



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

MECHANICAL TECHNOLOGY (WELDING AND METALWORK)

GUIDELINES FOR PRACTICAL ASSESSMENT TASKS

GRADE 12

2021

These guidelines consist of 22 pages.

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1. INTRODUCTION/BACKGROUND

The 18 Curriculum and Assessment Policy Statements subjects which contain a practical component all include a practical assessment task (PAT). These subjects are:

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

A practical assessment task (PAT) mark is a compulsory component of the final promotion mark for all candidates offering subjects that have a practical component and counts 25% (100 marks) of the end-of-year examination mark. The PAT is implemented across the first three terms of the school year. This is broken down into different phases or a series of smaller activities that make up the PAT. The PAT allows for learners to be assessed on a regular basis during the school year and it also allows for the assessment of skills that cannot be assessed in a written format, e.g. test or examination. It is therefore important that schools ensure that all learners complete the practical assessment tasks within the stipulated period to ensure that learners are resulted at the end of the school year. The planning and execution of the PAT differs from subject to subject.

The PAT allows the teacher 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% 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.

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 that should aim to develop the talents of a learner so that he/she can contribute to the well-being of the society by using and developing scientific and technological resources.

To prepare a learner in MECHANICAL TECHNOLOGY'S specialisation fields, one must focus on the following:

- An attitude where the learner can selectively use ideas, gather evidence and facts, to drawing logical conclusions to put them to good use creatively and with imagination;
- A capability to express ideas and information clearly by speech, writing, drawing and manufacturing and
- 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 sciences is essential to equip the MECHANICAL TECHNOLOGY learner with the necessary practical capabilities for the required processes. Practical training is the application 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 to develop the learner physically and mentally. The learner must show his/her initiative, curiosity and persistence in learning. In order to stimulate and develop self-confidence the granting of some degree of responsibility during the practical application is very important.

2. TEACHER GUIDELINES

2.1 Administration of the PAT

Teachers are requested to make copies of the different specialisation PAT documents. These documents need to be handed out to the learners at the beginning of the year. The Practical Assessment Task for Grade 12 is externally set, internally assessed and externally moderated.

Teachers must attach due dates for the different facets of the PAT (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 within the first three terms. The PAT should be completed under controlled conditions. (Refer to Mechanical Technology SPECIALISATION: CAPS Grades 10–12.)

2.2 Assessment of the PAT

Frequent and developmental feedback is needed to ensure necessary guidance and support to the learner.

Both formal and informal assessment should be conducted to ensure that the embedded skills are developed. Informal assessment can be conducted only to monitor progress of the learner. Formal assessment should always be conducted and recorded by the teacher.

2.3 Moderation of the PAT

The tasks, projects, assessment criteria as well as the mark sheets must be presented to the moderator during moderation of the PAT.

The moderator should be able to call on a learner to explain and demonstrate the functions, principles and skills during the moderation purposes.

On completion the moderator will, if necessary, adjust the marks of the group up or downwards depending on the decision reached as a result of moderation.

2.4 Consequences of absence/non-submission of tasks

If a learner's practical assessment task is incomplete or unavailable with valid reason, the learner may be given three weeks before the commencement of the final end-of-year examination to submit the outstanding task. Should the learner fail to fulfil the outstanding PAT requirement, such a learner will be awarded a zero mark 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 fulfil 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 tasks.

2.5 Declaration of Authenticity

NAME OF SCHOOL:

NAME OF LEARNER:

(FULL NAME(S) AND SURNAME)

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/her own.

SIGNATURE OF TEACHER

DATE

SCHOOL STAMP

3. LEARNER GUIDELINES

Instructions to the learner

- The PAT consists of a specialisation task in **Welding and Metalwork**. The practical work is spread over three terms, as set out in this document. (See CAPS document.)
- All tasks must be completed according to the time frames set out in each of the tasks.
- Learners are requested to actively engage in all practical assessment tasks.
- Learners who are uncooperative will receive demerits or a zero mark for that particular section of the work.
- Learners who act unsafely in the workshop and place other learners in danger, will be given additional corrective tasks to improve their safety awareness.

