PROVINCE OF THE EASTERN CAPE EDUCATION

DIRECTORATE:
CURRICULUM FET PROGRAMMES
LESSON PLANS

TERM 4
MATHEMATICAL LITERACY
GRADE 11

FOREWORD

The following Grade 10, 11 and 12 Lesson Plans were developed by Subject Advisors during May 2009. Teachers are requested to look at them, modify them where necessary to suit their contexts and resources. It must be remembered that Lesson Plans are working documents, and any comments to improve the lesson plans in this document will be appreciated. Teachers are urged to use this document with the following departmental policy documents: Subject Statement; LPG 2008; SAG 2008; Examination Guidelines 2009 and Provincial CASS Policy / Guidelines.

Lesson planning is the duty of each and every individual teacher but it helps when teachers sometimes plan together as a group. This interaction not only helps teachers to understand how to apply the Learning Outcomes (LOs) and Assessment Standards (ASs) but also builds up the confidence of the teachers in handling the content using new teaching strategies.

It must please be noted that in order to help teachers who teach across grades and subjects, an attempt has been made to **standardise lesson plan templates** and thus the new template might not resemble the templates used in each subject during the NCS training. However, all the essential elements of a lesson plan have been retained. This change has been made to assist teachers and lighten their administrative load.

Please note that these lesson plans are to be used only as a guide to complete the requirements of the Curriculum Statements and the work schedules and teachers are encouraged to develop their own learner activities to supplement and /or substitute some of the activities given here (depending on the school environment, number and type of learners in your class, the resources available to your learners, etc).
Do not forget to build in the tasks for the Programme of Assessment into your Lesson Plans.

Strengthen your efforts by supporting each other in clusters and share ideas. Good Luck with your endeavours to improve Teaching, Learning and Assessment.

SUBJECT: MATHEMATICAL LITERACY.	GRADE 11.	LESSON PLAN 1.	TERM 4.	TIME: 9.00 Hours

Content: Revision/ Remedial work on Data Handling.　　　　Context : 2009 National Elections, Business and Finance.

Link with previous lesson : Grade 10 Graphs and data interpretations, Grade 11 Probability

KNOWLEDGE (K): Data Handling and Probability
SKILLS (S): Collecting, sorting, displaying, analyzing and interpreting data. Calculating probability and making predictions.
VALUES (V): Appreciation of the role of data handling and probability in our everyday life.

LO 1. Numbers and operations in context. The learner is able to use knowledge of numbers and their relationships to investigate a range of different contexts which include financial aspects of personal, business and national issues.		LO 2: Functional Relationships. The learner is able to recognise, interpret, describe and represent various functional relationships to solve problems in real and simulated contexts.		LO 3: Space, Shape & Measurement. The learner is able to measure, estimate and calculate physical quantities and to interpret, describe and represent properties and relationships between 2- and 3-dimensional objects.		LO 4: Data Handling. The learner is able to collect, summarise, display and analyse data and apply knowledge of statistics and probability to communicate, justify & predict findings and draw conclusions.	
AS : 11.1.1. Find ways to explore and analyse numerically based situations by estimating, , calculating, checking results, rounding off and working with exponents and roots.		AS: 11.2.1.Work with numerical data and formulae in a variety of real-life situations to - find break-even points find optimal ranges.		AS: 11.3.1. Solve problems in 2-dimensional and 3-dimensional contexts by estimating, measuring and calculating: lengths, distances, areas, perimeter, volumes and surface areas of figures & solids		AS: 11.4.1. Investigate problems on issues related to social, environmental and political factors using appropriate statistical methods and comparing data from different sources and samples.	√
AS: 11.1.2. Relate calculated answers correctly and appropriately to problem situations.		AS: 11.2.2. Draw graphs as required by the situations and problems being investigated.		AS: 11..3.2. Convert units of measurement between different scales and systems .		AS : 11.4.2. Choose and interpret the use of methods to display data in statistical charts and graphs. -Tallies, tables, pie chart, single and compound bar graphs, line graphs and ogives	√
AS: 11.1.3. Investigate and determine entrepreneurship by calculating income and expenditure, profit and loss and determining optimal		AS: 11. 2.3. Critically interpret tables and graphs of relationships between two variables in a variety of real-life		AS: 12.3.3. Use and interpret scale drawings of plans to represent and identify views, estimate and calculate values according to		AS: 11. 4..3. Compare data using measures of central tendencies & spread – mean, median, mode, variance, standard deviation	

