



EXAMINATIONS COUNCIL OF ESWATINI
Junior Certificate Examination

CANDIDATE
NAME

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CENTRE
NUMBER

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Design and Technology

537/01

Paper 1

October/November 2020

2 hours

Additional materials: Standard Drawing Equipment.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name in the spaces provided at the top of the page.

Write in blue or black pen in the spaces provided on the Question Paper.

You may use a pencil/pen for any sketches, drawings or rough working.

Do not use staples, paper clips, highlighters, glue or correction fluid.

This paper consists of **two** (2) Sections; Section **A** and Section **B**.

Answer **all** questions in Section **A** and any **two** (2) questions in Section **B** in the spaces provided.

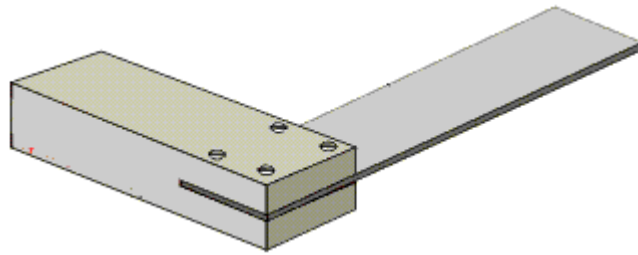
The number of marks is given in brackets [] at the end of each question or part question.

For Examiner's use	
Section A	
Section B	
Section B	
Total marks	

This document consists of **18** printed pages and **2** blank pages.

SECTION A [30 Marks]Answer **all** questions in this section.

- 1 **Figure 1** shows a commonly used tool.

**Fig. 1**

Name the tool.

..... [1]

- 2 Shown in **Figure 2** is a drawing of road sign.

**Fig. 2**

Name the specific shape of the sign board.

..... [1]

- 3 **Figure 3** shows part of a toy made from 2 mm thick plastic.

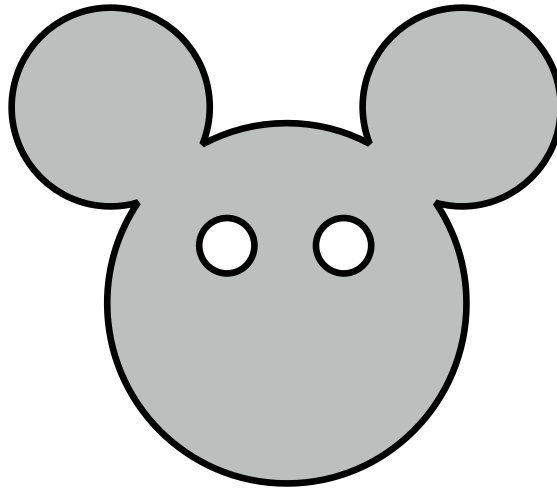


Fig. 3

Name **one** saw that can be used for cutting the shape.

..... [1]

- 4 Complete the statement below.

Brass is an alloy of and [2]

- 5 **Figure 4** shows a lock and a key.



Fig. 4

Name the type of force experienced by the key when locking and unlocking.

..... [1]

6 Shown in **Figure 5** is a wooden work piece that has been marked out.

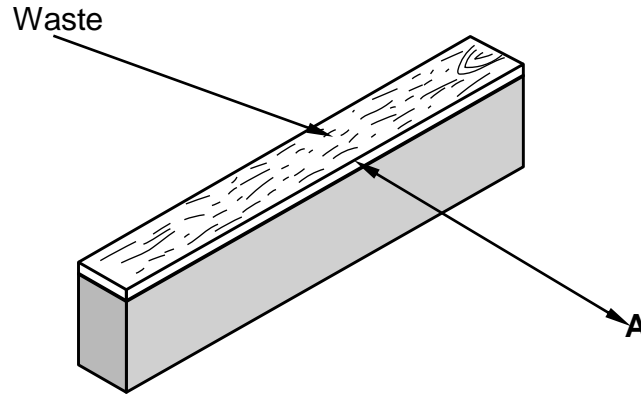


Fig. 5

(a) Name **one** marking out tool that can be used to mark out line **A**.

