



Cambridge International AS & A Level

DESIGN & TECHNOLOGY

9705/11

Paper 1

October/November 2023

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 salt pot which is to be made in a school workshop.

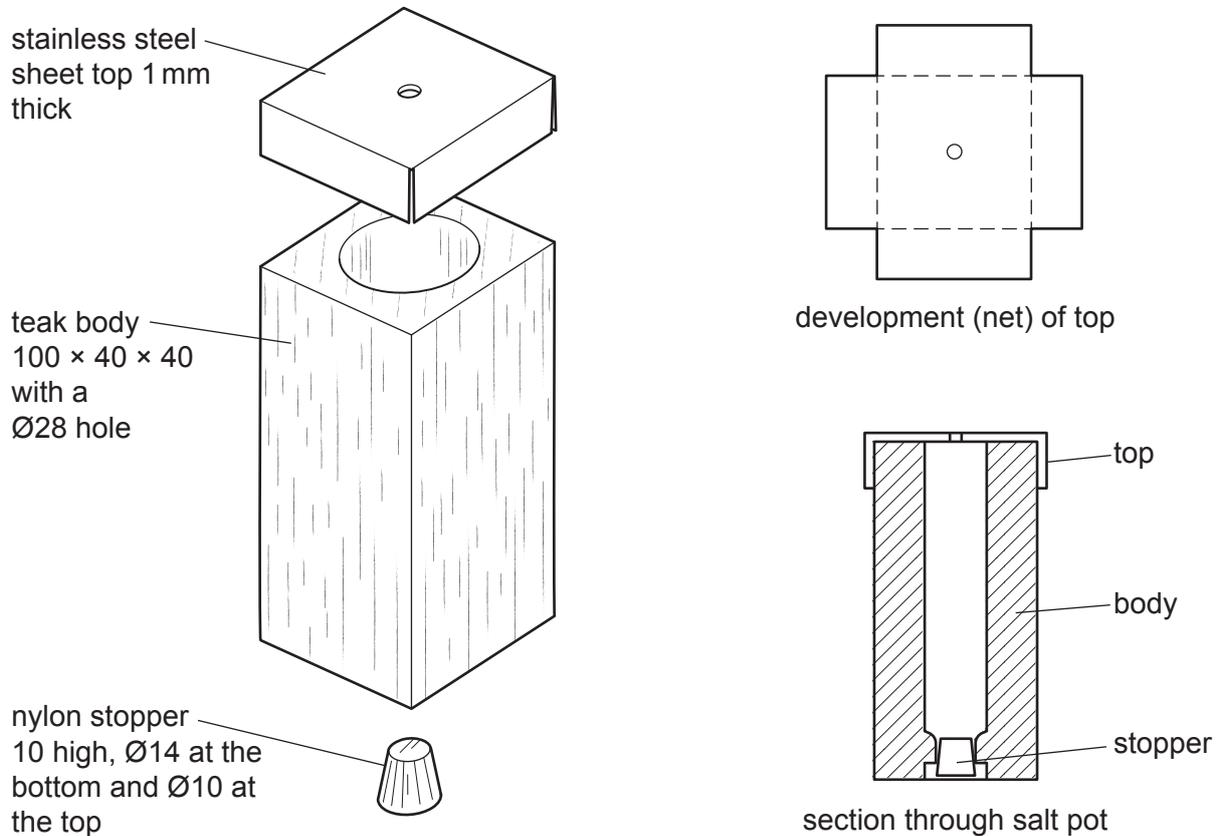


Fig. 1.1

- (a) Give **two** reasons why stainless steel sheet is a suitable material for the top. [2]
- (b) Use notes and sketches to describe:
- (i) how the top could be made [6]
 - (ii) how the body could be made. [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 show a method of producing a batch of 5000 nylon stoppers. [6]