4. SPECIALISATION

WELDING AND METALWORK

TASK: BUILT-IN BRAAI

Term: 1 to 3

Starting date: January 2021

Completion date: August 2021

Follow the following criteria and standards:

- The design of the built-in braai is shown in the given figures.
- Dimensions can be changed according to personal requirements, but not the design.
- The width, height and depth of the braai may be changed.
- Keep affordability in mind. (Standard dimensions of sheet metal)
- The chimney cap is according to own design. Make drawings and templates.
- All 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.
- All slag must be cleaned from the welding joints.
- After all dimensions have been marked out, record marks.
- All edges must be cleaned from all burrs.
- The project must be well presented.

RESOURCES REQUIRED FOR THE PAT:

COMPONENT	MATERIAL	DIMENSIONS	QUANTITY
Legs	2 mm sheet metal	200 x 50	4
Base	2 mm sheet metal	400 x 300	1
Back and sides	2 mm sheet metal	1 000 x 400	1
Grid support	2 mm flat bar/ angle iron	300 x 20 x 20	4
Ash pan	2 mm sheet metal	430 x 320	1
Grid	1,6 mm mesh	390 x 280	1
Grid frame	6 mm round bar/ 10 mm flat bar	± 1 400	1
Transition piece	2 mm sheet metal	According to template	1
Chimney	2 mm sheet metal	150 x 400	4
Chimney cap	0,8–2 mm sheet metal	Own design	1

FIGURE 1 shows the built-in braai.

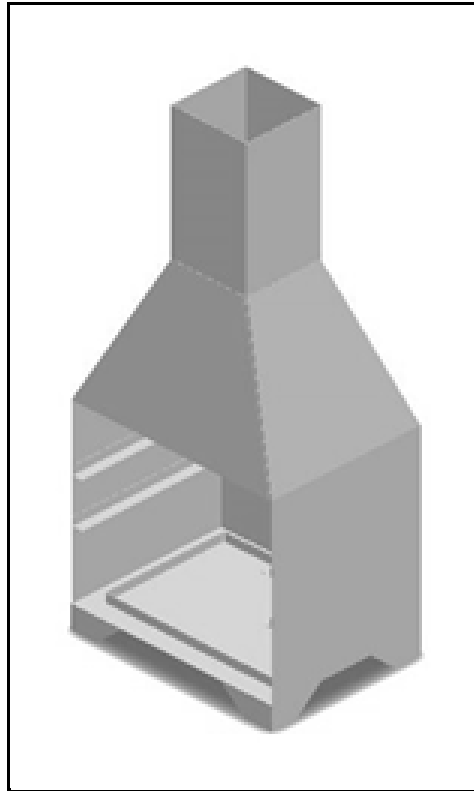


FIGURE 1: BUILT-IN BRAAI

FIGURES 2, 3 and 4 show the shell, grid supports and legs.

