



PEAS Scheme of Work: MATHEMATICS

SENIOR TWO

peas
PROMOTING EQUALITY IN AFRICAN SCHOOLS

S2 students will be doing a project in Mathematics during Term 1. Please indicate in this Scheme of Work which weeks this will take place.

Subject: Mathematics **Class:** Senior Two **Term:** One **Teacher's Name:**

Time allocation: 5 periods (2 doubles & a single lesson)

Note: The first 2 lessons in a week have a duration of 80 minutes while the last single has 40 minutes.

When it comes to planning your lessons use the structure: starter, I do, we do, you do, plenary. The starter is a written task that reviews previous learning. Ensure your lessons provide regular and extended opportunities for independent practice.

YPR:

Y= yes, I taught the lesson

P= I partially taught it e.g. I didn't get through all the content.

R= I taught the lesson, but I think students would benefit from a review

Theme: Patterns and Algebra/Mappings and Relations				
Competency: The learner understands and uses arrow diagrams to represent relations and functions				
Week Subtopics	Learning Outcomes	Methodology	Materials Required	YPR
1.1 Relations	Use arrow diagrams/mappings to represent relations in day-to-day life situations	<ul style="list-style-type: none"> Teacher uses a nuclear family model to demonstrate the concept of relation showing how each family member is related to the others. In their groups learners write down and compare their heights, age, sizes etc. with other group members. 	Tape measure for measuring heights. Active mathematics book 2 pg. 2	

		<ul style="list-style-type: none"> Individually, each learner uses an arrow diagrams to represent the relation “is the capital city of” for all the East African countries 		
1.2 Relations	Use arrow diagrams/mappings to represent numerical relations	<ul style="list-style-type: none"> Teacher presents two sets of numbers to the learner in which elements of one set are multiples of the other. Learners pair up and work together discover the relation between the two sets. Working individually, each learner uses an arrow diagram to represent the relation “is a prime factor of” between the sets $A = \{2,3,7,11\}$ and $B = \{20,21,22,23,24,25\}$ 	Fountain mathematics for secondary schools book 2 p3	
1.3 Mappings and Functions	Identify mappings and the types of mappings	<ul style="list-style-type: none"> The teacher present to the learners two sets one on inputs and the other of outputs. Working in pairs, the learners should identify how the elements in one set are mapped onto the elements in the other set. Give individual learners more problem sets to identify the types of mappings. 	Calculators Fountain mathematics for secondary schools book 2 pg. 4	
2.1 Mappings and functions	Use arrow diagrams/mappings to represent functions	<ul style="list-style-type: none"> A teacher presents a set of integers say, $A = \{1, 2, 3, 4, 5, 6\}$. Asks the learners in their groups to create another set of the squares of the elements in set A and use an arrow diagram to represent the numbers and their squares. Individual learners work with two more sets of elements and represent them on arrow diagrams. 	Active mathematics book 2 pg. 3	
2.2 Domain and Range	Identify the domain and range of a mapping	<ul style="list-style-type: none"> Teacher explains domain and range by using the function $\frac{1}{2}x - 1$ that maps x onto $A = \{-4,-2,$ 	Charts for presenting mappings	