2 Fig. 2.1 gives details of a calendar which is to be made in a school workshop.

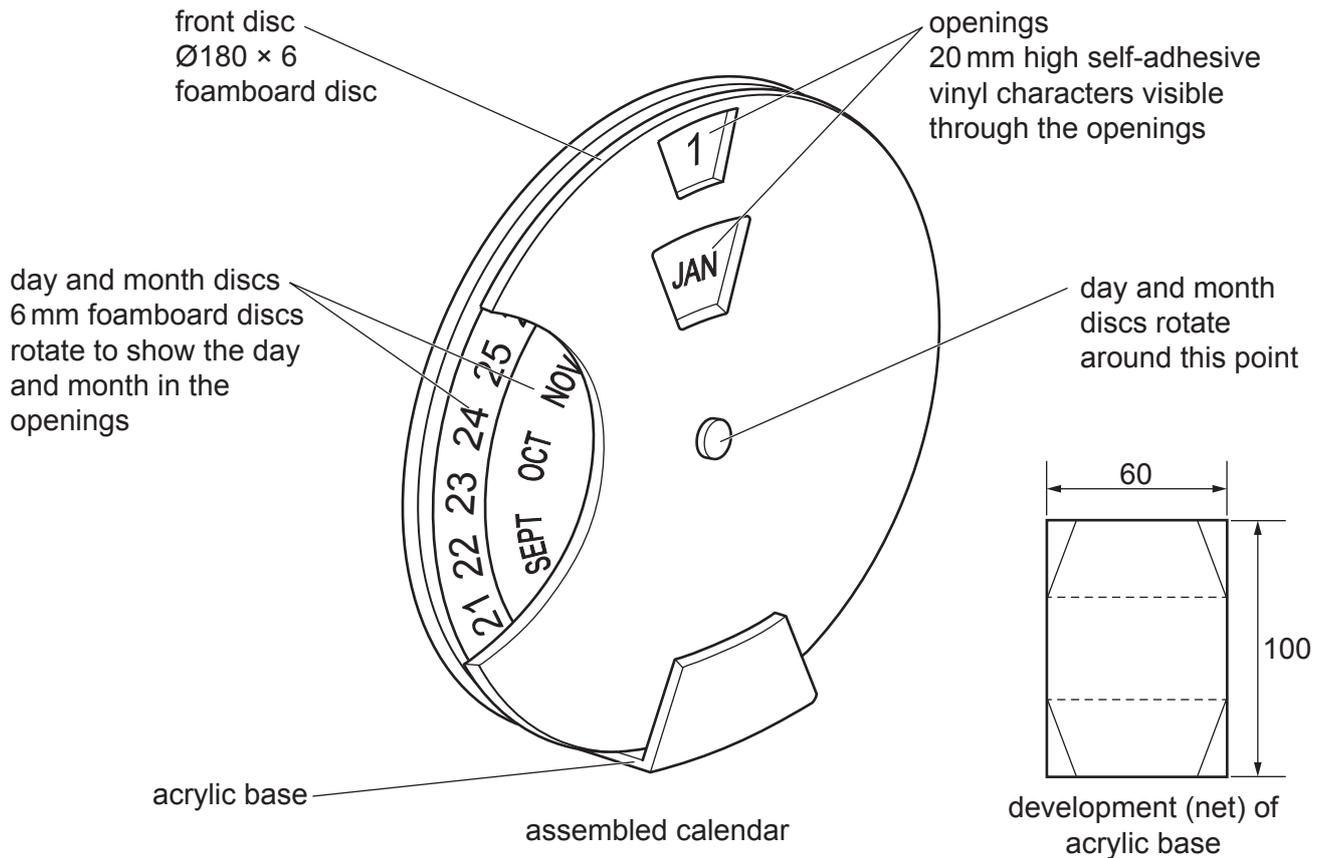


Fig. 2.1

- (a) Use a sketch and notes to show how the foamboard discs could be secured at the centre point and be able to rotate. [2]
- (b) Use notes and sketches to describe:
- (i) how to make the front disc [6]
 - (ii) how to make and apply the self-adhesive vinyl characters [6]
 - (iii) how to make the acrylic base. [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. 3.1 gives details of a toggle clamp which is to be made in a school workshop. The toggle clamp is made from 2 mm thick steel plate.

