



Cambridge International AS & A Level

DESIGN & TECHNOLOGY

9705/12

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 chair which is to be made in a school workshop.

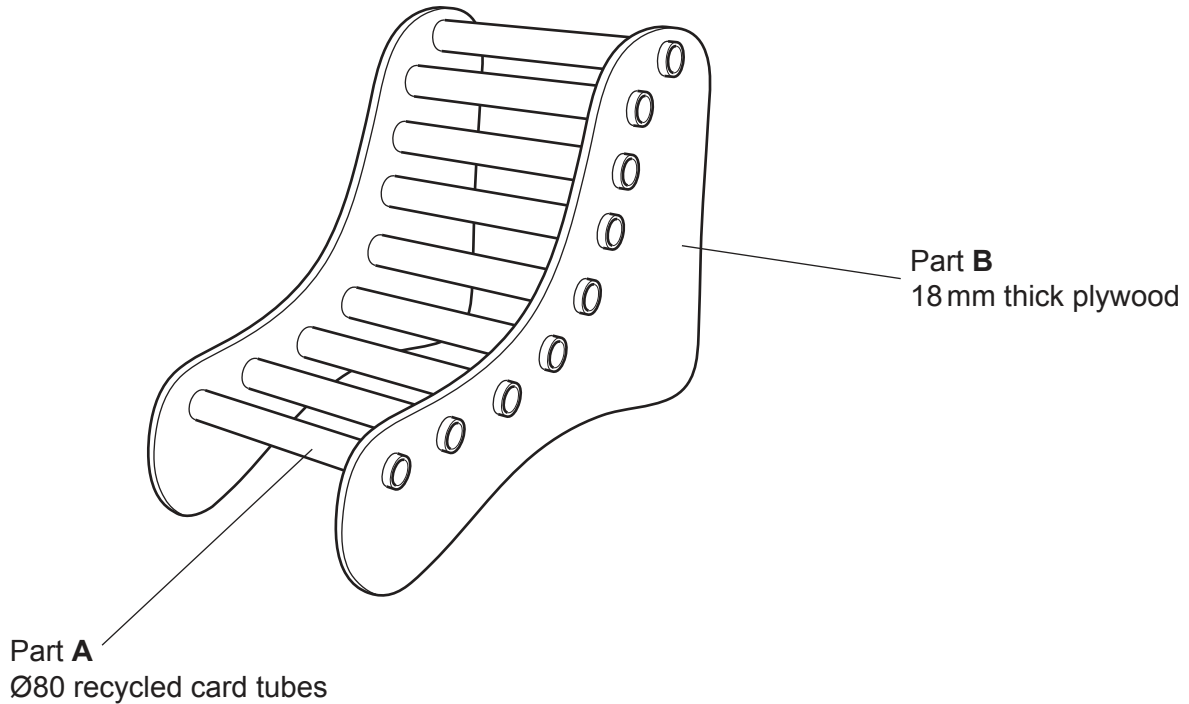


Fig. 1.1

- (a) Give **two** reasons why recycled card has been used to make Part A. [2]
- (b) Use notes and sketches to describe:
- (i) how the Ø80 mm holes in Part B could be set out on 180 mm centres and cut out [6]
 - (ii) how Part B could be prepared for a finish and the finish applied. [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 **two** temporary methods of joining Part A to Part B. [6]

