



GAUTENG PROVINCE

Department: Education

REPUBLIC OF SOUTH AFRICA

MECHANICAL TECHNOLOGY

PRACTICAL ASSESSMENT TASK

WELDING AND METALWORK

GRADE 11

2024

TABLE OF CONTENT

	Page
1. INTRODUCTION/BACKGROUND	3 – 4
2. TEACHER GUIDELINES	4
2.1 Administration of PAT	4
2.2 Assessment of PAT	4
2.3 Moderation of PAT	4
2.4 Consequences of absence/non-submission of tasks	5
2.5 Declaration of authenticity	6
3. LEARNER GUIDELINES	7
3.1 Instructions to the learner	7
4. - 7. SPECIALISATION - OPTION 1: Phase 1 – 4 Braai stand	8 – 23
OPTION 2: Phase 1 – 4 Dog Feeder	24 – 42

1. INTRODUCTION/BACKGROUND

The 16 Curriculum and Assessment Policy Statements subjects which contain a practical component all include a Practical Assessment Task (PAT), i.e. a Practical or Performance Assessment Task. These subjects are:

- AGRICULTURE: Agricultural Management Practices, Agricultural Technology
- ARTS: Dance Studies, Design, Dramatic Arts, Music, Visual Arts
- SCIENCES: Computer Applications Technology, Information Technology
- SERVICES: Consumer Studies, Hospitality Studies, Tourism
- TECHNOLOGY: Civil Technology, Electrical Technology, **MECHANICAL TECHNOLOGY** and Engineering Graphics and Design.

A PAT allows the educator to directly and systematically observe applied competence. The PAT comprises the application/performance of the knowledge, skills and values particular to that subject and counts 25% (i.e. 100 marks) of the total promotion/certification mark out of 400 for the subject.

The PAT is implemented across the first three terms of the school year, which is broken down into different practical skills that make up the PAT.

Any profession requires of its members a thorough grounding in both theory and practice, and **MECHANICAL TECHNOLOGY** is no exception. It is emphasized that the goal of the Practical Assessment Task is to produce a skilled learner in each specialisation field. A nation's true wealth is in its manpower and education should aim to develop the talents of the learner so that he/she can contribute to the well-being of society by using scientific and technological resources with the greatest efficiency and by continuing to develop them.

To prepare a learner to develop skills in **MECHANICAL TECHNOLOGY**, in each specialisation field:

- An attitude where the learner can selectively assimilate ideas, gather evidence and facts, and drawing logical conclusions and put them to good use creatively and with imagination;
- A capability to express ideas and information clearly by speech, writing, sketching or drawing;
- A willingness and capability to accept and exercise responsibility, to make decisions, and to learn by experience.

Attributes such as these cannot all be achieved in a classroom. A sound knowledge of engineering science is essential to equip the **MECHANICAL TECHNOLOGY** learner with the necessary practical capabilities for the required processes. Training is the art of acquiring essential skills to bridge between trade theory and practice.

Practical application in the workshop must therefore be made an interesting and challenging experience, mentally and physically, with encouragement to the learner to use his/her initiative, curiosity and persistence in finding things. The giving of some degree of responsibility during practical application is very important as a stimulus and to develop self-confidence.

2. TEACHER GUIDELINES

2.1 Administration of the PAT

Learners have the option to choose to complete any of the TWO options: OPTION 1 – BRAAISTAND or OPTION 2 – DOG FEEDER.

Teachers are requested to make copies of the different assessment criteria of the PAT document. These documents need to be distributed to the learners at the beginning of the year. The Practical Assessment Task for Grade 11 is internally set and moderated.

Teachers must attach due dates for the different terms of the PAT task (refer to the CAPS document). In this manner, learners can easily assess their progress. Instances where formal assessments take place, it is the responsibility of the teacher to administer assessment.

The PAT should be completed in the first three terms. The PAT should be based and completed under controlled conditions (Refer to the Mechanical Technology CAPS Grade 10–12).

2.2 Assessment of PAT

Frequent and developmental feedback is needed to guide and give support to the learner to ensure that the learner is on the right track.

Both formal and informal assessment should be conducted in different terms to ensure that the embedded skills are covered for the PAT. Informal assessment can be conducted only to monitor progress of the term in which the learners are engaged. Formal assessment should always be conducted by the teacher and will be recorded.

Note that the DOG FEEDER project has a marking rubric that educators must utilise when assessment is being conducted on the different facets of the task.

2.3 Moderation of PAT

During moderation of the PAT, the term tasks will be presented to the moderator with the assessment criteria and marks obtained.

Where required the moderator should be able to call on the learner to explain the function, principles of operation and also request the learner to demonstrate the skills acquired through the capability tasks for moderation purposes.

Upon completion the moderator will, if necessary, adjust the marks of the group up or downwards depending on the decision reached because of moderation.

2.4 CONSEQUENCES OF ABSENCE/NON-SUBMISSION OF TASKS.

If a learners' Practical Assessment Task is incomplete or unavailable with valid reason, the learner will be given three weeks before the commencement of the final end-of-year examination to submit outstanding task. Should the learner fail to fulfill the outstanding PAT requirement, such a learner will be awarded a zero for that PAT component.

A learner's results are regarded as incomplete if he/she does not offer any component of the PAT task. He/she will be given another opportunity based on the decision of the Head of the assessment body.

Should the learner fail to fulfill the outstanding PAT requirement, the marks for these components will be omitted and the final mark for Mechanical Technology will be adjusted for promotion purposes in terms of the completed

2.5 DECLARATION OF AUTHENTICITY

NAME OF THE SCHOOL:

NAME OF LEARNER:

(FULL NAME(S) AND SURNAME)

EXAMINATION NUMBER:

NAME OF TEACHER:



I hereby declare that the project submitted for assessment is my own, original work and has not been previously submitted for moderation.

SIGNATURE OF CANDIDATE

DATE

As far as I know, the above declaration by the candidate is true and I accept that the work offered is his or her own.

SIGNATURE OF TEACHER

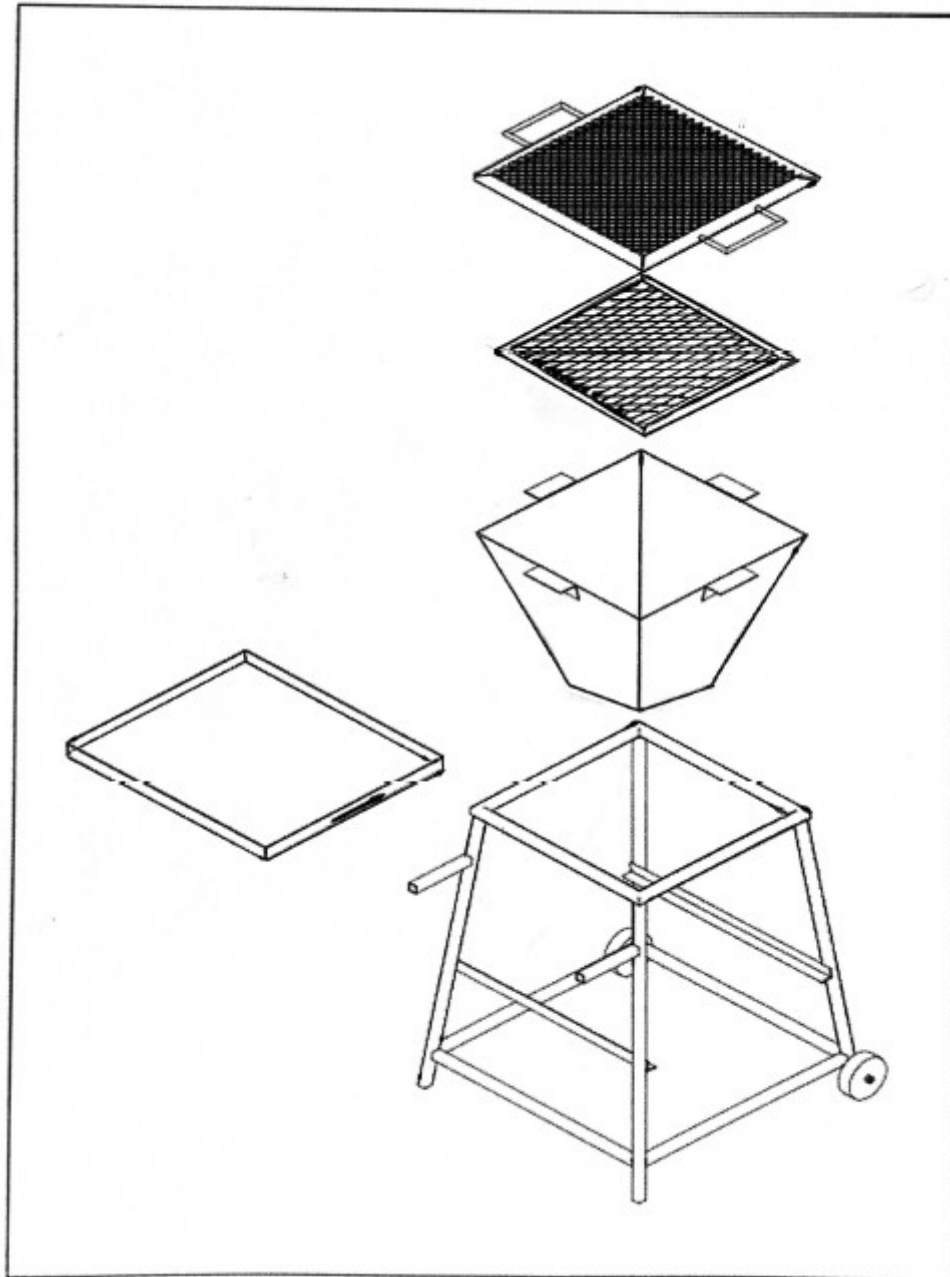
DATE

3. LEARNER GUIDELINES

3.1 Instructions to the learners

- Learners have the option to choose to complete **any** of the **TWO** options: OPTION 1 – BRAAISTAND **or** OPTION 2 – DOG FEEDER.
- All tasks must be completed according to the time frames set out in each of the tasks.
 - Phase 1 – Must be completed by end of Term 1
 - Phase 2 – Must be completed by end of Term 2
 - Phase 3 – Must be completed by end of Term 3
 - Phase 4 – Development must start in Term 1 and Phase 4 must be completed by end of September.
- Learners are required to actively engage in all practical assessment tasks.
- Learners who are un-cooperative will receive demerits or a zero-mark allocation for that particular section of the work.
- Learners, who act unsafely in the workshop and place other learners in danger, will be removed from the workshop and given additional corrective tasks to improve their safety awareness.
- Phase 2 – 4 make a complete project. Learners must work attentively and use all safety precautions at all times.

