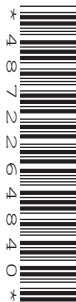


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0445/32

May/June 2016

1 hour

No Additional Materials are required.

READ THESE INSTRUCTIONS FIRST

DO NOT WRITE IN ANY BARCODES.

Section A

Answer **all** questions in this section.

Section B

Answer **one** question in this section.

You may use a calculator.

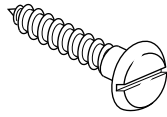
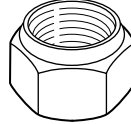
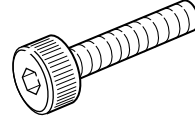
The total of the marks for this paper is 50.

This document consists of **17** printed pages and **3** blank pages.

Section A

Answer **all** questions in this section.

- 1 Name **three** different tools that would be used to tighten each of the fastenings **A**, **B** and **C** shown below.

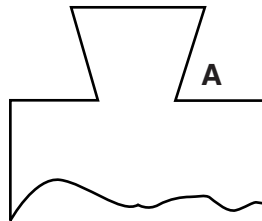
**A****B****C**

A[1]

B[1]

C[1]

- 2 Add to the drawing below to show how a bevel edge chisel would be used to cut out corner **A**.



[2]

- 3 Fig. 1 shows two wood joints.

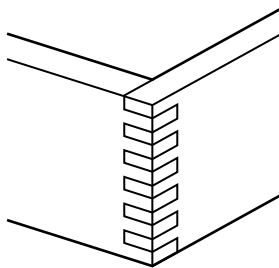
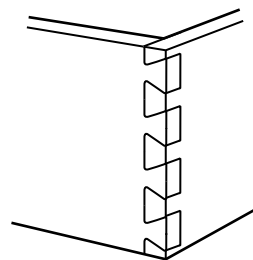
**A****B**

Fig. 1

- (a) Name the joints **A** and **B** shown in Fig. 1.

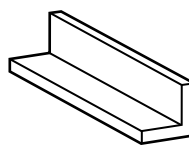
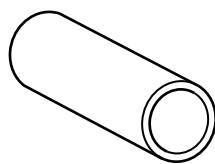
A

B[2]

- (b) Give **one** reason why joint **B** is stronger than joint **A**.

.....[1]

- 4 Name the **two** standard metal sections shown below.



..... [2]

- 5 Fig. 2 shows a metal handle with a textured finish on its edge.

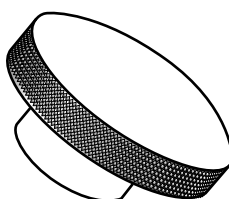


Fig. 2

- (a) Give the correct name for the textured finish.

.....[1]

- (b) State the purpose of the textured finish.

.....[1]

- (c) Name the machine used to produce the textured finish.

.....[1]

- 6 Fig. 3 shows a lap joint marked out.
Lines **A** and **B** have been marked out using two different gauges.

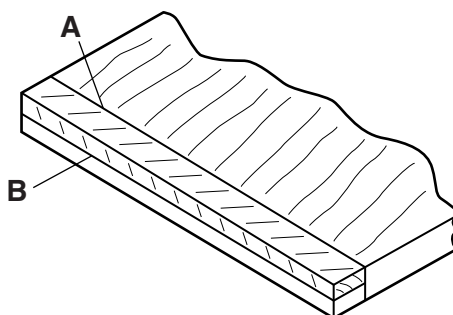


Fig. 3

Name the gauge used to mark out each line.

A

B[2]

- 7 Fig. 4 shows a car shell made from carbon fibre reinforced plastic (CFRP).

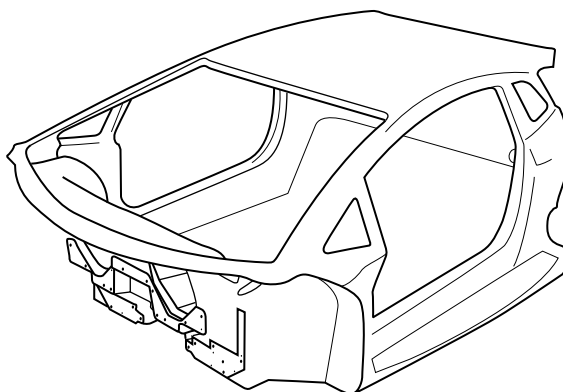


Fig. 4

Give **two** advantages of using carbon fibre reinforced plastic (CFRP) rather than steel for the car shell.