selling prices, checking profit margins	and simulated situations	scale.		and quartiles.	
		AS: 11..3.4. Use grids to determine locations and describe relative positions.		AS: 11.4. 4. Critically interpret two sets of data to draw conclusions on problems investigated and make predictions.	√
		AS: 11.3.5. Use basic trigonometric ratios – sine, cosine and tangent to interpret and solve problems.		AS: 11.4.5. Make and test predictions of compound outcomes in games and real-life situations by estimating basic probabilities; and drawing tree-diagrams.	√
		AS: 11.3.6. Recognise, visualise, describe and compare geometrical figures and solids.		AS: 11.4.6. Manipulate data in different ways to justify opposing conclusions.	√

Teacher Activity	Learner Activity	Assessment	Resources	Date completed
ACTIVITY 1. Working with 2009 Nat. Elections. Teacher provides learners with data sheets on 2009 National Election results and guides them on the performances of different political parties in terms of the number and percentage of votes received.	Learners work in groups to determine: - percentage of votes received - ratio of votes between parties - proportional representation in the assembly, etc. They also use the data to draw graphs, histograms, pie-chart, etc. using the data. Also calculate the mean, median and mode of the data.	Class work, Home work, Assignment.	Worksheets, Graph paper, Calculators.	
ACTIVITY 2. Probability.				

Provides learners with worksheets containing questions which require learners to calculate probability of events, determine trends and make predictions. Revises probability theory and tree diagrams.	Learners complete worksheets either individually or in groups and determines probability and trends of events and make appropriate predictions. Draw tree diagrams to determine probability.	Class work, Home work.	Worksheet, Graph paper, Calculator, Study guides.	
ACTIVITY 3. Teacher guides learners to do an investigation based on data handling and probability. Gives learners relevant instructions depending on the resources available to learners.	Learners carry-out the investigations as part of their school-based assessment.	**Investigation.** Tool: Rubric.	Appropriate Data and instructions to learners.	

Home work	
Expanded opportunities	More challenging tasks on analysis and interpretation of data.
Teacher reflections	

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SUBJECT: MATHEMATICAL LITERACY.	GRADE 11.	LESSON PLAN 2.	TERM 4.	TIME: 4½ HOURS.

Content: Revision of Graphs and Formulae.   Context : Business, Financial, Socio-economic, Health.

Link with previous lesson : Linear equations, Inverse relationships and interpretations of graphs.

KNOWLEDGE (K): Direct and inverse proportions.
SKILLS (S): Drawing and interpretation.
VALUES (V): Appreciation of the applications of linear and inverse graphs in real life situations.