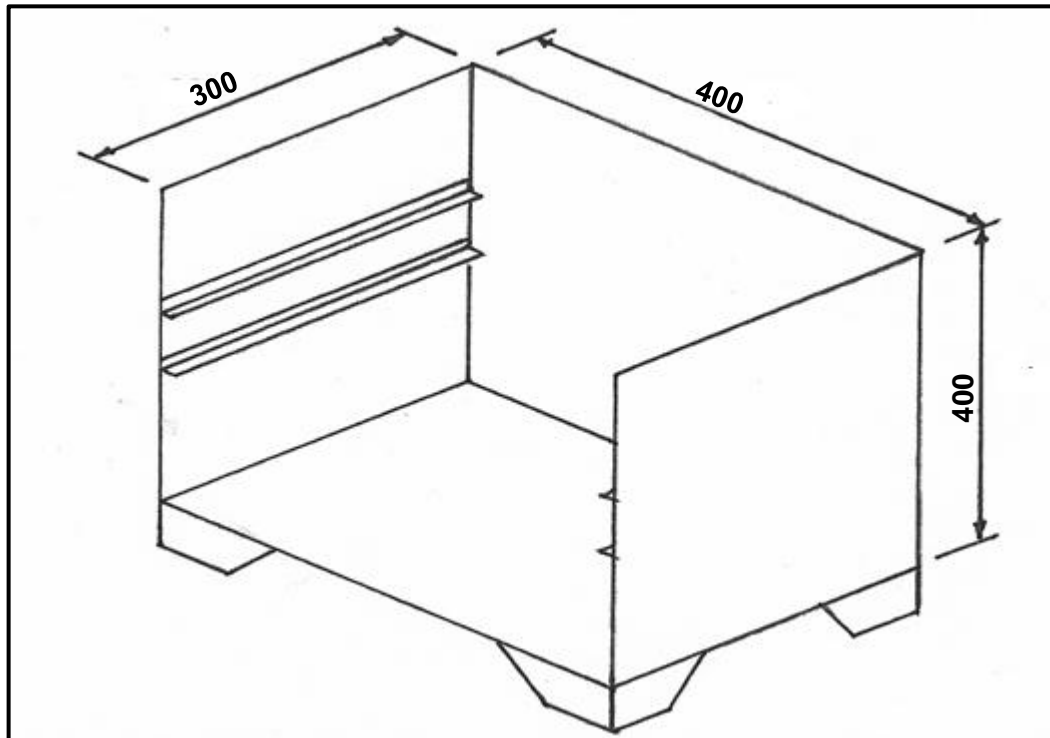


FIGURE 2: SHELL WITH GRID SUPPORTS AND LEGS

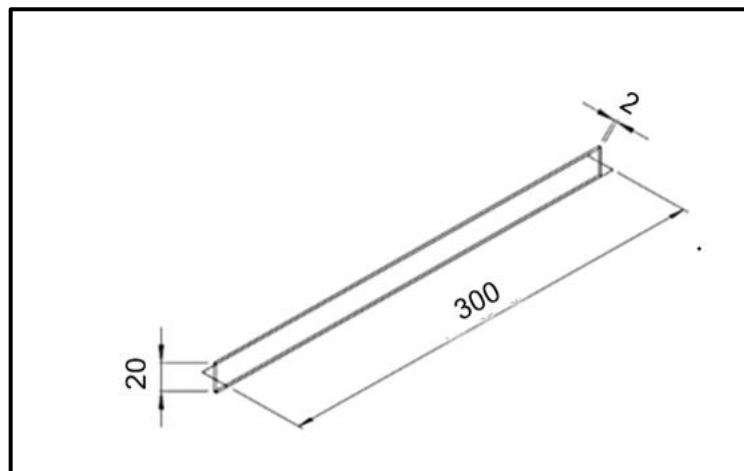


FIGURE 3: GRID SUPPORT

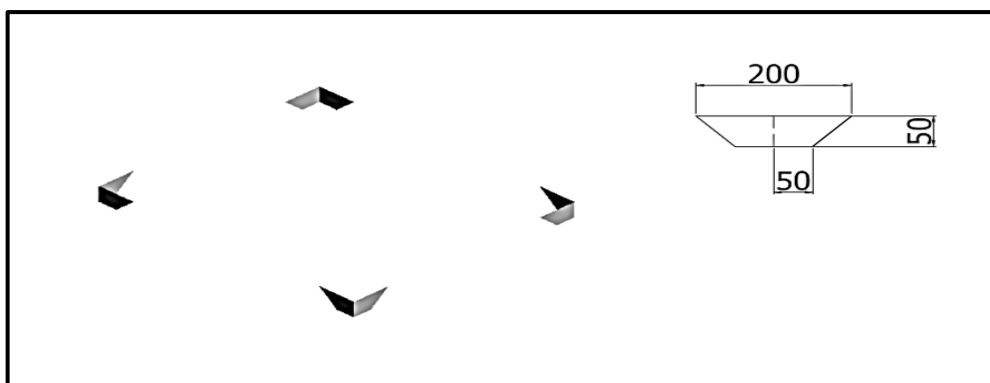


FIGURE 4: LEGS

MECHANICAL TECHNOLOGY											
WELDING AND METALWORK											
MARK SHEET – SHELL, GRID SUPPORTS, GRID, LEGS AND ASH PAN											
GRADE		12	DATE								
PROJECT		BUILT-IN BRAAI									
		LEARNERS									
FACETS	MARKS										
		1	2	3	4	5	6	7	8	9	10
Shell: cutting and bending	15										
Shell and base welding	15										