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

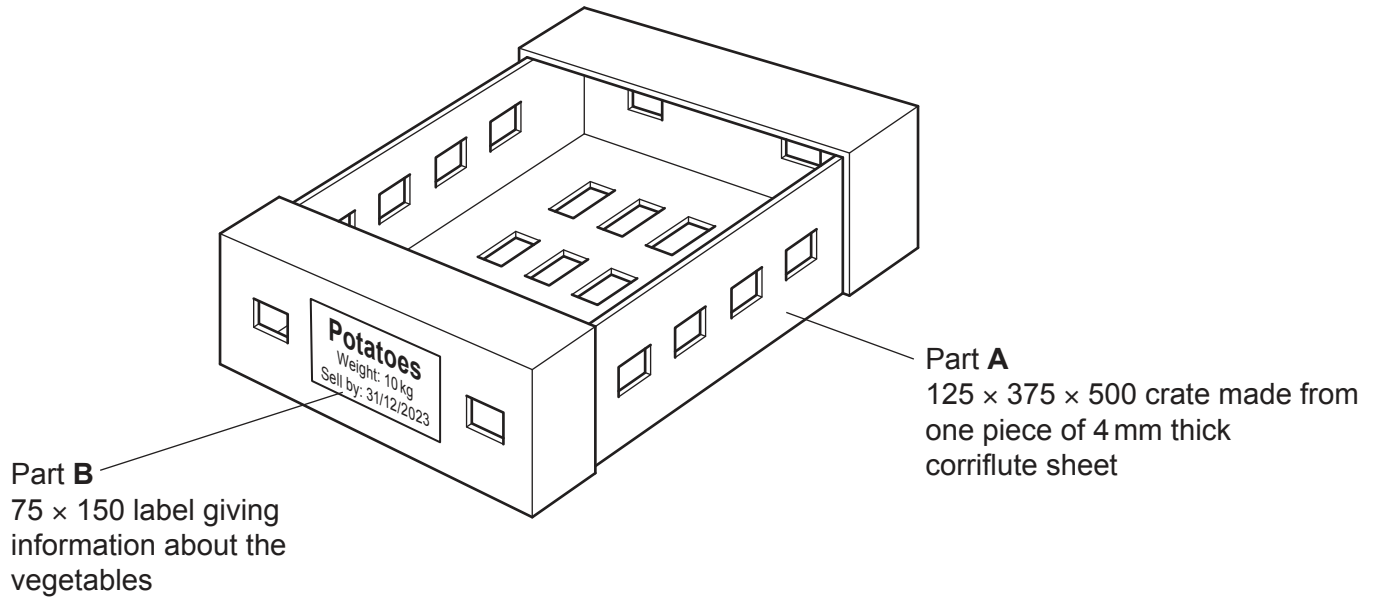


Fig. 2.1

- (a) Give **two** reasons why the crate has holes in it. [2]
 - (b) Use notes and sketches to show the shape of the one-piece development (net) required to make **Part A**, the crate. [6]
 - (c) Use notes and sketches to describe how the one-piece development (net) required to make **Part A**, the crate, could be cut and folded to shape. [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 a method of designing and making a label that allows the name of the vegetable, weight and sell by date to be changed. [6]

- 3 Fig. 3.1 gives details of a model of a compound pulley system which is to be made in a school workshop.

