

NAME: _____ FORM/GROUP _____

EQUIPMENT AND TOOLS WORKBOOK

1

THE FRETSAW

DRILLING MACHINES

THE BENCH DRILL

THE HAND DRILL

THE G CRAMP

SASH CLAMPS

TYPES OF PLANE

THE WOODWORKERS TRY-SQUARE

THE MARKING GAUGE

THE ENGINEERS TRY-SQUARE

THE SLIDING BEVEL

BACK SAWS

THE COPING SAW

THE HACKSAW

THE CENTRE PUNCH AND DOT PUNCH

CHISELS

THE HOT GLUE GUN

THE HAND FILE

THE DISK SANDER

SEQUENCE DRAWING - VACUUM FORMING

THE STRIP HEATER

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RECORD SHEET

Record the completion date of each worksheet.

Use the web links on each of the sheets, for information and guidance.

EQUIPMENT / TOOL	DATE
THE FRETSAW	
DRILLING MACHINES	
THE BENCH DRILL	
THE HAND DRILL	
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TYPES OF PLANE	
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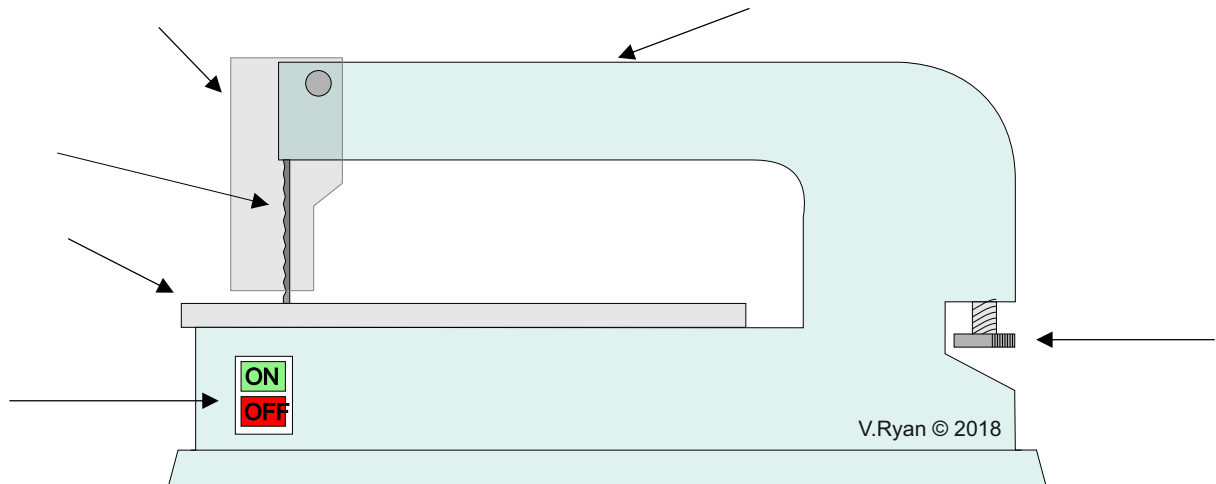
THE FRETSAW

HELPFUL LINK

<https://www.technologystudent.com/equip1/fretsw1.htm>

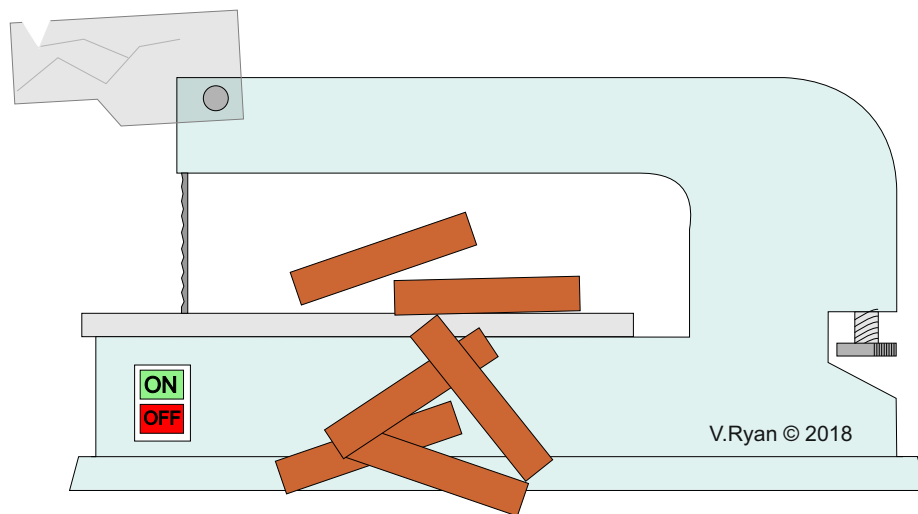
1. The Fretsaw is a general workshop machine. What materials can be cut and shaped using this machine?

2. Label the parts of the fretsaw identified by the arrows on the diagram below.



3. Describe how the machine can be operated safely.

Look carefully at the fretsaw seen below. What is wrong with the way it has been left for the next user/operator?



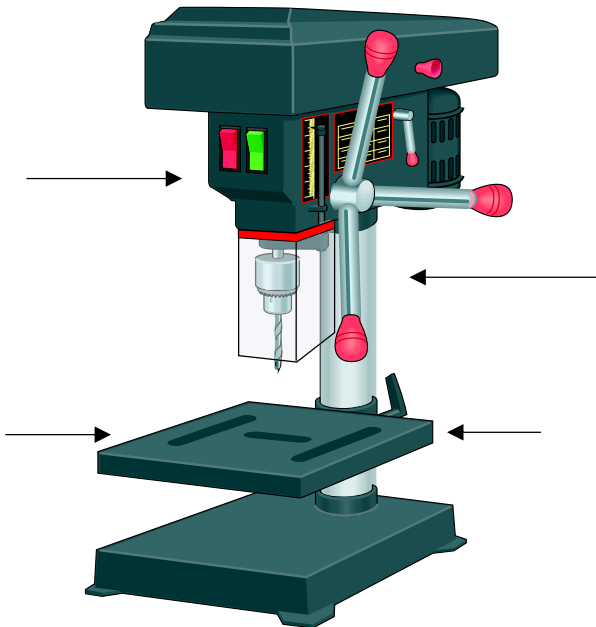
DRILLING MACHINES

HELPFUL LINK

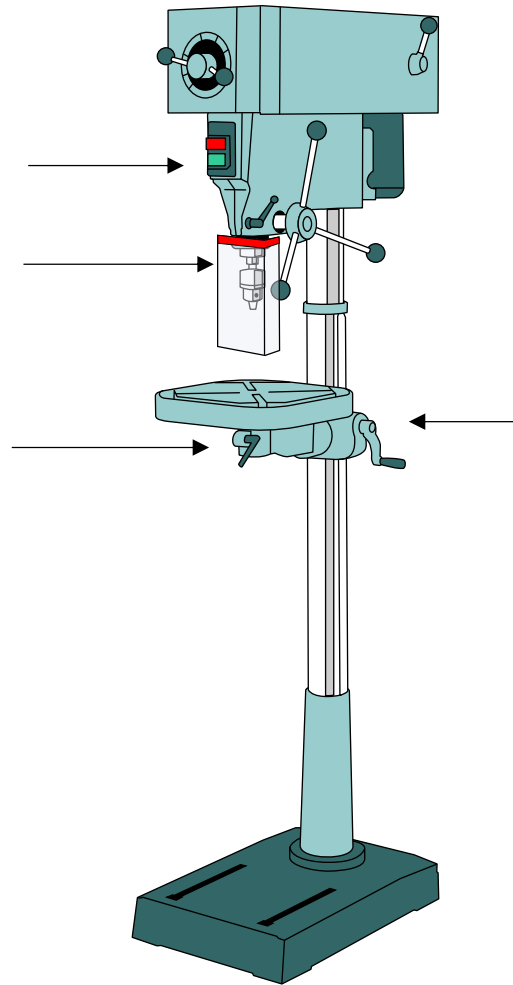
<https://www.technologystudent.com/equip1/macdr11.htm>

1. Two common types of drilling machine are seen below. Name both types.

NAME:



NAME:



2. Label the 'arrowed' parts.

3. The main difference between the two machine drills is their overall size. Why is one much smaller than the other? Include a description of the type of work normally carried out on the smaller drill, as part of your answer.

4. List four safety rules governing the use of drilling machines.

DRILLING MACHINES - CONTINUED

HELPFUL LINK

<https://www.technologystudent.com/equip1/macdr11.htm>

5. Three types of drill bit are seen below. Name each 'bit' and write a general description of the type of drilling each is capable of producing, when used in conjunction with a drilling machine.