Supports: cutting and welding	10										
Leg: cutting	10										
Leg: bends and welding	10										
Grid: cutting and welding	15										
Ash pan: cutting and bending	15										
Ash pan: welding	10										
TOTAL	100										
CONVERT	50										
SIGNATURE OF TEACHER											
SIGNATURE OF SUBJECT HEAD											
SIGNATURE OF MODERATOR											

FIGURES 5 and 6 show the braai grid and ash pan.

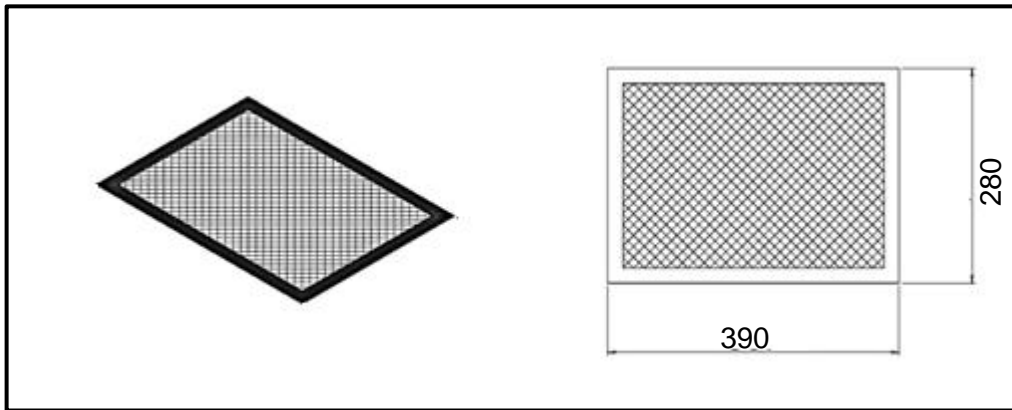


FIGURE 5: BRAAI GRID

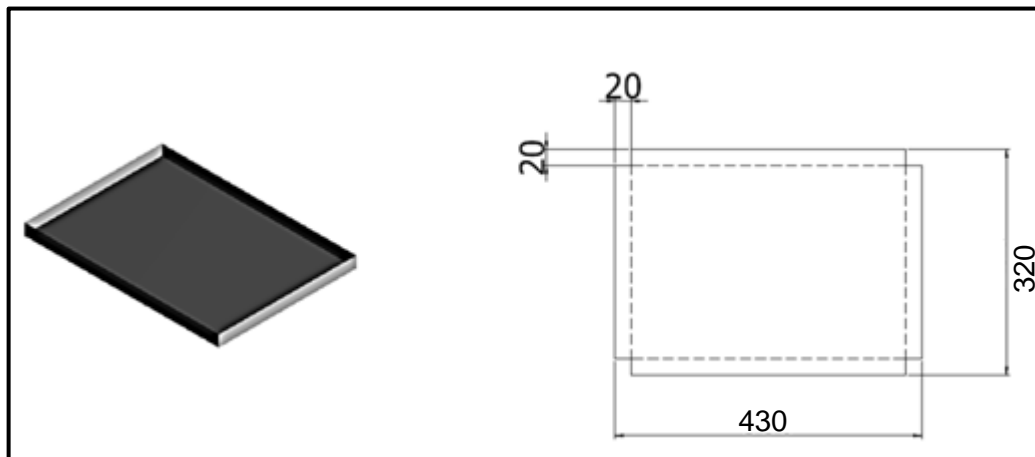


FIGURE 6: ASH PAN

FIGURES 7 and 8 show the transition piece.

