



Cambridge International AS & A Level

DESIGN & TECHNOLOGY**9705/32**

Paper 3

October/November 2022**3 hours**

You must answer on the answer booklet/paper.

You will need: Answer booklet/paper Coloured pencils
A3 drawing paper (5 sheets)
A range of design drawing equipment

INSTRUCTIONS

- Answer **three** questions in total:
 - Section A: answer **two** questions from **one** of the Parts A, B or C.
 - Section B: answer **one** question.
- 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 **two** questions from **one** of the Parts **A**, **B** or **C**.

Part A – Product Design

The instruction 'discuss' denotes that you should:

- examine critically the issues raised by the question
- explain and interpret these issues as appropriate
- introduce evidence wherever possible to support conclusions of arguments.

1 Fig. 1.1 shows a candle holder to be used on a restaurant table.

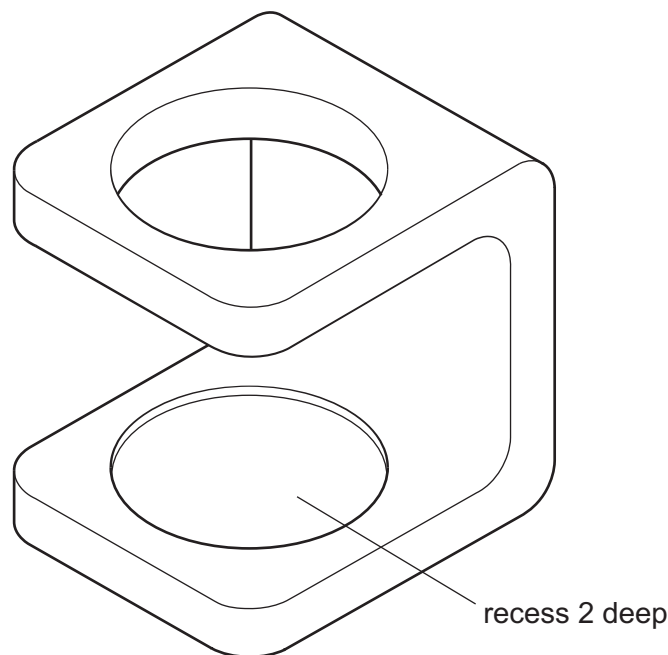
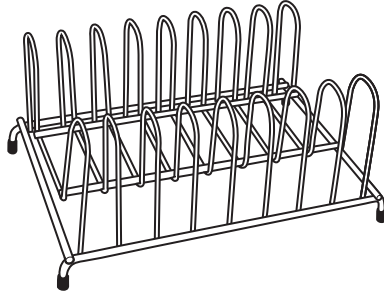


Fig. 1.1

- (a) State a suitable material for the candle holder of the type shown in Fig. 1.1 and give **two** reasons for your choice. [3]
- (b) Use sketches and notes to describe how you would make one candle holder in a school workshop. [9]
- (c) Explain the changes which may be necessary to the design, the manufacturing method used and the material selected, if 100 identical candle holders were required. Use sketches and notes to support your answer. [8]
- 2 Discuss how the manufacturing methods available and public opinion influence a designer when selecting materials for **one** of the following: [20]
- outdoor seating
 - drinking straws
 - shopping bags.

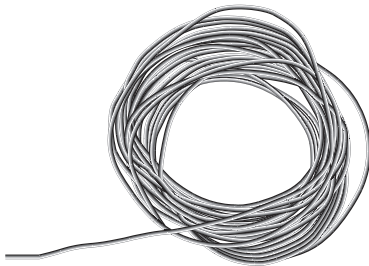
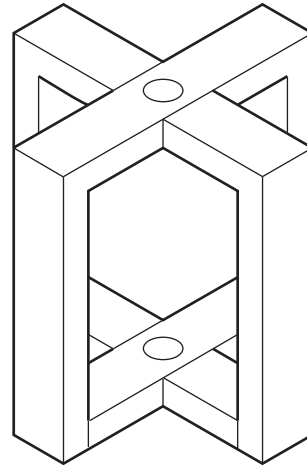
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3



item: plate rack
process: dip coated

item: lamp base
process: cross halving joint



item: copper wire
process: drawing

Fig. 3.1

Choose **two** of the items shown in Fig. 3.1. For **each**:

- (a) use sketches and notes to describe how the process has been used in the manufacture of the item [14]
- (b) explain why the process is particularly suitable in the production of the item. [6]

Part B – Practical Technology

The instruction 'discuss' denotes that you should:

- examine critically the issues raised by the question
- explain and interpret these issues as appropriate
- introduce evidence wherever possible to support conclusions of arguments.