**DRILL BIT NAME:**

TYPICAL USE:

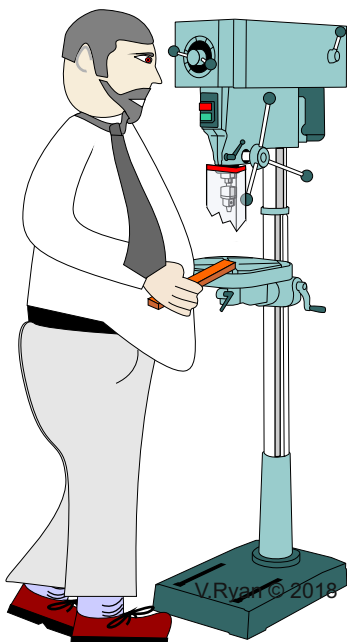
**DRILL BIT NAME:**

TYPICAL USE:

**DRILL BIT NAME:**

TYPICAL USE:

6. The machine drill shown opposite is being used in a very dangerous manner. Identify and describe all the dangers.

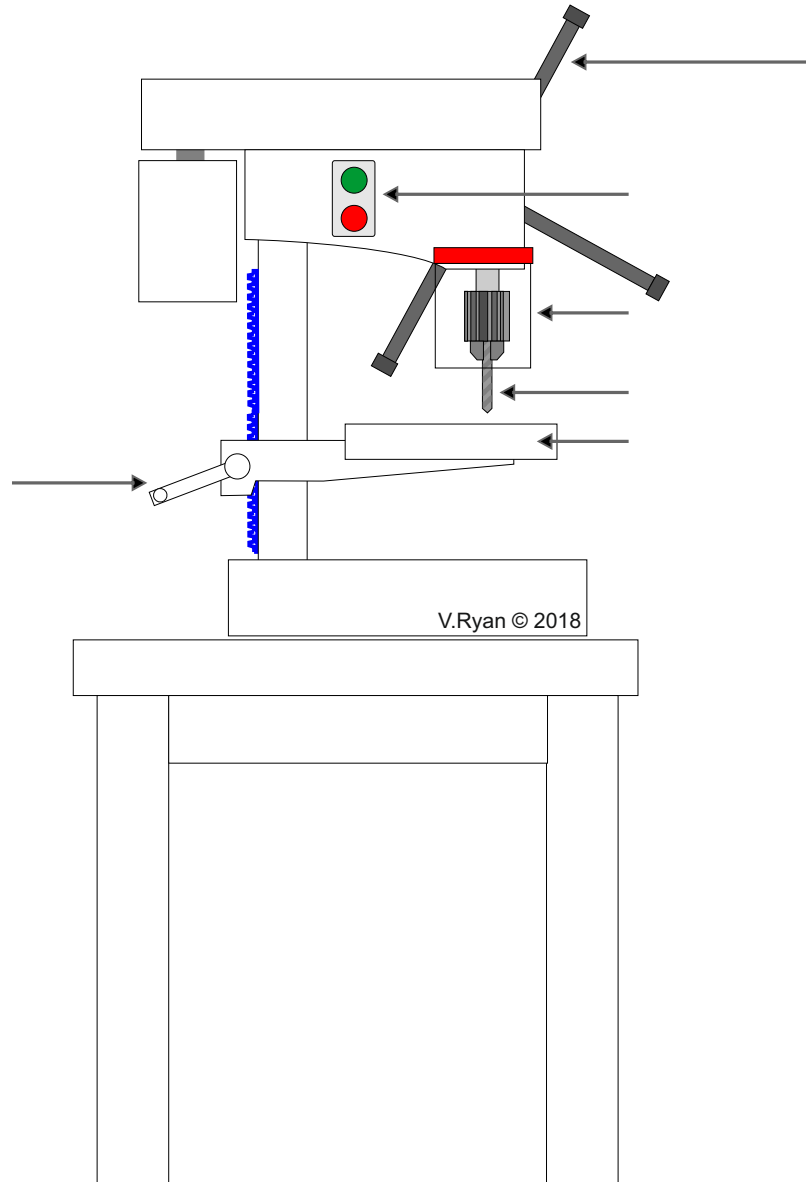


THE BENCH DRILL

HELPFUL LINK

https://www.technologystudent.com/equip_flesh/hdrill4.html

1. Complete the diagram of the bench drill, seen opposite. Label the important parts.
Add appropriate colour and shade.



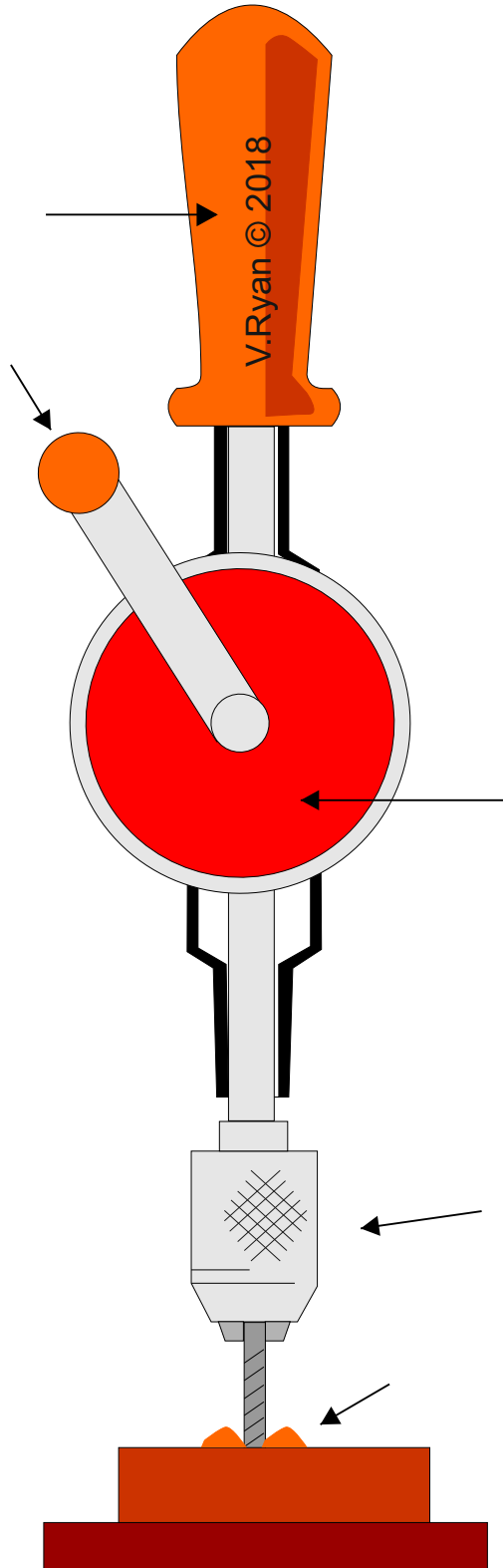
2. Add safety information in the space below. You may wish to explain the use of the guard or how work must be safely clamped before being drilled.

SAFETY INFORMATION:

THE HAND DRILL

HELPFUL LINKS: <https://www.technologystudent.com/equip1/hdrill1.htm>
<https://www.technologystudent.com/equip1/drilly.htm>