**GRADE 11 WELDING & METALWORK PAT:
OPTION 1: BRAAISTAND**



PHASE 1

SECTION C: WELDING AND METALWORK

4 : BRAAISTAND – Braai Fire-Grid and Ash-pan

Phase: 1
Start date: February 2024
Completion date: March 2024
Mark allocation: 100 (50)

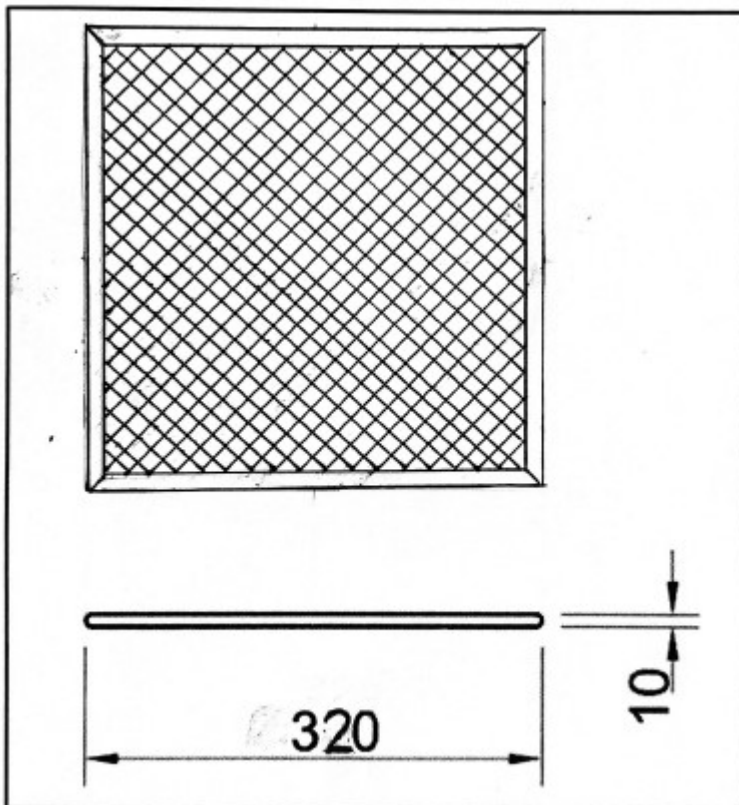


FIGURE 1 – FIRE-GRID

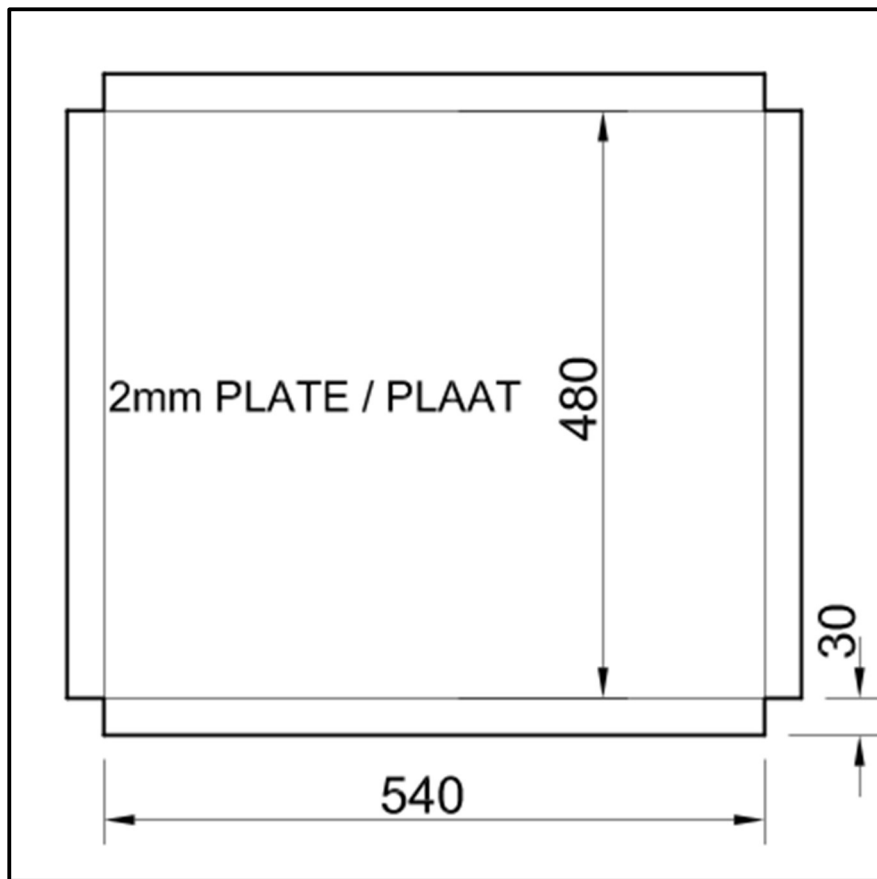


FIGURE 2 – ASH-PAN

4. CONSTRUCTION OF A FIRE-GRID AND ASH-PAN

4.1 Materials and Equipment:

- 1 off 540 x 480 x 2mm flat sheet metal (3mm sheet metal may be used)
- 325 x 325x10mm flat bar (4 pieces)
- 320 x 320 x 25mm expanded metal (2 or 3mm)
- Welding rods (2 mm)
- Measuring equipment
- PPE
- Welding machine
- Angle Grinder
- Files
- Guillotine
- Box bender / Brake-press

4.2 Method:

- Cut material(sheetmetal) to size as indicate in Figure 1 and 2
- Mark out the dimensions for the expanded metal Figure 1 and cut neatly.
- Cut four lengths of 10mm flat bar -325mmx325 mm, mitre and weld together.
- Use ringroller to roll to correct diameter and weld end together.
- Weld expanded metal to mitred square frame
- Mark out required size for the Ash pan indicated in Figure 2
- Mark folding lines and bend to 90° using a bending machine/ box and pan brake.
- Weld corners together and finish off neatly.

4.3 Criteria

- In overall, sizes must be within ± 2 mm of the required measurement.
- All the welding must be cleaned of all slag.
- After all dimensions have been marked out, it must first be taken for assessment.
- All edges must be cleaned from all cutting burs.

GRADE: 11		YEAR: 2024		SCHOOL:			
DATE STARTED:				DATE COMPLETED:			
SUBJECT: WELDING AND METALWORK				TEACHER:			
PROJECT: Phase 1				Page 1 of			
NAMES OF LEARNERS							
FACETS		MARKS	Learner – Self- Assessment	Teacher Assessment	Internal Moderation	Provincial Moderation	External Moderation
			1	2	3	4	5
			COMMENTS:				
MANUFACTURING							
FIRE-GRID	Measure and mark 4 pieces for grid frame	4					
	Cut 4 pieces for grid frame	10					
	Weld grid frame	10					
	Cut expanded metal to correct size	4					
	Welding of grid to square frame	16					
ASH-PAN	Mark ash pan to correct size	4					
	Marking of corners	4					
	Marking of folding lines	4					
	Cut out corners	12					
	Folding of ash pan	8					
	Welding of ash pan corners (5 x 4)	20					
Finishing	Remove all slag and overall neatness	4					
Sub-Total		100					
TOTAL		50					
SIGNATURE OF TEACHER:						Date	
SIGNATURE OF HOD:						Date	
SIGNATURE OF PRINCIPAL:						Date	
SIGNATURE OF SUBJECT ADVISOR:						Date	

PHASE 2

Start date: April 2024
Completion date: June 2024
Mark allocation: 175 (50)

