18.0 WOODWORK (444)

In 2010, Woodwork was tested using a **theory paper (444/1)** and **project paper 444/2**. The project was set by the Council but administered and scored by the subject teachers.

18.1 CANDIDATES GENERAL PERFORMANCE

Candidates' Overall Performance in Woodwork for the Years, 2004, 2005, 2008, 2009 and 2010 is as shown in the table below.

Year	Paper	Candidature	Maximum Score	Mean Score	Standard Deviation
	1		60	24.50	8.69
	2		40	30.67	5.90
2004	**Overall**	**1,156**	**100**	**54.11**	**14.00**
	1		60	19.35	7.72
	2		40	32.70	4.65
2005	**Overall**	**1,052**	**100**	**51.70**	**10.00**
	1		60	27.84	9.23
	2		40	18.61	4.93
2008	**Overall**	**98**	**100**	**46.45**	**12.89**
	1		60	28.27	10.30
	2		40	18.84	6.07
2009	**Overall**	**424**	**100**	**47.12**	**15.49**
	1		60	30.18	8.31
	2		40	20.18	4.55
2010	**Overall**	**375**	**100**	**50.01**	**12.27**

From the table above, it is to be observed that:

18.1.1 The candidates for the subject decreased from 424 in **2009** to **375** in **2010**.
18.1.2 Performance in theory paper improved from a mean of **28.27** in **2009** to a mean mark of **30.18** in **2010**.
18.1.3 The mean for the project paper went up by **1.34.**
18.1.4 Overall performance in the subject improved from a mean of **47.12** in **2009**to **50.01.** However the standard deviation dropped from **15.49**in **2009** to **12.27** in **2010.**

Questions which were poorly performed are discussed below.

Question 10

Figure 4 shows a pictorial view of a wooden coat hook.

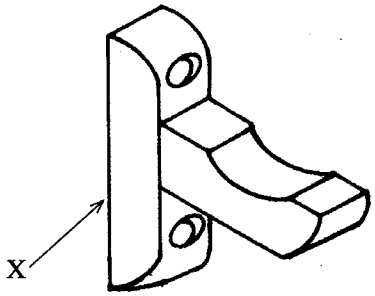


Figure 4

Sketch the three views of the wooden coat hook in third angle projection. View front elevation from the direction of arrow X.

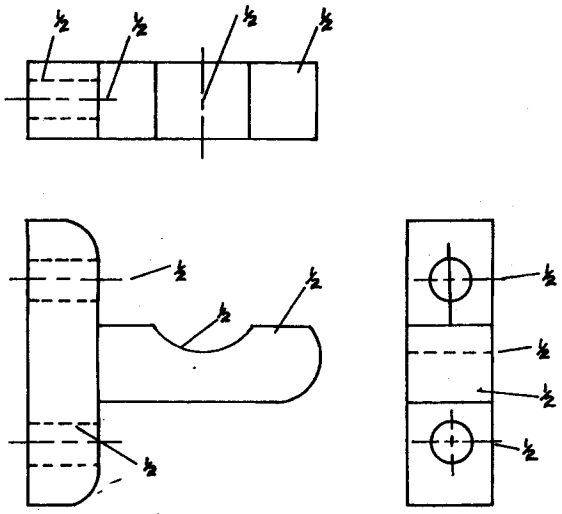
(6 marks)

Weaknesses

Some candidates could not differentiate 1st angle from 3rd angle and the two angles of projection were mixed up in their responses.

Expected Responses

10.



Plan	2
Front view	2
End view	2

(6 marks)

Advice to Teachers

Proper introduction to angles of projection should be taught through the use models of the planes of projections.

Question 11

Figure 5 shows three views of a block drawn in first angle orthographic projection.