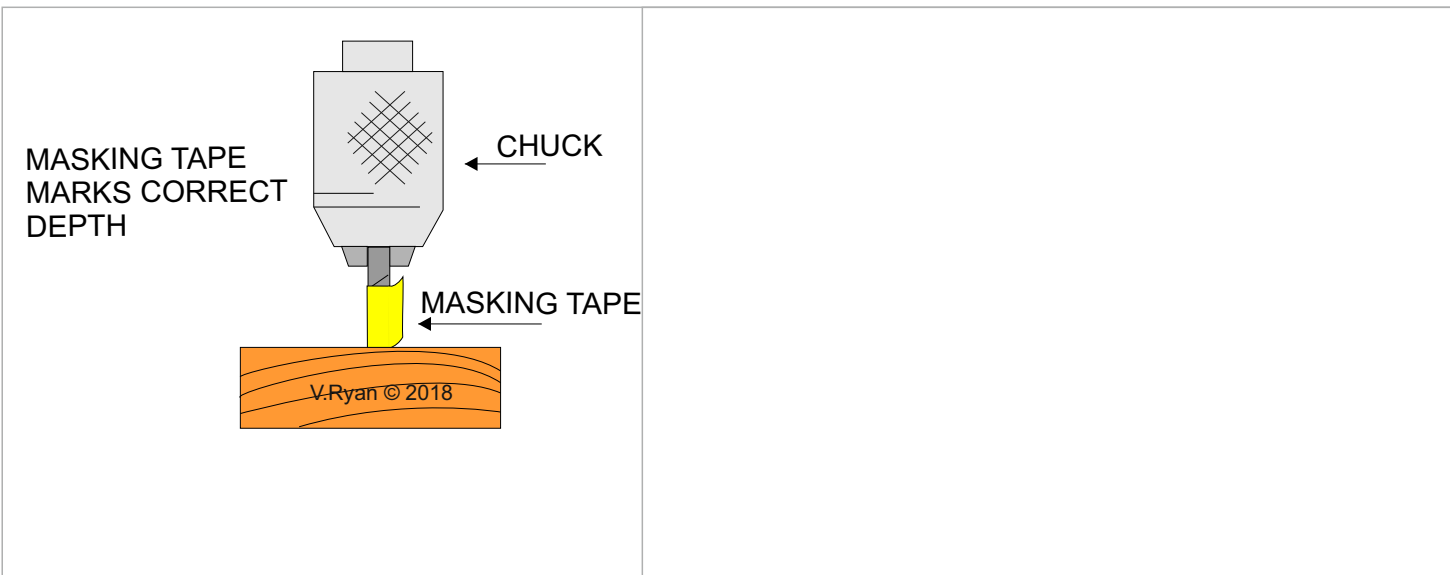
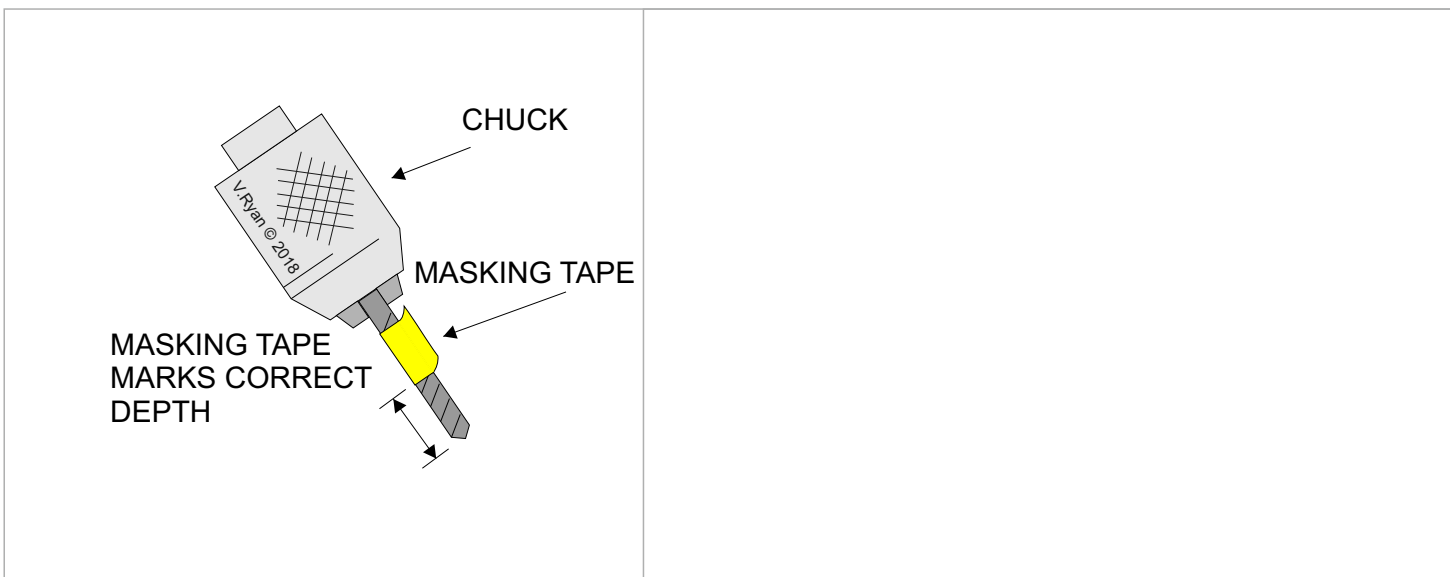
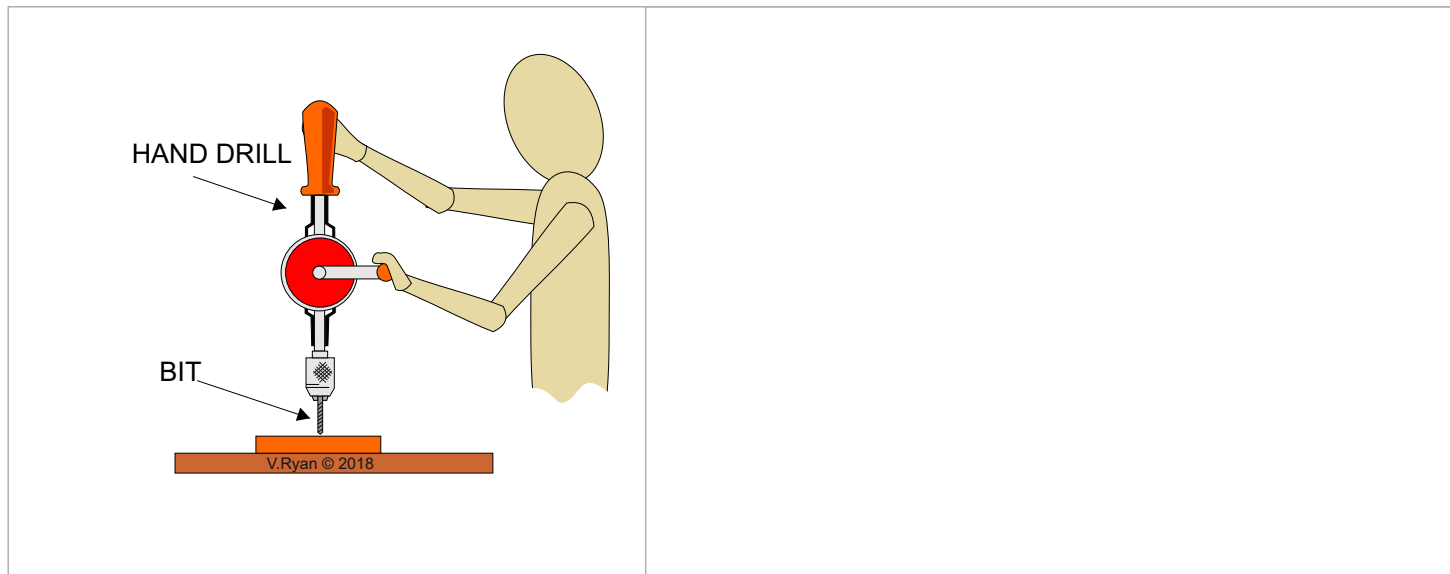
1. Complete this worksheet by adding labels to the diagram shown below.



THE HAND DRILL

HELPFUL LINKS: <https://www.technologystudent.com/equip1/hdrill1.htm>
<https://www.technologystudent.com/equip1/drilly.htm>

2. The sequence of drawings, show the use of a hand drill. Add notes to each stage.



THE G CRAMP

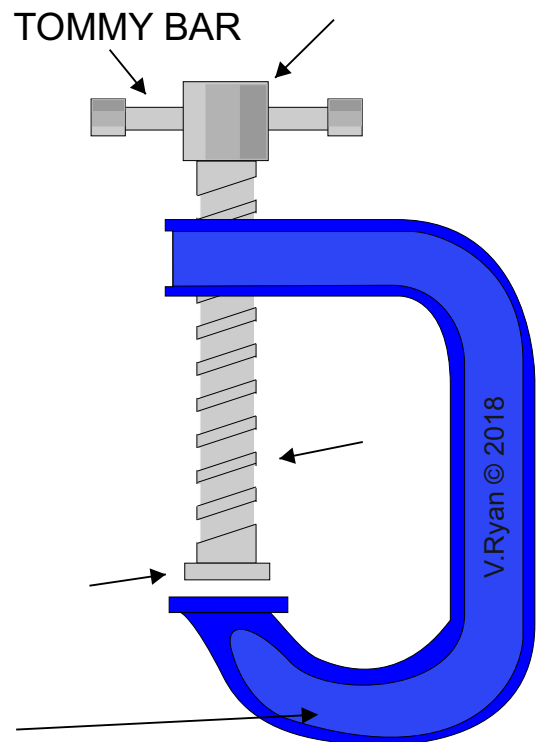
HELPFUL LINK <https://www.technologystudent.com/equip1/cramp1.htm>

1. In order to tighten a G Cramp, a tommy bar is turned in a clockwise direction.
Some G cramps have a wing nut in place of the tommy bar.

Draw a typical wing nut in the box (below).



