



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

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**DESIGN AND TECHNOLOGY**

**6043/01**

Paper 1 Technology

**October/November 2012**

**2 hours 30 minutes**

Additional Materials:      Answer Booklet/Paper  
   Plain paper  
   Sketching equipment

\* 8 7 3 6 6 0 3 8 8 \*

**READ THESE INSTRUCTIONS FIRST**

Write your Centre number, candidate number and name on all the work you hand in.  
Write in dark blue or black pen.  
You may use a soft pencil for any diagrams, graphs or rough working.  
Do not use staples, paper-clips, highlighters, glue or correction fluid.

**Part A**

Answer **all** questions.

**Part B**

Answer **four** questions.

Answer **one** question from Section 1, **two** questions from Section 2, and **one** other question from either Section.

Use sketches where appropriate to help answer any question.  
You are advised to spend no longer than 45 minutes on Part A and 1 hour 45 minutes on Part B.  
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.

This document consists of **11** printed pages and **1** blank page.



## Part A

You are advised to spend no more than 45 minutes on this part.

Attempt **all** questions.

- 1 Give the names of **three** processed timber boards. [3]
- 2 Fig. 1 shows an artist's palette made from a plastics material.

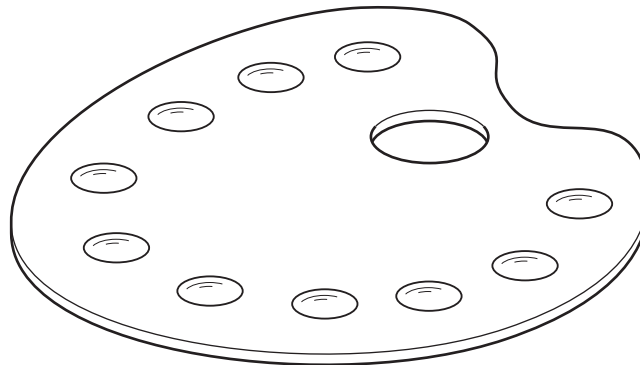
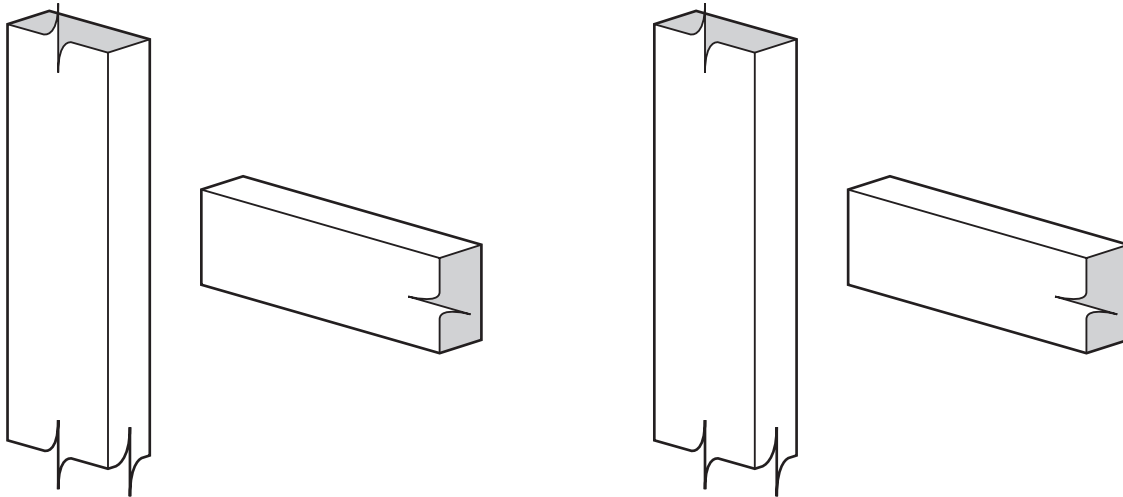


Fig. 1

- Give **two** reasons why plastics are suitable for the palette. [2]
- 3 Give the names of the **two** major metals that are used to make soft solder alloy. [2]
- 4 Copy and complete the outline drawings in Fig. 2 to show the joints named.