5. CONSTRUCTION OF THE BRAAISTAND FRAME

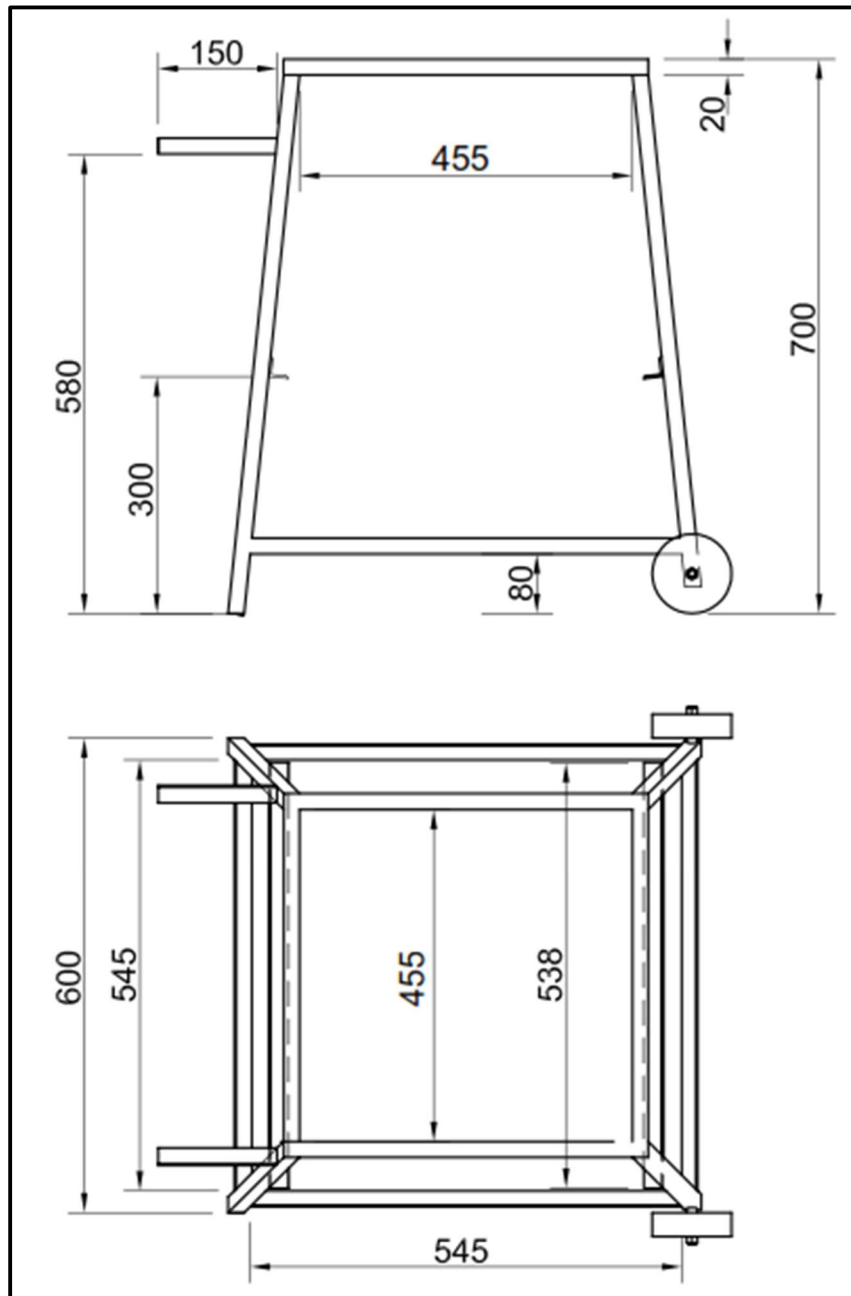


FIGURE 3 – BRAAISTAND FRAME

5.1 Materials and Equipment:

- 20 x 20 x 1.6mm square tube
- 30 x 30 x 3 angle iron pieces
- Welding rods (2mm)
- 2 x Wheels
- M8 bolt and nuts
- Measuring equipment
- PPE
- Welding machine
- Angle Grinder
- Files
- Drill press

5.2 Method:

- Cut material to size as indicate in Figure 3
- It will be advisable to start with the top frame.
- Cut legs to size and drill in two legs(shorter leg to required size as calculated with aquired wheel sizes) a hole in each for wheel bolt and nut.
- Cut other two legs (front legs) to size.
- Cut bottom support to size and start by tag welding frame together.
- Cut Angle iron to size and tag weld to frame.
- **ONCE CHECKED for squareness**, start permanent welding.
- Cut two handles to size and attach.
- Make use of welding magnets (if available) or clamps to keep parts in position during welding

5.3 Criteria

- In overall, sizes must be within ± 2 mm of the required measurement.
- All the welding must be cleaned of all slag.
- After all dimensions had been marked out, it must first be taken for assessment.
- All edges must be cleaned from all cutting burs.

GRADE: 11		YEAR: 2024		SCHOOL:				
DATE STARTED:				DATE COMPLETED:				
SUBJECT: WELDING AND METALWORK				TEACHER:				
PROJECT: Phase 2				Page 1 of				
NAMES OF LEARNERS								
FACETS		MARKS	Learner – Self- Assessment	Teacher Assessment	Internal Moderation	Provincial Moderation	External Moderation	COMMENTS
			1	2	3	4	5	
MANUFACTURING								
Angle Iron	2 x 538mm angle iron to correct length	8						
	Clean all burs	4						
Frame parts to size	4 x 455 square tube	12						
	4 x 545 square tube	12						
	2 x 680 square tube	6						
	2 x required size square tube for wheels	6						
	2 x 150 square tube	6						
Drill	Drill 8mm hole and clean (x 2)	10						
Welding	Tag welds (1 per weld)	21						
	Permanent weld top frame	10						
	Top frame square	10						
	Permanent weld frame	30						
	Weld Ash-pan support	10						
	Weld handle squarely	10						
Wheels	Attached wheels	10						
Finishing	Overall appearance and neatness	10						
Sub-Total		175						
TOTAL		50						
SIGNATURE OF TEACHER:						Date		
SIGNATURE OF HOD:						Date		
SIGNATURE OF PRINCIPAL:						Date		
SIGNATURE OF SUBJECT ADVISOR:						Date		

PHASE 3

Start date: July 2024
Completion date: September 2024
Mark allocation: 90 (50)

6. BRAAI GRID

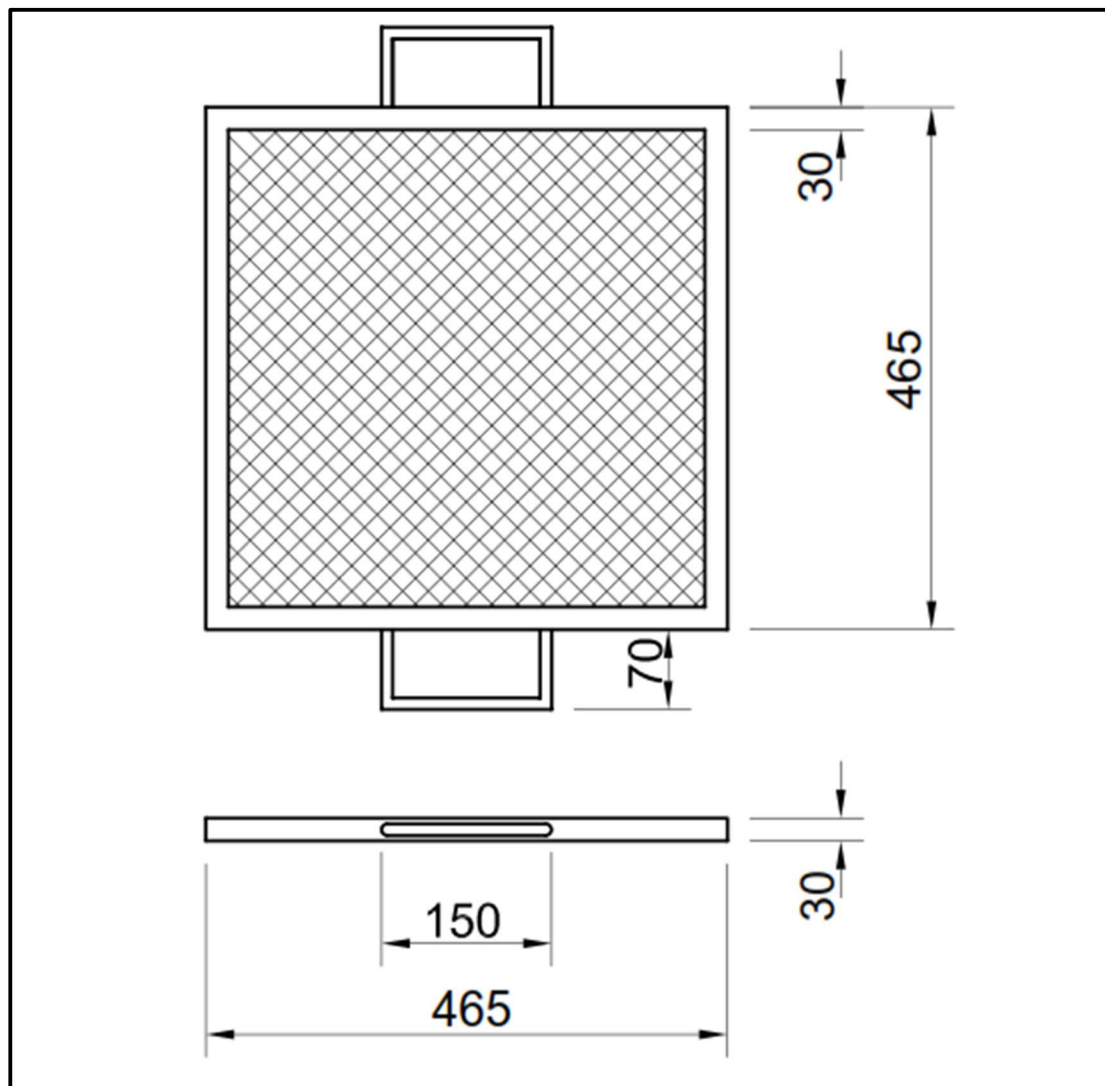


FIGURE 4 – BRAAI GRID

6.1 Materials and Equipment:

- 1 off 465 x 465 expanded metal
- 4 off 465 x 30 x 30 x 3mm angle iron pieces (2.5mm can also be used)
- Welding rods (2mm)
- Measuring equipment
- PPE
- Welding machine
- Guillotine
- Angle Grinder
- Files

6.2 Method:

- Cut material to size as indicate in Figure 4.
- Cut angle iron to size and cut 45° corners. Make use of magnets (if available) to keep grid frame in position. Tag weld and set to square.
- Once satisfied that all is sqaure, do permanent welding.
- Cut grit to size and weld in grid frame
- Tag weld and make sure it is postioned right and the do permanent welding

6.3 Criteria

- In overall, sizes must be within ± 2 mm of the required measurement.
- All the welding must be cleaned of all slag.
- After all dimensions had been marked out, it must first be taken for assessment.
- All edges must be cleaned from all cutting burs.