2. Add the missing labels to the diagram of the G cramp.



3. List two other types of clamps and briefly describe how they are used.

CLAMP NAME:

HOW USED:

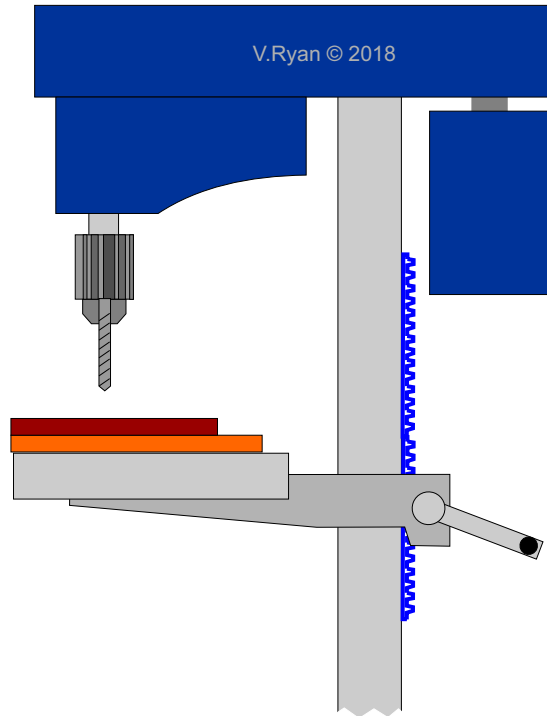
CLAMP NAME:

HOW USED:

THE G CRAMP

HELPFUL LINK <https://www.technologystudent.com/equip1/cramp1.htm>

4. A flat piece of MDF has been placed on the table of the bench drill shown below. The MDF needs securing to the table for safety reasons. Draw the G cramp in the correct position.

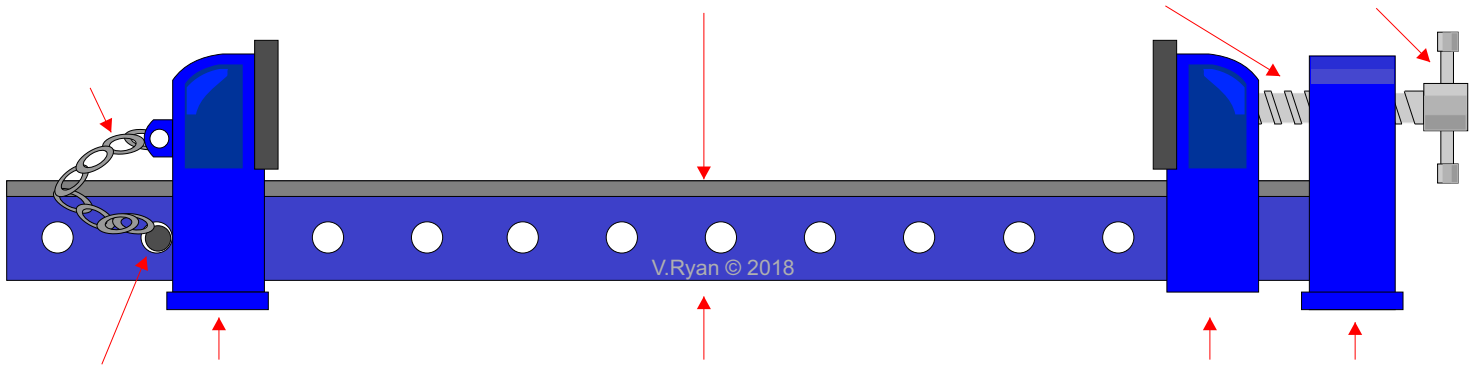


5. What are the dangers of holding the work in the hand whilst drilling?

SASH CLAMPS

HELPFUL LINK <https://www.technologystudent.com/equip1/sash1.htm>

1. Label the parts of the sash clamp shown below.



2. The box (below) is to be held together with sash clamps. On the diagram, draw a sash clamp in the correct position, across the box. Add explanatory notes.



NOTES:

3. Scrap wood is normally placed either side of the item to be clamped. Why is this the case?
4. Sash clamps are available in a range of lengths. What is the range?
5. The parts of a sash clamp are manufactured from suitable materials. What are the materials?
6. Why is the sash clamp tightened with a tommy bar?

SASH CLAMPS

HELPFUL LINK <https://www.technologystudent.com/equip1/sash1.htm>

7. The box shown below is held together with sash clamps, whilst the glue dries. It is vital that each corner of the box is an accurate 90 degree angle. Two basic tools are used to check that the angles are correct.

Name each tool.

Describe the use of each tool

Draw each tool on the diagram below, showing each one in use.

TOOL 1:

DESCRIPTION OF USE:

TOOL 2:

DESCRIPTION OF USE:



TYPES OF PLANE

HELPFUL LINK <https://www.technologystudent.com/equip1/planes1.htm>

The planes seen below are regularly used in a workshop. Add the name of each plane and include notes explaining the purpose of each one.

NAME:

PURPOSE:



NAME:

PURPOSE:



NAME:

PURPOSE:



NAME:

PURPOSE:



TYPES OF PLANE - CONTINUED

HELPFUL LINK <https://www.technologystudent.com/equip1/planes1.htm>

The planes seen below are regularly used in a workshop. Add the name of each plane and include notes explaining the purpose of each one.

NAME:



PURPOSE:

NAME:



PURPOSE:

NAME:



PURPOSE:

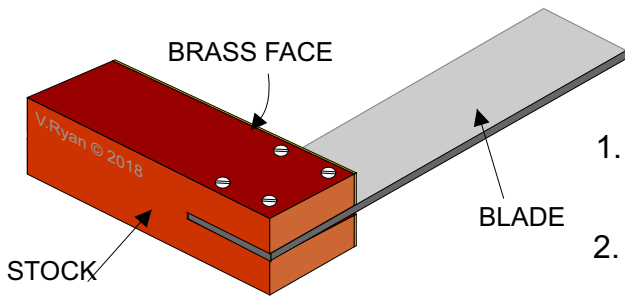
NAME:



PURPOSE:

THE WOODWORKERS TRY-SQUARE

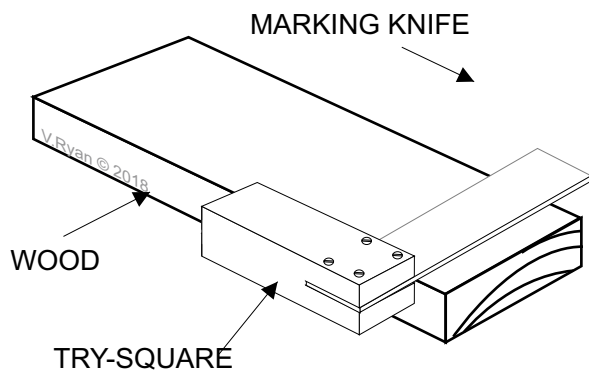
HELPFUL LINK <https://www.technologystudent.com/equip1/try1.htm>



A typical woodworkers try square is shown opposite.

1. The blade is manufactured from:
2. The blade has been hardened and tempered because:

3. Why does the stock have a brass face?

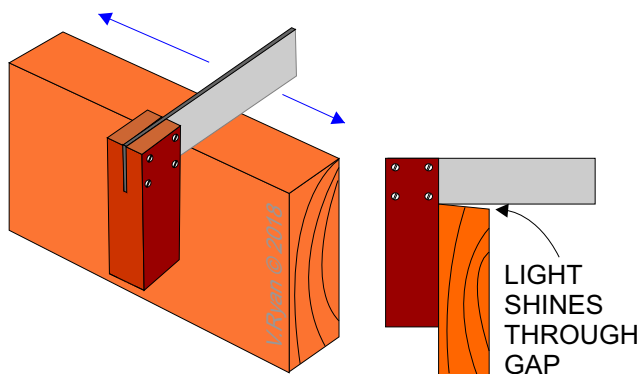


4. A try square and marking knife are used to mark out lengths of wood to the correct distance. Draw the marking knife in the correct position on the diagram shown opposite.

5. Why is a marking knife used rather than a pencil. Two possible answers are written below. Put a tick in the box opposite the correct answer.

The knife cuts/breaks precisely, the wood fibres. This means that when a saw is used to cut away the waste wood, a frayed or uneven edge is avoided.

A pencil requires sharpening and this slows down the marking out procedure.



6. The diagram opposite shows a woodworkers try square being used to carry out an important quality check.

Explain / describe the quality check.