..... [1]

(b) Name **one** tool that can be used to remove the waste.

..... [1]

7 **Figure 6 (a)** shows a complete illustration of plastic key holder.

Figure 6 (b) shows an incomplete illustration of the key holder.

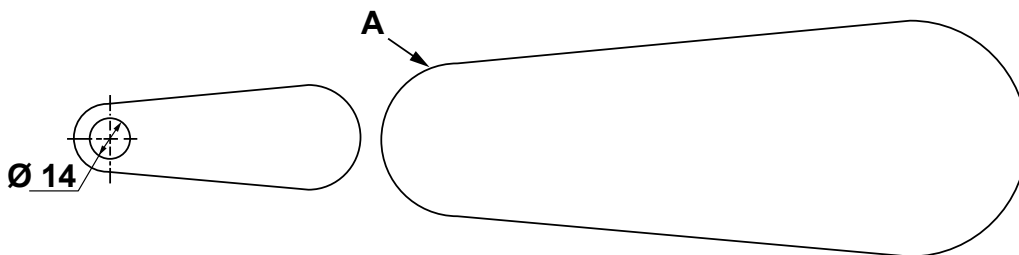


Fig. 6 (a)

Fig. 6 (b)

Using geometrical construction find the centre of arc **A** and draw the Ø14 circle on **Fig. 6 (b)**. [3]

8 Shown in **Figure 7** is a sketch of sheet metal being cut.

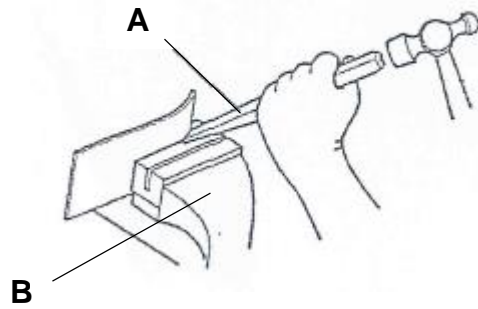


Fig. 7

(a) Name the tool labelled **A**.

..... [1]

(b) Name the tool labelled **B**.

..... [1]

9 When acrylic is supplied it comes with a plastic coating.

State **two** functions for the plastic coating.

1..... [1]

2..... [1]

10 **Figure 8 (a)** shows a pencil organizer made of two pieces of wood. **Figure 8 (b)** shows an incomplete sectional views of the organizer.

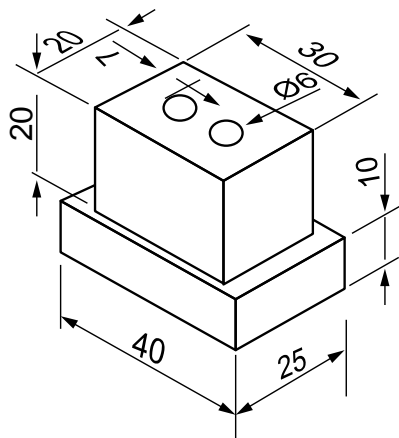


Fig. 8 (a)

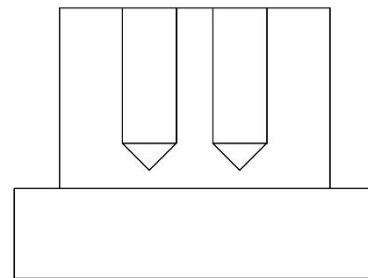


Fig. 8 (b)

Complete the sectional view in **Fig. 8 (b)**.