- 4 The emergence of new materials and manufacturing processes has greatly extended product range and quality.

Fig. 4.1 shows a modern cycle frame.

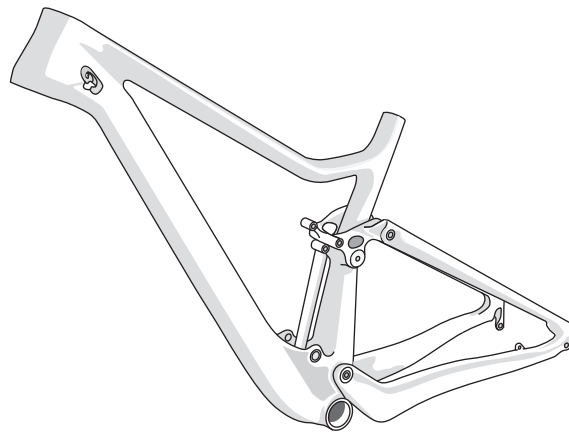


Fig. 4.1

- (a) Describe the benefits of using alloys and/or new materials in the manufacture of bicycle frames. [10]
- (b) Use an example to show in detail how new processes have greatly improved the manufacture of products. [10]
- 5 Computers play an increasingly important part in the design and manufacture of products.
- (a) Identify **two** input devices and **two** output devices for computers that are commonly used by designers or manufacturers. [4]
- (b) For **each** device, explain in detail their function and how they assist in the process of designing and making of products. [16]
- 6 Discuss the implications to the manufacturer and the consumer of the growth in self-assembly products. [20]

Part C – Graphic Products

The instruction 'discuss' denotes that you should:

- examine critically the issues raised by the question
- explain and interpret these issues as appropriate
- introduce evidence wherever possible to support conclusions of arguments.