GRADE: 11		YEAR: 2024		SCHOOL:				
DATE STARTED:				DATE COMPLETED:				
SUBJECT: WELDING AND METALWORK				TEACHER:				
PROJECT: Phase 3				Page 1 of				
NAMES OF LEARNERS								
FACETS		MARKS	Learner – Self- Assessment	Teacher Assessment	Internal Moderation	Provincial Moderation	External Moderation	COMMENTS
			1	2	3	4	5	
MANUFACTURING								
Braai Grid	2 x 485 Angle iron to correct length	4						
	2 x 490 Angle iron to correct length	4						
	Cut 45° corners (8 cuts)	16						
	Weld frame together	40						
	Cut grid to correct size	5						
	Weld grid to frame	12						
	Frame all 90° and square	5						
	Neatness and all slag removed	4						
SUB- TOTAL		90						
TOTAL		50						
SIGNATURE OF TEACHER:						Date		
SIGNATURE OF HOD:						Date		
SIGNATURE OF PRINCIPAL:						Date		
SIGNATURE OF SUBJECT ADVISOR:						Date		

PHASE 4

Start date: February 2024
Completion date: September 2024
Mark allocation: 100

7. CONSTRUCTION OF THE BRAAI SHELL

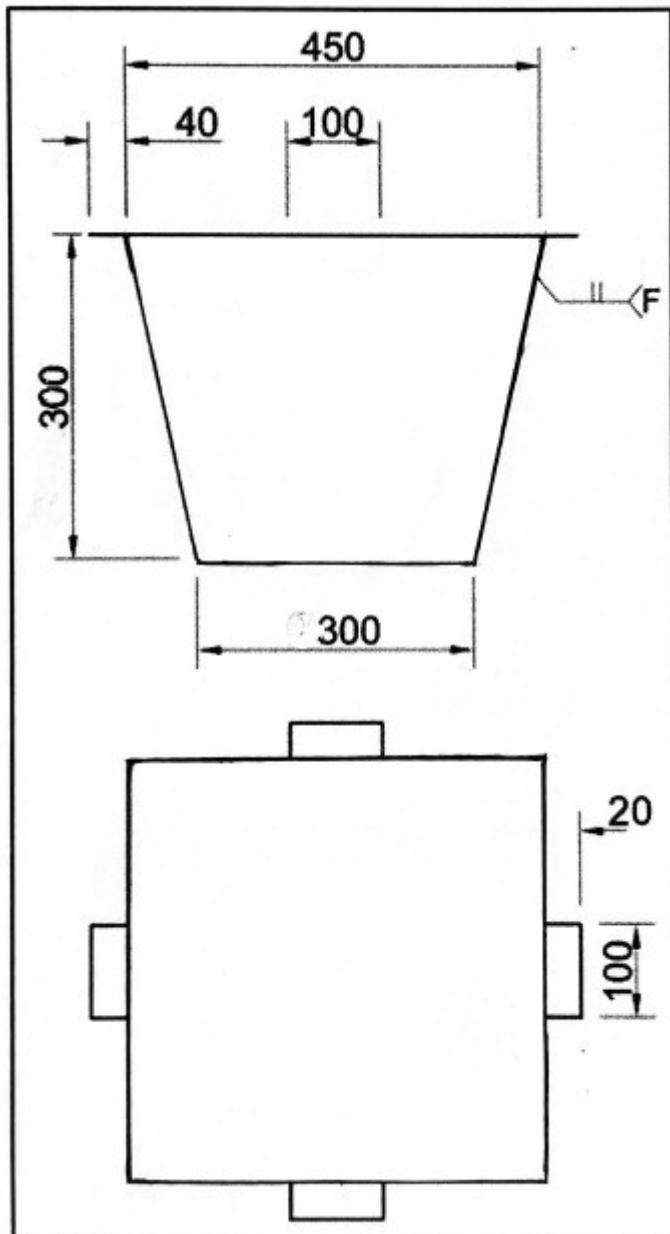


FIGURE 5 – BRAAI SHELL

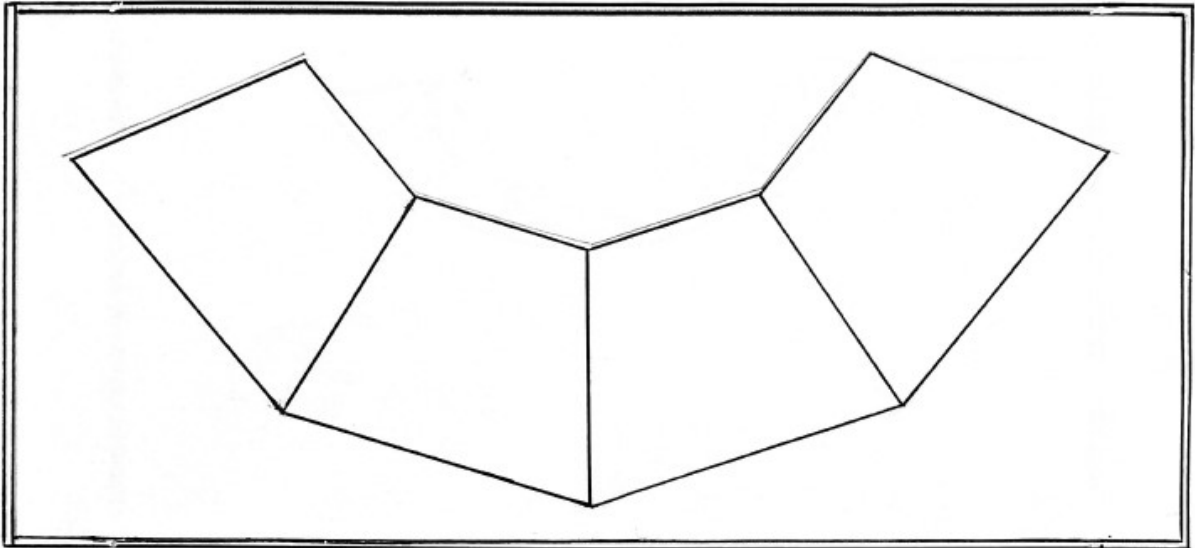


FIGURE 6 – DEVELOPMENT

7.1 Materials and Equipment:

- 1550 x 916 x 2mm mild steel sheet metal (3mm can also be used)
- Welding rods (2mm)
- Measuring equipment
- PPE
- Welding machine
- Guillotine
- Plasma cutter / Oxy-Acetylene equipment
- Angle Grinder
- Files
- Box bender / Brake-press
- Bending rolls

7.2 Procedure:

- Cut material to size as indicate in Figure 5 and 6
- Cut 4 pieces for the support so in order to overlap 20mm on each side of the shell. These form the rest whereby the shell rest on the braai frame.

7.3 Criteria

- In overall, sizes must be within ± 2 mm of the required measurement.
- All the welding must be cleaned of all slag.
- After all dimensions had been marked out, it must first be taken for assessment.
- All edges must be cleaned from all cutting burs.

Template Development:

1. By the use of Technical Drawing equipment, create a template of a square-to-square transition piece shape with a square dimension on bottom of 450 x 450mm (Vertical height of the transition piece is 300mm)
2. Use calculations to calculate the correct length of each of the sector lines and create a template which you must use to transfer measurements to a plate when creating the square-to-square transition piece.
3. Label your template with your name and the evidence of all calculations must in your portfolio file.

Procedure:

1. Transfer your template measurements to sheetmetal.
2. When transferring your template to the steel plate, make use of a scribe so that your measurements indicated does not get lost when cutting out of the template occur.
3. By the use of plasma cutter or guillotine, cut out your profile on the outside lines.
4. Finish the template outside perimeter with an angle grinder to specification.
5. Draw your template lines where you need to fold your plate to the correct angle.
6. Bend each side until the two ends meet up perfectly.
7. Tag weld in place and do permanent welding when satisfied of squareness.
8. Attach finished transition to Phase 1/2 shell and weld together.
9. Tag weld onto the formed transition piece. Ensure the pieces are positioned correctly and then weld permanently.
10. Clean any slag of where all welding has taken place.
11. Project can be finished by painting it with heat resistant paint.

N.B. The development of the transition piece can be done as a single development or as two parts.