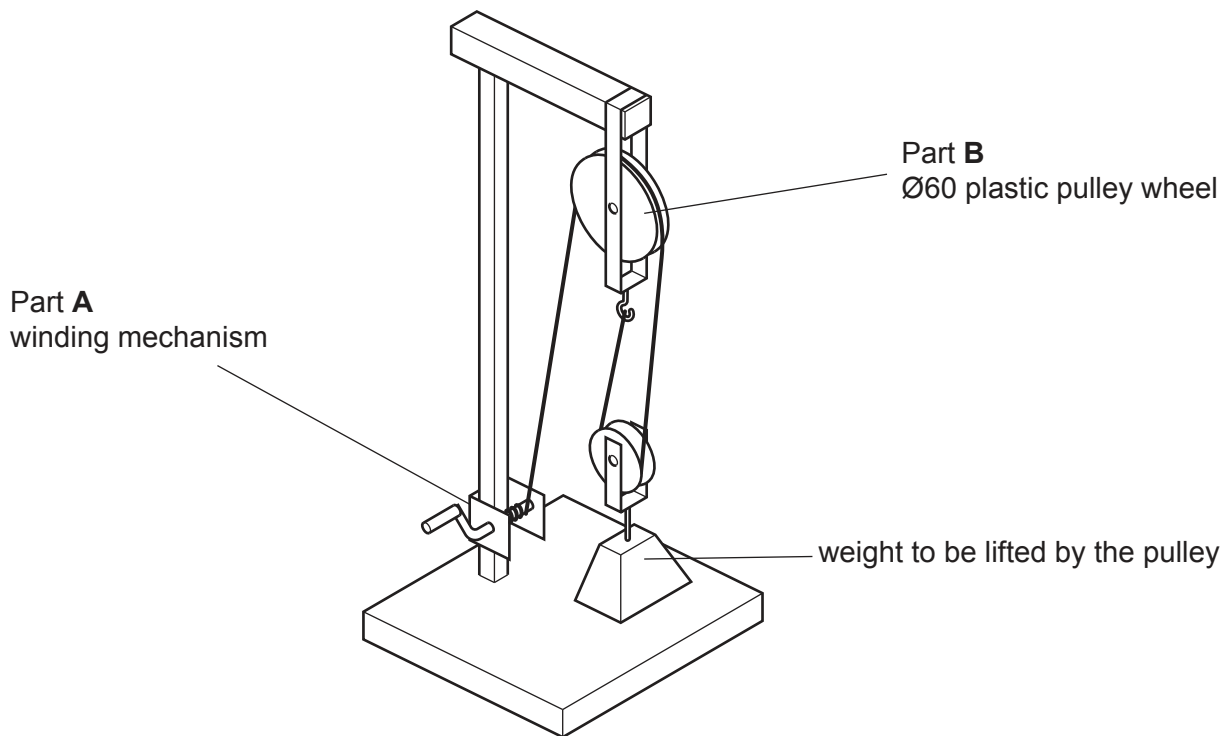


Fig. 3.1

- (a) Give **two** reasons for making a model of a mechanism. [2]
- (b) Use notes and sketches to describe how to make Part **A**, the winding mechanism. [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 sketches and notes to describe how:
- (i) to make a batch of 1000 of Part **B** [6]
 - (ii) a compound pulley system makes it easier to lift loads. [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 garden shed.

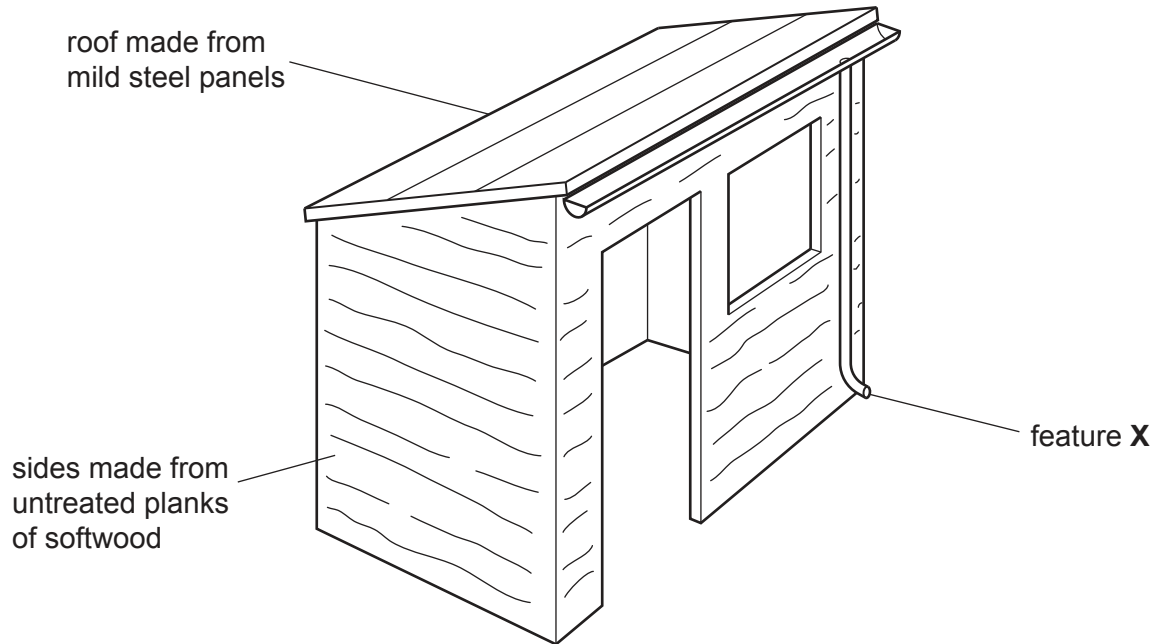


Fig. 4.1

- (a) Explain the function of the design feature shown at **X**. [2]
- (b) Identify and describe **two** problems that make the garden shed unsuitable for use. [4]
- (c) Use notes and sketches to explain how the garden shed would need to be changed to overcome the **two** problems you have identified in **part (b)**. [6]
- (d) Discuss why many products, such as the garden shed, are designed to be assembled at home. 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 of packaging for socks.