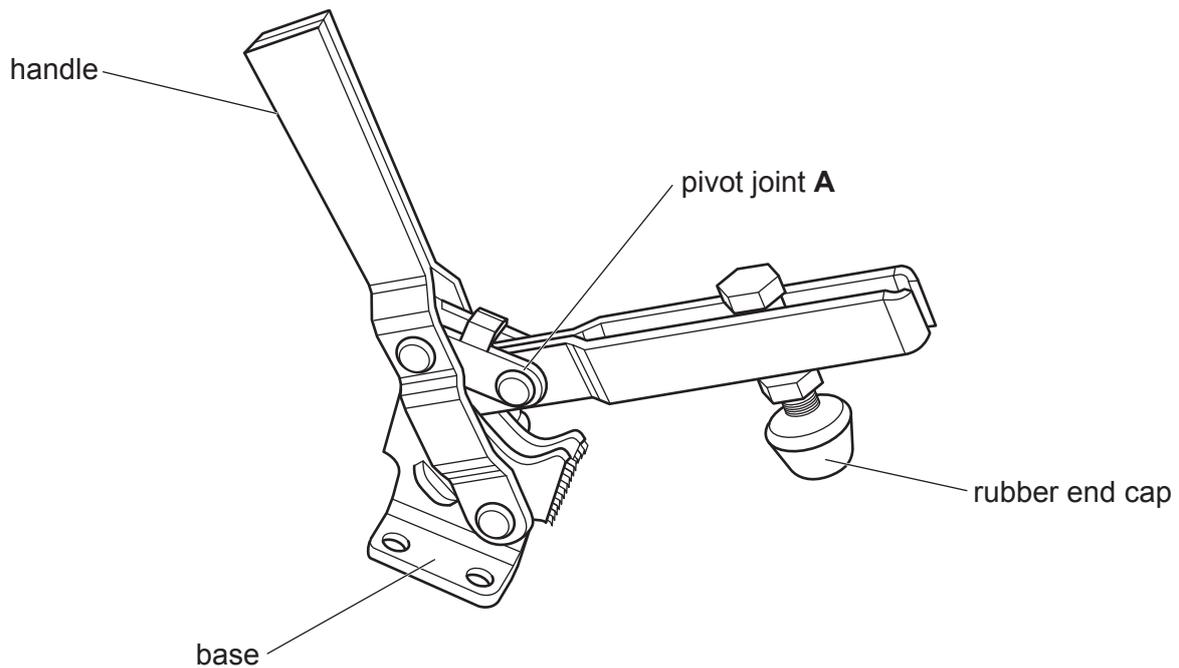


Fig. 3.1

- (a) Explain why the toggle clamp has holes in the base. [2]
- (b) Use notes and sketches to describe:
- (i) how a plastic coating could be applied to the handle [6]
 - (ii) a method of making pivot joint **A**. [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 toggle clamp is designed to be adjustable and to prevent damage to the material being clamped. [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 folding table.

