

2

Part A

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

Attempt **all** questions.

- 1 When tempering tool steel, what do oxide colours indicate? [2]
- 2 Sketch a bradawl and explain its purpose. [3]
- 3 Fig. 1 shows a small plastic measuring scoop used in cooking.

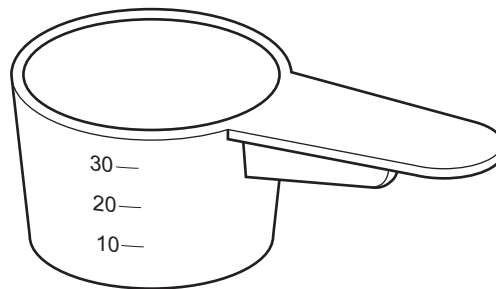


Fig. 1

- (a) State a suitable method of manufacture. [1]
 - (b) State why the plastic needs to be heated. [1]
- 4 Fig. 2 shows two metal boxes that are used in a workshop process.

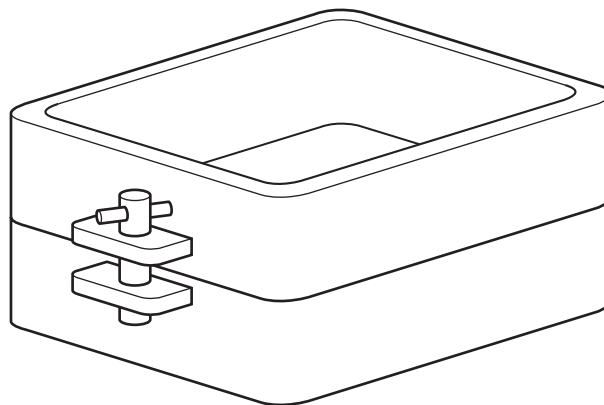


Fig. 2

- (a) Name the two boxes. [2]
 - (b) State their purpose. [2]

3

- 5 With the aid of sketches, show **three** different ways of fixing the plywood bottom of a desk drawer as shown in Fig. 3.

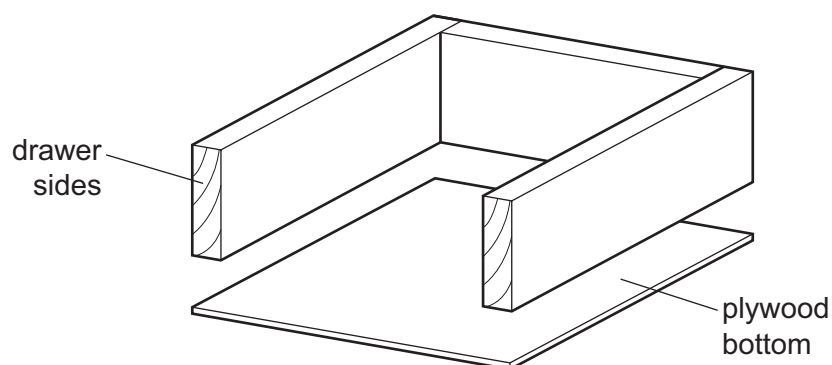


Fig. 3

[3]

- 6 Fig. 4 shows two pieces of acrylic about to be joined.

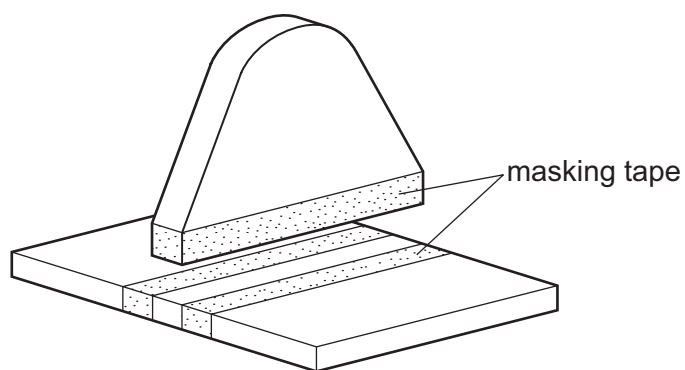
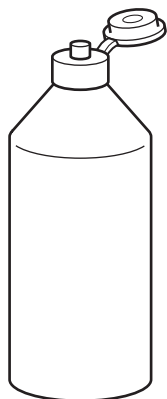