LO 1. Numbers and operations in context. The learner is able to use knowledge of numbers and their relationships to investigate a range of different contexts which include financial aspects of personal, business and national issues.		LO 2: Functional Relationships. The learner is able to recognise, interpret, describe and represent various functional relationships to solve problems in real and simulated contexts.		LO 3: Space, Shape & Measurement. The learner is able to measure, estimate and calculate physical quantities and to interpret, describe and represent properties and relationships between 2- and 3-dimensional objects.		LO 4: Data Handling. The learner is able to collect, summarise, display and analyse data and apply knowledge of statistics and probability to communicate, justify & predict findings and draw conclusions.	
AS : 11.1.1. Find ways to explore and analyse numerically based situations by estimating, , calculating, checking results, rounding off and working with exponents and roots.		AS: 11.2.1.Work with numerical data and formulae in a variety of real-life situations to - find break-even points find optimal ranges.	√	AS: 11.3.1. Solve problems in 2-dimensional and 3-dimensional contexts by estimating, measuring and calculating: lengths, distances, areas, perimeter, volumes and surface areas of figures & solids		AS: 11.4.1. Investigate problems on issues related to social, environmental and political factors using appropriate statistical methods and comparing data from different sources and samples.	
AS: 11.1.2. Relate calculated answers correctly and appropriately to problem situations.		AS: 11.2.2. Draw graphs as required by the situations and problems being investigated.	√	AS: 11..3.2. Convert units of measurement between different scales and systems .		AS : 11.4.2. Choose and interpret the use of methods to display data in statistical charts and graphs. -Tallies, tables, pie chart, single and compound bar graphs, line graphs and ogives	
AS: 11.1.3. Investigate and determine entrepreneurship by calculating income and expenditure, profit and loss and determining optimal selling prices, checking		AS: 11. 2.3. Critically interpret tables and graphs of relationships between two variables in a variety of real-life and simulated situations		AS: 12.3.3. Use and interpret scale drawings of plans to represent and identify views, estimate and calculate values according to scale.		AS: 11. 4..3. Compare data using measures of central tendencies & spread – mean, median, mode, variance, standard deviation and quartiles.	

				AS: 11..3.4. Use grids to determine locations and describe relative positions.	AS: 11.4. 4. Critically interpret two sets of data to draw conclusions on problems investigated and make predictions.	
profit margins						
				AS: 11.3.5. Use basic trigonometric ratios – sine, cosine and tangent to interpret and solve problems.	AS: 11.4.5. Make and test predictions of compound outcomes in games and real-life situations by estimating basic probabilities; and drawing tree-diagrams.	
				AS: 11.3.6. Recognise, visualise, describe and compare geometrical figures and solids.	AS: 11.4.6. Manipulate data in different ways to justify opposing conclusions.	

Teacher Activity	Learner Activity	Assessment	Resources	Date completed
ACTIVITY 1. Linear relationships. Teacher provides learners with worksheets that involve questions on linear relations .	Learners complete worksheets in groups. Draws graphs and completes tables. Use the graphs to answer questions. Draw conclusions and make predictions.	Class work, Home work, Check list.	Worksheet, Text book, Graph paper, Calculator.	
ACTIVITY 2. Inverse Relations. Provides learners with questions on inverse relations and revises properties of inverse relations. Eg. Supply and demand relations, Compound increase and decrease,	Learners work in groups or individually to answer questions given to them. Remedial work and re- inforcement done where necessary.	Class work, Home work.	Text books, Study guides, Past exam. Papers,	

			Graph paper.	
Speed-time graph, etc.				
ACTIVITY 3. Teacher prepares and gives an informal test to learners on linear and inverse relations.	Learners complete the test and do remedial work where necessary.	Informal class test.	Question paper and memo.	
Home work				
Extended opportunities	More challenging tasks from a variety of text books and study guides.			
Teacher reflections.				

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SUBJECT: MATHEMATICAL LITERACY.	GRADE 11.	LESSON PLAN 3.	TERM 4.	TIME: 4½ HOURS.

Content: Revision/Remedial work on Space, Shape and Measurement. **Context :** Building plans and Maps.

Link with previous lesson : 2D and 3D objects, conversion of units, scale drawing and use of grids and maps.

KNOWLEDGE (K): Properties and relationships between 2D and 3D objects. Scale drawing, grids and maps.
SKILLS (S): Solving problems, converting units, interpretation and drawing scale diagrams.
VALUES (V): Developing self confidence in performing tasks correctly.