1.....

2.....[2]

- 8 Fig. 5 shows a child's sit-on toy made from wood.

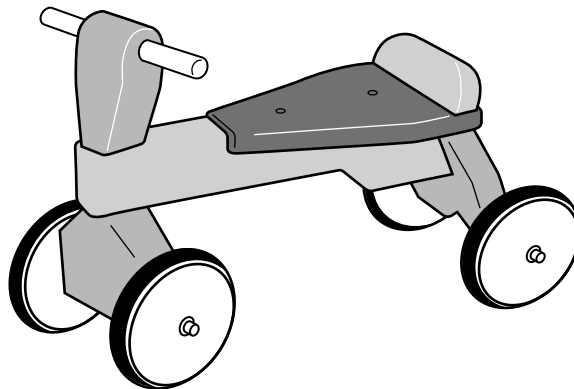


Fig. 5

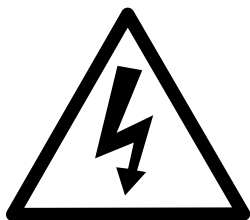
Describe **three** ways in which the designer has made the sit-on toy suitable for children.

1

2

3[3]

9 State what is meant by each safety symbol shown below.



.....[1]



.....[1]

10 Complete the table below by naming a different metal that matches each of the properties given.

Name of metal	Property
	malleable
	corrosion resistant
	electrical conductivity

[3]

Section B

Answer **one** question in this section.

- 11 Fig. 6 shows an incomplete design for a book stand made from hardwood. The book stand has two main parts: the frame and the ledge.

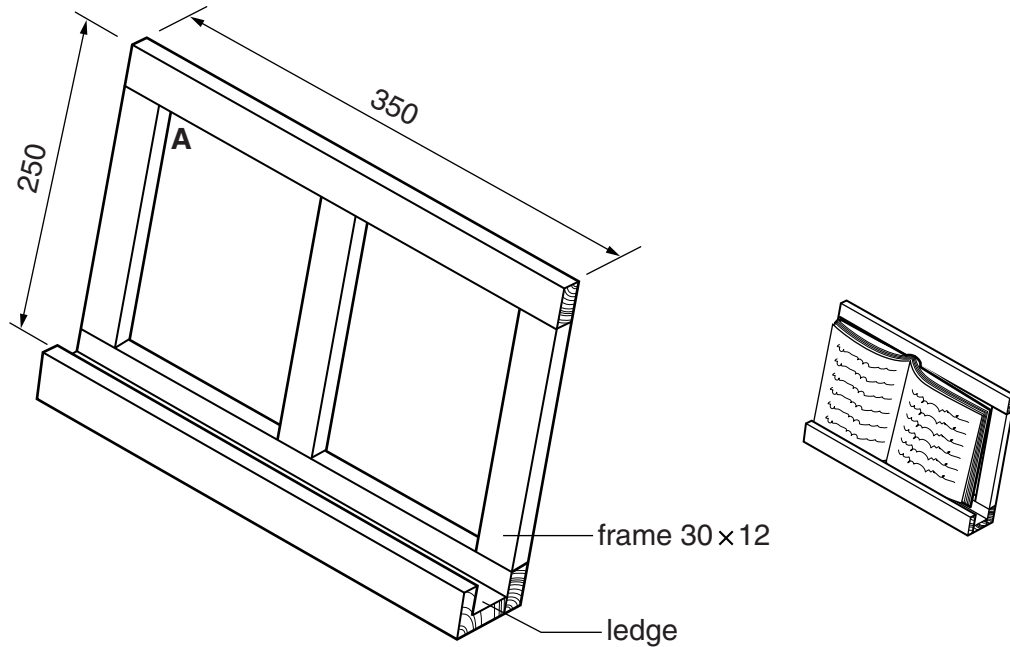


Fig. 6

- (a) Give **two** advantages of using a frame made from separate pieces of hardwood for the book stand rather than one solid piece of wood.

1

2[2]

- (b) Sketch and name a suitable joint at **A** in Fig. 6.

(c) Fig. 7 shows the frame ready to be clamped and glued together.