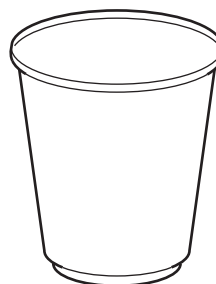
Fig. 4

- (a) Name the type of bonding agent that would be used. [1]
- (b) State why masking tape is used around the joint. [1]
- 7 (a) Explain briefly the term *forging* when used in the workshop. [2]
- (b) Identify **one** possible hazard when forging. [1]
- 8 State **two** different wood finishes. [2]
- 9 For each of the following protective items, state a different workshop process where it would be required.
- face mask
 - rubber gloves
- [2]

10 Fig. 5 shows two plastic products.



a squeeze bottle



a hot drinks cup

Fig. 5

(a) State a suitable plastic for the manufacture of each product. [2]

(b) Give a reason for the choice of each plastic. [2]

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 Accurate measurement is a vital part of construction work.

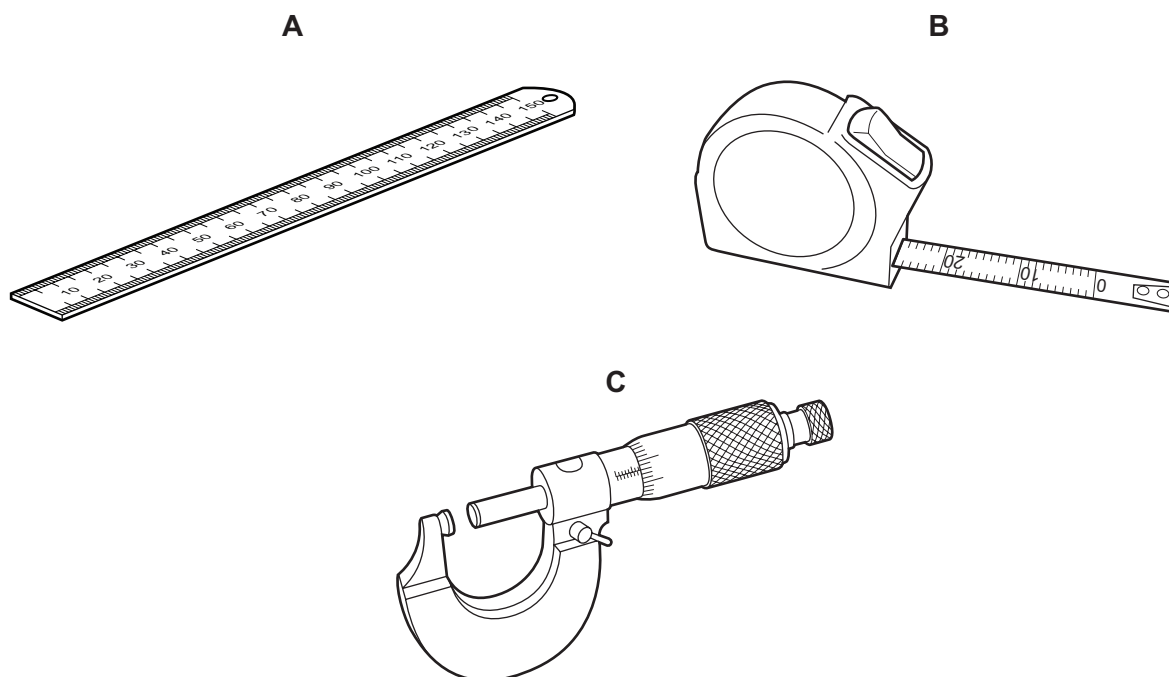


Fig. 6

- (a) Identify each of the measuring tools shown in Fig. 6 and explain the purpose of each. [6]
- (b) Using notes and sketches show:
- (i) how a pair of odd-leg callipers could be set to a measurement using tool **A**;
 - (ii) the advantage tool **B** has over other measuring tools;
 - (iii) a turned bar being checked for size using tool **C**. [9]
- (c) With the aid of a sketch, show how a twist drill with no measurements showing may be checked for size. [2]

12 The situation in which a material is to be used plays an important role in its selection.

(a) Explain the effect of:

- (i)** very hot weather on a softwood bench;
- (ii)** dripping water on mild steel;
- (iii)** a hot candle flame close to an acrylic holder.

[6]

(b) Using examples, explain how the shaping of each material can be helped by:

- (i)** steam on wood;
- (ii)** heat on metal;
- (iii)** air on plastic.

[6]

(c) With the aid of examples, explain what effect the processing of some materials can have on our working environment.