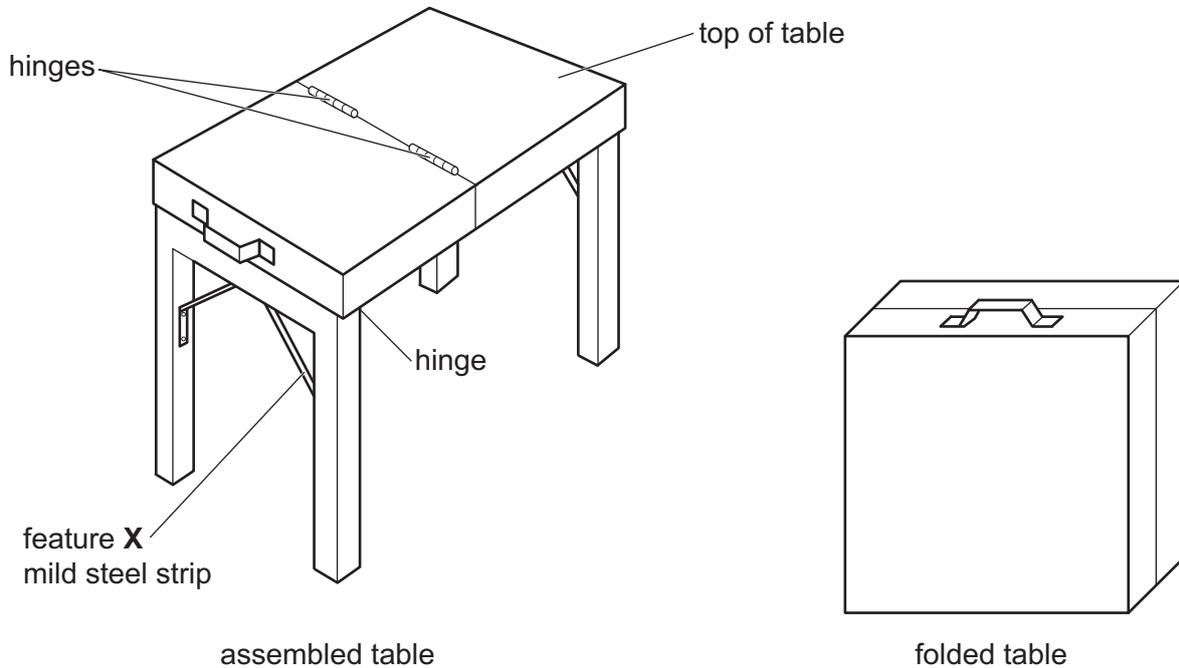


Fig. 4.1

- (a) Explain the function of the design feature shown at **X**. [2]
- (b) Identify and describe **two** problems with the folding table. [4]
- (c) Use notes and sketches to explain how the design for the folding table would need to be changed to overcome the **two** problems you have identified in **part (b)**. [6]
- (d) Discuss why manufacturers use standardised components, such as hinges, in products. 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 that is to be used to post samples of wooden flooring to customers.