[3]

11 Shown in **Figure 9** is a car pulling attachment.

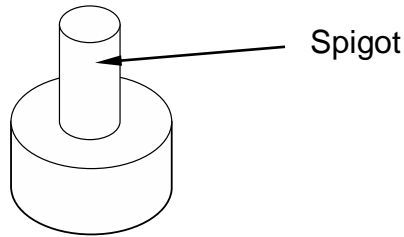


Fig. 9

The spigot is to be threaded.

Name the **two** tools that can be used to cut the threads on the spigot.

Tool 1..... [1]

Tool 2 [1]

12 **Figure 10** shows a chair used in a school.



Fig. 10

Name **one** specific type of plastic that can be used to produce the chair.

..... [1]

13 Shown in **Figure 11** is an incomplete tenon saw.

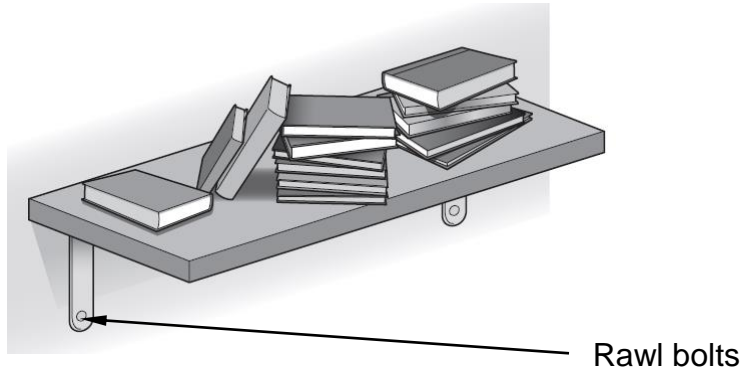


Fig. 11

Neatly complete the sketch of the tenon saw.

[3]

- 14 Shown below is a drawing of a book shelf hanging on a wall.



Name the type of force experienced by the rawl bolts hanging the book shelf.

..... [1]

- 15 **Figure 12** shows a sign post.

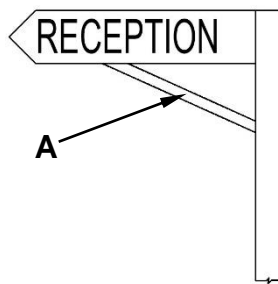


Fig. 12

- (a) In terms of triangulation name the part labelled **A**.

..... [1]

- (b) State the function of part **A**.

..... [1]

16 **Figure 13** shows three different types of rivet.

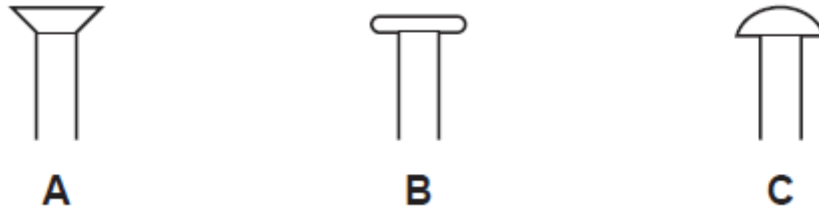


Fig. 13

Name each type of rivet.

rivet **A** [1]

rivet **B** [1]

rivet **C** [1]

17 Shown in **Figure 14** is a safety sign.



Fig.14

State the correct meaning of the sign.

..... [1]

SECTION B [40 Marks]

Answer any **two** questions in this section.

Question B1

1 Modelling a product is one of the techniques used in Design and Technology.

(a) Give **one** reason for making a model.

..... [1]

(b) Give **one** material used for making models.

..... [1]

2 Given in **Figure 1** is a development of geometrical solid.

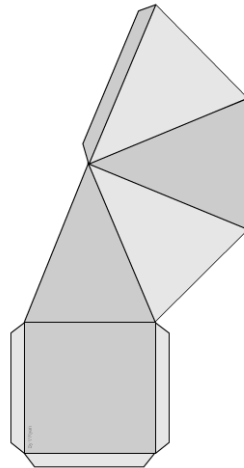


Fig. 1

State the correct name of the geometrical solid.