GRADE: 11		YEAR: 2024	SCHOOL:					
DATE STARTED:			DATE COMPLETED:					
SUBJECT: WELDING AND METALWORK				TEACHER:				
PROJECT: Phase 4				Page 1 of _____				
NAMES OF LEARNERS								
FACETS		MARKS	Learner – Self- Assessment	Teacher Assessment	Internal Moderation	Provincial Moderation	External Moderation	COMMENTS
			1	2	3	4	5	
MANUFACTURING								
Template	Transition piece template	15						
Transition pieces	Cut transition pieces to correct length and sizes (x2)	10						
	Marking of folding lines	16						
	Folding of transition pieces – neat and square	20						
Shell supports	Measure and cut supports to correct size	4						
	Bending of supports	8						
Tag Weld	Tag weld transition pieces together	5						
	Tag weld supports	5						
Permanent Welding	Permanent weld of transition pieces	25						
	supports	8						
	Attach transition piece to shell	25						
Finishing	Remove all slag	4						
	Anaesthetically good appearance	5						
SUB- TOTAL		150						
TOTAL		100						
SIGNATURE OF TEACHER:						Date		
SIGNATURE OF HOD:						Date		
SIGNATURE OF PRINCIPAL:						Date		
SIGNATURE OF SUBJECT ADVISOR:						Date		

GRADE 11 WELDING & METALWORK PAT: OPTION 2: DOG FEEDER

4. WELDING AND METALWORK (SPECIFIC) TASK: DOG FEEDER:

Term: 1 to 3

Starting date: January 2024

Completion date: September 2024

Follow the ensuing criteria and standards:

- The design of the dog feeder is shown in the given figures.
- Keep affordability in mind. (**Standard dimensions of sheet metal**)
- Overall sizes must be within ± 2 mm of the required measurement.
- Tools and equipment must not be damaged.
- All appropriate safety procedures must be adhered to.
- Welded joints must be cleaned of all slag.
- After all dimensions have been marked out, record marks.
- All edges must be cleaned off burrs.
- The project must be well presented.
- FIGURE 1 shows examples of welding defects.
- ***NB!! Learners to PRACTICE welding and welding techniques BEFORE attempting the final product.***

RESOURCES REQUIRED FOR PAT:

Each learner will require the following:

	COMPONENTS	MATERIAL	DIMENSIONS	QUANTITY
1	Phase 1	19 x 19 x 1,6 square tube	2200 mm	1
2	Phase 2	1,6 mm (2 mm) sheet metal	400 x 400 mm	1
3	Phase 3	1,6 mm (2 mm) sheet metal	350 x 370 mm	1
4	Phase 4	1,6 mm (2 mm) sheet metal	1220 x 700 mm	1

RUBRIC: RUBRIC FOR CUTTING, WELDING AND PRESENTATION

CATEGORY	Excellent (5)	Good (4)	Average (3)	Poor (2)	Incomplete (1)
MARKING OF PARTS / PIECES	All parts marked and accurate according to dimensions. ± 1 mm deviation from required dimensions.	Nearly all parts marked and accurately dimensions obtained. ± 2-3 mm deviation from required dimensions.	Most parts marked and most accuracy obtained. ± 4 mm deviation from required dimensions.	Some parts partially marked / some accuracy obtained. ± 5 mm deviation from required dimensions.	Poor and wrongly marked / inaccurate. ± 6 mm deviation from required dimensions.
CUTTING AND DRILLING	All parts cut / drilled accurately according to dimensions. ± 1 mm deviation.	Nearly all parts cut / drilled accurately. ± 2-3 mm deviation	Most parts marked and cut/drilled accurately. ± 4 mm deviation	Some accuracy obtained with some deviation from dimensions. ± 5 mm deviation	Section poorly cut / drilled inaccurately or wrong dimensions. ± 6 mm deviation
WELDING QUALITY	No welding defects visible. Beading neat and complete fusion of metals achieved. All slag is removed.	Neat welding done. Good beading with some minor defects visible. Good fusion achieved. All slag is removed.	Some beading visible. Presence of some welding defects. Not complete fusion achieved. All slag is partially removed.	Poor welding done. Lot of welding defects visible. Poor or no fusion achieved. Some burning through metal occurred.	Bad welding. Lot of welding defects with no fusion and holes burned through.
FINISHING AND PRESENTATION	Weld areas are cleanly finished, ground and painted. Project excellent presented. Excellent functionality obtained.	Nearly all welded areas are cleanly finished, ground and painted. Project well presented. Will function well.	Most welded areas are cleanly finished, ground and painted. Average presentation. Project will function.	Some welded areas are cleanly finished, ground and painted. Poor presentation with limited functionality.	No welded areas cleanly finished, ground and painted. No complete assembly. Bad presentation with no functionality.