[5]

13 Fig. 7 shows three different fixings used when joining materials.

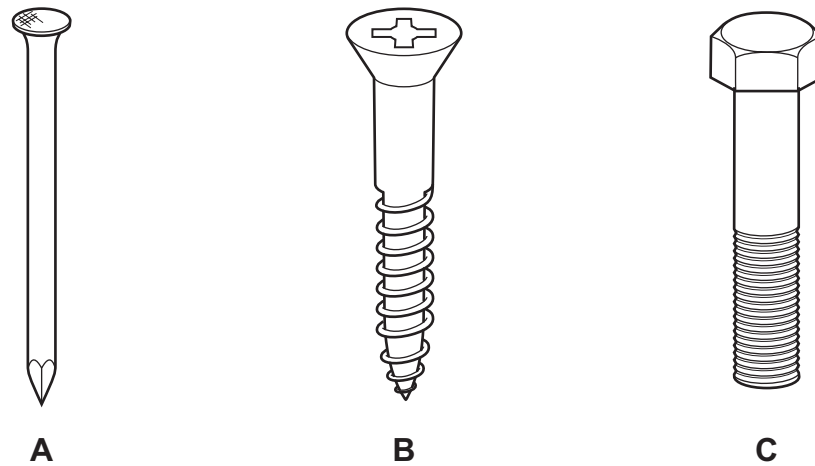


Fig. 7

- (a) Name the **three** fixings shown in Fig. 7 and give a use for each. [6]
- (b) Each fixing named in (a) requires a different type of tool to complete the joining process.
Sketch an appropriate tool for each fixing. [9]
- (c) Using an example, explain why different materials are sometimes used for fixings. [2]

Section 2 - Processes

14 The outline design of a child's wooden toy is shown in Fig. 8.

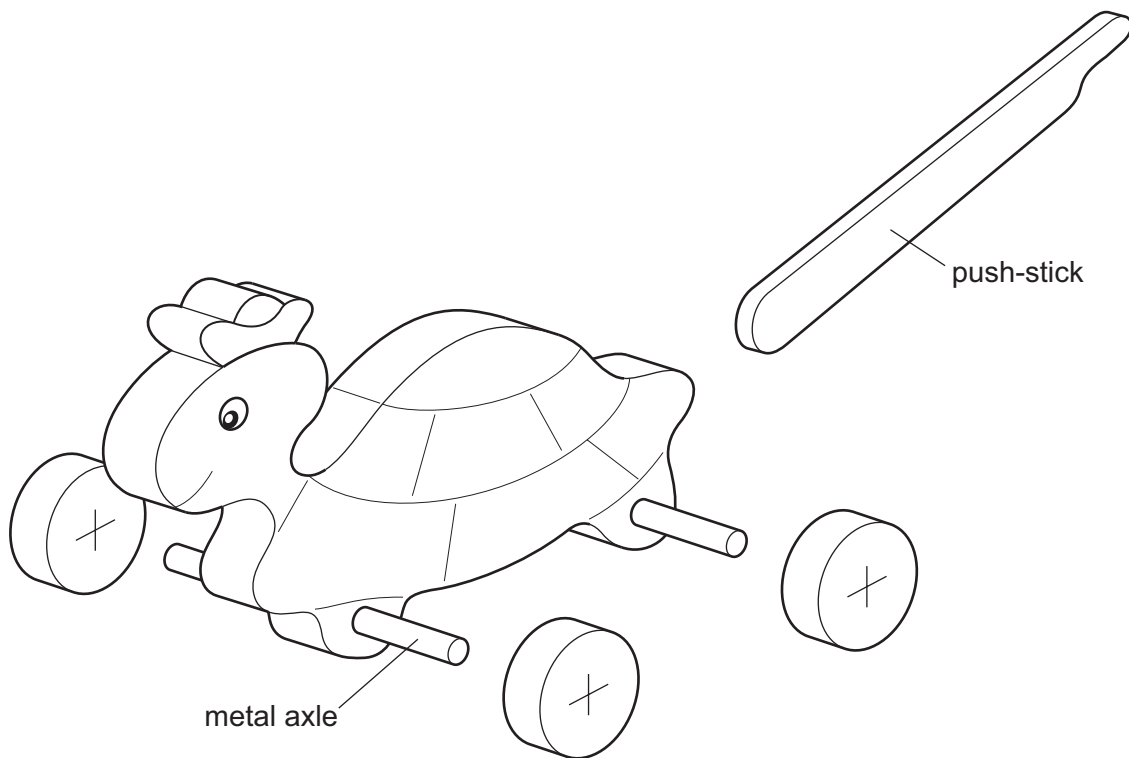


Fig. 8

- (a) Give **two** safety factors that should be considered when designing toys for young children. [2]
- (b) The metal axle shown in Fig. 8 is fixed and cannot rotate.
- (i) State a method of joining the wheels to the axle so that they can rotate but not become detached. [3]
- (ii) Using notes and sketches, describe the processes needed to make the wheels and axle. [4]
- (c) Describe the various stages of preparing and painting the toy. [5]
- (d) With the aid of a sketch, show how the push-stick may be easily attached to or detached from the toy. [3]