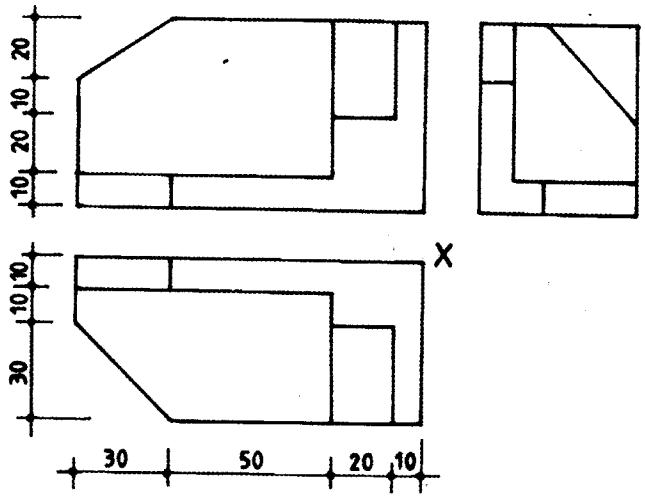


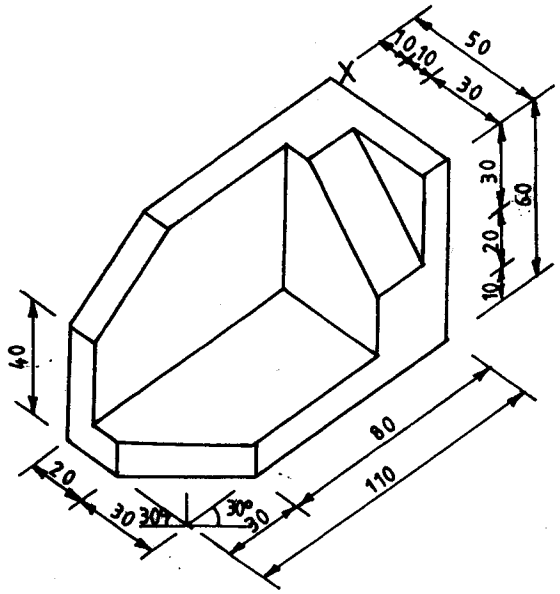
Figure 5

Draw full size, an isometric view of the block, taking X as the highest point and insert eight dimensions. (15 marks)

Weaknesses

Some candidates confused oblique projection for isometric.

Expected Responses



Correct interpretation	1
10 faces	10 x ½=5
Correct angle 30°	1
Scale (1:)	2
Dimensions	any 8 x ½=4
Construction lines	2
	(15 marks)

Advice to Teachers

Teachers should explain the different pictorial drawings to the learnersi.e. isometric, oblique and perspective.

18.2 GENERAL ADVICE TO TEACHERS

18.2.1 The whole syllabus should be effectively covered during instruction because examination items will be sampled from the entire syllabus.

182.2 The teacher/school should acquire the relevant reference materials and assist candidates to obtain and use the recommended textbooks.

18.2.3 The use of textbooks by teachers should always be guided by the syllabus. The specific objectives stipulated in the syllabus should be correctly interpreted to ensure the topics in question are taught adequately and effectively.

18.2.4 A variety of teaching methods and resources should be utilised by teachers to ensure that the content is effectively delivered during instruction. Resource persons/guest speakers and field visits should be arranged and used in areas where the teacher and the school lack the resources to teach the topic/lesson effectively.

18.2.5 All the suggested practical activities in the syllabus should be carried out to prepare candidates adequately for questions that require application of psychomotor skills acquired during instruction.

29.16 WOODWORK (444)

29.16.1 Woodwork Paper 1 (444/1)

SECTION A (40 marks)

*Answer **all** the questions in this section.*

1 Outline the basic first aid that should be administered to a victim of a cut on the wrist. (1½ marks)

2 Outline the process through which a tree manufactures its food. (4 marks)

3 (i) Name each of the tools shown in Figure 1.

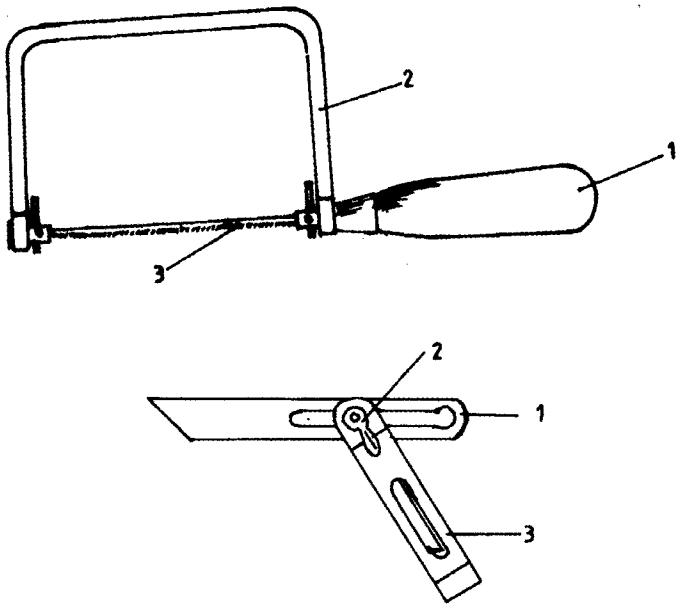


Figure 1

(ii) Name the parts labelled 1, 2 and 3 for each tool.