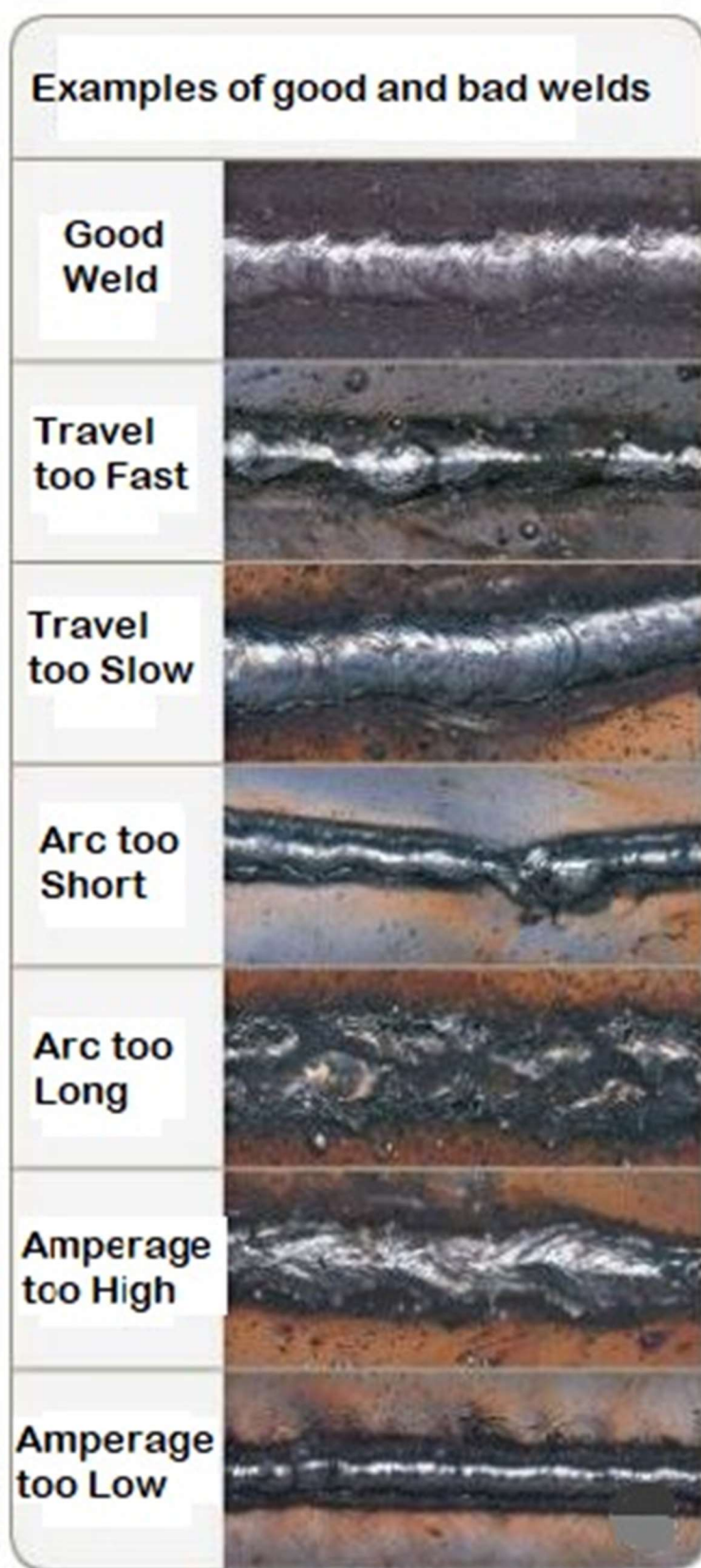


FIGURE 1



FIGURE 2 – Example of dog feeder

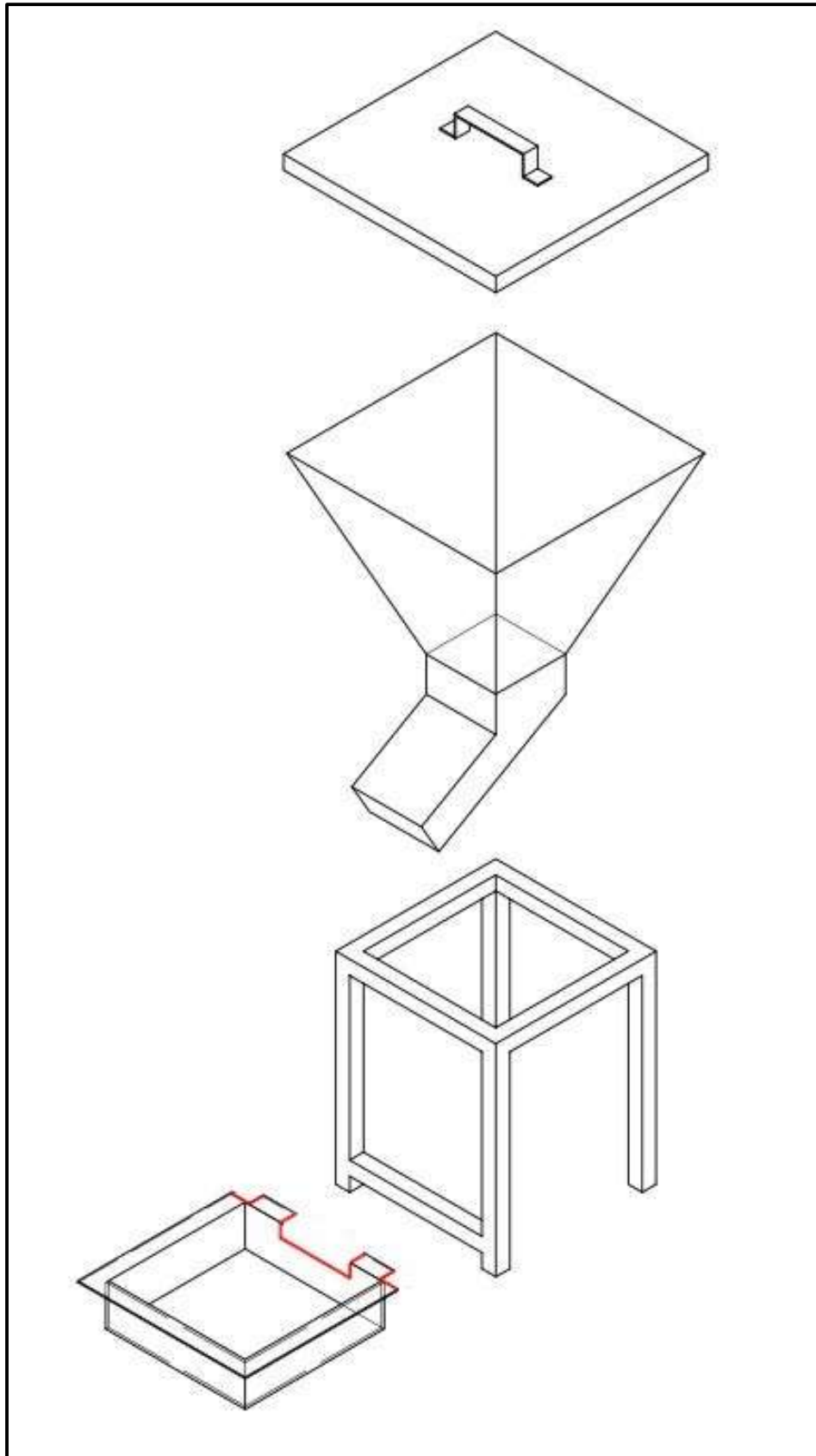


FIGURE 3

PHASE 1

SECTION C: WELDING AND METALWORK

DOG FEEDER - Stand

Start date: January 2024

Completion date: March 2024

Mark allocation: **50**

CONSTRUCTION OF A STAND

Materials and Equipment:

- 4 off 19 x 19 x 1,6 square tube – 250 mm long each
- 4 off 19 x 19 x 1,6 square tube – 300 mm long each
- Welding rods (**MAX 2 mm**)
- Measuring equipment
- PPE
- Welding machine and equipment
- Angle Grinder
- Files

Criteria

- In overall, sizes must be within ± 1 mm of the required measurement.
- All the welding must be cleaned of all slag.
- After all dimensions had been marked out, it must first be taken for assessment.
- All edges must be cleaned from all cutting burs.
- Corners of top of stand frame **MUST be cut to 45°**. Marks will be allocated for corners. If no corners of 45° were cut, a 0 mark must be submitted.

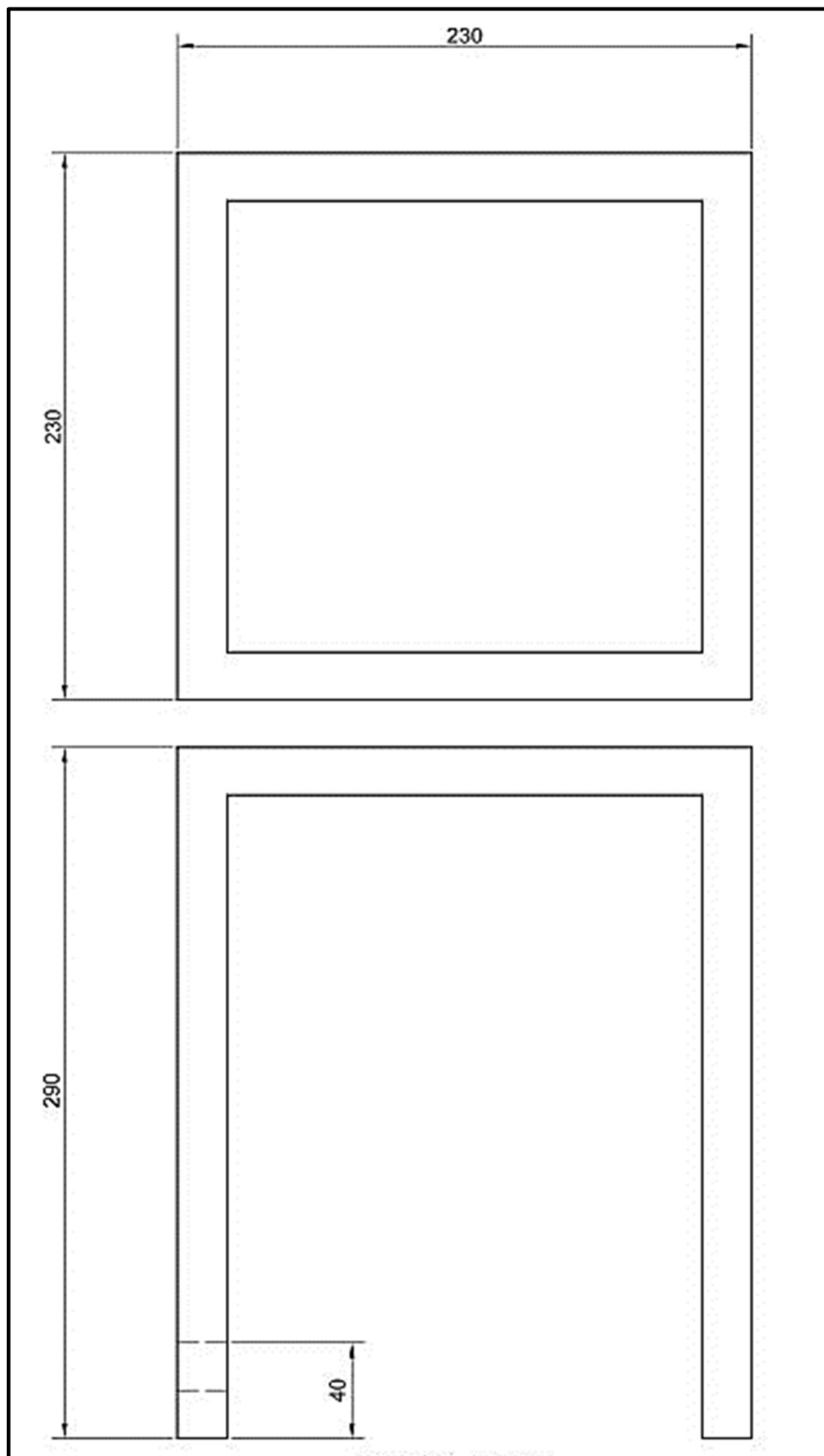


FIGURE 4 – Stand

GRADE: 11		YEAR: 2024		SCHOOL:			
DATE STARTED:				DATE COMPLETED:			
SUBJECT: WELDING AND METALWORK				TEACHER:			
PROJECT: Phase 1				Page 1 of _____			
			NAMES OF LEARNERS				
FACETS STAND		MARKS	Learner – Self- Assessment	Teacher Assessment	Internal Moderation	Provincial Moderation	External Moderation
			1	2	3	4	5
CUTTING	4 off 230 mm (5 x 4)	20					
	Cut corner to 45° (5 x 8)	40					
	4 off 230 mm (5 x 4)	20					
	Remove all burs	5					
WELDING AND ASSEMBLY	Tag weld 4 corners (5 x 4)	20					
	Permanent weld 4 corners (5 x 4)	20					
	Corners 90° (5 x 4)	20					
	Tag weld 4 legs to top (5 x 4)	20					
	Permanent weld 4 legs to top (5 x 4)	20					
	Legs 90° to top (5 x 4)	20					
Finishing	Remove all slag and overall neatness	5					
Sub-Total		210					
TOTAL		50					
SIGNATURE OF TEACHER:						Date	
SIGNATURE OF HOD:						Date	
SIGNATURE OF PRINCIPAL:						Date	
SIGNATURE OF SUBJECT ADVISOR:						Date	