(a) Mortice and tenon joint

(b) Dowel joint

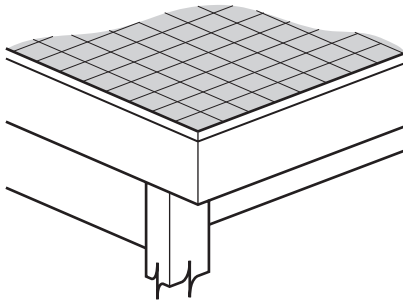
Fig. 2

- 5 Explain what is meant by the term *realisation* in the design process. [4]

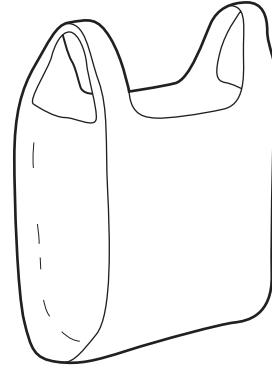
[4]

[3]

- 6 State a suitable plastics material for each of the situations shown in Fig. 3.



(a) Hard wearing surface for a table top



(b) Bag for holding shopping

Fig. 3

[2]

- 7 State **three** details that would be needed when ordering wood screws for a project.

[3]

- 8 Fig. 4 is a diagram used to explain a plastics forming process.

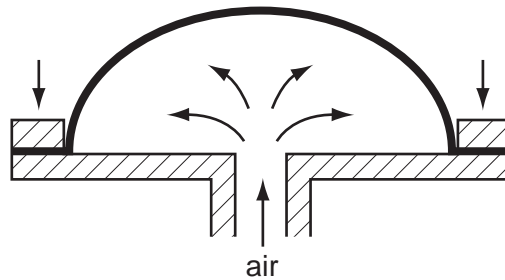


Fig. 4

- (a) Name the process.

[1]

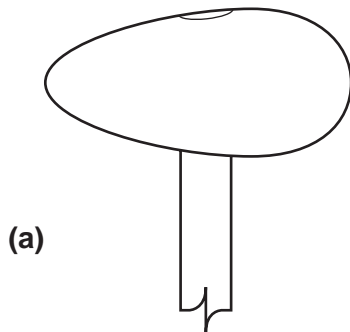
- (b) What must be done to the plastic in order for it to be formed?

[1]

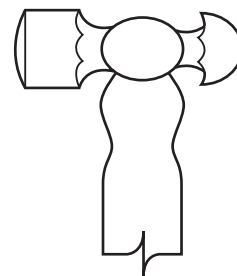
- 9 Explain why a lubricant is used when cutting a thread on metal.

[2]

- 10 Name the tools shown in Fig. 5 and give a specific use for each.



(a)



(b)

Fig. 5

[4]

**Part B**

You are advised to spend at least 1 hour 45 minutes on this part of the examination.

Attempt **four questions** including **one** from Section 1, **two** from Section 2 and **one** further question from either section.

All questions carry equal marks.

**Section 1 - Tools and Materials**

- 11** Potential risks should always be considered when working material or using tools.
- (a)** Using a different example in each case, explain how working some materials could result in:
- (i)** breathing problems;
  - (ii)** eye problems;
  - (iii)** skin problems. [9]
- (b)** State **three** types of protective clothing or equipment available in the school workshop and give the reasons for the use of each. [6]
- (c)** Explain why it can be dangerous to use badly maintained tools. [2]