7 Fig. 7.1 shows the plan of a wetroom.

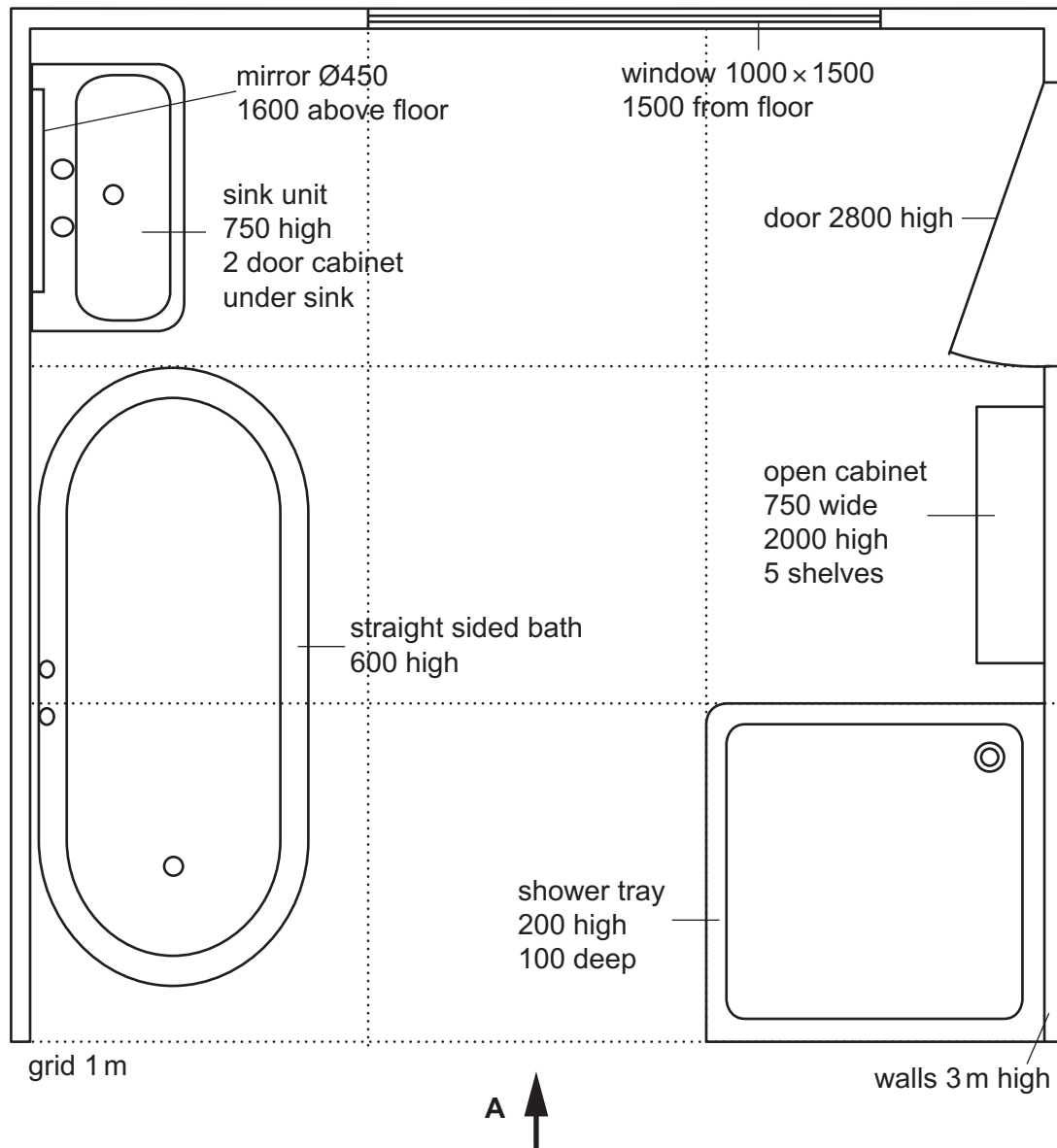


Fig. 7.1

Draw to approximate scale, a one-point perspective drawing of the wetroom viewed from arrow **A**. [20]

- 8 A campaign is to be launched at a college to make students more aware of the need to be safe when using computers online. The campaign will involve an interactive display at the school and an A4 tri-fold leaflet to distribute at the event.

Fig. 8.1 shows an outline of the room in which the interactive display will be set up.