..... [1]

3 **Figure 2** shows a drawing of a coffee table.

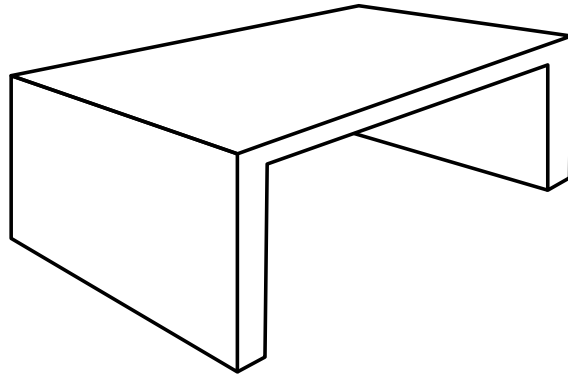


Fig. 2

Name the specific type of projection that has been used to present the coffee table.

..... [1]

4 Shown in **Figure 3** is a model of a camera drawn in first angle projection.

x

Fig. 3

In the space on the right draw the model in isometric projection making **X** to be on the foreground.

[7]

5 **Figure 4 (a)** shows a drawing of a grass cutting tractor.

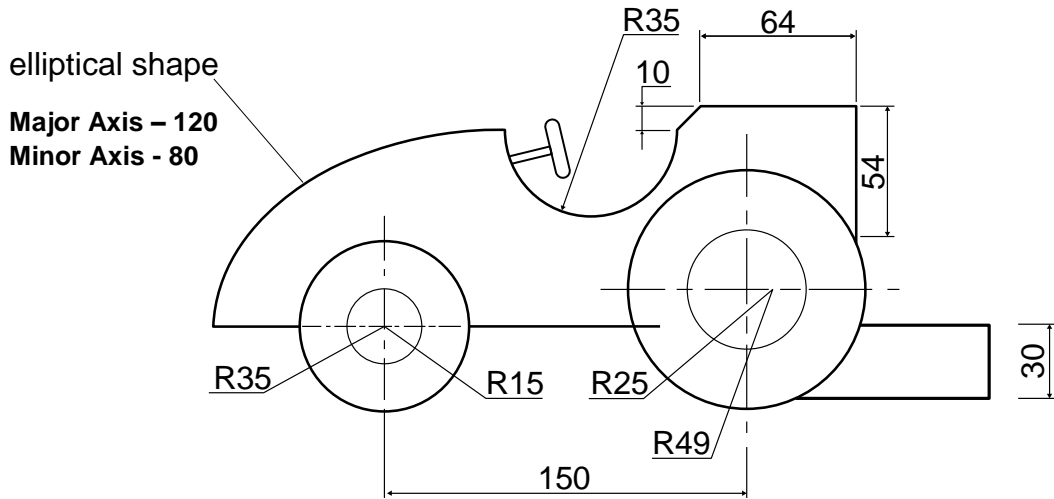


Fig. 4 (a)

Figure 4 (b) is an incomplete drawing of the tractor.

Fig. 4(b)

Using geometrical construction complete the drawing of the grass cutting tractor in Fig. 4 (b). [9]

Question B2

1 **Figure 1** shows a method of filing.

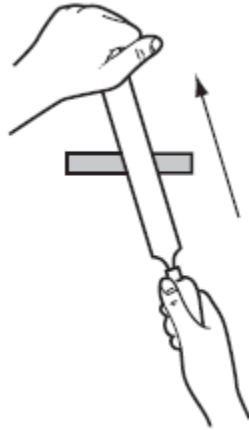


Fig. 1

Name the method of filing.

.....[1]

2 **Figure 2** shows a marking out tool.