12 Fig. 6 shows three different cutting tools.

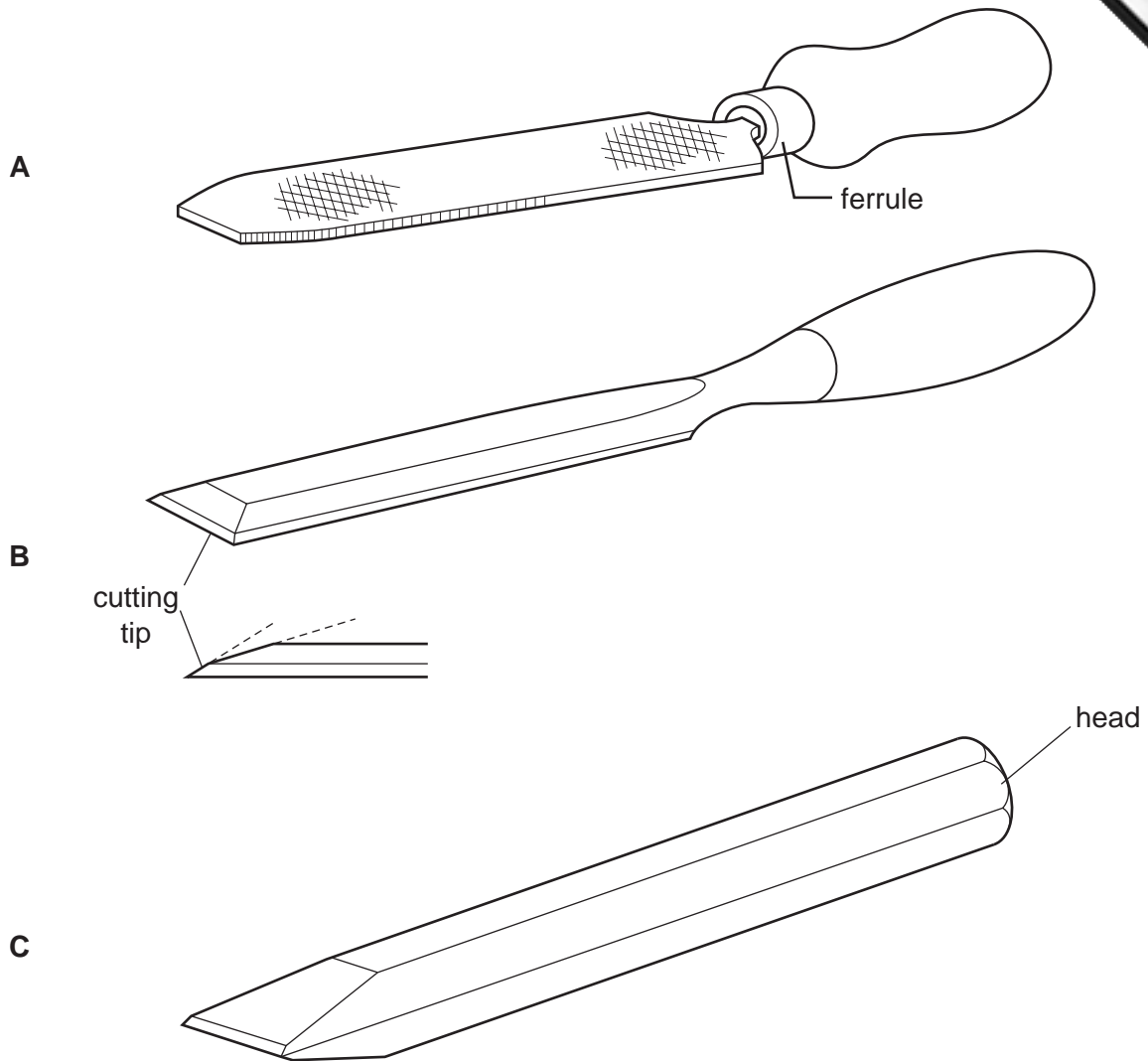


Fig. 6

- (a) Name each tool and state its purpose. [6]
- (b) Explain the reason for:
- (i) the steel ferrule on tool **A**;
  - (ii) two different angles on the tip of tool **B**;
  - (iii) the head of tool **C** being left in a soft state. [6]
- (c) With the aid of sketches, explain why work to be cut by the three tools needs to be held in some way. [5]

- 13 Fig. 7 shows an idea for a puzzle that is made up of six interlocking pieces that join together to form a disc.