LO 1. Numbers and operations in context. The learner is able to use knowledge of numbers and their relationships to investigate a range of different contexts which include financial aspects of personal, business and national issues.		LO 2: Functional Relationships. The learner is able to recognise, interpret, describe and represent various functional relationships to solve problems in real and simulated contexts.		LO 3: Space, Shape & Measurement. The learner is able to measure, estimate and calculate physical quantities and to interpret, describe and represent properties and relationships between 2- and 3-dimensional objects.		LO 4: Data Handling. The learner is able to collect, summarise, display and analyse data and apply knowledge of statistics and probability to communicate, justify & predict findings and draw conclusions.	
AS : 11.1.1. Find ways to explore and analyse numerically based situations by estimating, , calculating, checking results, rounding off and working with exponents and roots.		AS: 11.2.1.Work with numerical data and formulae in a variety of real-life situations to - find break-even points find optimal ranges.		AS: 11.3.1. Solve problems in 2-dimensional and 3-dimensional contexts by estimating, measuring and calculating: lengths, distances, areas, perimeter, volumes and surface areas of figures & solids		AS: 11.4.1. Investigate problems on issues related to social, environmental and political factors using appropriate statistical methods and comparing data from different sources and samples.	√
AS: 11.1.2. Relate calculated answers correctly and appropriately to problem situations.		AS: 11.2.2. Draw graphs as required by the situations and problems being investigated.	√	AS: 11..3.2. Convert units of measurement between different scales and systems .	√	AS : 11.4.2. Choose and interpret the use of methods to display data in statistical charts and graphs. -Tallies, tables, pie chart, single and compound bar graphs, line graphs and ogives	
AS: 11.1.3. Investigate and determine entrepreneurship by calculating income and expenditure, profit and loss and determining optimal selling prices, checking		AS: 11. 2.3. Critically interpret tables and graphs of relationships between two variables in a variety of real-life and simulated situations		AS: 11.3.3. Use and interpret scale drawings of plans to represent and identify views, estimate and calculate values according to scale.	√	AS: 11. 4..3. Compare data using measures of central tendencies & spread – mean, median, mode, variance, standard deviation and quartiles.	

profit margins						
			AS: 11..3.4. Use grids to determine locations and describe relative positions.		AS: 11.4. 4. Critically interpret two sets of data to draw conclusions on problems investigated and make predictions.	
			AS: 11.3.5. Use basic trigonometric ratios – sine, cosine and tangent to interpret and solve problems.	√	AS: 11.4.5. Make and test predictions of compound outcomes in games and real-life situations by estimating basic probabilities; and drawing tree-diagrams.	
			AS: 11.3.6. Recognise, visualise, describe and compare geometrical figures and solids.		AS: 11.4.6. Manipulate data in different ways to justify opposing conclusions.	

Teacher Activity	Learner Activity	Assessment	Resources	Date completed
ACTIVITY 1. 2D Shapes and 3D objects. Provides learners with worksheet containing questions that require to calculate: Lengths and distances, Perimeter and areas of polygons, Volumes of prisms and cylinders, Surface areas of solids and Conversion of units.	Learners work in groups or individually to solve problems given to them. Remedial work by teacher where necessary.	Class work, Home work, Informal assessment by teacher.	Worksheet, Study guides, Text book, Calculator.	
ACTIVITY 2. Scale drawing, grids and maps. Provides learners with worksheet that comprises of questions on:	Learners answer questions using their knowledge of the content in context.	Class work, Home work.	Worksheet Past exam. Papers,	

Use and interpretation of scale drawing, Use of grids and maps and compass directions.	Interpret scales of maps and building plans. Use compass directions to determine locations and positions.		Text book, Graph paper, Calculator	
Home work				
Extended opportunities	Investigation on the use and advantages of GPS.			
Teacher reflections				

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SUBJECT: MATHEMATICAL LITERACY.	GRADE 11.	LESSON PLAN 4.	TERM 4.	TIME: 4½ HOURS.

Content: Revision work on rate, ratio, proportion and percentage. **Context :** 2009 Nat. election results, Business, Finance.

Link with previous lesson : Fractions and decimal numbers, rate, ratio and proportion done in grade 10.