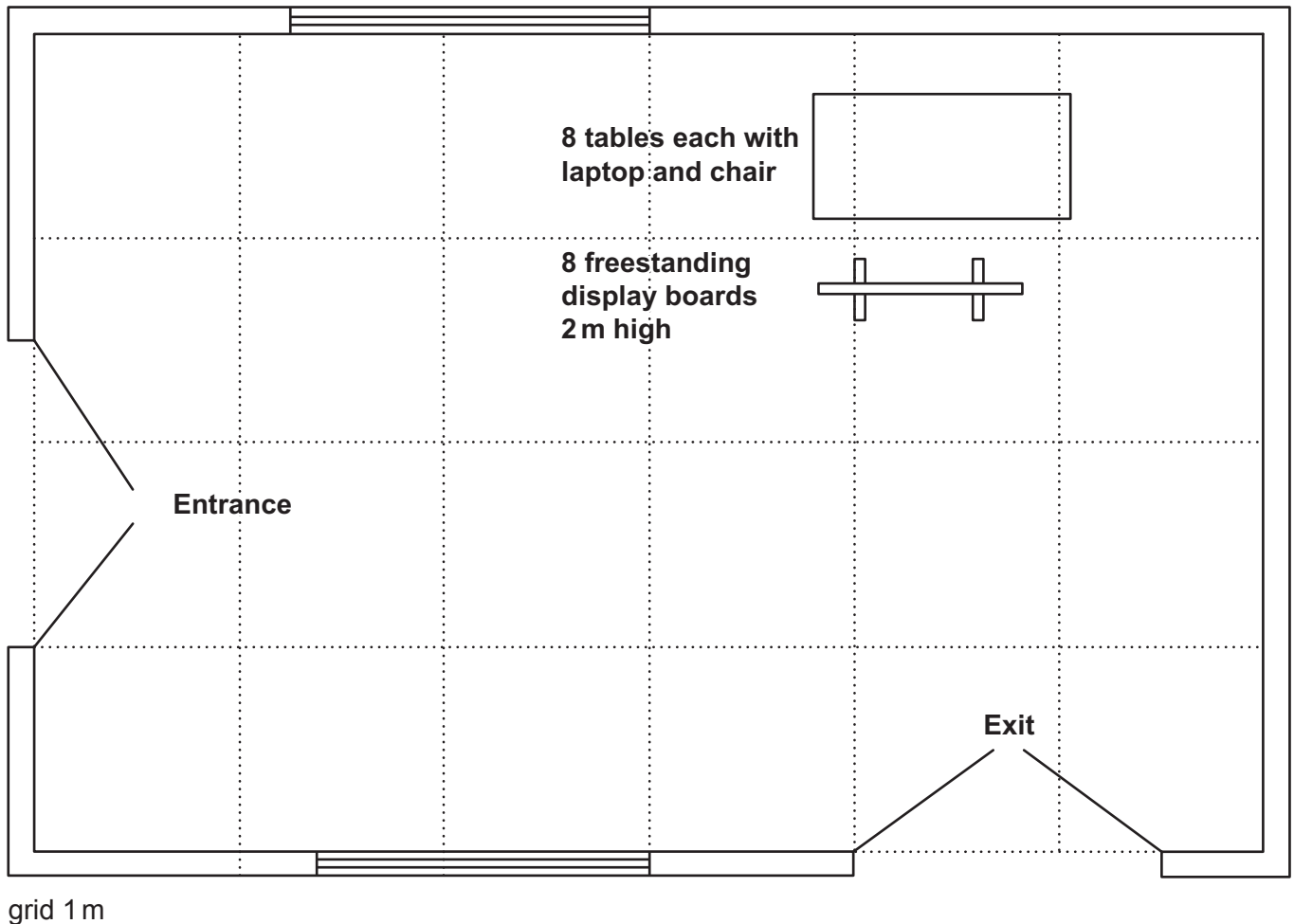


Fig. 8.1

- (a) Use sketches and notes to describe how the room is to be set up. Consider the circulation of visitors and the protection of equipment. [10]
- (b) Design a monochrome graphic symbol that will highlight the possible dangers of using computers online. The symbol is to be included in the design of the leaflets. [4]
- (c) Describe a method of producing 500 monochrome A4 tri-fold leaflets. [6]
- 9 Discuss the impact of the work of engineers and architects in shaping our environment. [20]

Section B

Answer **one** question on the A3 paper provided.

Each question is worth 80 marks.

You should approach the design question of your choice in the following manner:

Analysis

Produce an analysis of the given situation/problem, which may be in written or graphical form. [5]

Specification

From the analysis produce a detailed written specification of the design requirements. Include at least five specification points other than those given in the question. [5]

Exploration

Use bold sketches and brief notes to show your exploration of ideas for a design solution, with reasons for selection. [25]

Development

Show using bold sketches and notes, the development, reasoning and composition of ideas into a single design proposal. Give details of materials, constructional and other relevant technical details. [25]

Proposed solution

Produce drawings of an appropriate kind to show the complete solution. [15]

Evaluation

Give a written evaluation of the final design solution. [5]

10 Families use outdoor space to enable young children to play under supervision.

You are to design an outdoor play area that will allow a child to experience different fun activities. Maximum space available is 5m × 5m.

The play area must be:

- arranged in different configurations for at least two play activities
- suitable for use by children aged 4–10 years.

[80]

11 Market traders who sell clothes need to store their products and display them to potential customers.

You are to design a product that can store and display a range of clothing to allow customers to browse and select items.

The product must be:

- easily moved into position at the market and securely fixed when in place
- easily assembled and disassembled.

[80]

12 Many students and workers use their mobile device (phone or tablet) at home or when out of the office to communicate with friends or colleagues.

A new broadband company wishes to distribute a free gift to potential customers.