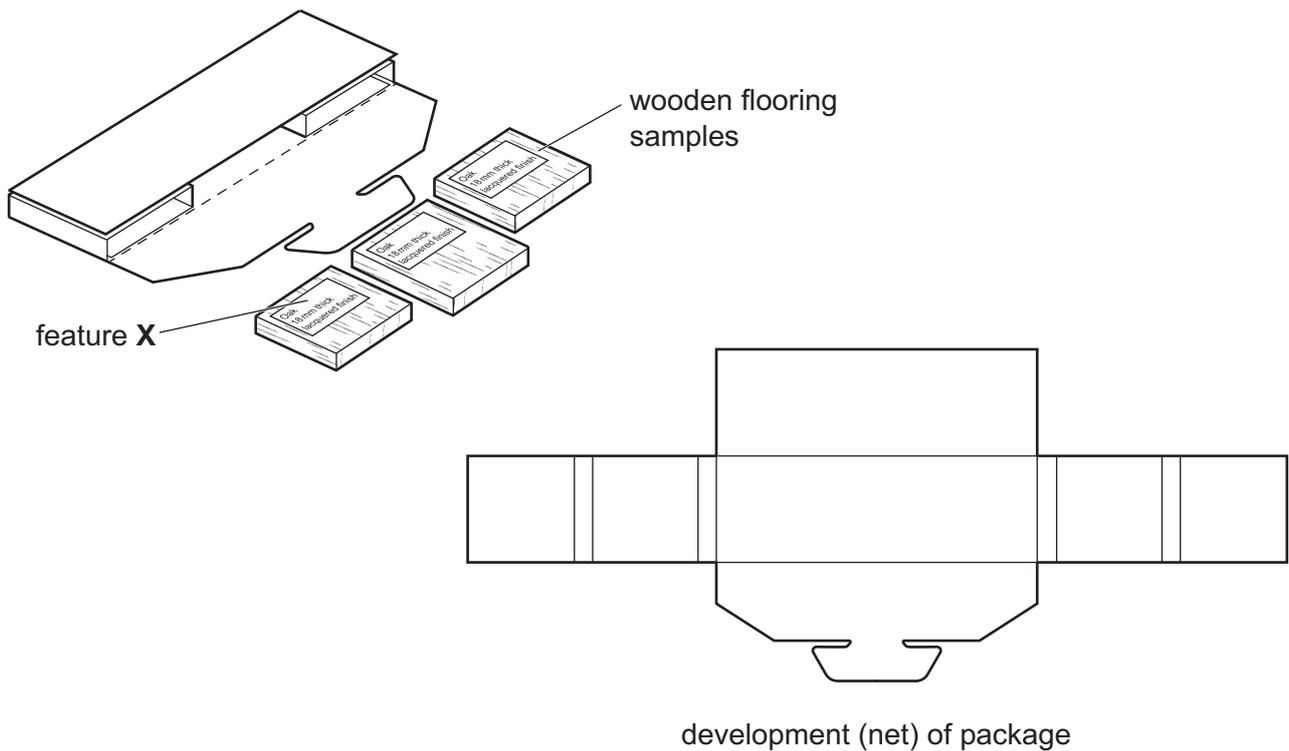


Fig. 5.1

- (a) Explain the function of the design feature shown at **X**. [2]
- (b) Identify and describe **two** problems that make the design for the package for the wooden flooring samples unsuitable for use. [4]
- (c) Use notes and sketches to explain how the design for the package would need to be changed to overcome the **two** problems you have identified in **part (b)**. [6]
- (d) Discuss why designers of packaging use CAD (computer aided design) to develop and communicate design proposals. 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 hospitality tray that is used in a hotel room.