PHASE 2

DOG FEEDER – Feeder Bowl

Start date: April 2024

Completion date: June 2024

Mark allocation: 50

DEVELOPMENT AND CONSTRUCTION OF THE FEEDER BOWL

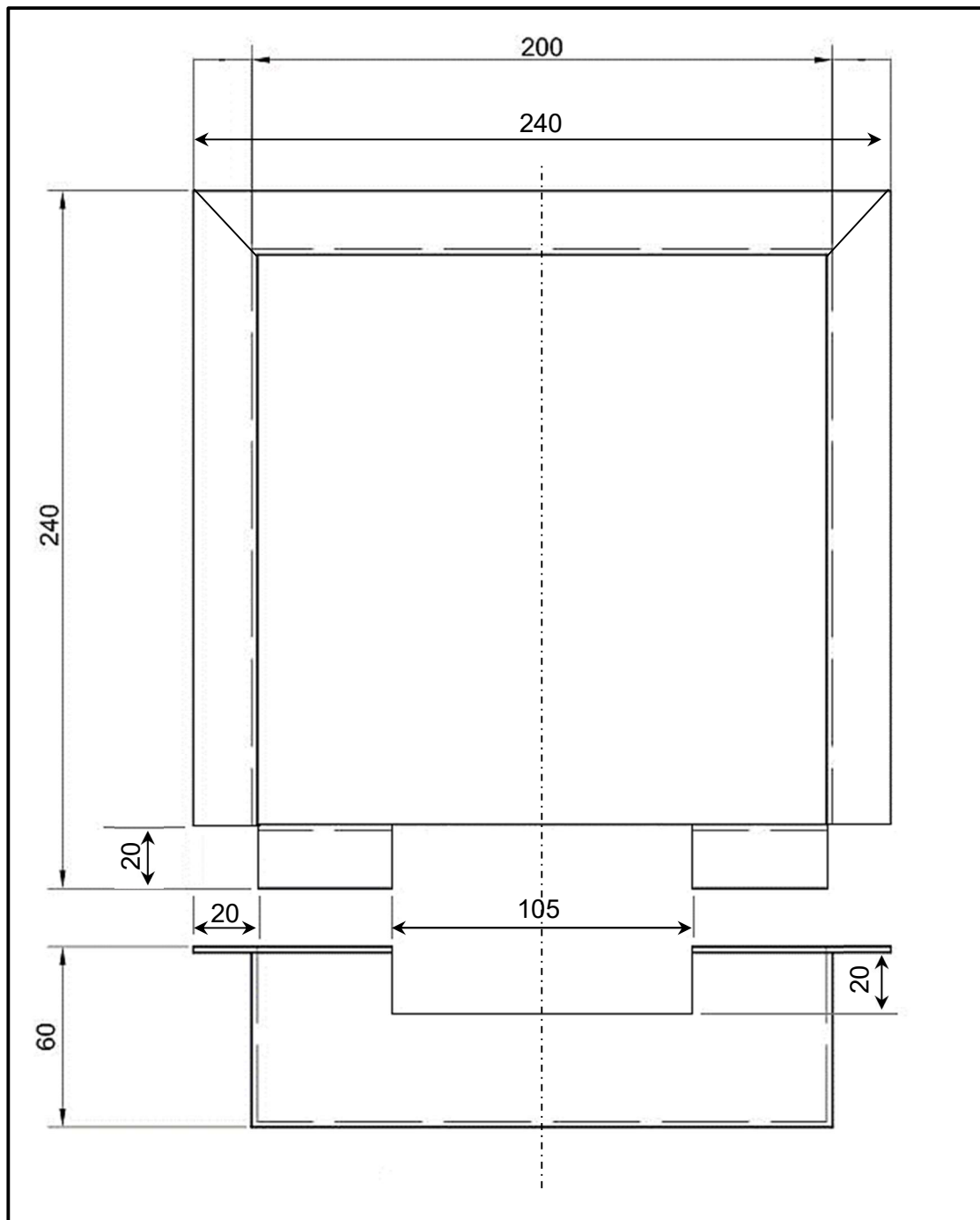


FIGURE 5 – FEEDER BOWL

Materials and Equipment:

- 400 x 400 x 1,6 mm (2 mm) sheet metal
- Welding rods (2mm)
- Measuring equipment
- PPE
- Welding machine
- Angle Grinder
- Files
- Box bender / Brake-press

Criteria

- In overall, sizes must be within ± 2 mm of the required measurement.
- All the welding must be cleaned of all slag.
- After all dimensions had been marked out, it must first be taken for assessment.
- All edges must be cleaned from all cutting burs.
- Great care should be taken when cutting out material before bending.
- Development and template must be made BEFORE cutting of material is taking place.

Template Development:

4. By the use of Technical Drawing equipment, create a template in order to cut out your project from your material.
5. Use calculations to calculate (if necessary) the correct length of each of the sector lines and create a template which you have to use to transfer measurement to a plate.
6. Label your template with your name and the evidence of all calculations (if necessary) must in your portfolio file.

GRADE: 11		YEAR: 2024		SCHOOL:				
DATE STARTED:				DATE COMPLETED:				
SUBJECT: WELDING AND METALWORK				TEACHER:				
PROJECT: Phase 2				Page 1 of				
NAMES OF LEARNERS								
FACETS FEEDER BOWL		MARKS	Learner – Self- Assessment	Teacher Assessment	Internal Moderation	Provincial Moderation	External Moderation	COMMENTS
			1	2	3	4	5	
Development and Cutting	Create template for bowl	5						
	Cutting out of 2 front corners (5 x 2)	10						
	Cut out spout clearance	5						
	Cut out corners for legs (5 x 2)	10						
Bend	Bend top edges 90° (5 x 4)	20						
	Bend sides 90° (5 x 4)	20						
Weld	Tag weld 4 corners (5 x 4)	20						
	Permanent weld 4 corners (5 x 4)	20						
Dimensions	Bowl sides 200 x 200 mm	5						
	Top sizes including edge 240 x 240 mm	5						
	Spout cut out 105 x 60	5						
	Top edges 20 mm	5						
	Bowl inside corners 90° (5 x 4)	20						
Finishing	Overall appearance and neatness	5						
Sub-Total		155						
TOTAL		50						
SIGNATURE OF TEACHER:							Date	
SIGNATURE OF HOD:							Date	
SIGNATURE OF PRINCIPAL:							Date	
SIGNATURE OF SUBJECT ADVISOR:							Date	

PHASE 3

DOG FEEDER – Lid with Handle

Start date: July 2024

Completion date: September 2024

Mark allocation: 50

LID WITH HANDLE

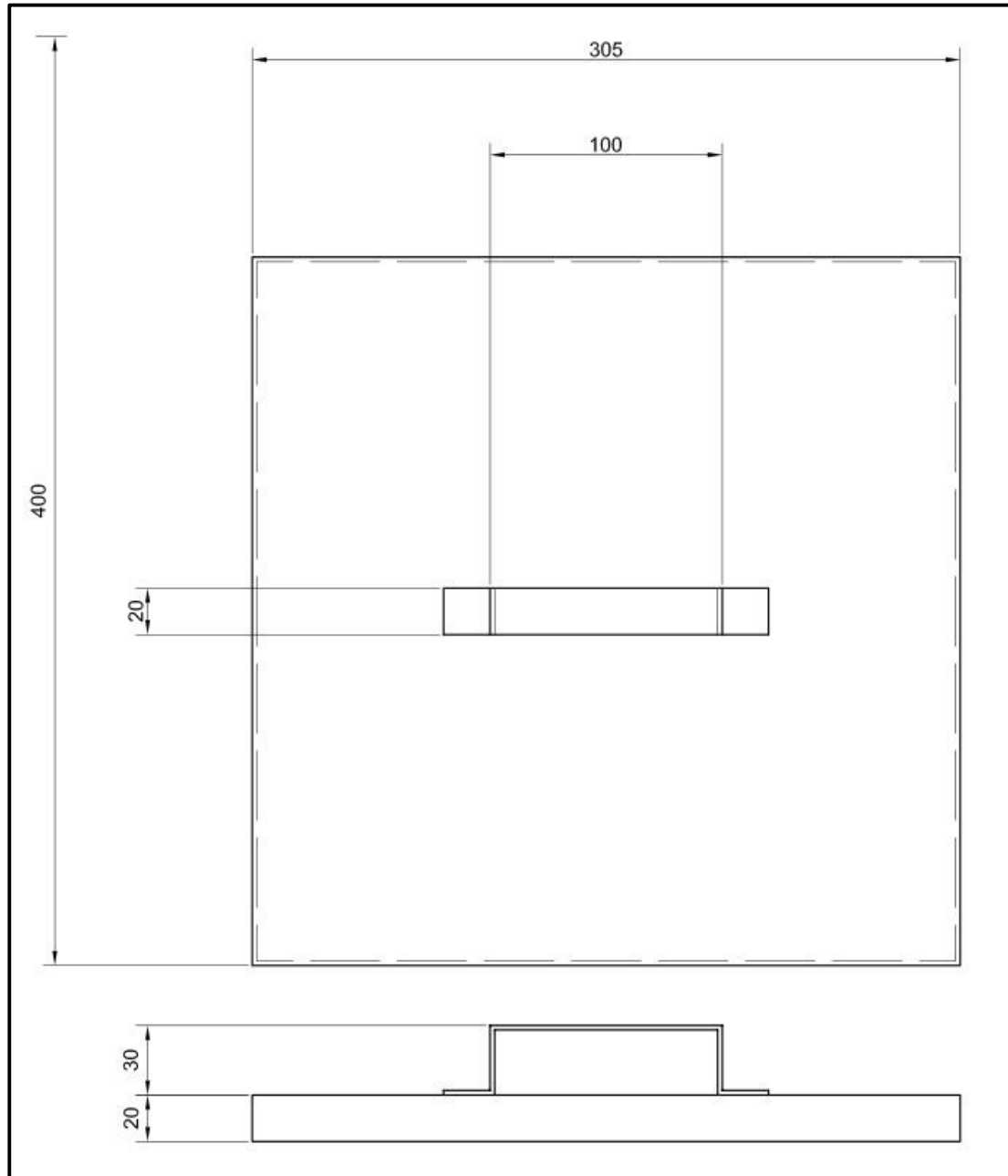


FIGURE 6 – LID WITH HANDLE

Materials and Equipment:

- 1 off 350 x 350 x 1,6 (2 mm) sheet metal
- 1 off 200 x 20 x 1,6 (2 mm) sheet metal
- Welding rods (2 mm)
- Measuring equipment
- PPE
- Welding machine
- Guillotine
- Angle Grinder
- Box bender / Brake-press
- Files

Criteria

- In overall, sizes must be within ± 2 mm of the required measurement.
- All the welding must be cleaned of all slag.
- After all dimensions had been marked out, it must first be taken for assessment.
- All edges must be cleaned from all cutting burs.
- Great care should be taken when cutting out material before bending.
- Handle can be cut from same material and therefor it must be included into required cutting list.