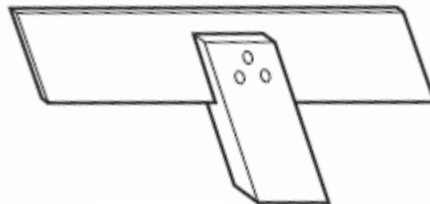


Fig. 2

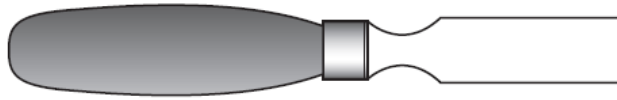
(a) State the correct name of the tool.

..... [1]

(b) State the specific use of the tool.

..... [1]

- 3 Complete the drawing below to show a bevel edge chisel. [2]



- 4 Shown in **Figure 3** is an incomplete sketch of a three-ply wood. [3]

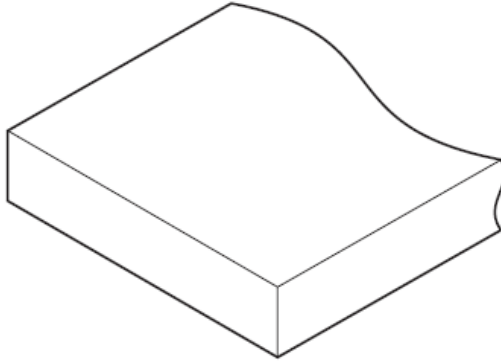


Fig. 3

- (a) Complete the sketch. [3]
- (b) Give **one** advantage of plywood over solid timber. [1]

..... [1]

5 **Figure 4** shows a CD display unit made from 3 mm acrylic.

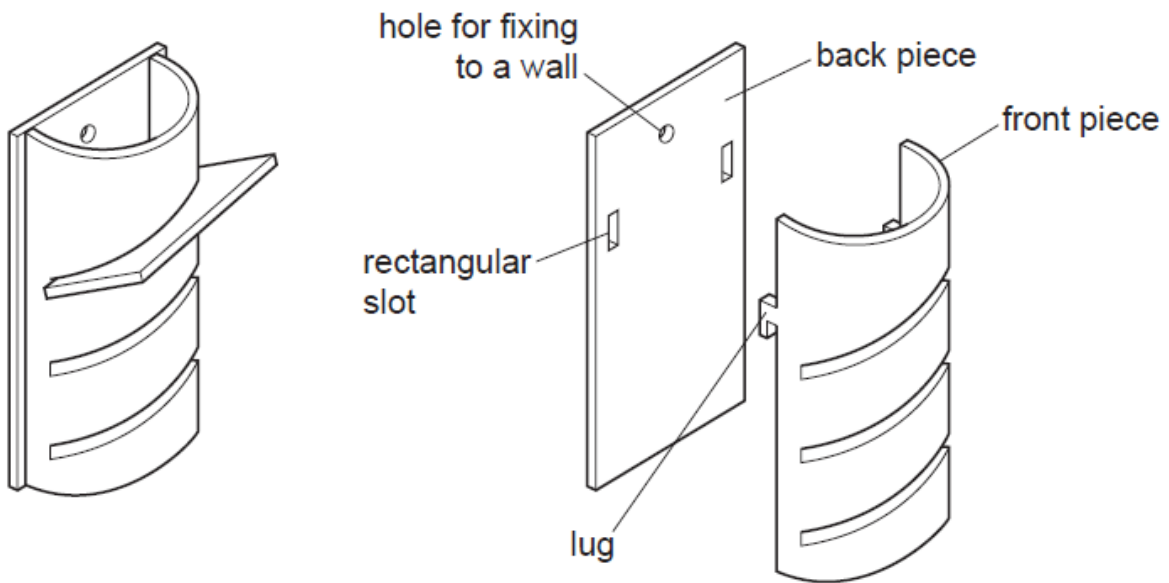
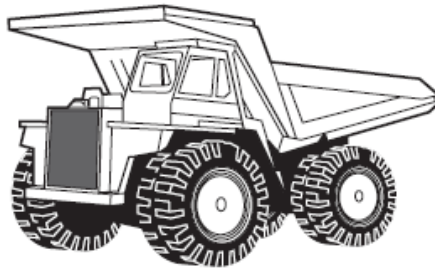