15 Fig. 9 shows details of a paper napkin holder that could be made by:

- casting;
- vacuum forming;
- injection moulding;
- building up from pieces.

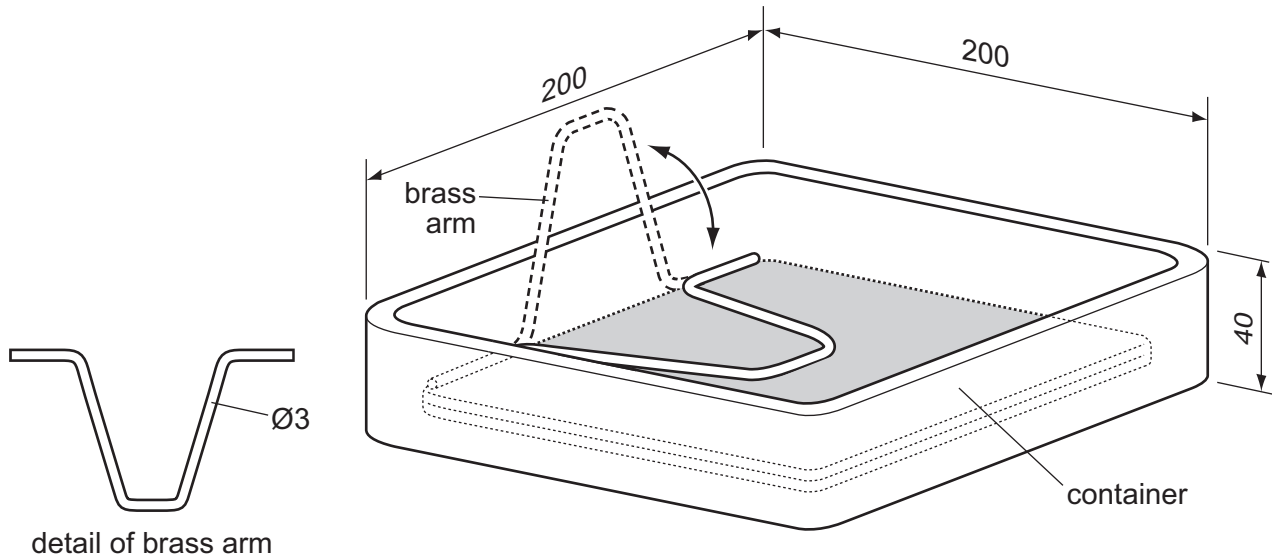


Fig. 9

- (a) For **two** of the listed processes, state an advantage and disadvantage of each. [4]
- (b) For **one** of the listed processes, use notes and sketches to describe how the container would be made. [8]
- (c) Describe, with the aid of notes and sketches, how the arm may be formed and fixed to the container. [5]

