanism, different to that designed in **part (a)**, that will lower and raise the magnet by 80 mm so that it can pick up a metal disc. [20]
- (c) Use notes and sketches to **develop** a design for a device that will give a visual indication when the magnet attaches to a metal disc. [20]
- (d) Produce a pictorial (3D) rendered drawing which shows all of the features that you have designed in **parts (a) – (c)**. [20]



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