7. Describe another use of a woodworkers try square. Include a sketch.

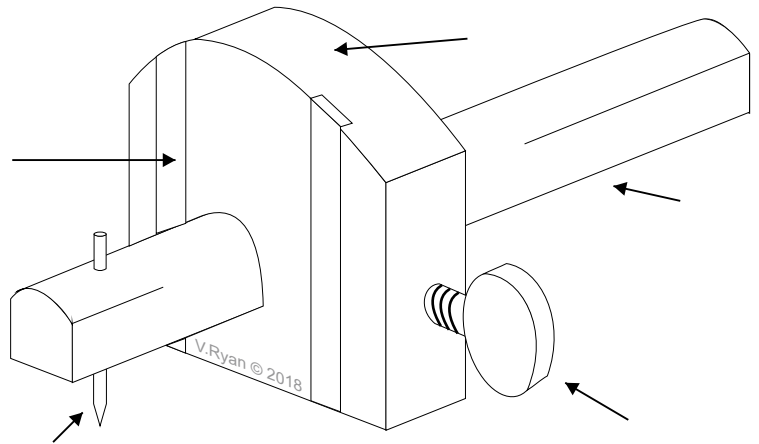
THE MARKING GAUGE

HELPFUL LINK <https://www.technologystudent.com/equip1/mgauge1.htm>

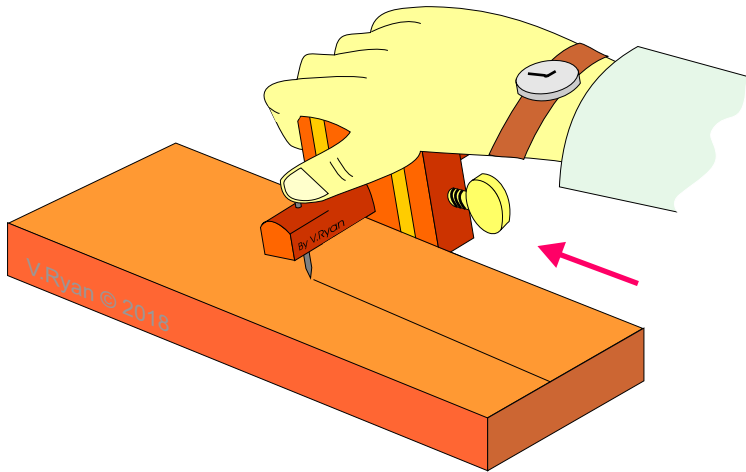
1. A typical marking gauge is seen opposite. Complete the diagram by adding the missing labels.

2. Add appropriate colour and shade to the diagram.

3. What is the function of the marking gauge?



4. What materials are used for the manufacture of the various parts of the marking gauge?



5. Look carefully at the diagram of the marking gauge being used.

Describe what is happening in the diagram?

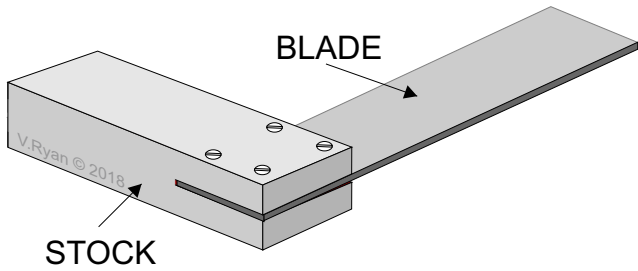
6. Below is a description of how the distance between the spur and the stock is set:

“The distance between the stock and the spur can be adjusted by loosening the thumbscrew which allows the stock to slide along the stem. The thumbscrew can then be tightened, once the correct distance has been reached. A ruler is used to set the distance”.

In the space opposite, draw a diagram that represents the description written above.

THE ENGINEERS TRY-SQUARE

HELPFUL LINK <https://www.technologystudent.com/equip1/try2.htm>

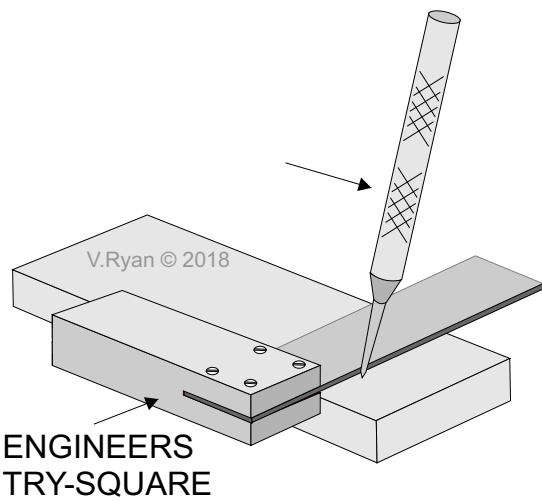


1. A typical engineers try square is shown opposite. How does it differ from a typical woodworkers try square?

2. What material is used to manufacture an engineers try square?

3. The blade is specially treated. What is this treatment called?

3. Why is the blade treated in this special way?

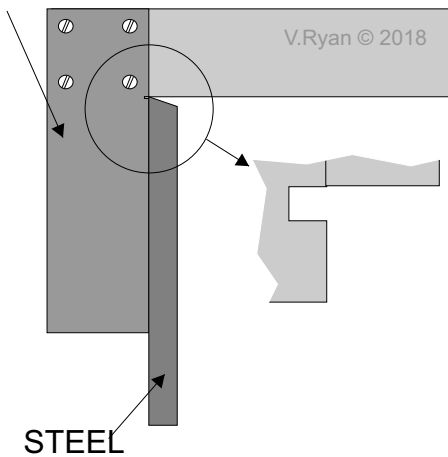


4. A try square and another engineers tool are used to mark out metals.

Label this second tool (shown on the diagram).

Describe the marking out procedure.

TRY-SQUARE



5. An engineers try square has been designed to include a small slot, as indicated on the diagram shown opposite. Why is this slot essential?

6. Describe another typical use of an engineers try square. Include a sketch.

SKETCH

NOTES

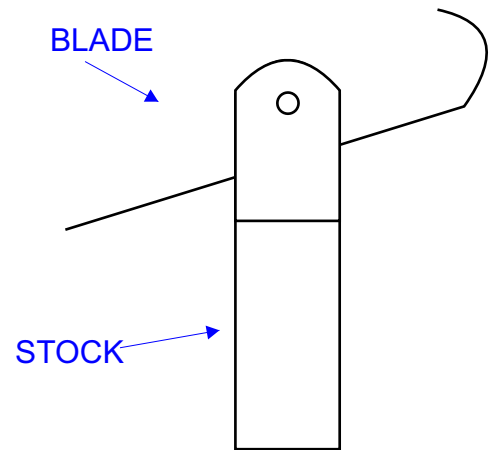
THE SLIDING BEVEL

HELPFUL LINK <https://www.technologystudent.com/equip1/bevel1.htm>

1. The diagram shows an incomplete sliding bevel. Complete the diagram by:

Adding the missing parts.

Adding appropriate colour and shade. (consider the materials used to manufacture this tool).



2. The paragraph below describes the sliding bevel. Some of the words are missing. Fill in the missing words (they are displayed below the paragraph).

The _____ is composed of two parts, the _____ and the _____. The stock is usually made from _____ which is a high quality material. The blade is made from _____ steel. The blade can be adjusted to a variety of _____ and _____ in position. This is useful when a line has to be marked at an _____ on wood.

hardened and tempered

stock

locked

rosewood

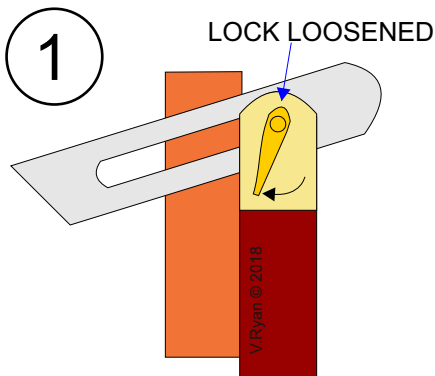
sliding bevel

angles

blade

angle

3. Complete the two stages of using a sliding bevel, by adding text / notes and a diagram.



ADD YOUR TEXT HERE:

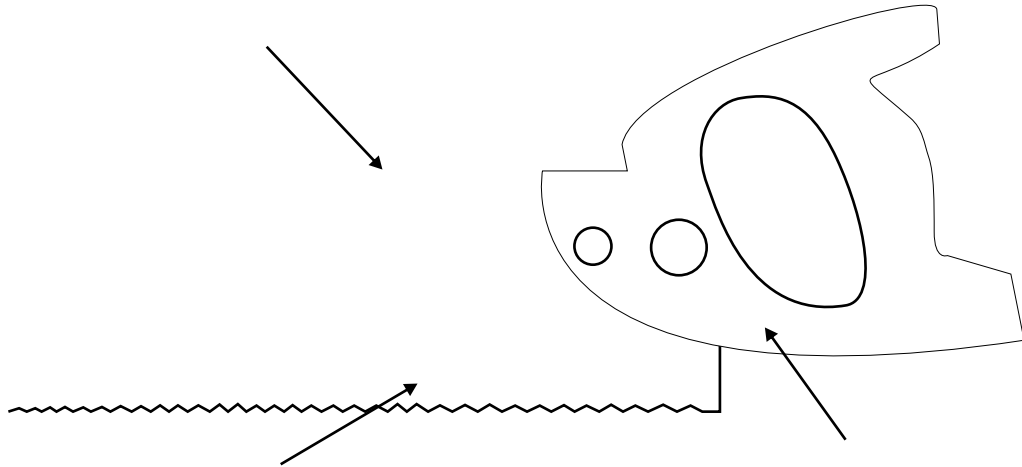
2 ADD YOUR DIAGRAM HERE

THE LOCK ON THE SLIDING BEVEL IS TIGHTENED SO THAT THE ANGLE OF THE BLADE CANNOT BE ALTERED ACCIDENTALLY. A MARKING KNIFE IS USED TO MARK A LINE AT THE CORRECT ANGLE.