Fig. 4

- (a) Give **one** property of acrylic.
.....[1]
- (b) Name **one** tool that can be used for cutting the back piece from a wider piece.
.....[1]
- (c) When cutting the back piece what could be done to ensure that the plastic does not break during process?
.....[1]
- (d) Name **one** tool that can be used to make the edges of the back piece smooth.
.....[1]
- (e) Classify the method of joining the front and the back pieces of the CD display unit.
..... [1]

6 Shown below is child's toy made from plastic.

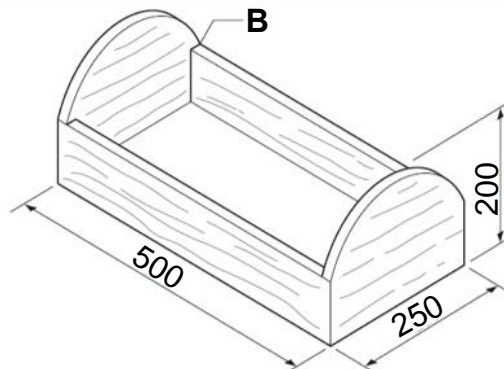


State **two** reasons why plastic is a suitable material for children's toys.

Reason 1 [1]

Reason 2 [1]

7 Shown below is an incomplete wooden box for carrying sandwiches.



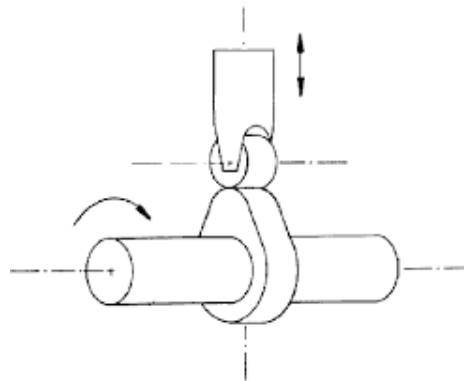
(a) Name **one** suitable hard wood that can be used for making the box.
..... [1]

(b) Name **one** specific joint that can be used for corner **A**.
..... [1]

(c) Sketch an exploded view of the joint named in part (b).
..... [2]

Question B3

1 A mechanism for creating motion is shown below.



- (a) State the correct name of the given mechanism.
..... [1]
- (b) State the type of movement produced by the mechanism?
..... [1]
- (c) Name **one** machine where such mechanism is used.
..... [1]

2 **Figure 1** shows another mechanism.

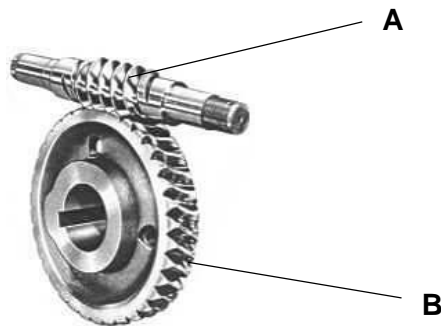


Fig. 1

- (a) Name the parts labelled **A** and **B**.
 A..... [1]
 B [1]
- (b) Give **two** functions of the mechanism.
 1..... [1]
 2..... [1]