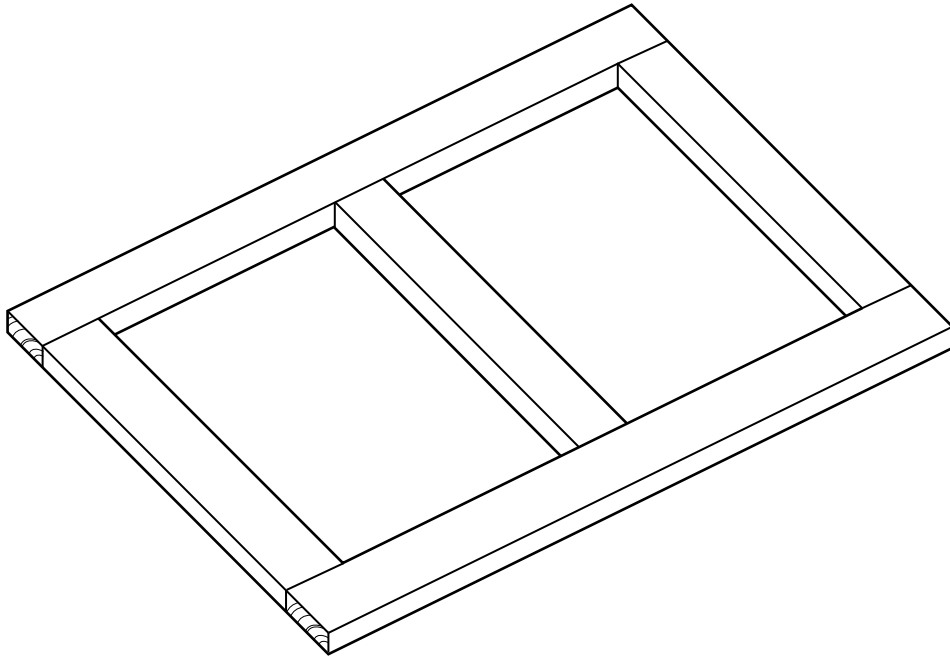


Fig. 7

- (i) Add sketches and notes to Fig. 7 to show how the frame would be clamped while the glue sets. Name the type of cramps used. [3]
- (ii) Use sketches and notes to show how the outside edges would be planed and the surfaces prepared to take a clear varnish finish.

[4]

(d) Fig. 8 shows details of the ledge.

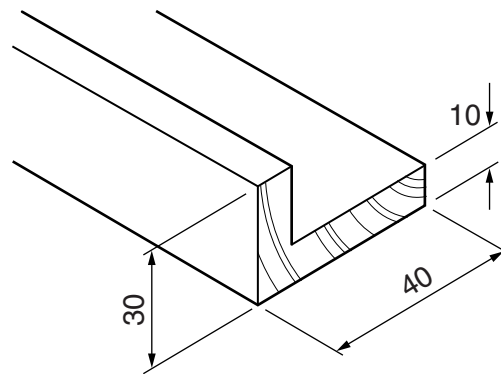


Fig. 8

Use sketches and notes to show how the ledge could be attached to the frame as shown in Fig. 6.

[2]

- (e) When a book is placed on the book stand the book does not always stay open at the required page.
Use sketches and notes to show a modification to the design so that the book stays open.
Include details of materials and/or fittings used.

[4]

(f) Fig. 9 shows a side view of the book stand.

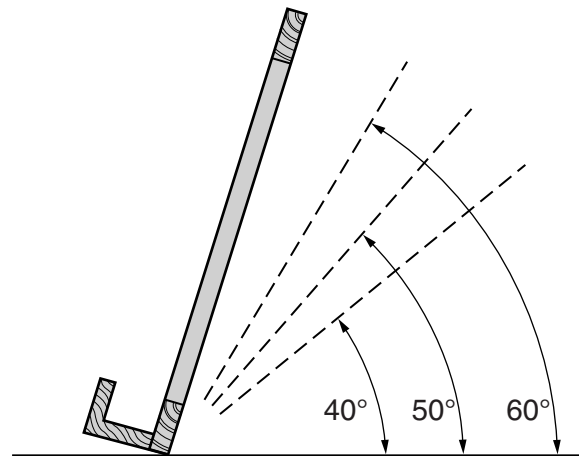


Fig. 9

Use sketches and notes to show how the book stand could be adjusted to **three** different positions as shown above.

Include details of materials, constructions and fittings used.

[6]

- 12 Fig. 10 shows a child's shape sorting toy. The box and shapes are made from beech. The top is made from acrylic.