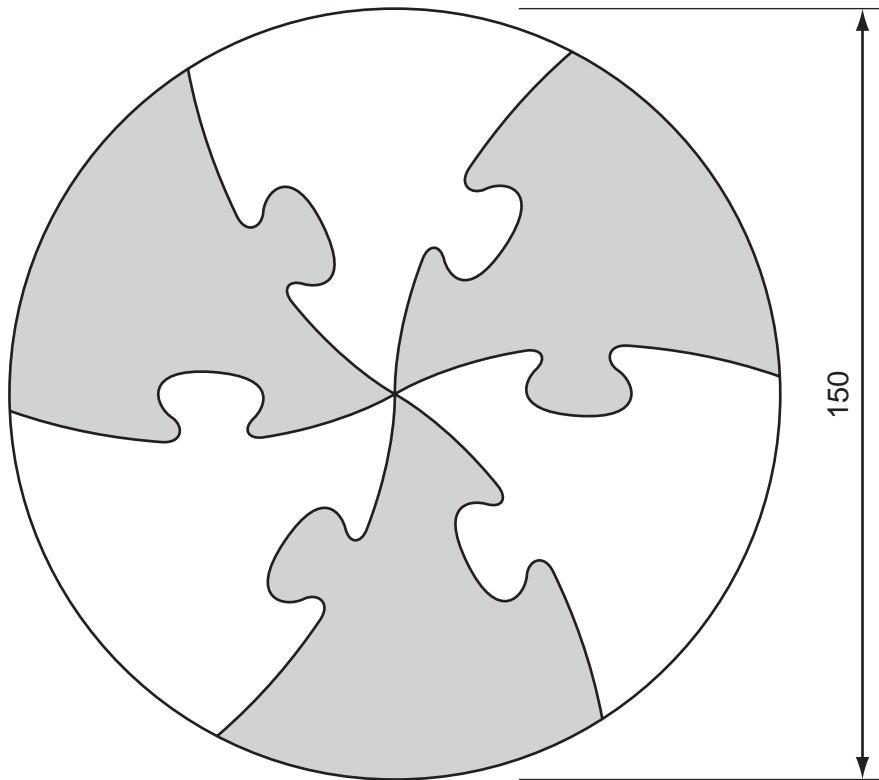


Fig. 7

- (a) Some possible materials being considered for the puzzle are listed below. For each, give one reason for selection and one reason for rejection.
- (i) acrylic
  - (ii) aluminium
  - (iii) plywood
- [6]
- (b) Explain why it is better to cut the pieces from a prepared disc than to make each piece separately.
- [2]
- (c) Select **one** of the materials from (a) and sketch a suitable tool for:
- (i) marking out the disc;
  - (ii) holding the disc while being worked;
  - (iii) cutting out the pieces.
- [9]