3 Shown in **Figure 2** is a block making machine.

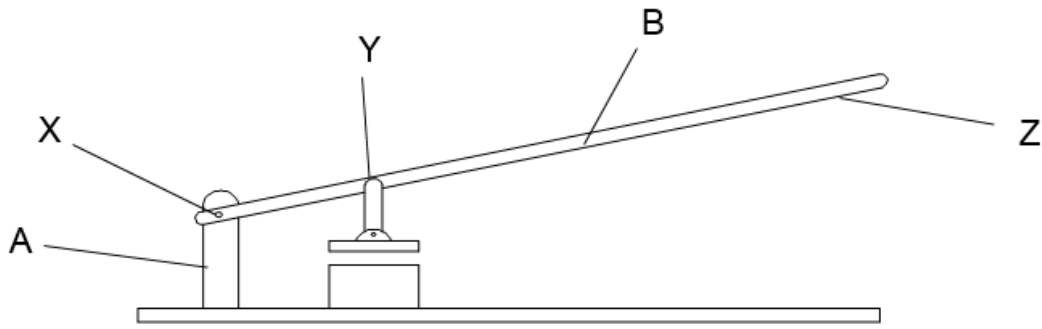


Fig. 2

- (a) Which mechanism has been applied in the design of the block making machine.
.....[1]
- (b) What is the advantage of the mechanism named in part (a)?
.....[1]
- (c) What would happen if **B** was made shorter?
.....[1]
- (d) What force is experienced by part labelled **A** when the machine is in operation?
..... [1]
- (e) Name the parts labelled **X**, **Y** and **Z** in terms effort, fulcrum and the load.
 - X**[1]
 - Y**[1]
 - Z**[1]

4 The sketch in **Figure 3** shows a man using a pillar drill.

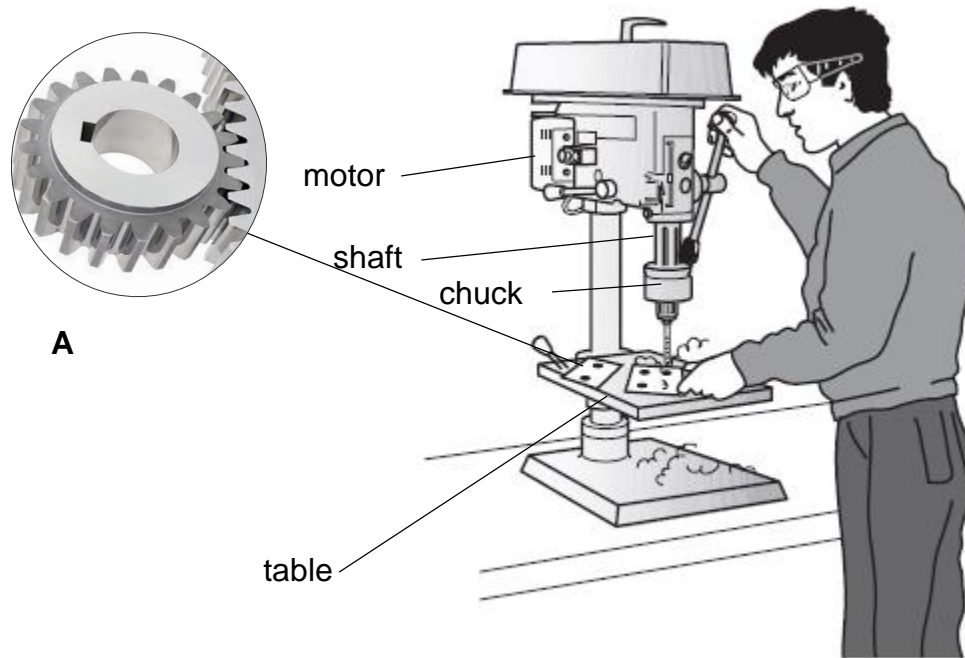


Fig. 3

- (a) Give the **two** motions experienced by the chuck as the pillar drill is being used.
 Motion 1 [1]
 Motion 2 [1]
- (b) Name the type of mechanism that is used to transfer motion from the motor to the shaft.
 [1]
- (c) State the disadvantage of the mechanism named in part (b).
 [1]
- (d) The pillar drill is fitted with mechanism **A**.
 Name the mechanism.
 [1]
- (e) State the function of the mechanism named in part (d) in the pillar drill.
 [1]

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