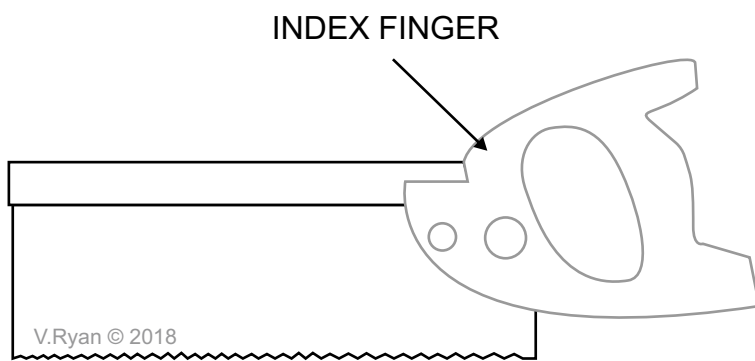
BACK SAWS - TENON SAWS AND DOVETAIL SAWS

HELPFUL LINK <https://www.technologystudent.com/equip1/bksaw1.htm>

1. Complete the diagram of the tenon saw shown below. Add the three missing labels and appropriate add colour and shade.



2. All back saws, such as a typical tenon saw or dovetail saw have a brass back. Why is this the case?

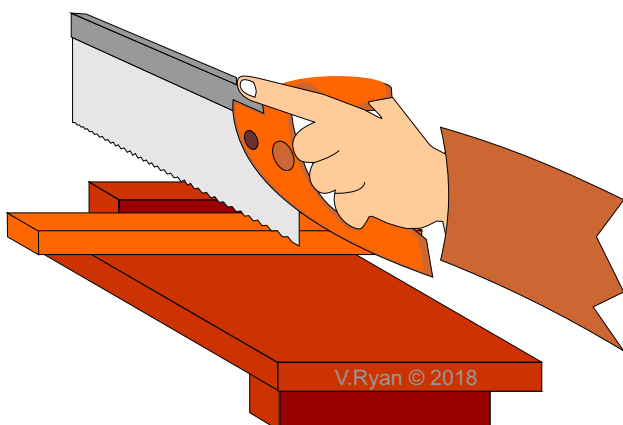


3. A typical tenon saw is shown opposite. Complete the drawing by adding a hand. Your drawing should clearly show how a back saw should be held, and in particular, the position of the index finger.

4. Tenon saws and dovetail saws are used for slightly different cutting/sawing. Describe the type of cutting for each saw.

TENON SAW:

DOVETAIL SAW:

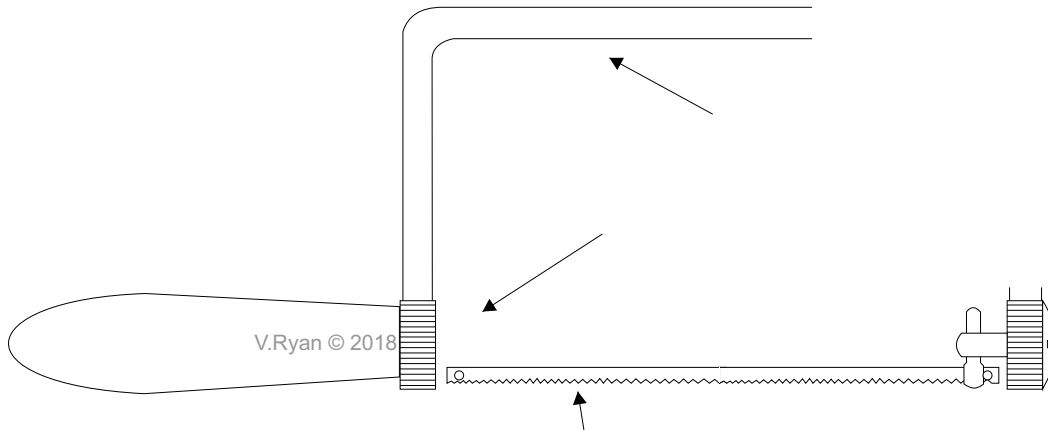


5. The diagram opposite shows a piece of wood, a bench hook and tenon saw. Describe the sawing technique.

THE COPING SAW

HELPFUL LINK <https://www.technologystudent.com/equip1/coping1.htm>

1. Complete the diagram of the coping saw shown below. Add the three missing labels and appropriate add colour and shade.



2. The coping saw blade must face in the correct position. Write an explanation below.

3. Explain how a new blade is secured to the frame of a coping saw. Use notes and a sketch to aid your explanation.

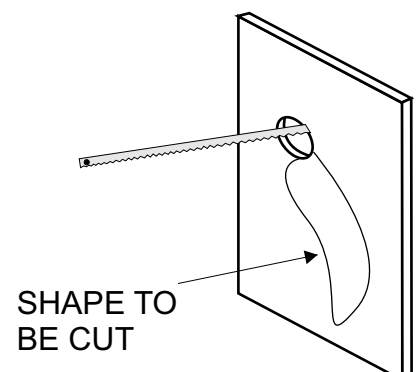
SKETCH

NOTES

4. Coping saws are ideal for cutting internal shapes/curves. The incomplete diagram below, shows the procedure for this type of cutting. Complete the diagram and add explanatory notes.

NOTES

DIAGRAM



THE HACKSAW

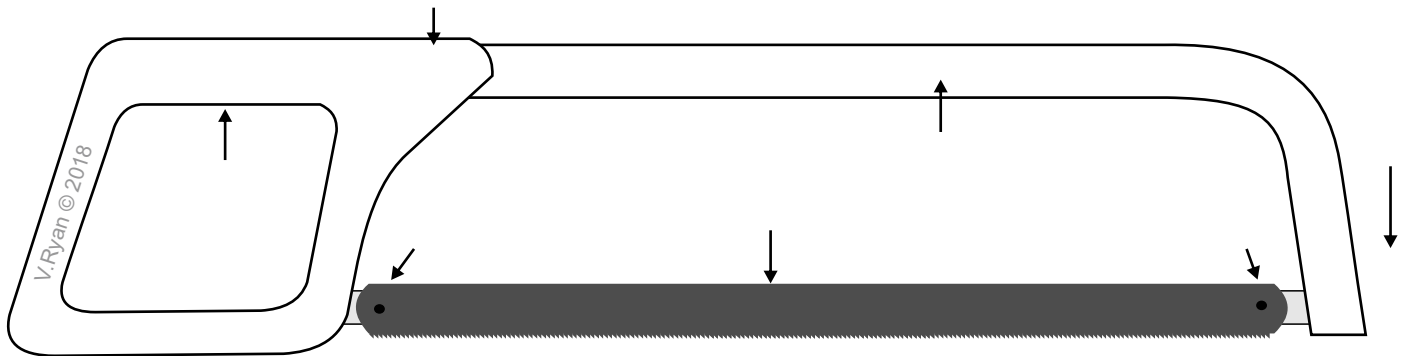
HELPFUL LINK https://www.technologystudent.com/equip_fish/hacksw1.html

1. What materials are cut to size / shape using a hacksaw?
2. Why are hacksaws adjustable (sometimes hacksaws are referred to as adjustable hacksaws)?
3. What is meant by the abbreviation TPI ? Explain your answer.
4. Complete the table below. This refers to teeth per inch (25mm) and the type of material each hacksaw blade is most suited to cut.

TEETH PER INCH (25mm)	SUITABLE FOR CUTTING
14 TPI	
18 TPI	
24 TPI	
32 TPI	

5. Complete the diagram of the adjustable hacksaw by:

Adding the missing parts.
Adding the names of the identified parts.



6. Explain how the blade of a hacksaw is changed. You should also explain the direction in which the teeth of the blade should point if the blade is correctly set up.

THE CENTRE PUNCH AND DOT PUNCH

HELPFUL LINK <https://www.technologystudent.com/equip1/punch1.htm>

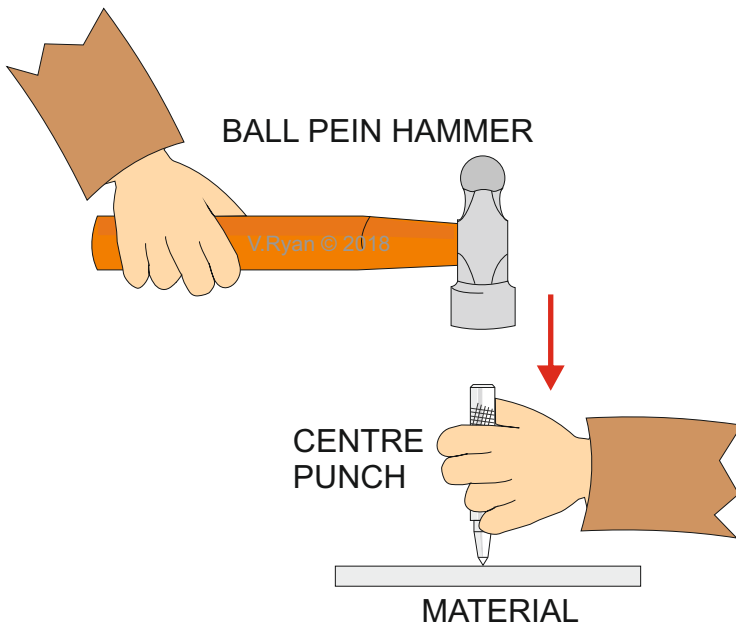
1. In the space below, draw diagrams of a centre punch and dot punch. Underneath each sketch, add notes describing each of the tools.