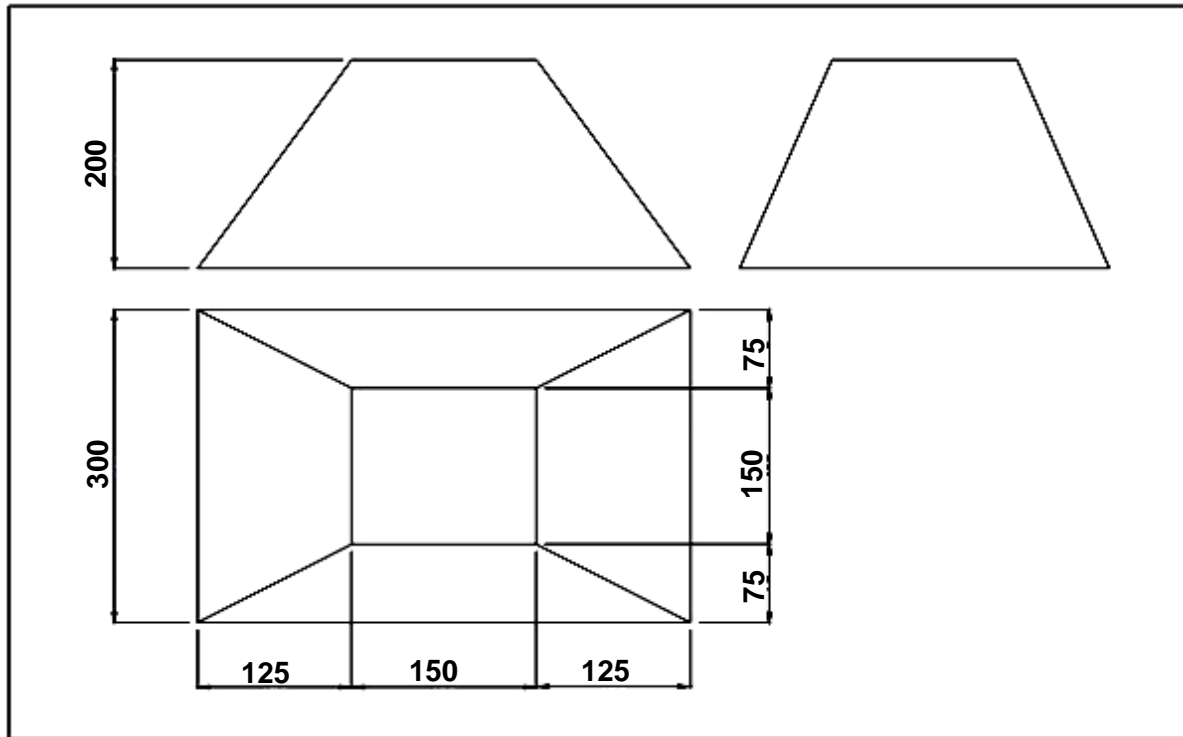


FIGURE 7: TRANSITION PIECE

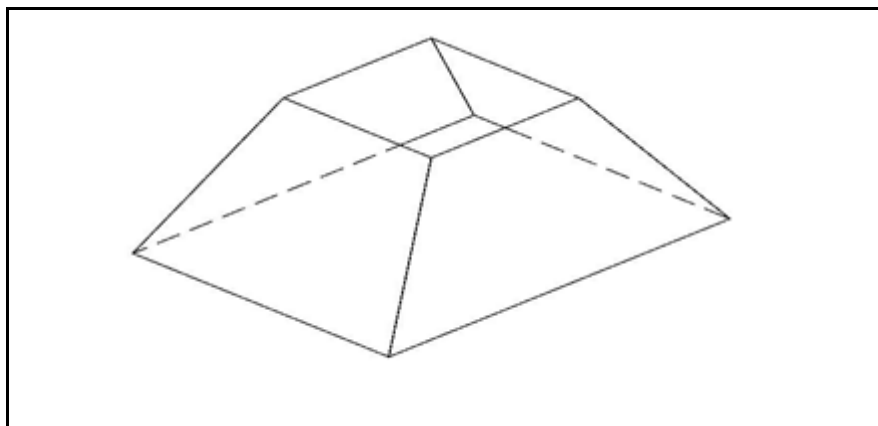


FIGURE 8: ISOMETRIC TRANSITION PIECE

FIGURE 9 shows the chimney.