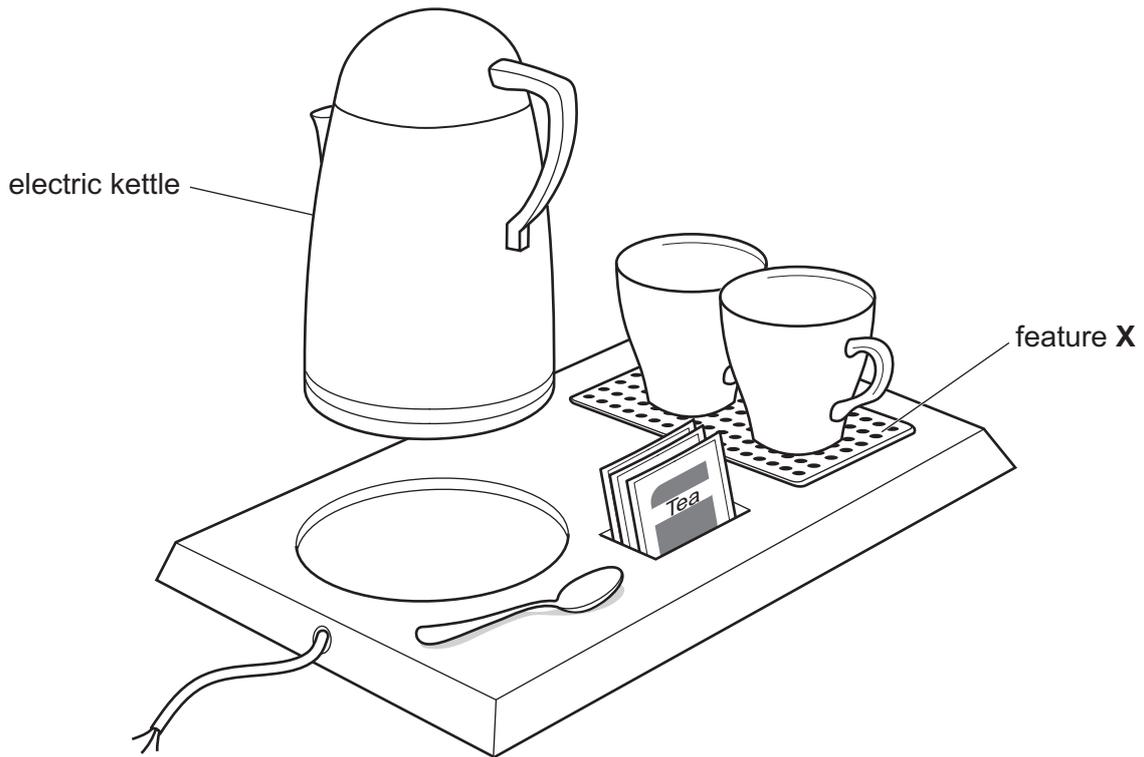


Fig. 6.1

- (a) Explain the function of the design feature shown at X. [2]
- (b) Identify and describe **two** problems with the design of the hospitality tray. [4]
- (c) Use notes and sketches to explain how the design of the hospitality tray would need to be changed to overcome the **two** problems you have identified in **part (b)**. [6]
- (d) Discuss how designers of products, such as the hospitality tray, consider ergonomics during the design process. 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 an incomplete design for a trolley that is to be used to move potted plants around a garden centre.

