



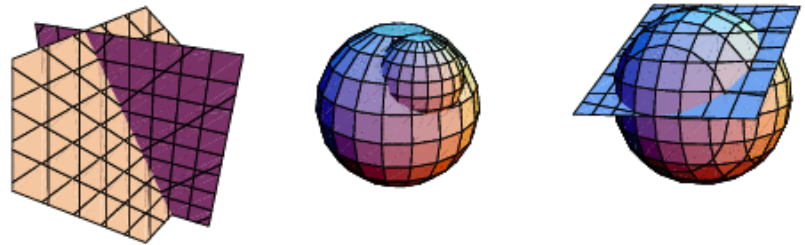
NQF Level: **1**

US No: **7463**

Facilitator Guide

Primary Agriculture

Shape, Space, Time and Motion



My name:

Company:

Commodity: Date:

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agriculture

Department:
Agriculture
REPUBLIC OF SOUTH AFRICA



Before you get started...

Dear Facilitator,

This Facilitator Guide (together with the relevant Learner Guide) is aimed at facilitators who will be assisting learners wishing to complete the following unit standard:

Title:	Describe and represent objects and the environment in terms of shape, space, time and motion		
US No:	7463	NQF Level:	1
		Credits:	2

This guide contains all necessary facilitation instructions to ensure that learners will attain the expected competencies required by the above-mentioned unit standard. This guide is designed to be used during the presentation of a learning session based on this unit standard. The full unit standard is attached at the end of this guide as well as at the end of the relevant Learner Guide. Learners are advised to read the unit standard at their time. Please discuss the unit standard with the learners to ensure that they understand what is expected from them to achieve the outcomes of the unit standard.

This unit standard is one of the building blocks in the qualifications listed below. Please mark the qualification you are currently facilitating, because that will be determined by the context of application:

Title	ID Number	NQF Level	Credits	Mark
National Certificate in Animal Production	48970	1	120	<input type="checkbox"/>
National Certificate in Mixed Farming Systems	48971	1	120	<input type="checkbox"/>
National Certificate in Plant Production	48972	1	120	<input type="checkbox"/>

Please mark the learning program the learners are enrolled in:

Are you facilitating a:	Y	N
Learnership?	<input type="checkbox"/>	<input type="checkbox"/>
Skills Program?	<input type="checkbox"/>	<input type="checkbox"/>
Short Course?	<input type="checkbox"/>	<input type="checkbox"/>

Note to Facilitator:

If you are presenting this module as part of a full qualification or learnership, please ensure that you have familiarised yourself with the content of the qualification.

Please explain the above concepts to the learner.

There are four guides, namely the Learner Guide, the Learner Workbook, the Assessor Guide and the Facilitator Guide. These guides have been developed to address specific aspects of the learning experience. You therefore need to use these guides additional each other.

Make this an enjoyable learning experience!

Context of Application ...

Primary Agriculture is a diverse sector and a wide range of commodities is being produced for both national and international market. Each commodity has its own production requirements and practices. You will be facilitating the learning process within a specific context where a specific agricultural commodity is being produced. The learning material has been written in a **generic** manner, as it is aimed to be available on national level and should be suitable to be applied within a variety of commodities. It is therefore inclusive of all agricultural commodities and crop in this field. Therefore, the examples that are being used in the materials may not always be applicable to your specific community, commodity, environment or region.

This presents you, the facilitator, with the challenge to **contextualise** the learning material. It is imperative that you, the Facilitator and Assessor interpret and present activities, case studies and projects related to the material in such a way that learners can easily identify and apply their knowledge within their own context. This will require from you to add examples of crop, which are applicable to the community or farm. Learners must be guided with examples from their own communities, commodities, environment or regions. This should be done supplementary to the learning material:

- Examples relevant to the commodity,
- Including commodity specific requirements,
- Including operating procedures of the farm,
- Including agricultural practice specific requirements,
- Agricultural markets,
- Guiding learners to write these specifics down in the learning guide,
- Etc.

The contextualisation of the learning material is a very important step in preparing for and facilitating the learning experience and enough time and effort should be put into this exercise.