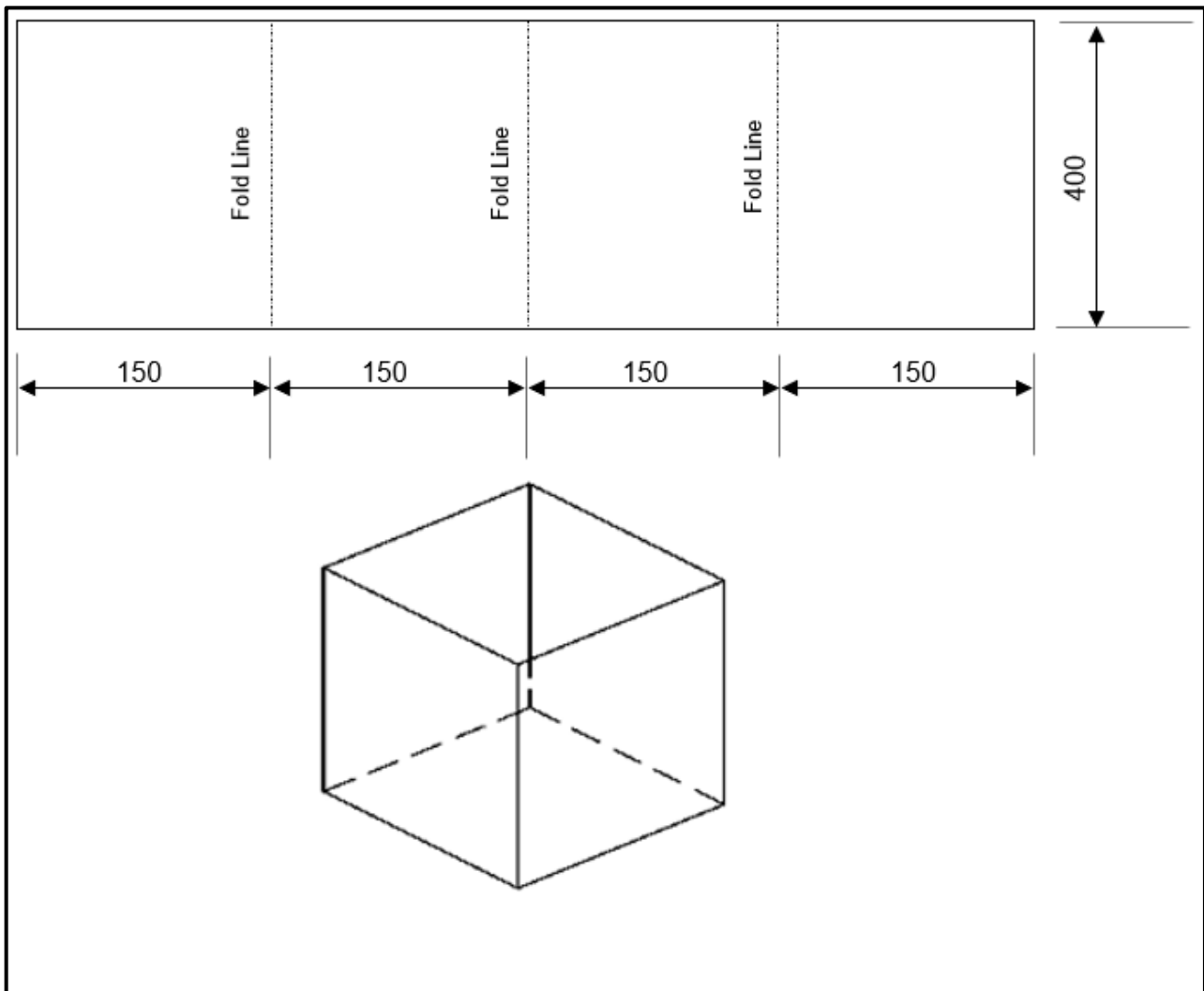


FIGURE 9: CHIMNEY DEVELOPMENT

MECHANICAL TECHNOLOGY											
WELDING AND METALWORK											
MARK SHEET – TRANSITION PIECE AND CHIMNEY											
GRADE		12	DATE								
PROJECT		BUILT-IN BRAAI									
		LEARNERS									
FACETS	MARKS										
		1	2	3	4	5	6	7	8	9	10
Transition template by calculation	15										
Template drawing on cardboard	15										
Transition marking and cutting	15										
Transition joining	15										
Chimney: cutting and welding	15										
Chimney: joining to transition	15										
Assembly of chimney, transition and shell	10										
TOTAL	100										
CONVERT	50										
SIGNATURE OF TEACHER											
SIGNATURE OF SUBJECT HEAD											
SIGNATURE OF MODERATOR											

CHIMNEY CAP**Criteria for the chimney cap:**

- Design a chimney cap to fit onto the chimney top for protection and to prevent objects from falling into the chimney.
- The chimney cap design must be based on the cone development principles.

DESCRIPTION	MATERIAL
Chimney cap	0,8–2 mm sheet metal
4 x supports	2 mm sheet metal

FIGURE 10 shows examples of chimney caps.



FIGURE 10: CHIMNEY CAPS

NAME: _____

2.	Welding – Chimney cap:	
2.1	Draw neat freehand sketches of TWO possible options for the chimney cap.	
OPTION 1		
	(5)	

OPTION 2

(5)

2.2	Choose the option that you are going to use and motivate your choice.
(5)	