(iii) State the use of each tool. (5 marks)

4 With the aid of labelled sketches, explain the difference between a backsaw and a hand saw. (5 marks)

5 Figure 2 shows a component of a jackplane.

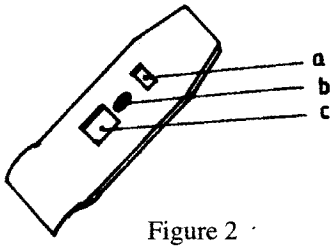


Figure 2

(i) Name the component. (1 mark)

(ii) Name the areas labelled a, b and c. (1½ marks)

(iii) State **two** functions of the component. (2 marks)

6 (a) Distinguish between shelf life and storage life of glue. (2 marks)

(b) Sketch and label an oval head screw. (2 marks)

7 Figure 3 shows the corner of a work piece with a curve. (3 marks)

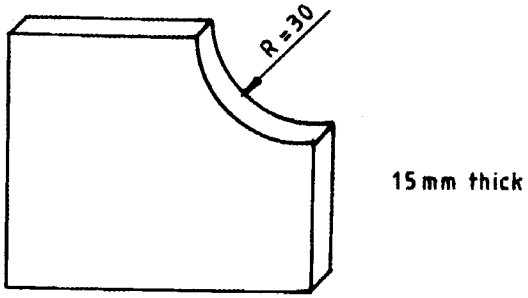


Figure 3

Outline the procedure of shaping the curve using hand tools.

8 (a) State **three** reasons for placing a piece of wood under a claw hammer when drawing out nails. (3 marks)

(b) Distinguish between the following terms as used in wood finishes:

(i) staining;

(ii) bleaching. (2 marks)

9 Name **four** institutions in Kenya that deal with aforestation. (2 marks)

10 Figure 4 shows a pictorial view of a wooden coat hook.

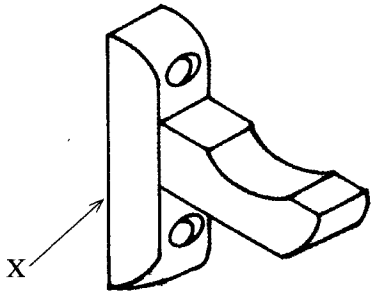


Figure 4

Sketch the three views of the wooden coat hook in third angle projection. View front elevation from the direction of arrow X.

(6 marks)

SECTION B (60 marks)

*Answer question **11** and any other **three** questions from this section.*
*Candidates are advised to spend **not more than 25 minutes** on question 11.*

11 Figure 5 shows three views of a block drawn in first angle orthographic projection.

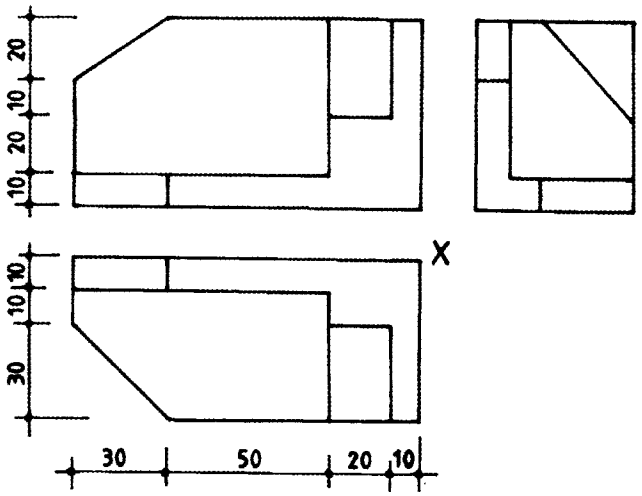


Figure 5

Draw full size, an isometric view of the block, taking X as the highest point and insert eight dimensions. (15 marks)

12 (a) State **six** disadvantages of using unseasoned timber. (3 marks)

(b) With the aid of labelled sketches, differentiate between the following centre bits: (6 marks)

(i) plain bit;
(ii) screw nosed bit.