According to the qualifications mentioned on page 2, this module could be contextualised to fit the following groups of commodities:

Plant Production	Animal Production	
<ul style="list-style-type: none"> • Organic production, • Hydroponic production, • Perma-culture production, • Agronomy, • Horticulture, Natural resources harvesting. 	<ul style="list-style-type: none"> • Small stock production, • Large stock production, • Dairy production, • Pig production, • Poultry production, • Game, • Aqua / mari culture, • Commercial insects • Animal fibres harvesting, • Bee keeping. 	<ul style="list-style-type: none"> • Natural resources harvesting • Organic production, • Perma-culture production, • Eco/Agri Tourism, • Agro Chemicals, • Horse Breeding, etc.

How to use this guide ...

Throughout the guide information is given specifically aimed at you, the facilitator, to **assist** in the actual presentation of the learning material and/or facilitation of the learning process. Although this guide contains all the information required for attaining competency in this unit standard, references to additional resources, both printed and electronic, are provided for additional reference by the facilitator and further study by the learner.

Please note that the purpose of this information is merely to **guide** you, the facilitator, and is provided as a suggestion of possibilities. It remains the responsibility of every facilitator to re-assess the learner/s in each learning situation throughout the learning process in order to stay in touch with their specific learning needs. This should be the determining factor in the choice of the learning approach to follow.

Use the different boxes listed below for identification purposes:



Instructions regarding **activities**, whether group or individual activities will be described in this box.



Facilitators' Tip ...

My Notes ...

You can use this box for your own notes/comments.

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What & How will you be Facilitating?

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The Learning Experience...

When learners have achieved this unit standard, they will be able to:

- ◆ Describe and represent the position and change in position of an object in space.
- ◆ Illustrate changes in size and shape of the appearance of objects as a result of changes in orientation.

Learners will specifically be able to:

- ◆ Describe and represent the position and change in position of an object in space.
- ◆ Illustrate changes in size & shape of appearance of objects as result of changes in orientation.



Facilitators' Tip ...

Remember to do a diagnostic assessment of the learner's prior learning and ensure that they are starting at the correct level.

Introduction



Facilitators' Tip ...

- You can devote 60 minutes to learner support, orientation and learner motivation for this section.
- This section helps the learner to understand the importance of numeracy and math in their daily lives and will help to build learner confidence for this subject.

■ Tick off True or False

Statement	True	False	Answer
1. There is one way to solve a problem...		✓	There are a variety of ways to solve math problems and variety of tools to assist with the process.
2. You need a 'math gene' or dominance of your left-brain to be successful at math...		✓	Like reading, the majority of people are born with the ability to do math. Children and adults need to maintain a positive attitude and the belief that they can do math. This self-belief has often been scarred somewhere in the past... today is the day to make a fresh start and begin from scratch!
3. People don't learn the basics anymore because of a reliance on calculators and computers....		✓	Research at this time indicates that calculators do not have a negative impact on achievement. The calculator is a powerful teaching tool when used appropriately. Most facilitators now help you to learn how to use any technological tool to your advantage!
4. You need to memorize a lot of facts, rules and formulas to be good at math...		✓	As stated earlier, there's more than one way to solve a problem. Memorizing procedures is not as effective as conceptually understanding concepts!

The question to ask yourself is: Do I really understand how, why, when this will work?

Positive attitudes towards math are the first step to success!

■ When does the most powerful learning usually occur?

- ◆ When one makes a mistake!
- ◆ If you take the time to analyse where you go wrong, you can't help but learn. Never feel badly about making mistakes in mathematics!
- ◆ Math has never been more important, technology demands that we work smarter and have stronger problem solving skills!

Now ... let's do math!

Learning Program Time Frames

	Total time allocated (hours)	Theoretical learning time allocated (hours)	Practical learning time allocated (hours)	Activities to be completed
Complete Program (including summative assessment)	20 hours	11 hours	9 hours	6 activities
Learner Orientation and "Ice Breaker"	1 hour	30 minutes	30 minutes	N/A
Purpose, Introduction and Learner Directions	1 hour	30 minutes	30 minutes	N/A
Session 1	6 hours	4 hours	2 hours	1 – 2
Session 2	8 hours	4 hours	4 hours	3 – 6
Preparation for Assessment & revision	4 hours	2 hours	2 hours	

Tips for level of learning



Remember the following before you get started:

This unit standard is aimed at level 1 learners.

- A typical level 1 learner might be exposed to the world of work through this learning program for the first time.
- Explain concepts and define words in a simple, clear and concise method throughout the learning program.
- Take special care to facilitate for ALL learners. Allow them opportunities to share experiences, prior knowledge, translate into their mother tongue for each other and enjoy the learning process.
- The examples given in this resource guide might be for a different geographical area or commodity to what the learner is exposed to – please adapt your examples accordingly.
- There should always be good communication between facilitators and mentors to ensure effective learning experience.
- During practical activities facilitators should be present at all times. Should that not be possible, the mentor should be available for attendance.