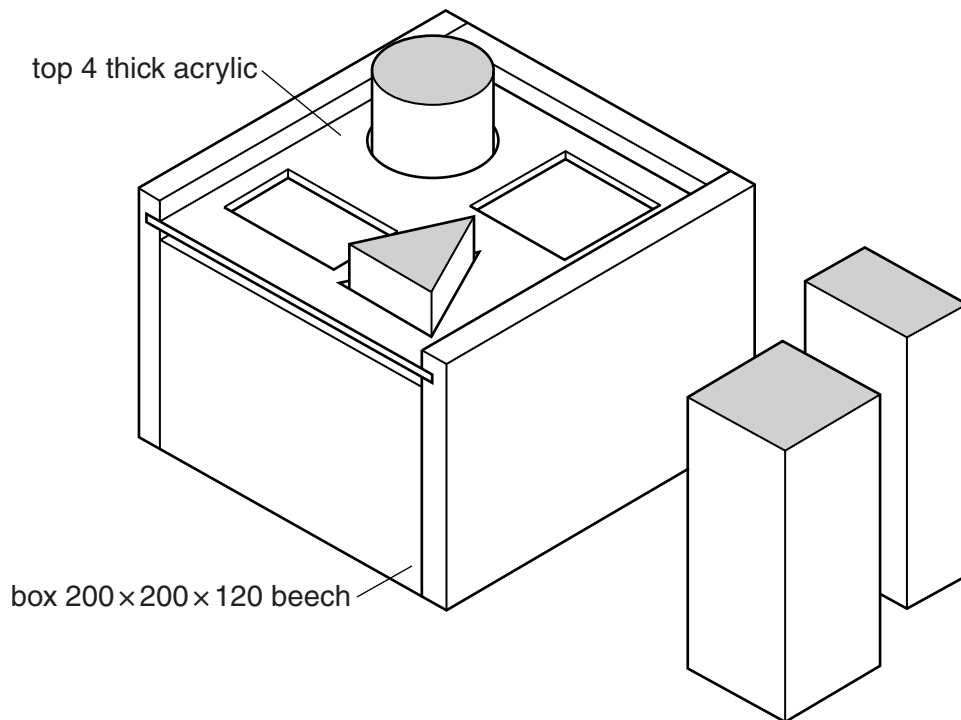


Fig. 10

- (a) Give **two** reasons why beech is often used to make children's toys.

1

2[2]

- (b) Fig. 11 shows the acrylic top with the shapes marked out.

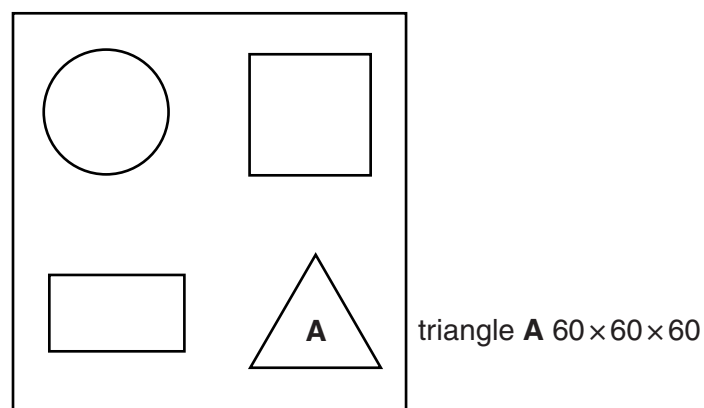


Fig. 11

- (i) Name a tool that would be used to mark the shapes on the surface of the acrylic.

.....[1]

- (ii) Use sketches and notes to show how triangle shape **A** could be cut out from the acrylic top and the edges made flat and smooth.

[4]

- (iii) When working with acrylic there is a possibility that it could crack.
Describe **two** processes where this could occur and how the problem can be solved.

Process

Solution

Process

Solution[4]

- (c) Fig. 12 shows part of the groove that allows the acrylic top to be removed.

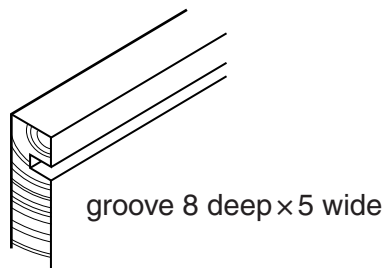


Fig. 12

Use sketches and notes to show how the groove could be produced.

[3]

- (d) Fig. 13 shows the triangular shape **A** marked out on a length of beech.