GRADE: 11		YEAR: 2024		SCHOOL:				
DATE STARTED:				DATE COMPLETED:				
SUBJECT: WELDING AND METALWORK				TEACHER:				
PROJECT: Phase 3				Page 1 of				
NAMES OF LEARNERS								
FACETS		MARKS	Learner – Self-	Teacher Assessment	Internal Moderation	Provincial Moderation	External Moderation	COMMENTS
LID WITH HANDLE			1	2	3	4	5	
Handle	Cut size 200 x 20	5						
	Bend side 1 = 2 x 90°	10						
	Bend side 2 = 2 x 90°	10						
	Side 1 = 20 x 30 mm	5						
	Side 2 = 20 x 30 mm	5						
	Top of handle 100 mm	5						
Lid	Cut out 4 corner of lid 20 x 20 mm (5 x 4)	20						
	Bend 4 sides 90°	20						
	Sides 20 mm (5 x 4)	20						
	Corners of lid 90° (5 x 4)	20						
Welding	Tag weld corners (5 x 4)	20						
	Permanent weld corners (5 x 4)	20						
	Tag weld handle to lid (5 x 2)	10						
	Permanent weld handle (5 x 2)	10						
Handle centre of lid		5						
Lid 305 x 305 mm		5						
Lid height 20 mm		5						
Finishing		5						
SUB- TOTAL		200						
TOTAL		50						
SIGNATURE OF TEACHER:						Date		
SIGNATURE OF HOD:						Date		
SIGNATURE OF PRINCIPAL:						Date		
SIGNATURE OF SUBJECT ADVISOR:						Date		

PHASE 4

DOG FEEDER – Hopper and Spout

Start date: January 2024

Completion date: September 2024

Mark allocation: 100

CONSTRUCTION OF THE HOPPER AND SPOUT

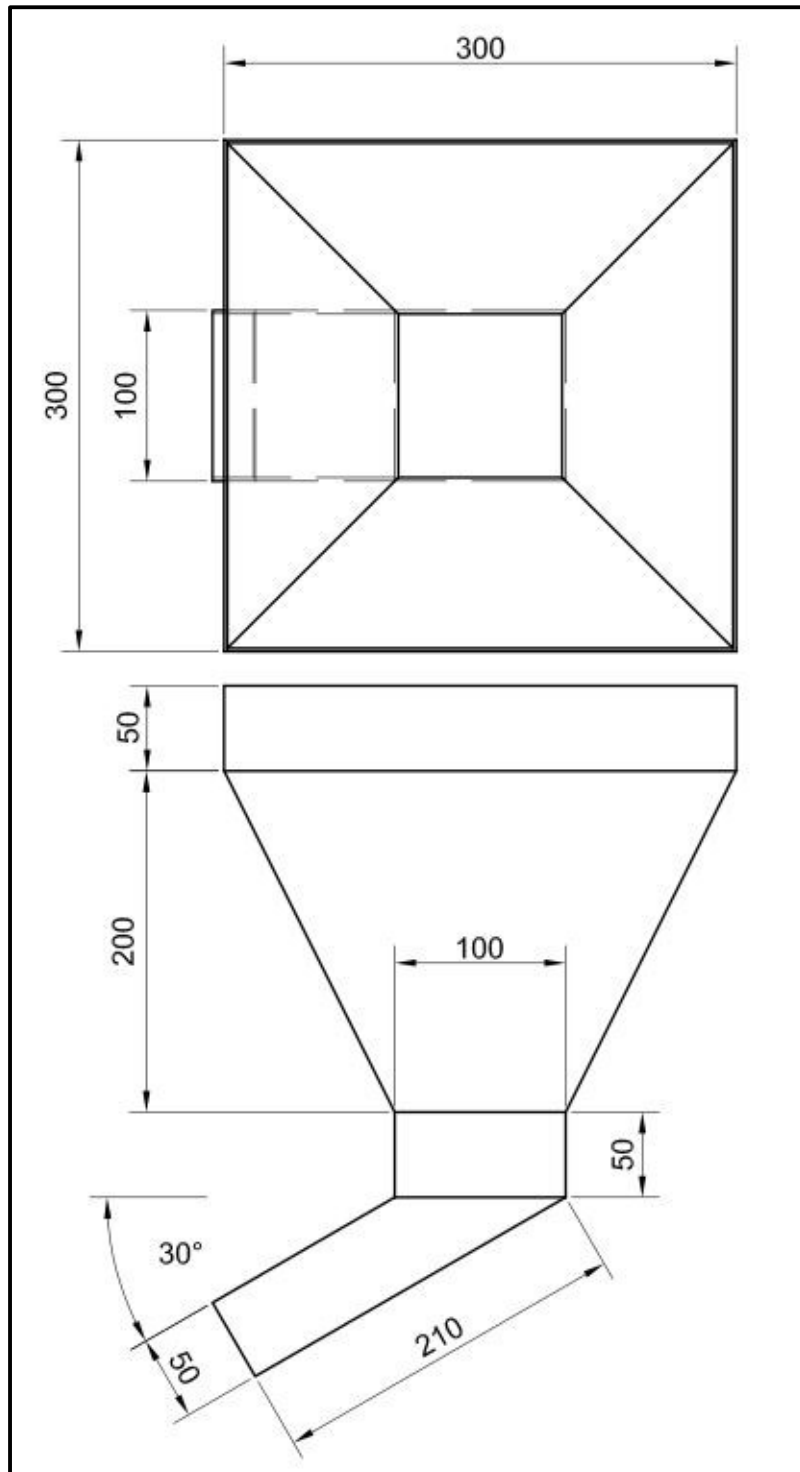


FIGURE 7 – HOPPER AND SPOUT

Materials and Equipment:

- 1 off 1220 x 300 x 1,6 (2 mm) flat sheet piece
- 1 off 400 x 300 x 1,6 (2 mm) flat sheet piece
- Welding rods (2 mm)
- Measuring equipment
- PPE
- Welding machine
- Guillotine
- Angle Grinder
- Files
- Box bender / Brake-press
- Technical Drawing equipment

Criteria

- In overall, sizes must be within ± 2 mm of the required measurement.
- All the welding must be cleaned of all slag.
- After all dimensions had been marked out, it must first be taken for assessment.
- All edges must be cleaned from all cutting burs.
- Great care should be taken when cutting out material before bending.
- Calculations MUST be evident in portfolio file (WORKSHEET 4.1)

Template Development:

1. By the use of Technical Drawing equipment, create a template of a square-to-square hopper with a square dimension on top of 300 x 300 and on the bottom of 100 x 100.
2. Use calculations to calculate the correct length of each of the sector lines and create a template which you have to use to transfer measurement to a plate when creating the square-to-square hopper piece.
3. Label your template with your name and the evidence of all calculations must in your portfolio file.

WORKSHEET 4.1

Learner Name:

HOPPER CALCULATIONS

SPOUT CALCULATIONS

THIS WORKSHEET MUST BE EVIDENT IN LEARNER PORTFOLIO OF EVIDENCE AND MUST BE PRESENTED FOR MODERATION.

GRADE: 11		YEAR: 2024		SCHOOL:			
DATE STARTED:				DATE COMPLETED:			
SUBJECT: WELDING AND METALWORK				TEACHER:			
PROJECT: Phase 4				Page 1 of _____			
NAMES OF LEARNERS							
FACETS MARK SHEET A – HOPPER		MARKS	Learner – Self-Assessment	Teacher Assessment	Internal Moderation	Provincial Moderation	External Moderation
			1	2	3	4	5
			COMMENTS				
Development	Hopper development	5					
	Calculations of hopper (Worksheet 4.1)	5					
	Create template	5					
	Cut out 4 sides	5					
	Bend top x 4	20					
Weld	Tag weld 4 x sides (5 x 4)	20					
	Permanent weld 4 sides (5 x 4)	20					
Dimensions	Top height 50 mm (5 x 4)	20					
	Hopper sides height 200 mm (5 x 4)	20					
	Down pipe height 50 mm (5 x 4)	20					
	Down pipe width 100 mm (5 x 4)	20					
	Total hopper height 300 mm (5 x 4)	20					
Finishing		5					
SUB- TOTAL MARK SHEET A		185					
SIGNATURE OF TEACHER:						Date	
SIGNATURE OF HOD:						Date	
SIGNATURE OF PRINCIPAL:						Date	
SIGNATURE OF SUBJECT ADVISOR:						Date	

GRADE: 11		YEAR: 2024		SCHOOL:			
DATE STARTED:				DATE COMPLETED:			
SUBJECT: WELDING AND METALWORK				TEACHER:			
PROJECT: Phase 4				Page 1 of			
NAMES OF LEARNERS							
FACETS MARK SHEET B – SPOUT		MARKS	Learner – Self- Assessment	Teacher Assessment	Internal Moderation	Provincial Moderation	External Moderation
			1	2	3	4	5
			COMMENTS				
Development	Development of spout	5					
	Calculations for spout (Worksheet 4.1)	5					
	Create template	5					
	Cut out bottom and sides (1 piece)	5					
	Cut out top	5					
Bend and Weld	Bend 2 side 90°	10					
	Tag weld top onto sides	10					
	Permanent weld top onto sides	10					
Dimen- sions	30° to hopper	5					
	Sides 50 x 2	10					
	Bottom 210 mm	5					
Weld	Tag weld 4 x sides onto hopper	20					
	Permanent weld	20					
	Finishing of spout	5					
Complete finishing and functionality		5					
SUB- TOTAL MARK SHEET B		125					
SUB- TOTAL MARK SHEET A		185					
SUB- TOTAL		310					
TOTAL		100					
SIGNATURE OF TEACHER:						Date	
SIGNATURE OF HOD:						Date	
SIGNATURE OF PRINCIPAL:						Date	
SIGNATURE OF SUBJECT ADVISOR:						Date	