Facilitator's Checklist & Training Aids



Facilitators' Tip ...

- This checklist has been designed to assist you in delivering the best possible facilitation to the learners.
- Please use it and supply whatever resources you might have in short supply at your venue of learning.

Learner support strategies

Learners are supplied with all resources and aids as required by the programme – including:

- Objects & devices such as equipment, protective clothing, safety gear, etc.
- Learner Guides and Learner Workbook
- Visual aids, etc.

Use this checklist below during your preparation to ensure that you have all the equipment, documents and training aids for a successful session.

Preparation	Yes	No
Qualification Knowledge – I have familiarised myself with the content of the applicable qualification		
Unit Standard Knowledge – I have familiarised myself with the content of all aspects of the applicable unit standard		
Content Knowledge – I have sufficient knowledge of the content to enable me to facilitate with ease		
Application knowledge – I understand the programme matrix & have prepared for programme delivery accordingly		
Contextualisation – I have included information which is specific to the commodity and practices related to the commodity		
Ability to respond to learners background & experience – I have studied the learner demographics, age group, experience & circumstances & prepared for programme delivery accordingly		
Enthusiasm & Commitment – I am passionate about my subject & have prepared my programme delivery to create a motivating environment with real commitment to success		
Enterprise knowledge – I know & understand the values, ethics, vision & mission of the workplace & have prepared my programme delivery, reporting & administrative tasks accordingly.		

Equipment check:		
Learner guides x 1 per learner		
Assessment guides x 1 per learner		
Writing materials & stationary (facilitator & learner)		
White board & pens		
Flip chart paper		
Proxima projector & screen		
Laptop & programme disk		
Sample Hand-outs and examples of laws and other relevant documents		
Safety gear as prescribed by unit standard and applicable legislation		
Documentation checklist:		
Attendance Register		
Course Evaluation		
Learner Course Evaluation		
Portfolios of evidence		

Contextualisation of Content!

Go through this module and indicate what specific **information / activities / examples** should be included in this module.

Contextualisation	
What specific information / activities / examples should I include in this module?	
• Commodity specific?	
• Operating procedures of the farm?	
• Agricultural practices?	
• Agricultural markets?	

Session

1 Position and change of an object in space

Learner Guide:
Page 8

After completing this session, the learner should be able to:
SO 1: How to describe and represent the position and change in position of an object in space.

Concept (SO 1)	Time frame	Activities related to the concept
The positions of objects are described in relation to each other using graphs and sketches and written or verbal descriptions.	6 hours	Activity 1 and 2
The positions of objects are represented correctly on a Cartesian plane.		
The change of position of objects in terms of the relationship between space and time is described.		
Tessellations are identified.		



Facilitators' Tip ...

- You can devote 6 hour to session 1 of this learning material.
- Ensure that you orientate the learner as to what they are going to learn and why this is important.
- This section includes the "High level concepts regarding the Cartesian Plane".
- Whilst some of the concepts might appear too high level for NQF 1, they are in fact in line with activities that are performed daily by a level 1 learner.
- The trick is to orientate and facilitate awareness of the learner that "math is all around us", by using examples from the learner context whenever possible.



Facilitators' Tip ...

- Take a bit of extra time here.
- Whilst this might seem like history and theory, this is an important bit of information for the learner to know.
- Let learners read the history of how Descartes experimented with the Cartesian plane and why, and discuss it. It will stimulate their interest and help their understanding of "Why" it is necessary to explore concepts such as these on a mathematical level.
- Take the time to introduce learners to the "language" of the Cartesian plane as well as its look and feel.
- Allow learners an opportunity to "draw" the Cartesian plane of graph paper.
- Familiarise them with the 4 quadrants, the x and y axis and how to plot a point on it.
- This is a difficult concept for level 1 learners – so take a bit of extra time.
- If possible give learners a copy page of a map of the area where they live.
- Now ask them to visualise a certain place in the area – such as the street where they live / a sports field / a school etc.
- Now ask them to find it on the map.
- Let learners discuss and explain how a 3 dimensional object has been represented on a Cartesian plane and how they would explain to someone else how to find it by means of "plotting" on an x and y axis of the map.
- Explore the concept that all maps have x & y axis.
- It is important for learners to understand the definition, use and scientific basis of vectors.
- Explain the inter-related nature of vectors in terms of pest and disease control first.
- Then explain that mathematically all shapes and movements can also be defined by vectors.
- Allow learners to reference the words and concepts in a dictionary.
- It is important to prompt learners to check their progress by completing this self-assessment exercise.