KNOWLEDGE (K): Rate, Ratio , Proportion and Percentage.
SKILLS (S): Solving problems, calculating, applying and interpreting.
VALUES (V): Appreciate the use and applications of rate, ratio and percentages in real life situations.

LO 1. Numbers and operations in context. *The learner is able to use knowledge of numbers and their relationships to investigate a range of different contexts which include financial aspects of personal, business and national issues.*		*LO 2: Functional Relationships.* *The learner is able to recognise, interpret, describe and represent various functional relationships to solve problems in real and simulated contexts.*		*LO 3: Space, Shape & Measurement.* *The learner is able to measure, estimate and calculate physical quantities and to interpret, describe and represent properties and relationships between 2- and 3-dimensional objects.*		*LO 4: Data Handling.* *The learner is able to collect, summarise, display and analyse data and apply knowledge of statistics and probability to communicate, justify & predict findings and draw conclusions.*	
AS : 11.1.1. Find ways to explore and analyse numerically based situations by estimating, , calculating, checking results, rounding off and working with exponents and roots.	√	AS: 11.2.1.Work with numerical data and formulae in a variety of real-life situations to - find break-even points find optimal ranges.		AS: 11.3.1. Solve problems in 2-dimensional and 3-dimensional contexts by estimating, measuring and calculating: lengths, distances, areas, perimeter, volumes and surface areas of figures & solids		AS: 11.4.1. Investigate problems on issues related to social, environmental and political factors using appropriate statistical methods and comparing data from different sources and samples.	
AS: 11.1.2. Relate calculated answers correctly and appropriately to problem situations.	√	AS: 11.2.2. Draw graphs as required by the situations and problems being investigated.		AS: 11..3.2. Convert units of measurement between different scales and systems .		AS : 11.4.2. Choose and interpret the use of methods to display data in statistical charts and graphs. -Tallies, tables, pie chart, single and compound bar graphs, line graphs and ogives	
AS: 11.1.3. Investigate and determine entrepreneurship by calculating income and expenditure, profit and loss and determining optimal selling prices, checking	√	AS: 11. 2.3. Critically interpret tables and graphs of relationships between two variables in a variety of real-life and simulated situations		AS: 11.3.3. Use and interpret scale drawings of plans to represent and identify views, estimate and calculate values according to scale.		AS: 11. 4..3. Compare data using measures of central tendencies & spread – mean, median, mode, variance, standard deviation and quartiles.	

				AS: 11..3.4. Use grids to determine locations and describe relative positions.	AS: 11.4. 4. Critically interpret two sets of data to draw conclusions on problems investigated and make predictions.	
profit margins						
				AS: 11.3.5. Use basic trigonometric ratios – sine, cosine and tangent to interpret and solve problems.	AS: 11.4.5. Make and test predictions of compound outcomes in games and real-life situations by estimating basic probabilities; and drawing tree-diagrams.	
				AS: 11.3.6. Recognise, visualise, describe and compare geometrical figures and solids.	AS: 11.4.6. Manipulate data in different ways to justify opposing conclusions.	

Teacher Activity	Learner Activity	Assessment	Resources	Date completed
ACTIVITY 1. Rate, ratio and percentage. Teacher provides learners with the 2009 National Election results and a set of questions to answer from the number of votes received by different parties.	Learners work in groups to determine: Percentage of votes received by each political party, Ratio of votes obtained between parties, Proportional number of seats achieved by different parties, etc.	Peer assessment. Class work, Home work.	Election results. Calculator.	
ACTIVITY 2. Personal Finances. Provides learners with worksheet comprising of questions on simple and compound growth and Income and expenditure.	Learners solve problems either individually or in groups and compare the interests obtained from simple and compound interest rates. Compare personal income and expenditure to make appropriate decisions.	Class work, Home work, Informal test.	Worksheet, Study guide, Text book, Calculator.	

Home work					
Extended opportunities	More challenging tasks on rate, ratio, proportion and percentage from real-life situations.				
Teacher reflections					

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