## Section 2 - Processes

14 Parts of a washroom shelf unit are shown in Fig. 8.

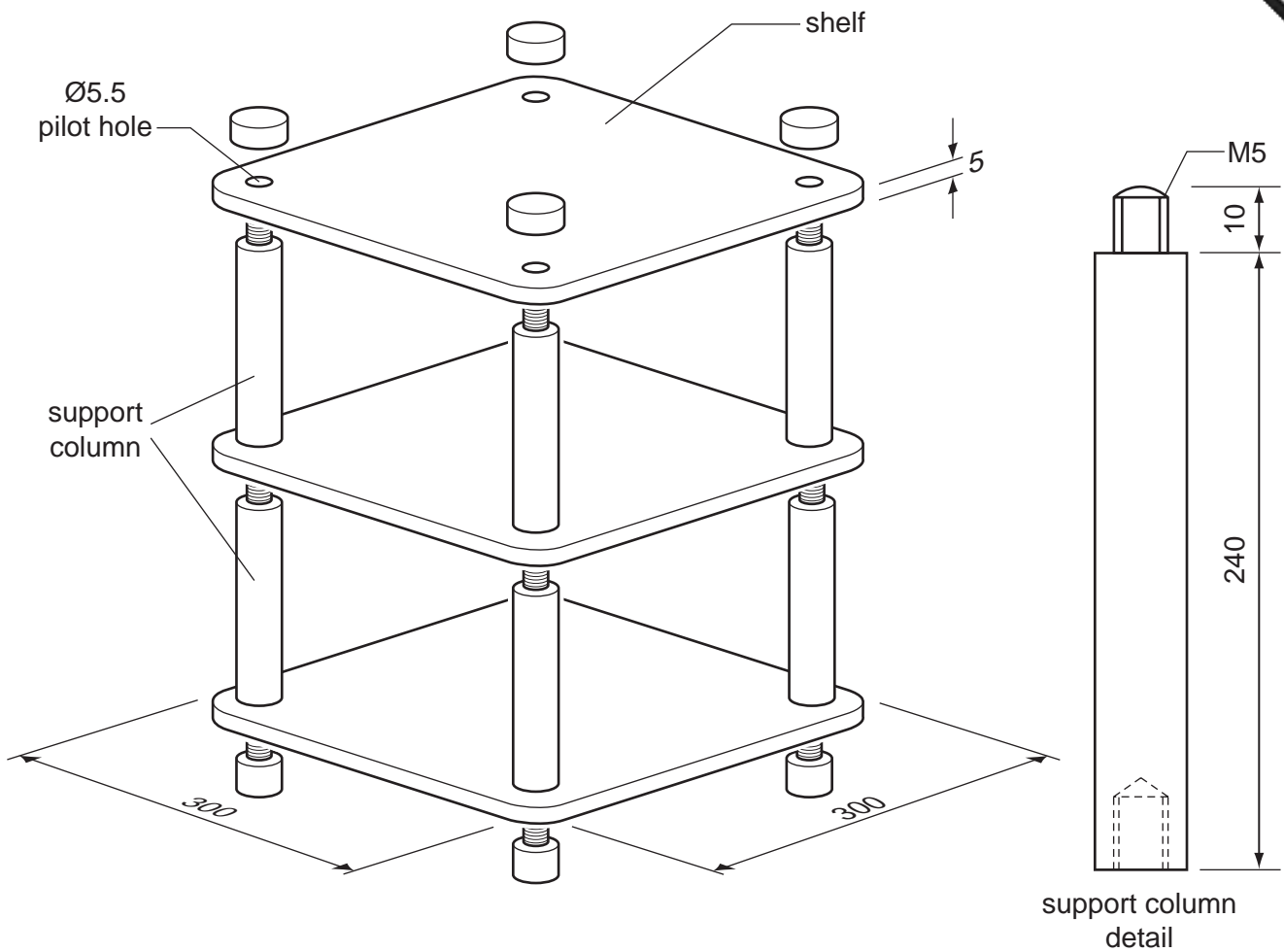


Fig. 8

- (a) Give **two** properties that any material should have to be suitable for the unit. [2]
- (b) Using a material of your choice, describe, with the aid of notes and sketches:
- (i) marking out positions and drilling of holes in shelves;
  - (ii) making the shelf support columns. [15]

15 Fig. 9 gives details of the letter R from a display of lettering.

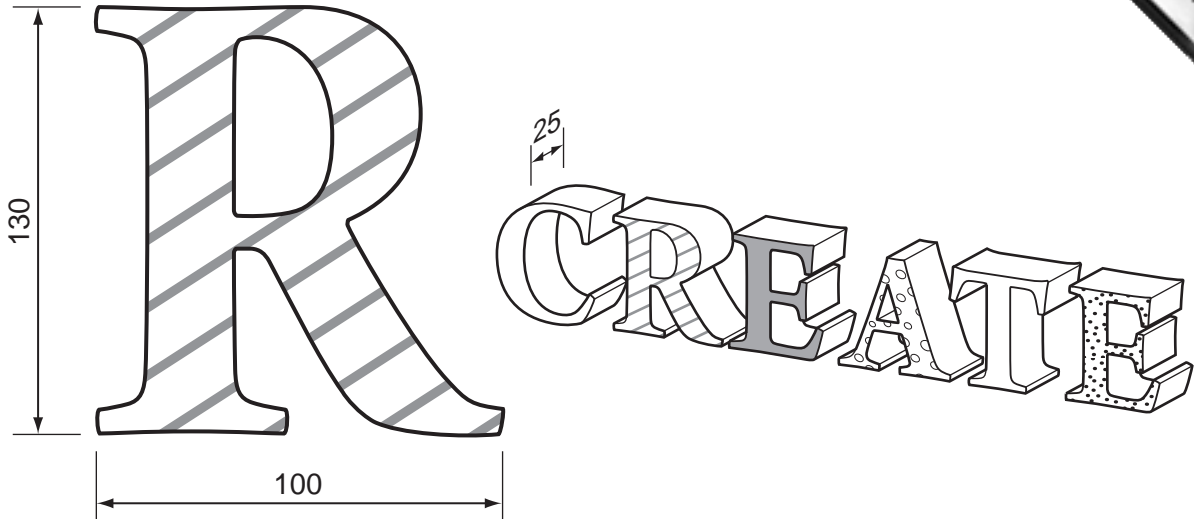


Fig. 9

- (a) Suggest **two** possible methods of production for the letter R and give **one** reason why each would be suitable. [4]
- (b) Choose **one** of the methods you have suggested in (a) and, using notes and sketches, describe the **major** stages in making the letter R. [10]
- (c) Describe, with the aid of sketches, how the decorative angled lines may be applied to the surface of the letter R. [3]