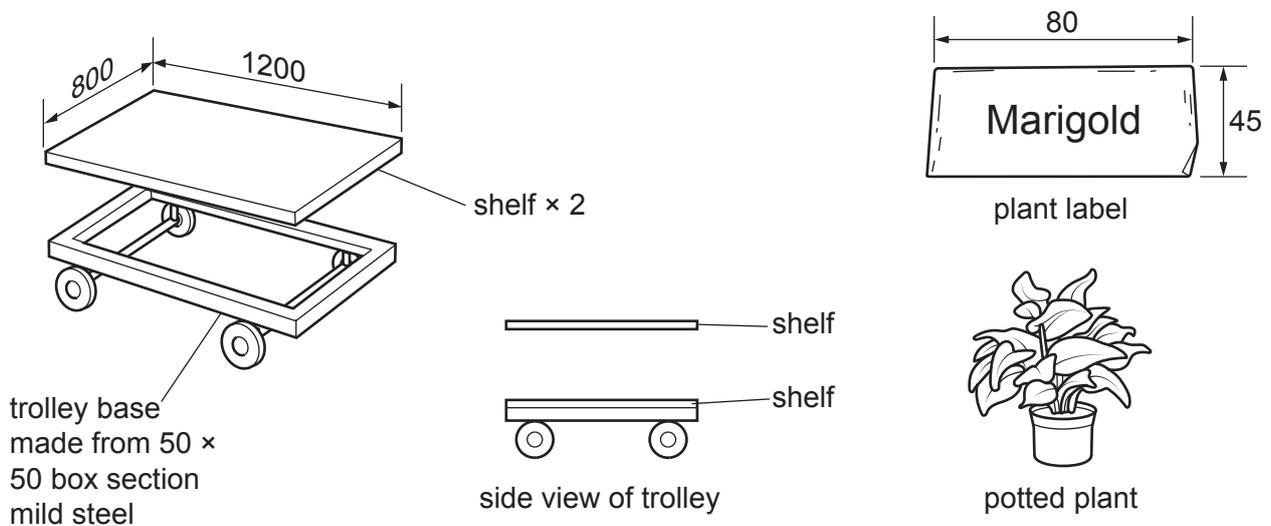


Fig. 7.1

- (a) Use notes and sketches to **develop** a design for the shelf to prevent the potted plants from sliding off and allow excess water to be collected and reused. [20]
- (b) Use notes and sketches to **develop** a design for a frame that attaches to the trolley base and supports two of the shelves designed in **part (a)**. The upper shelf must be adjustable to accommodate taller plants. [20]
- (c) Use notes and sketches to **develop** a design for a holder for the plant label that attaches to the shelf designed in **part (a)**. The holder must allow the label to be easily changed and protect it from moisture. [20]
- (d) Produce a pictorial (3D) rendered drawing of the complete trolley which shows all of the features that you have designed in **parts (a) – (c)**. [20]

- 8 Fig. 8.1 shows the parts of an outdoor game called **Additions**. The game involves children throwing hoops onto numbered foam tiles to achieve the highest score. The game consists of 20 foam tiles that join together, to make a play mat, and 4 hoops.

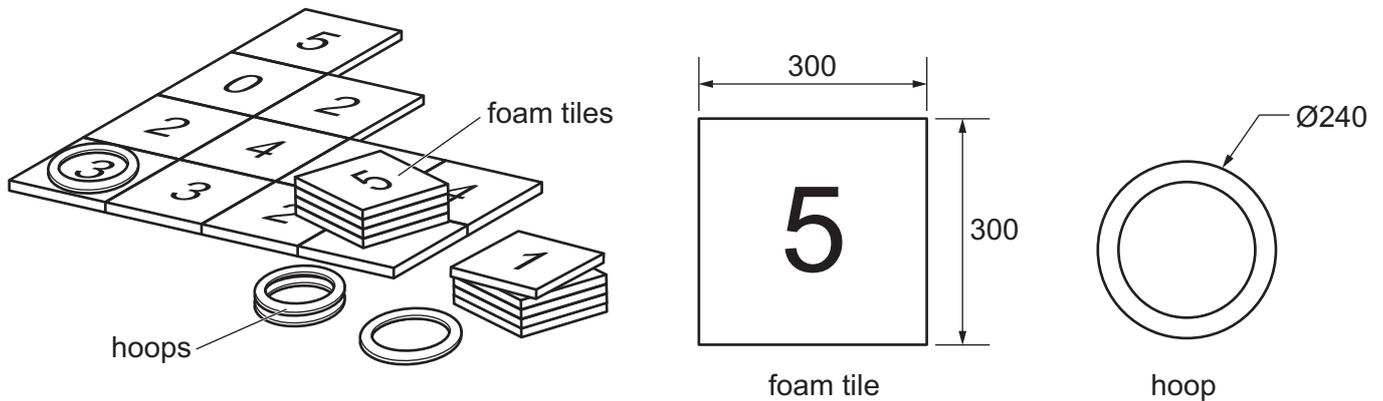


Fig. 8.1

- (a) Use notes and sketches to **develop** a design for an instruction sheet that shows how to play the game. The instructions must use pictures and **not** words. [20]
- (b) Use notes and sketches to **develop** a method of joining the foam tiles together to make a play mat. [20]
- (c) Use notes and sketches to **develop** a design for a carrying case to hold the parts of the outdoor game and the instruction sheet designed in **part (a)**. The instruction sheet must be visible when the case is closed. [20]
- (d) Produce a pictorial (3D) rendered drawing of the outdoor game which shows all of the features that you have designed in **parts (a) – (c)**. [20]