(c) State **six** operational rules to be observed when using a hand drill. (6 marks)

13 (a) State **six** causes of splitting timber when nailing. (6 marks)

(b) Outline the procedure of fixing veneer on a table top using contact glue. (9 marks)

14 (a) Sketch and label an exploded view of a corner single dovetail joint. (4 marks)

(b) Outline the procedure of constructing the joint named in 14(a). (11 marks)

15 (a) A piece of timber weighs 100g. After drying it in an oven its weight dropped by 10%. Determine the moisture content of the dried timber. (3 marks)

(b) (i) Distinguish between primary and secondary colours.

(ii) State **two** examples for each. (4 marks)

(c) Explain each of the following processes as used in the maintenance of saws.

(i) jointing;
(ii) shaping;
(iii) setting;
(iv) sharpening. (8 marks)

30.16 WOODWORK (444)

30.16.1 Woodwork Paper 1 (444/1)

SECTION A

1. Basic first aid to a cut

- Apply steady and firm pressure directly over the wound.
- Elevate the arm to ease pain.
- When bleeding stops, apply a bandage over a pad using a piece of clean cotton material.

3 x ½=(1½ marks)

2. Process of production of food in trees

- Sunlight is absorbed through green leaves.
- Carbon dioxide and sap from the roots are mixed in the leave.
- The mixture is converted by the sunlight into sugars and starches.
- Oxygen is released.

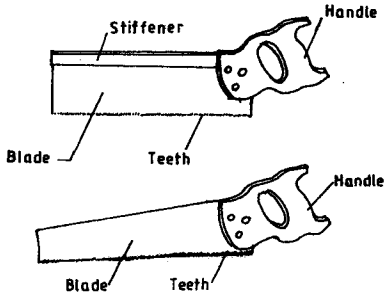
4 x 1 =(4 marks)

3. Names, parts and uses of tools

Name	Labels	Use
(a) Coping saw	• handle • frame • blade	- cutting curves in timber/manufactured boards
(b) Sliding level	• adjustable blade • wing nut • stock	- making and testing any angle - duplicating angles

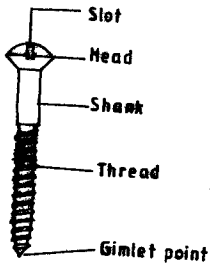
Name 2 x ½=1
Labels 2 x 3 x½=3
Use 2 x 1 x ½=1
(5 marks)

- **Differences between back saw and hand saw:**
  - A back saw has a piece of steel attached to the back to stiffen the blade while a hand saw does not.
  - Teeth are finer in back saws
  - Back saw generally used for joint cutting and hand saw for ripping and cross cutting.



Difference – 1
Sketch – 2 x 1 = 2
Label 2 x2 x ½=2
(5 marks)

- (i) **Component** is Cap Iron - 1
  (ii) **Area labeled**
  A - Slot for Y adjustment lever- Latest adjustment - alignment - ½
  B -Slot for the cap iron screw- Hold in place - ½
  C -Slot for level cap screw – Hold in place the assembly - ½ (4 ½)
  (iii) Purpose
  - break shavings - 1
  - provide tension for the cutting edge - 1



Sketch=1
Labels 2 x ½=1
(2)

6. **Shelf life**
   - This is the time a glue takes to be stored between manufacture and mixing for use before it deteriorates due to chemical changes. -1

   Storage life
   - This is the length of time glue take when containerized before it comes ineffective.

   -1

7. **Procedure of shaping curve**
   - Mark the carve on the
   - Fasten work piece on the vice.
   - Cut away the curve with a coping saw/cut slots and break.
   - Hold the chisel with the bevel against the work piece.
   - Trim along the grains.
   - Taken thin shavings by applying pressure downwards using a beveled chisel/spoke share.
   - Finish/smoothen the surface neatly using a sand paper.