Please allow learners to complete Activity 1 and 2 in their workbooks

Type of activity	Resources	Instructions to give to the learners	Conclusions
1. Complete the worksheet	Learner Workbook	As per instructions in workbook.	Related assessment criteria.
2. Complete the worksheet	Learner Workbook	As per instructions in workbook.	Related assessment criteria.

Session

2 The development of base-ten number system

Learner Guide:
Page 18

After completing this session, the learner should be able to:

SO 2: Critically analyse the development of the base-ten number system.

Concept (SO 2)	Time frame	Activities related to the concept
The perception of the changes in an object is described from different observational points.	8 hours	Activity 3 – 6
3-dimensional objects are represented in 2 dimensions in such a way that the size and shape of the object are correctly represented.		
The relationships between surface area and volume are described.		



Facilitators' Tip ...

- You can devote 8 hours to session 1 of this learning material.
- Ensure that you orientate the learner as to what they are going to learn and why this is important.
- This section includes concepts regarding 1, 2 and 3 dimensional space.
- Unlike in session 1, you will find that learner are a lot more at ease with this concept, as it is easier to visualise. DO NOT fall into the trap of completing this session first. Use it as a re-assurance method and stepping stone to the next level.
- Also allow time for the high-level tessellation examples at the end of the session. It prepares the learner for NQF 2.
- Take a bit of extra time here.
- Please try to find as many examples and descriptions as you can from the immediate learner concept.
- Allow learners the opportunity to discuss and explore the occurrence of Tessellation in their daily lives and in their working environment.
- It will build their confidence and allow for CCFO development.



Facilitators' Tip ...

- Take a bit of extra time here.
- Most level 1 learner's might have encountered the difficulty of scale drawing of a floor plan / layout previously.
- Allow learners who have managed to it well to teach others. Peer learning often works best to help learners here.
- Also be sure to relate the drafting of squares etc, back to the Cartesian plane exercise in session 1.
- Allow learners the opportunity to physically explore their environment and to go out and find examples of "perimeter" applications – such as fencing of a farm, building a dam, laying out an orchard or a vegetable garden vs. buying fencing wire or building materials.
- This is often a difficult concept for level 1 learners.
- Take a bit of extra time here.
- Allow learners a chance to explore with physical objects such as a flat piece of string vs. a piece of paper vs. a cardboard box.
- Let different learners share and explain their perceptions.
- Take the time to introduce learners to the "language" of the 2- and 3-dimensional space – such as "square meterage and cubic meterage".
- Also allow time for the high-level tessellation examples at the end of the session. It prepares the learner for NQF 2.
- It is important to prompt learners to check their progress by completing this self-assessment exercise.
- Please offer learners an opportunity to ask questions and share concerns.



Please allow learners to complete Activity 3 - 6 in their workbooks

Type of activity	Resources	Instructions to give to the learners	Conclusions
3. Complete the worksheet	Learner Workbook	As per instructions in workbook.	Related assessment criteria.
4. Complete the worksheet	Learner Workbook	As per instructions in workbook.	Related assessment criteria.
5. Complete the exercise	Learner Workbook	As per instructions in workbook.	Related assessment criteria.
6. Complete the exercise	Learner Workbook	As per instructions in workbook.	Related assessment criteria.

What will I do differently next time?

Take some time to **reflect** on your own activities as facilitator of this Unit Standard. Then write down five of the most important lessons you have learnt and include a motivation:

What will I do differently next time?	Motivate how or why (Give examples, reasons, etc.)
1.	
2.	
3.	
4.	
5.	

As facilitator, you have hands on experience in the application of the unit standard. And you might experience difficulties with the unit standard that the developers did not anticipate. Also, the unit standard will be revised at the end of the registration period. Your comments below can be an important contribution in the revision process and should be brought to the attention of either the AgriSETA ETQA manager or the SGB chairperson.

Please take some time to reflect on your experience and list a few of the difficulties you had to address.

Difficulties I had with the Unit Standard	Recommended Changes to Address the Difficulty
6.	
7.	
8.	
9.	
10.	