CENTRE PUNCH

DOT PUNCH

NOTES

NOTES



2. The diagram opposite, shows one use of a centre punch. Add a description, alongside the diagram.

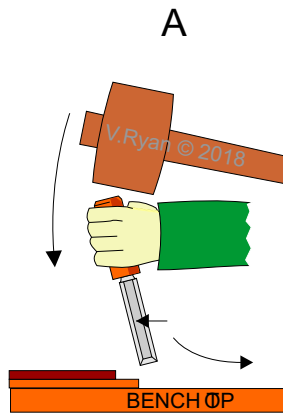
3. If a centre punch is not used to mark the position of a hole before drilling, what could be an undesirable outcome?

CHISELS

HELPFUL LINK <https://www.technologystudent.com/equip1/chisels.htm>

1. Diagrams 'A' and 'B' show two ways of using a chisel incorrectly. Describe what is wrong.

DIAGRAM A:



B

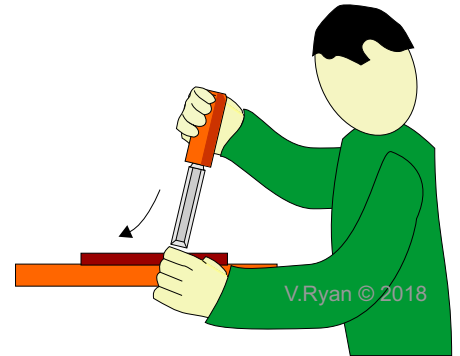
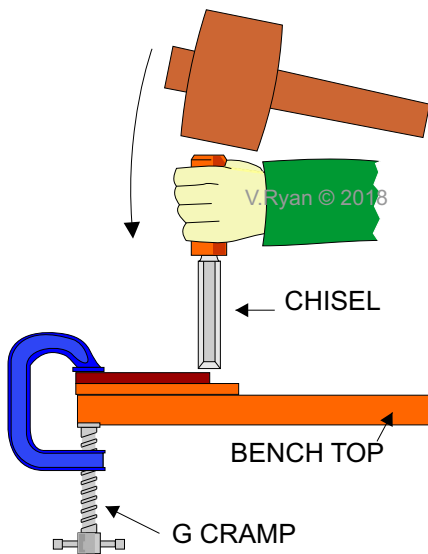


DIAGRAM B:

2. A blunt chisel can be more dangerous than sharp chisel. Why is this the case?



3. The diagram opposite shows the correct use of a chisel. Describe the technique and explain the safety precautions shown in the diagram.

4. Three cross sections of three common chisels are shown below. Write the name of each chisel, underneath the correct section.

A



B



C



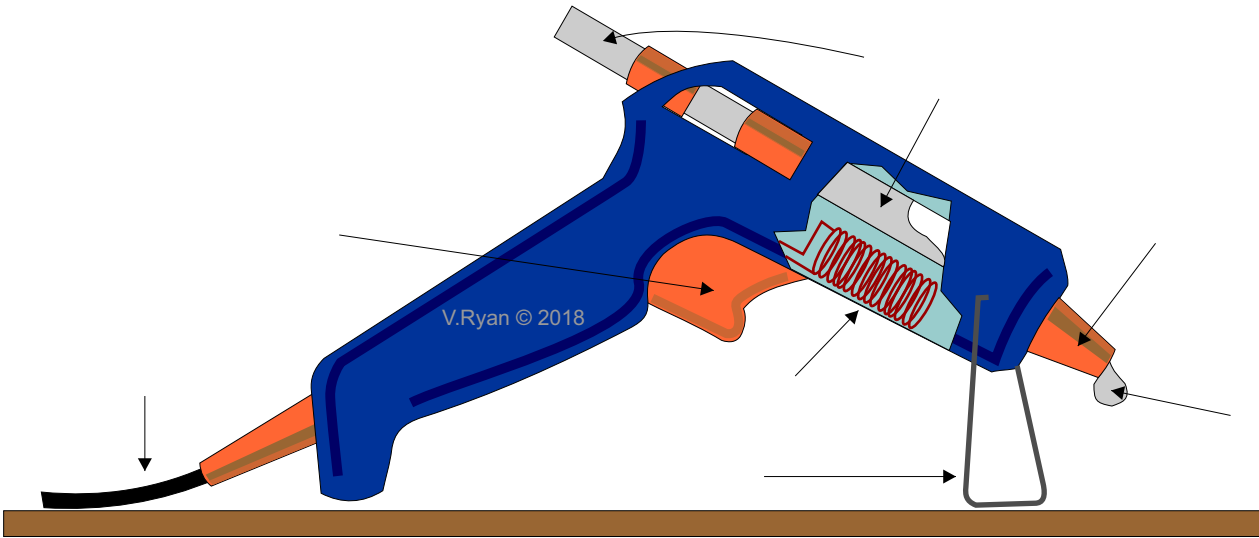
5. The handles of most chisels are manufactured from:

6. Why should both hands be kept behind the cutting edge when using a chisel?

THE HOT GLUE GUN

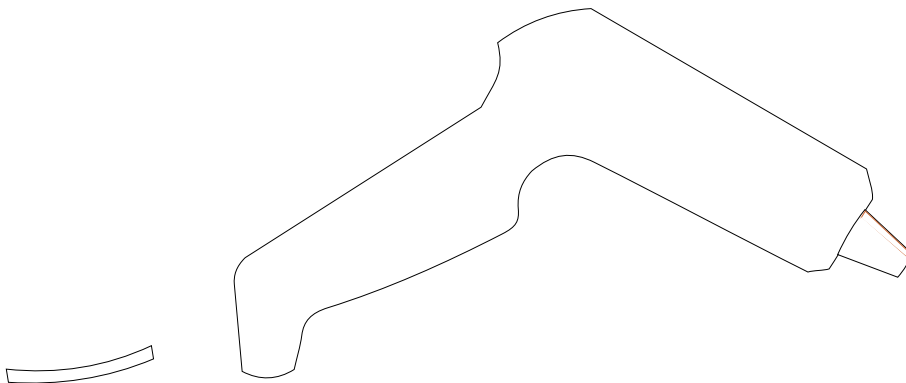
HELPFUL LINK <https://www.technologystudent.com/equip1/htglu1.htm>

1. A hot glue gun is shown below. Complete the diagram by adding the missing labels.



2. Explain how the glue gun shown above works.

3. Complete the diagram of the hot glue gun shown below. Add suitable colour and shade.



4. What safety factors should be kept in mind when using a hot glue gun?

5. What type of work is a hot glue gun best suited to 'glue' together?

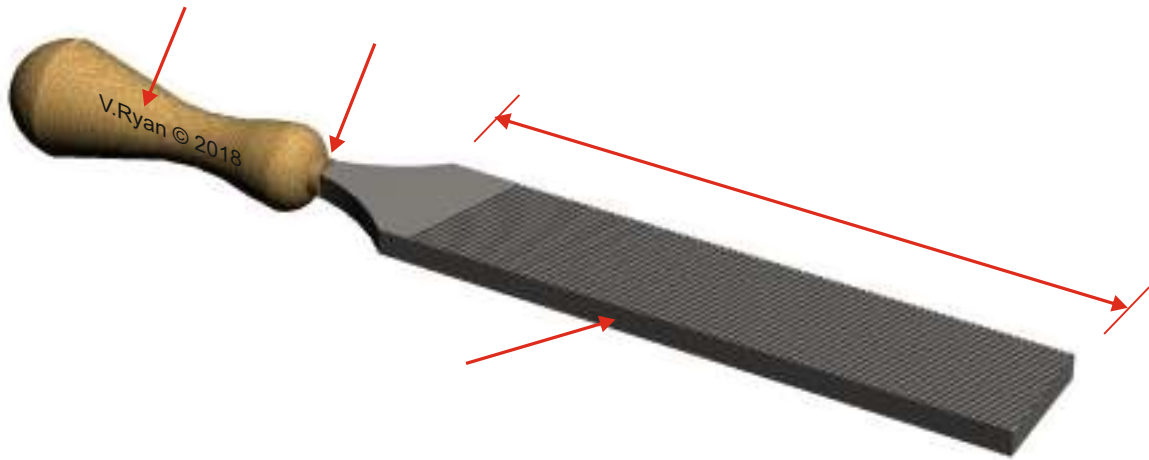
THE HAND FILE

HELPFUL LINKS

<https://www.technologystudent.com/equip1/hfile1.htm>

<https://www.technologystudent.com/equip1/hfile2.htm>

1. A typical hand file is shown below. Add the labels, as indicated by the arrows.



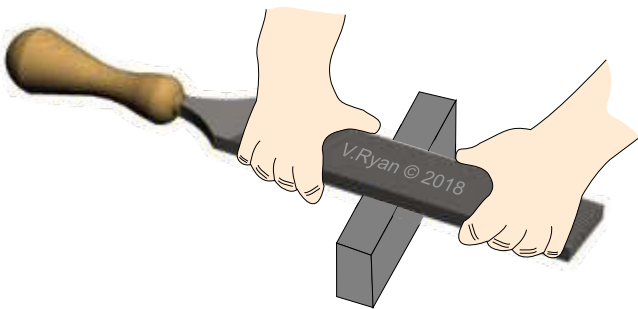
2. Why is high carbon steel used for the manufacture of the main part of the file?