   6 x ½ = (3 marks)

8. (a) **Reasons for using a block of timber while drawing out nails**
   - Provide leverage
   - Prevent marking or denting the work piece.
   - To keep the nail straight. 3 x 1=(3 marks)

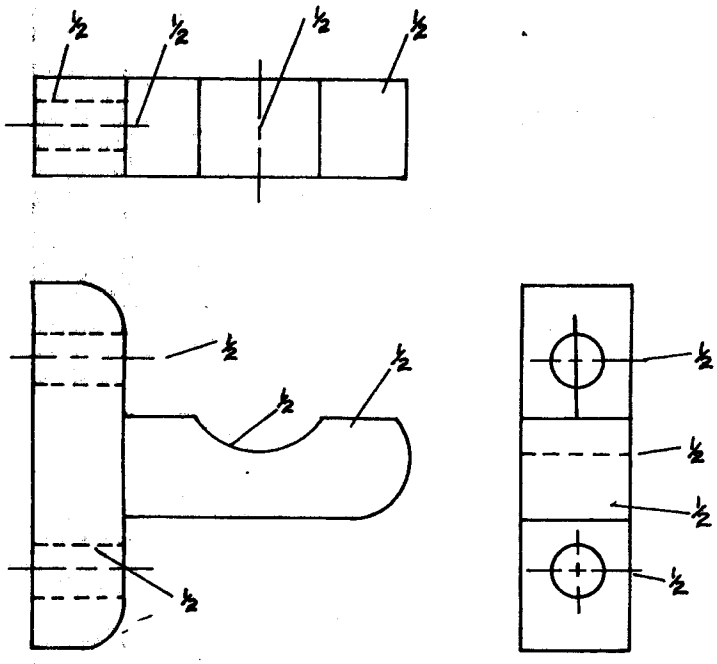
   (b) Difference between bleaching and staining
   - Staining is the process of changing or enhancing the natural colour of wood.
   - Bleaching is the process of lightening the natural colour of wood with chemicals

   2 x 1=(2 marks)

9. **Afforestation institutions**
   - Department of Forestry in Ministry of Natural Resources.
   - International Centre for Research in Agriculture and Forestry (ICRAF)
   - Kenya forestry research Institute (KEFRI)
   - Greenbelt movement. 4 x ½=(2 marks)

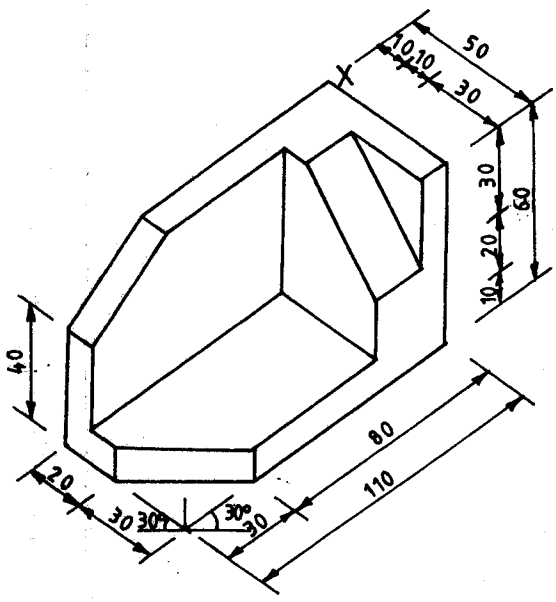
   Accept any other correct answer.

10.



Plan	2
Front view	2
End view	2
	(6 marks)

SECTION B



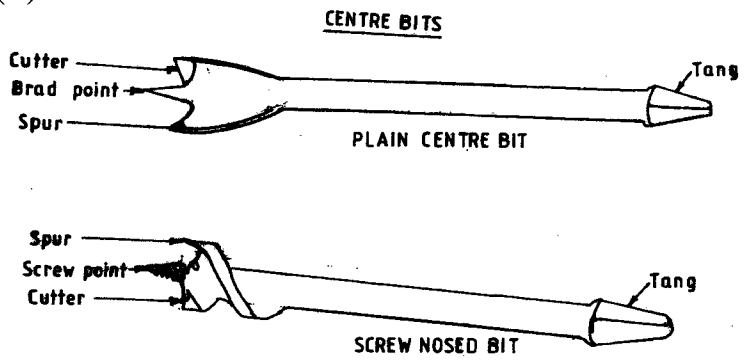
Correct interpretation	1
10 faces	10 x ½=5
Correct angle 30°	1
Scale (1:)	2
Dimensions	any 8 x ½=4
Construction lines	2
	(15 marks)

12. (a) **Disadvantages of using wet timber**

- The wood is difficult to work
- Joints constructed with wet timber and glued fail because the glue does not set properly.
- The work piece may become warped or cracked while you work with it.
- Difficult to apply stain or varnish.
- As water evaporates the wood shrinks or distorts hence loosing dimensions and shape.
- Wet wood is structurally weak and can bend easily.