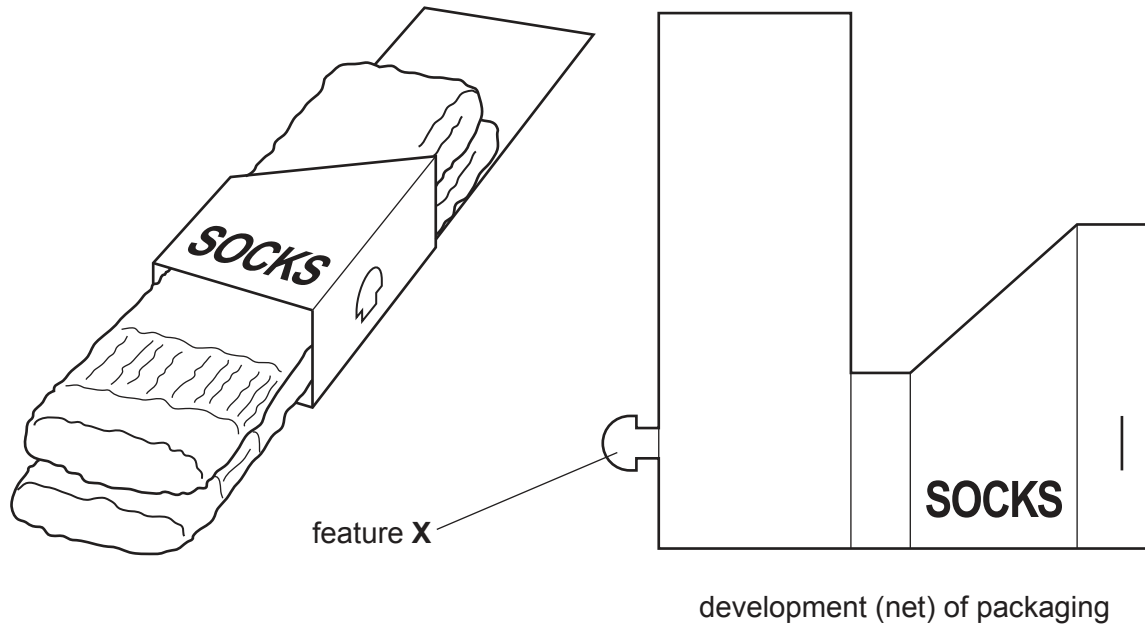


Fig. 5.1

- (a) Explain the function of the design feature shown at X. [2]
- (b) Identify and describe **two** problems that make the packaging for socks unsuitable for use. [4]
- (c) Use notes and sketches to explain how the packaging would need to be changed to overcome the **two** problems you have identified in **part (b)**. [6]
- (d) Discuss why designers of packaging use research to inform their design. 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 coffee machine.