3. With the aid of a diagram, explain the technique called 'through filing'.

DRAWING

NOTES

4. The drawing below shows another filing technique. Name and describe the technique.



TECHNIQUE NAME:

DESCRIPTION:

5. With the aid of a sketch / diagram, explain the importance of a 'safe edge'.

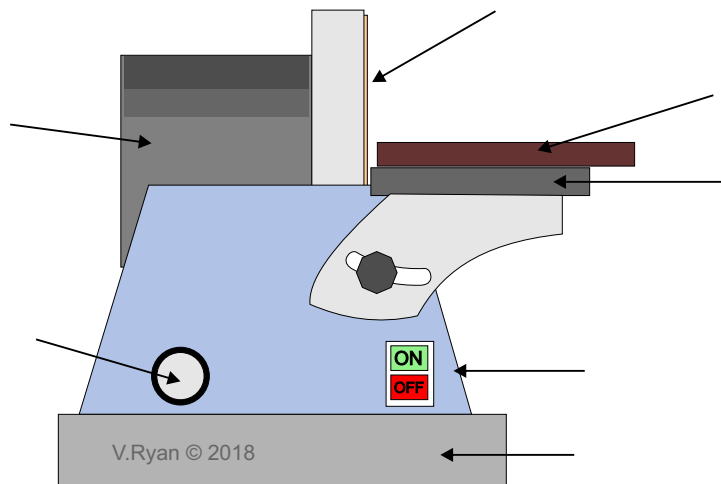
DRAWING

NOTES

THE DISK SANDER

HELPFUL LINK https://www.technologystudent.com/equip_flash/disk2.html

1. Complete the labels on the diagram of the disk sander, shown opposite.



2. List safety precautions that need to be applied when using the disk sander?

3. Draw a simple version of a disk Sander and identify all its dangers.

4. Why is it important to wear a dust mask and to use extraction, when using a sanding disk?

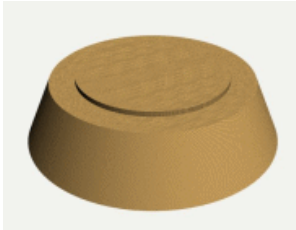
SEQUENCE DRAWING - VACUUM FORMING

HELPFUL LINK <https://www.technologystudent.com/equip1/vacform1.htm>

Complete the sequence drawing below by adding the missing words and parts of each diagram.

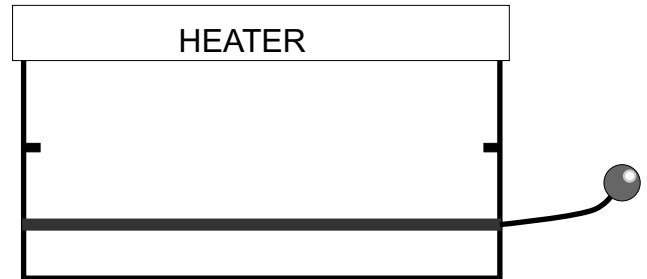
Add colour / shade.

1.



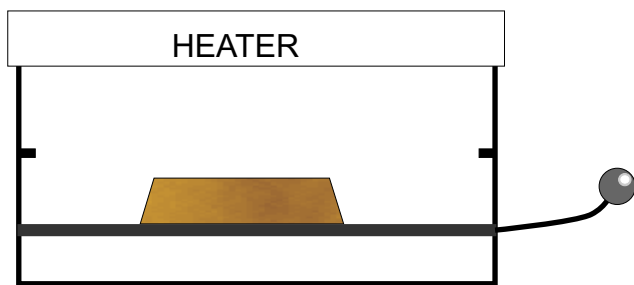
A SUITABLE _____
IS CAREFULLY MANUFACTURED

2.



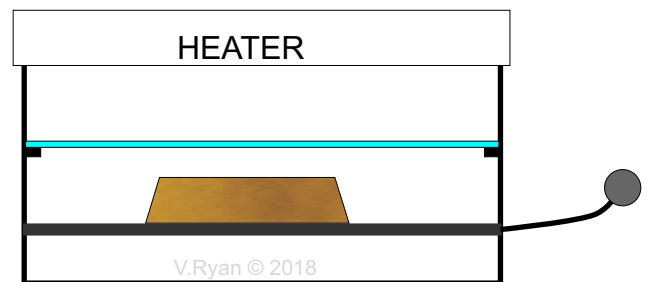
THE MOULD IS PLACED IN
THE _____ FORMER

3.



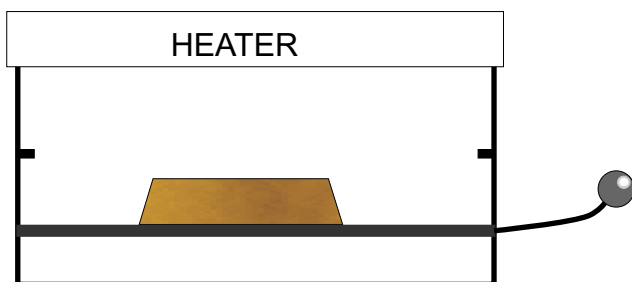
_____ SHEET IS PLACED ABOVE
THE MOULD AND _____
SECURELY.

4.



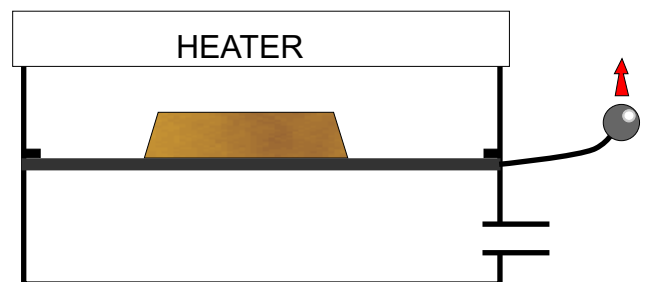
THE ELECTRIC _____ IS TURNED ON
TO WARM THE PLASTIC SHEET.

5.



THE PLASTIC BECOMES _____
WHEN HEATED

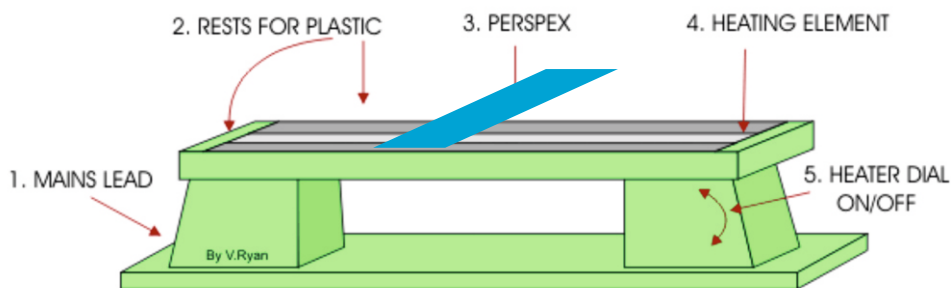
6.



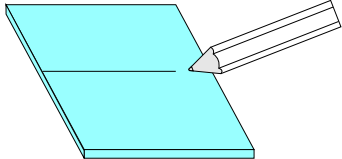
THE AIR IS _____ OUT OF
THE AREA BELOW THE PLASTIC
AND MOULD.

THE STRIP HEATER

HELPFUL LINK <https://www.technologystudent.com/equip1/stques1.htm>
<https://www.technologystudent.com/joints/desk17.htm>



Draw a series of small diagrams, representing the stages of vacuum forming, Add an explanation of each stage on the right hand side. The first stage has already been included

	<p><i>STAGE ONE: The position of the fold is marked with a china-graph pencil. With this type of pencil the line can be removed easily later.</i></p>