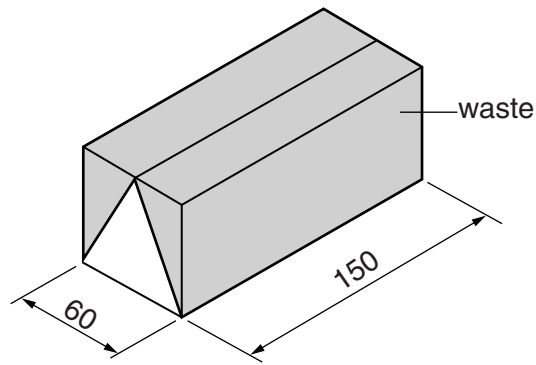


Fig. 13

Use sketches and notes to show how the triangular shape could be produced.
Name all the tools and equipment used.

[4]

- (e) Fig. 14 shows a length of beech that will be used to make the round shape.
The round shape will be produced by turning between-centres on a wood turning lathe.

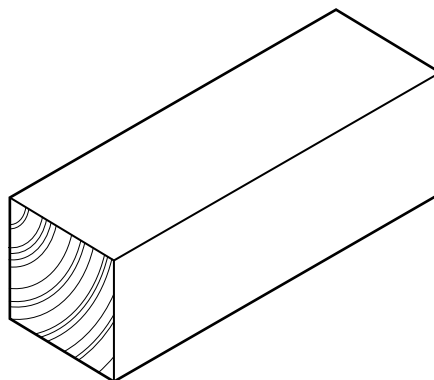


Fig. 14

Add sketches and notes to Fig. 14 to show how the beech would be prepared **before** it is set up on a wood turning lathe.

[3]

- (f) Fig. 15 shows hollow section plastic shapes that could also be used in the shape sorting toy.

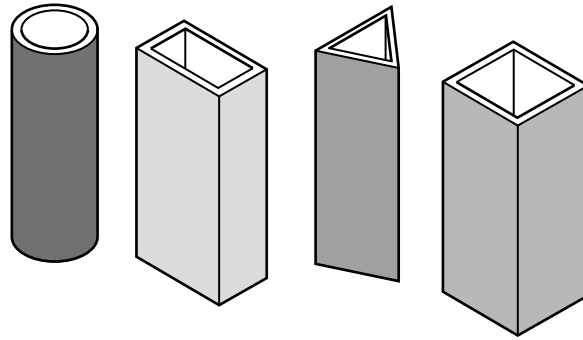


Fig. 15

- (i) Give **three** advantages of using plastic rather than beech for the shapes.

- 1
- 2
- 3[3]

- (ii) Name a process that could be used to produce the hollow plastic shapes in quantity.

.....[1]

- 13** Fig. 16 shows a wall-mounted key rack. The front of the key rack and the key fob are made from 1.5 thick aluminium sheet. The back is made from 12 thick MDF.

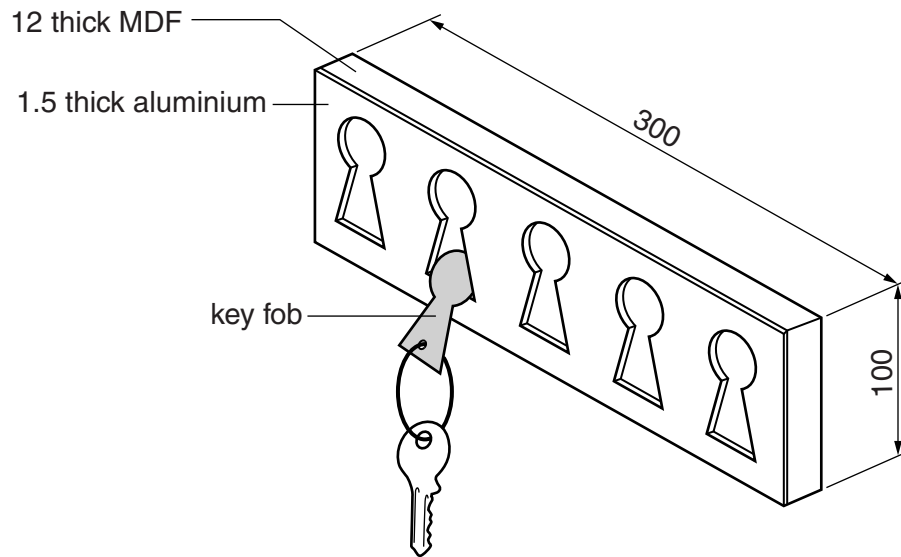


Fig. 16

- (a) (i)** Fig. 17 shows the keyhole shapes marked out on aluminium sheet.