16 Details of a table-cover clip are shown in Fig. 10.

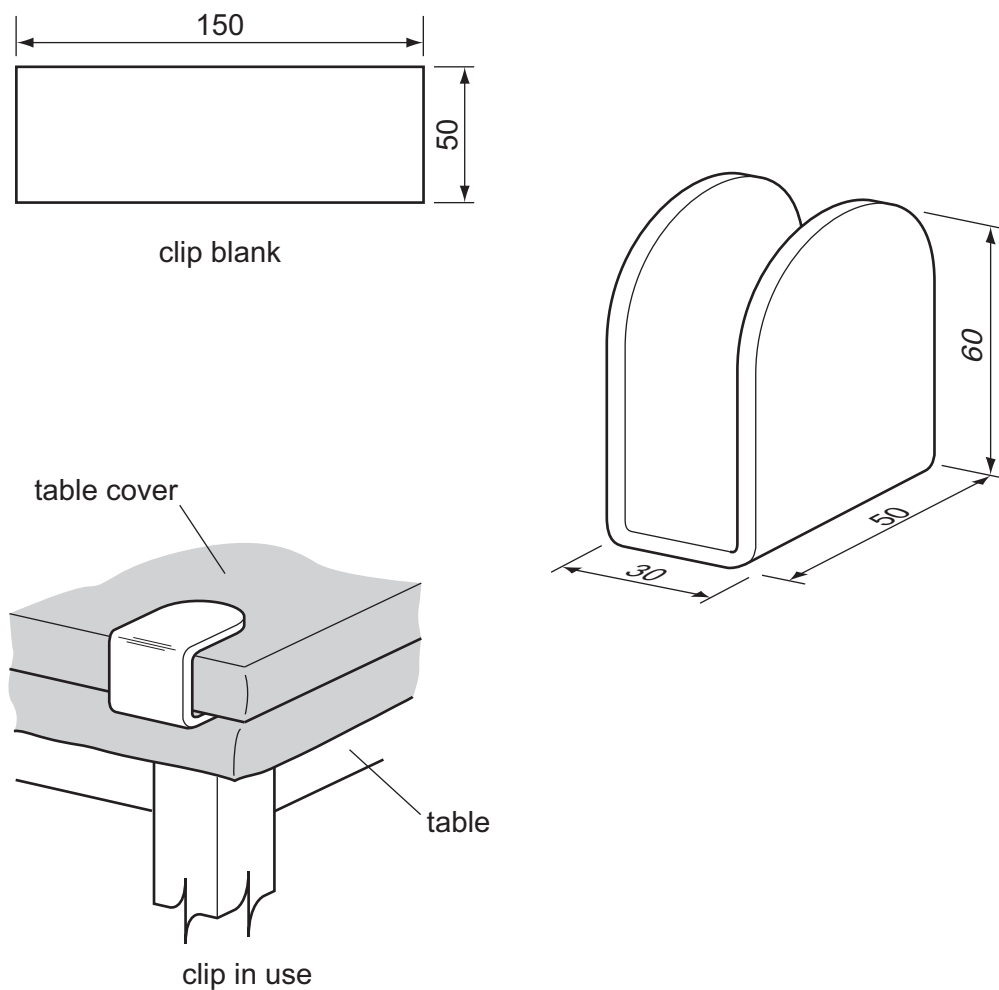


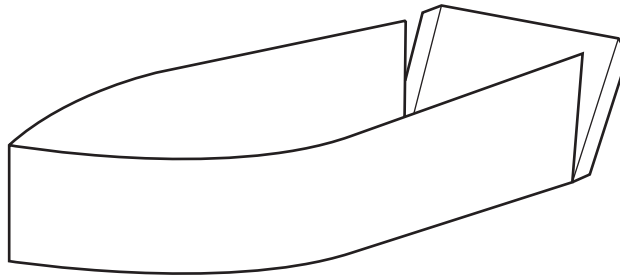
Fig. 10

- (a) Suggest a suitable sheet material for the cover clip and give a reason for your choice. [2]
- (b) Using the material chosen in (a), describe, with the aid of notes and sketches:
- (i) marking out the blank ready for cutting and forming; [5]
 - (ii) cutting and finishing the outline shape; [5]
 - (iii) forming the clip shape. [5]

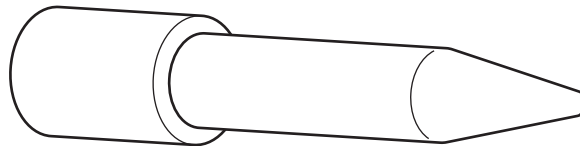
17 Fig. 11 shows three products that are made using different processes.

Select **two** of the processes and describe how each of the processes is carried out in the making of the product shown.

- Soft soldering the joints on a tinplate boat.



- Turning a wooden tent peg on the lathe.



- Blow moulding a soap dish.

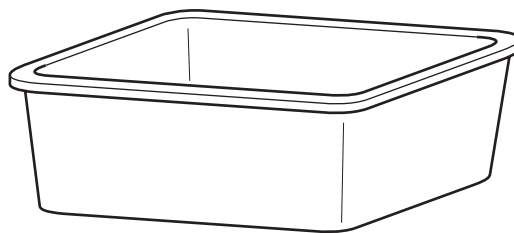


Fig. 11

[17]

18 Using notes and sketches to support your answers, explain what is meant by **each** of the following terms.

- Fluidising.
- Case hardening.
- Lamination.
- Extrusion.

[17]

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