6 x ½=(3 marks)

(b)



Sketching 2 x 2 = 4
Labels 2
(6 marks)

- **Operational rules of hand drills**

- Ensure that the drill bit shank is centrally gripped by all three chuck jaws.
- The work is to be drilled should be held firmly
- For through holes the bench should be protected with a waste piece
- Make a pilot hole to prevent the drill point from wandering when starting a hole.
- When drilling, use sufficient pressure to keep the tool cutting. Excessive pressure overload the drill.
- For efficient drilling to be achieved, the drill should be sharp withdrawn regularly to stop clogging with waste materials. 6 x 1=(6 marks)

13. (a) **Why timber split while nailing**

- Nailing to near to the edge.
- The nail gauge is too large for the wood section
- Nailing one nail behind another in line with the grain.
- Using an oversize nail punch.
- Trying to straighten bent nails with a hammer.
- Using too much force to drive the nail.
- Deflection of the hammer when nailing.
- Nailing near the edge – knot on wood.

Any 6 x 1 = (6 marks)

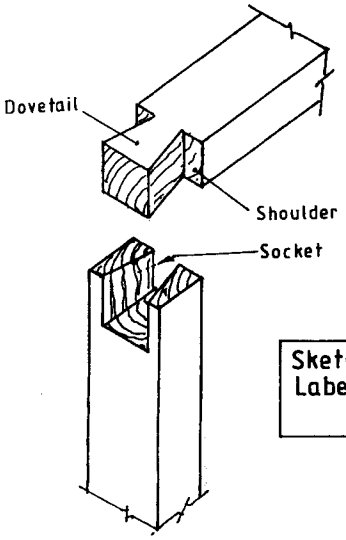
(b) **Procedure of fixing a veneer**

- Before the surface
- Apply glue to both table tap and veneer in thin even coat.
- Allow time for glue to set.
- Allow time for glue to set.
- Place edge/align edge of veneer take edge.

- Place spacers at interval between take top and veneer to avoid contact and trapping the air.
- Using a roller/wooden blunt piers veneer onto take top towards the spaces.
- Remove spacks as pressing continues towards the opposite end.
- Check for blisters and if any, allow the trapped air to escape by slitting along the grain with a very sharp edge.
- Trim the edges

9 x 1=(9 marks)

14.



Sketch = 2
Labels Any 2 x1= 2
= 4 mks

Exploded view of a single dovetail corner joint

Sketching 2 x 2=4
Labels 2
(6 marks)

(a) Procedure of construction of corner single Dovetail joint

- Prepare material of size
- Mark the position of socket on end of one piece equal to the thickness of other piece.
- Cut the socket.
- Cut the dovetail
- Make trial assembly
- Adjust as necessary
- Make dry assembly
- Test for squareness.
- Shoot ends
- Make final assembly

11 x 1=(11 marks)

15. (a) **Determination of moisture content**

Wet weight = 100g

Dry weight = *90100*x 100=90g

$$\text{Moisture content} = \frac{h - h}{h} \times 100$$

$$= \frac{100-9090}{} \times 100$$

= 11.1%

Dry weight 1
Correct formula 1
Moisture content 1
(2 marks)

(b) Distinguishing between primary and secondary colours

- Primary colours are basic colours e.g. yellow, blue, red, while
- Secondary colours are formed by pairing primary colours e.g. green, orange, purple.

Differentiation 2

Examples 2 x 2 x ½ = 2
(4 marks)

(c) Jointing

- Running a file along the tops of saw teeth when found to be uneven. The saw is held in a saw vice and a flat file held square to the blade is run from end to end to touch all the teeth.

Shaping

- The flattened teeth are shaped. Also done when the teeth are irregular after many sharpening.
- Place saw in saw vice with the gullet about 4 mm above the jaws. File straight across with file at right angles to the blade and ensuring all teeth are the same shape.

Setting

This is the process of bending the adjacent teeth to opposite sides so that the kerf of a saw only the top ⅓ of each tooth is bent. Irregularities in setting are corrected by side filling.

Sharpening

Fix saw in saw vice.

- Place file in the gullet to the left of the 1st tooth bent towards you and file at an angle of 20° with file parallel to the floor.
- On the other side of the saw file the rest of the teeth. 4 x 2=8 marks