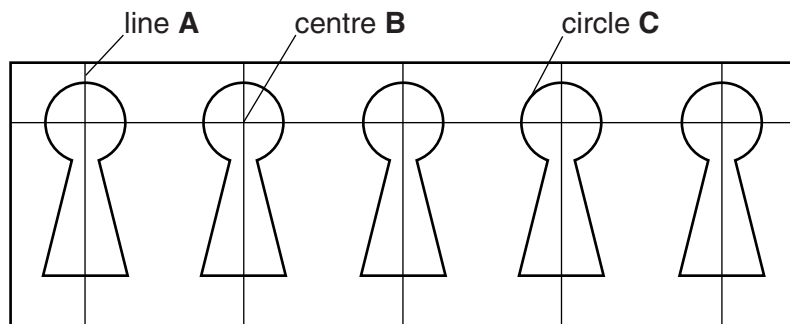


Fig. 17

Name a marking out tool that would be used to mark out:

line **A**

centre **B**

circle **C**[3]

- (ii)** Name a product that can be painted onto the surface of metal to make the marking out stand out more clearly.

.....[1]

(b) Fig. 18 shows details of one of the keyhole shapes.

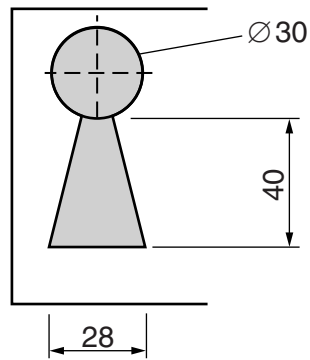


Fig. 18

Use sketches and notes to show how **one** of the keyhole shapes could be cut out and the edges made smooth. Name all the tools and equipment used.

[4]

(c) (i) Describe the process of self-finishing the aluminium to produce a polished surface.

.....

.....

.....

.....[3]

(ii) Aluminium can be anodised.
Give **one** reason for anodising the surface of aluminium.

.....[1]

(d) Fig. 19 shows an exploded view of the key rack.

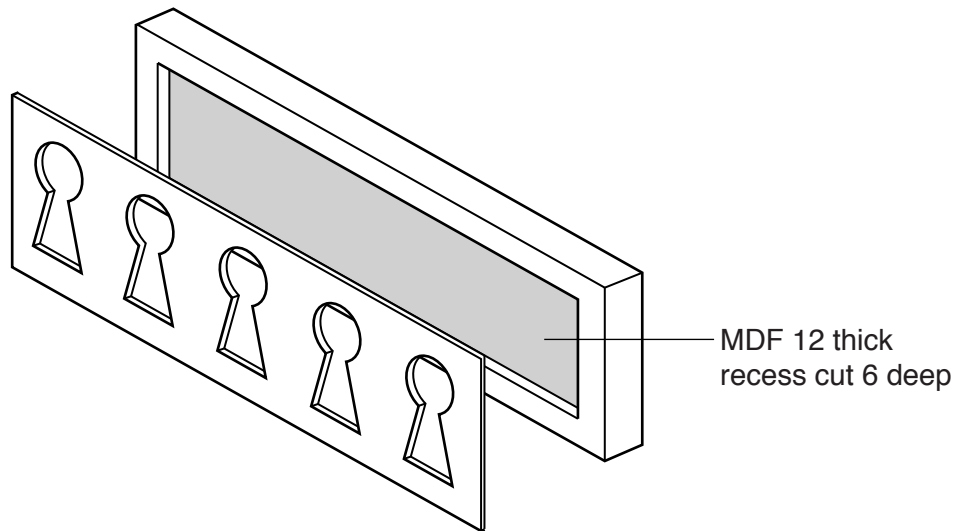


Fig. 19

- (i) Name **two** tools or items of equipment that could be used to cut out the recess shown in Fig. 19.

1

2[2]

- (ii) Use sketches and notes to show how the front and back could be joined using an adhesive.
Name a suitable adhesive and show how the parts are held together while the adhesive sets.

[3]

(e) Give **two** benefits of using CAM (Computer Aided Manufacture) to make the key rack.

1

2[2]

(f) Use sketches and notes to show how the key rack could be fitted to a wall.
Screw holes must not be visible in the front of the key rack.
Include details of materials, constructions and fittings used.

[4]

(g) Describe **one** environmental impact of using aluminium in products.

.....

.....[2]

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