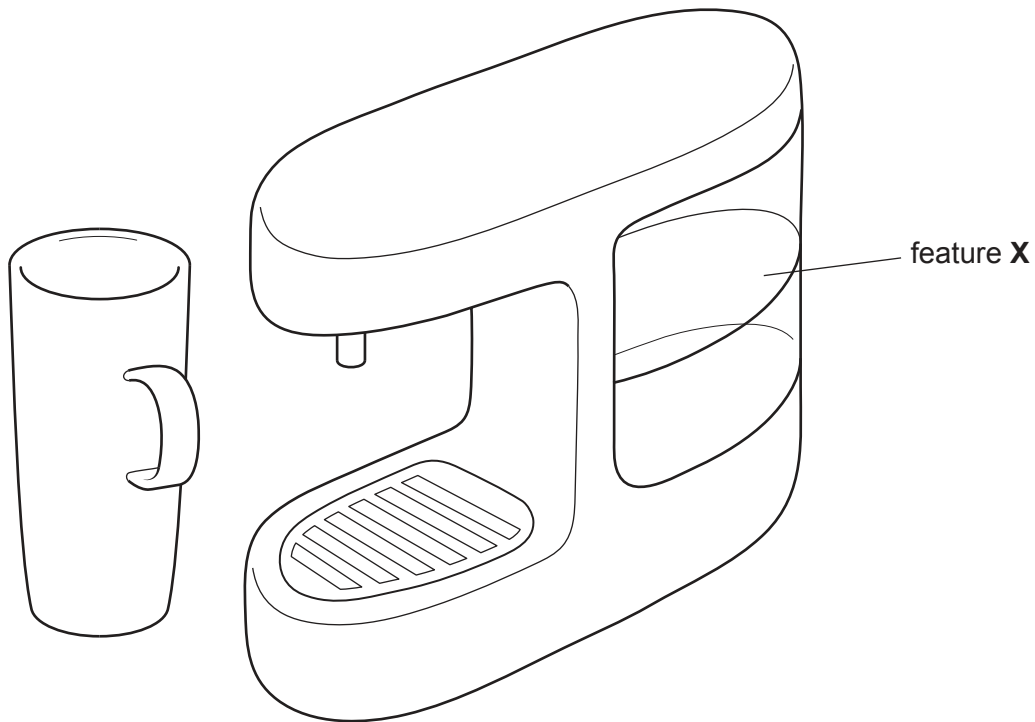


Fig. 6.1

- (a) Explain the function of the design feature shown at **X**. [2]
- (b) Identify and describe **two** problems with the coffee machine. [4]
- (c) Use notes and sketches to explain how the design would need to be changed to overcome the **two** problems you have identified in **part (b)**. [6]
- (d) Discuss why designers of electrical products, such as the coffee machine, consider the effects of form and surface finishes. 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 a design for a box to hold precious items, including rings.