MECHANICAL TECHNOLOGY											
WELDING AND METALWORK											
MARK SHEET – CHIMNEY CAP (OWN DESIGN)											
GRADE		12	DATE								
PROJECT		BUILT-IN BRAAI									
		LEARNERS									
FACETS	MARKS										
		1	2	3	4	5	6	7	8	9	10
Drawings (Own design)	15										
Development of chimney cap	15										
Template	10										
Attaching cap to chimney	10										
TOTAL	50										
SIGNATURE OF TEACHER											
SIGNATURE OF SUBJECT HEAD											
SIGNATURE OF MODERATOR											

MECHANICAL TECHNOLOGY											
WELDING AND METALWORK											
COMPOSITE MARK SHEET											
GRADE		12	DATE								
PROJECT		BUILT-IN BRAAI									
		LEARNERS									
FACETS	MARKS										
		1	2	3	4	5	6	7	8	9	10
Shell, grid supports, grid, legs and ash pan	100										
Transition piece and chimney	100										
Chimney cap	50										
TOTAL	250										
TOTAL PAT MARK	100										
SIGNATURE OF TEACHER											
SIGNATURE OF SUBJECT HEAD											
SIGNATURE OF MODERATOR											

5. CONCLUSION

On completion of the practical assessment task learners should be able to demonstrate their understanding of the industry, enhance their knowledge, skills, values and reasoning abilities as well as establish connections to life outside the classroom and address real-world challenges. The PAT furthermore develops learners' life skills and provides opportunities for learners to engage in their own learning.