16 Details of an end support from a spice jar rack are shown in Fig. 10.

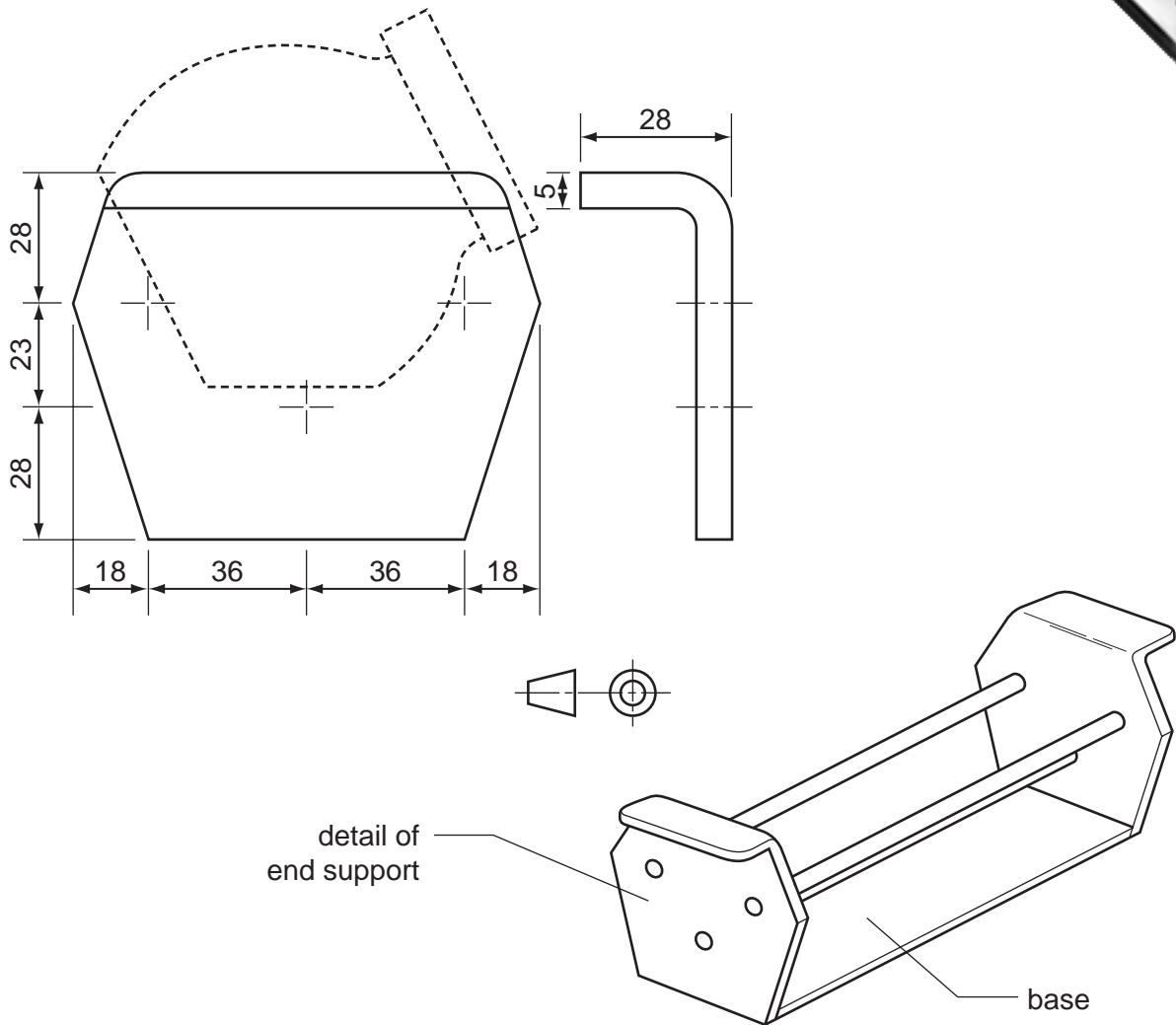
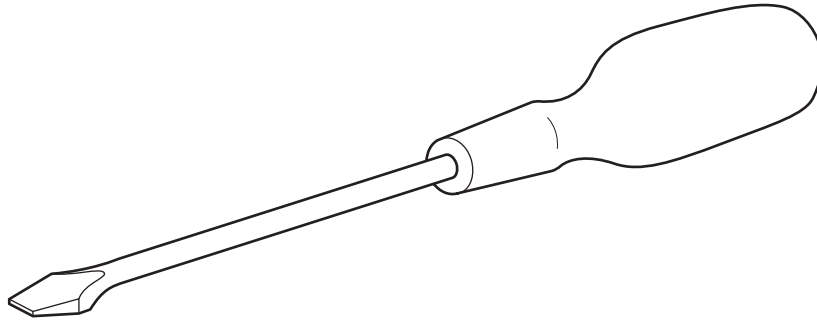