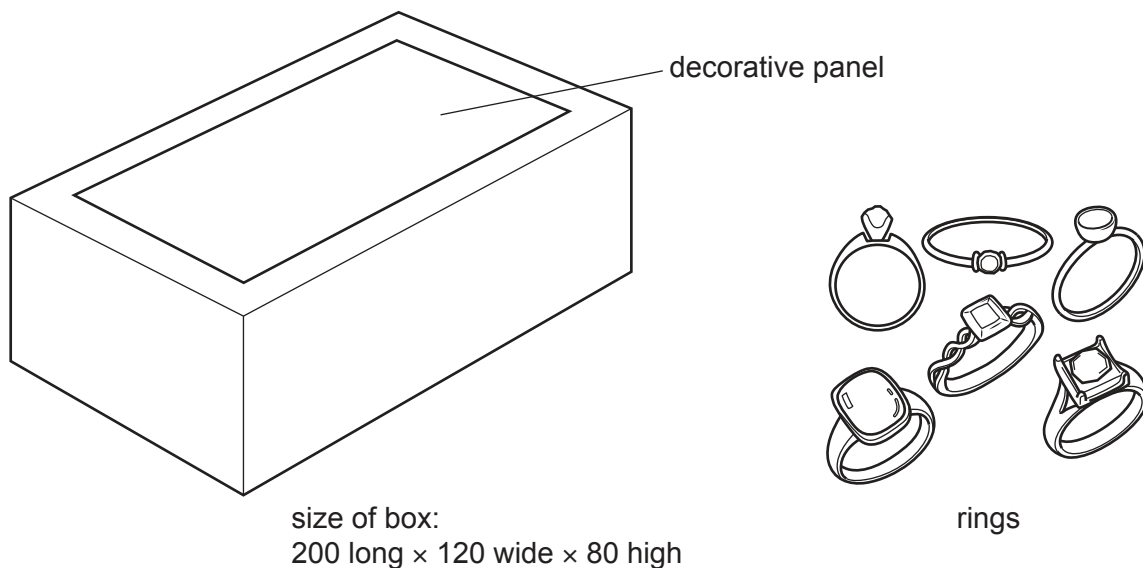


Fig. 7.1

- (a)** Use notes and sketches to **develop** a design for a box to hold precious items. The box must include a lid that can be locked. [20]
- (b)** Use notes and sketches to **develop** a design for a decorative panel for the top of the box you designed in **part (a)**. The purchaser of the box must be able to personalize the decorative panel. [20]
- (c)** Use notes and sketches to **develop** a design for a method of holding six rings. The method of holding must fit inside the box you designed in **part (a)**. [20]
- (d)** Produce a pictorial (3D) rendered drawing of the complete box which shows all of the features that you have designed in **parts (a) – (c)**. [20]

- 8 Fig. 8.1 shows an incomplete design for a paper carrier bag. The bag is to be used by a shop selling high quality clothes.



Fig. 8.1

- (a) Use notes and sketches to **develop** a design for the development (net) for a paper carrier bag. The bag must fold flat when not in use. [20]
- (b) Use notes and sketches to **develop** a design for a logo to be printed on the paper carrier bag. The logo must be based upon the name 'GL Clothes'. [20]
- (c) Use notes and sketches to **develop** a design for an attachment to go on the string handles that will make the paper carrier bag more comfortable to carry. [20]
- (d) Produce a pictorial (3D) rendered drawing of the complete paper carrier bag which shows all of the features that you have designed in **parts (a) – (c)**. [20]

- 9 Fig. 9.1 shows a magnifying glass and a circuit board. It can be difficult to hold and see small electronic components when fault finding.

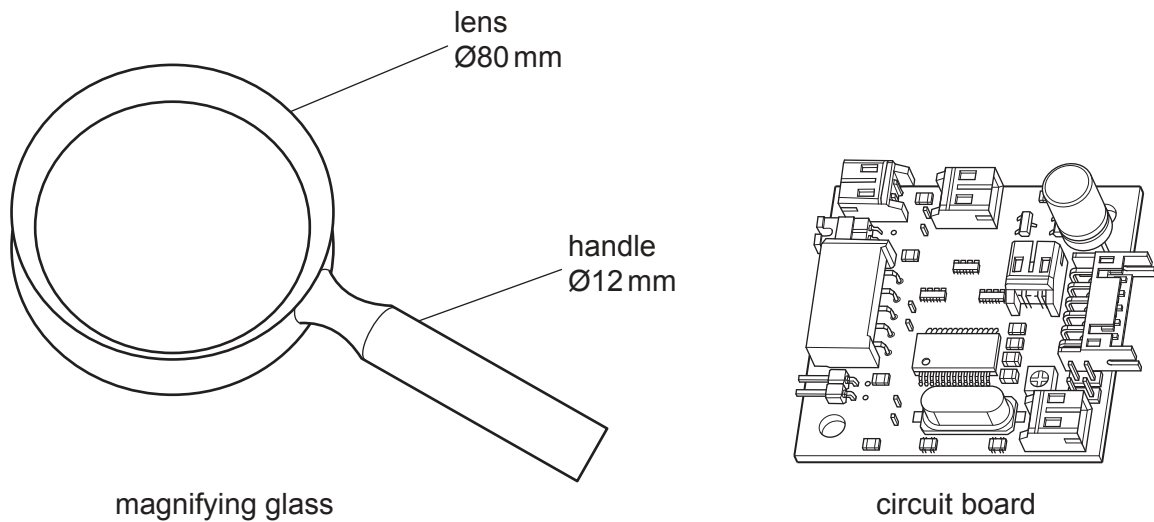


Fig. 9.1

- (a) Use notes and sketches to **develop** a design for a device that will sit on a bench and hold a magnifying glass. The magnifying glass must be easily adjusted to different angles. [20]
- (b) Use notes and sketches to **develop** a design for an attachment to the device you designed in **part (a)** that will hold a circuit board without damaging the components. [20]
- (c) Use notes and sketches to **develop** a design for an attachment to the device you designed in **part (a)** that will illuminate (light up) the work whilst it is being held. [20]
- (d) Produce a pictorial (3D) rendered drawing of the device which shows all of the features that you have designed in **parts (a) – (c)**. [20]

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