You are to design:

- a name and logo for a new broadband company
- a product that would hold a mobile device in an appropriate position when in use.

The product must be:

- produced as flat pack
- able to be used for a range of mobile devices.

[80]

Details of mobile devices are given in Fig. 12.1.

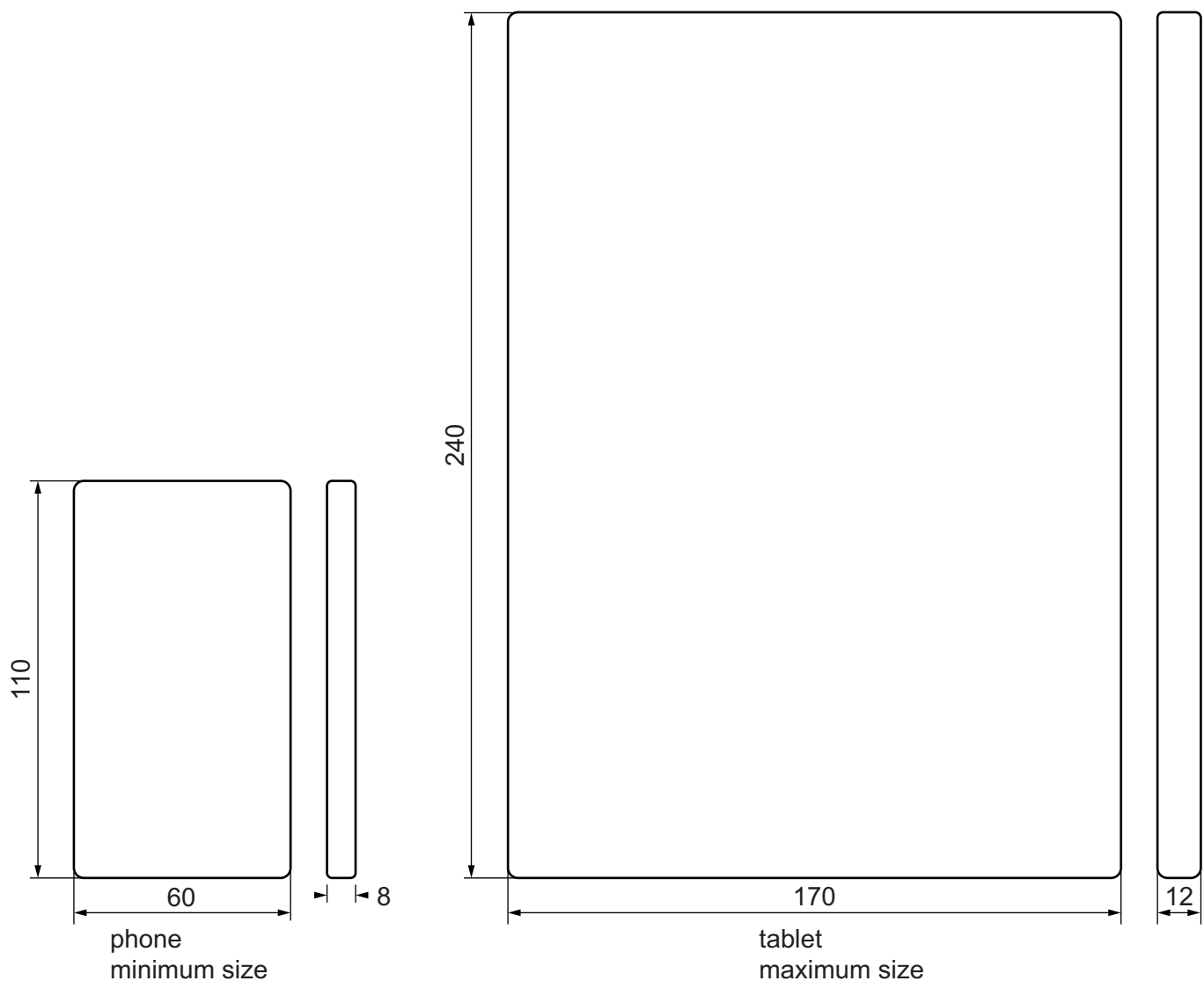


Fig. 12.1

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