Fig. 10

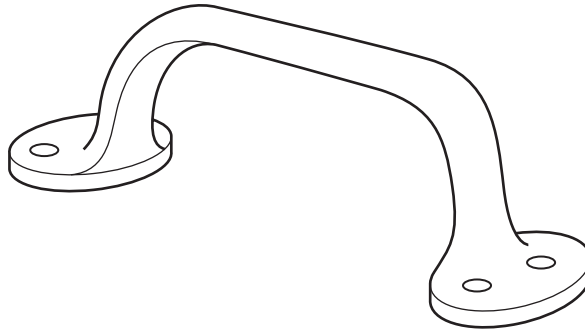
- (a) Suggest a suitable sheet material for the end support and give a reason for your choice. [2]
- (b) Using the material chosen in (a), describe, with the aid of notes and sketches, each of the following processes:
- (i) marking out the shape and hole positions;
  - (ii) cutting to shape;
  - (iii) forming the bend. [12]
- (c) With the aid of sketches, show how the end support could be fixed to the base. [3]

17 Choose **two** of the processes in Fig. 11 and, using notes and sketches, describe the processes carried out.

(a) Hardening and tempering the tip of a screwdriver blade



(b) Plastic dip coating a cast-iron door handle



(c) Marking out and cutting a single dovetail joint

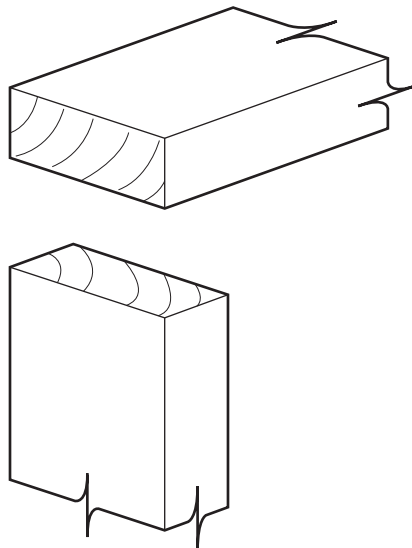


Fig. 11

18 Details of a small bangle are given in Fig. 12.

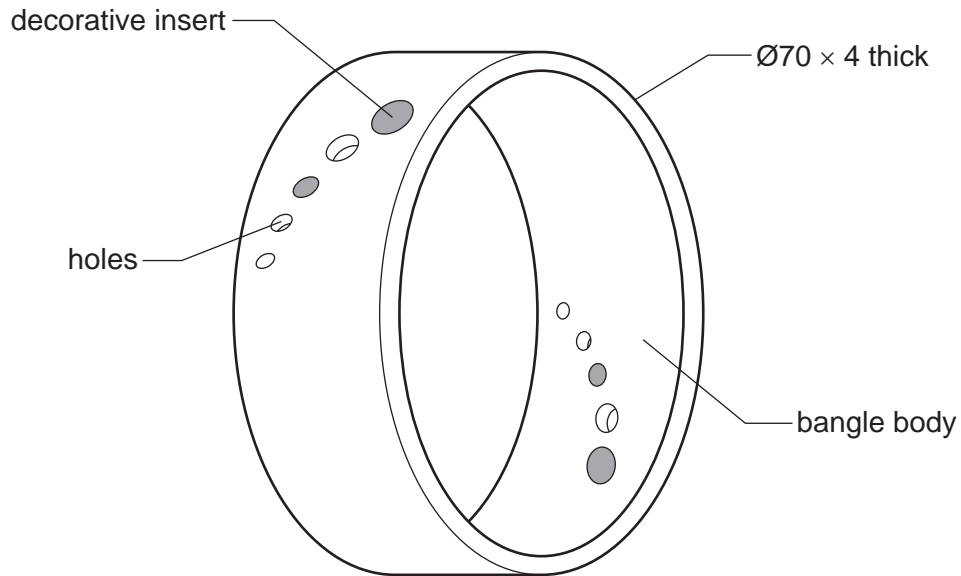


Fig. 12

- (a) Suggest a suitable material for the bangle and give a reason why it would be suitable. [2]
- (b) Using the material chosen in (a), describe, with the aid of notes and sketches, each of the following processes.
- (i) production of the bangle body [9]
- (ii) drilling the holes [4]
- (c) Choose a colourful material for the decorative insert and describe how it would be fixed to the bangle. [2]