9 Fig. 9.1 shows details of a scaffold, a metal tube and a bucket.

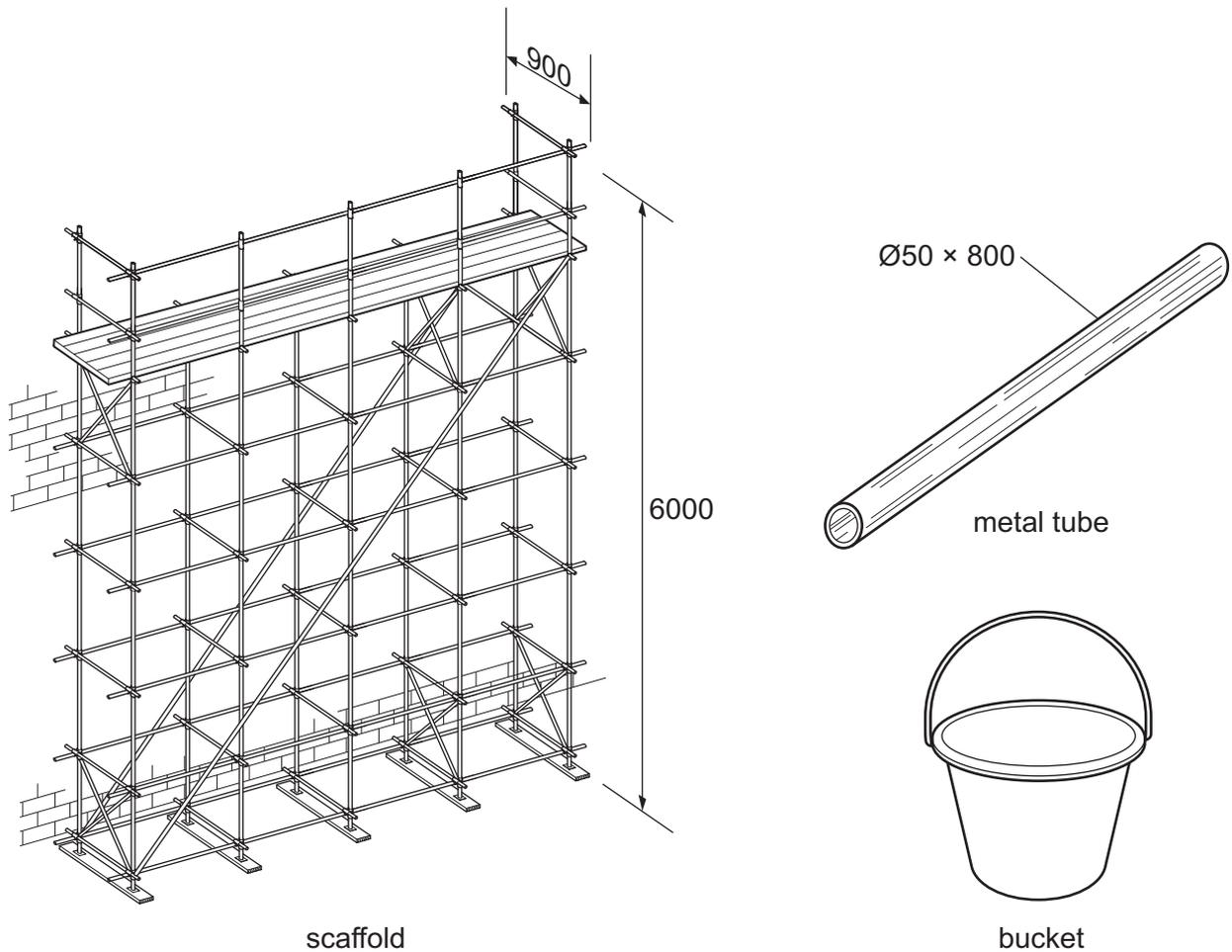


Fig. 9.1

- (a) Use notes and sketches to **develop** a design for a device that will securely, but temporarily, attach the metal tube horizontally at 90° to the scaffold handrail. [20]
- (b) Use notes and sketches to **develop** a design for a device that will raise and lower the bucket. The device must attach to the metal tube and be operated from the top of the scaffold. [20]
- (c) Use notes and sketches to **develop** a design for a device that will give a visual and audible warning when the bucket is being raised or lowered. [20]
- (d) Produce a pictorial (3D) rendered drawing of the complete lifting device which shows all of the features that you have designed in **parts (a) – (c)**. [20]

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