		<p>0, 2, 4, 6} (domain) to form another set B (range).</p> <ul style="list-style-type: none"> In groups the learners, identify the domain and range of any two mappings given by the teacher. Individual learners to find the range corresponding to the domain $\{-2, -1, 0, 1, 2\}$ using the following mappings. $X \rightarrow 2x + 3$ and $x \rightarrow x^2 - 1$ 	Fountain mathematics for secondary schools book 2 pg. 5 -6	
2.3 Function and non-function mapping	Describe and distinguish between function and non-function mapping	<ul style="list-style-type: none"> Teacher uses relevant examples to show that one to one and many to one relation are functions, many to many are non-function mappings. E.g. animals and their young ones In groups, the learners identify which mappings are functions and which are non-function mappings given by the teacher. Individually, each learner identifies at least three real life examples of function and non-function mappings. 	Fountain mathematics for secondary schools book 2 pg. 7 - 8	
3.1 Activity of integration	Use of mappings and relations in real life situations.	<ul style="list-style-type: none"> Administers the activity of integration and communicates the expectations 		
Theme: Patterns and Algebra/ Vectors and Translation Competency: The learner understands the nature of a vector, manipulates them in order to define translation				
3.2 Translation	Finding out what a translation is	<ul style="list-style-type: none"> Teacher illustrates a translation using a table being pushed from one position to another. Working in groups the, learners identify the object and the image of the table, comment on the size and shape of the table after being moved. 	<ul style="list-style-type: none"> Classroom table Set Squares Active mathematics book 2 pg. 14 	

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		<ul style="list-style-type: none"> Asks learners to work individually, trace the outline of Set Square and move it without lifting it. Let them draw lines joining the various points of the object and the image of the set square. Let them write what they observe in their books. 		
3.3 Translation	Define a translation with a vector	<ul style="list-style-type: none"> A teacher draws a figure and its image with known vertices on a Cartesian plane. Use it to explain what a translation vector is. Assigns to learners in pairs, two vectors and a figure, say, a triangle and ask them to use the vectors to draw the two images of the figure on a Cartesian plane. Ask them to undo the translation and state what they observe. Individual students, are provided with more problem sets for independent practice involving more than one translation on an object. 	<ul style="list-style-type: none"> Black board ruler Graph books Fountain mathematics for Uganda schools book 2 pg. 16 	
4.1 Vectors and Scalars	Identify scalars and vectors	<ul style="list-style-type: none"> Teacher elaborates to the learners the difference between a scalar and a vector. Learners work in groups and list down the quantities they deal with in real life as vector and scalar quantities. Stating reasons for their choices. Assigns each individual learner to determine which of the following vector or scalar quantities are. An aero plane flew for 500 km to the west A pack of chalk has 12 sticks. A Point B 400km and 0400 from point b The statue is 2.5 m in height 	<ul style="list-style-type: none"> Fountain mathematics for Uganda Schools book 2 pg. 19- 20 Active Mathematics Student's book 2. 	

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		<ul style="list-style-type: none"> Learners work out more tasks given by the teacher 		
4.2 Vector notation	Use vector notation	<ul style="list-style-type: none"> Tr. uses a map of different marked places to illustrate the different vector notations. In pairs, the learners describe translations on another map using vector notations Each learner uses vector notation to describe the movement about places represented by their initial letters in their district. 	Fountain mathematics for secondary schools book 2 pg. 21. Active Mathematics book 2 pg. 16	
4.3 Geometrical representation of a vector	Represent vectors both single and combined geometrically	<ul style="list-style-type: none"> The teacher models the geometrical representation of a vector on a Cartesian coordinate using a suitable example. Asks learners in their groups to represent the following vectors geometrically $a + b =$ $2a + 5d =$ Assigns individual problems for each learner to try out in their exercise books 	Black board ruler for drawing coordinates. Graph books. Fountain mathematics for secondary schools page book 2	
5.1 Activity of integration				
Theme: Data and Probability/Graphs Competency: The learner should plot, interpret and use graphs to solve problems				
5.2 Tabulating values from given relations	Tabulate values from given relations	<ul style="list-style-type: none"> Teacher introduces the topic by discussing the importance of graphs in our daily life activities and how they simplify data presentation. Working in pairs, the learners tabulate the values of x from -4 to +4 and then find the values of y for the equation $y = x + 3$ Give individual learners two more relations to tabulate. 	Graph board Graph books Fountain mathematics for secondary schools page book 2 pg. 22	

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5.3	Tabulate values from given relations	<ul style="list-style-type: none"> Teacher illustrates with an example, how data from a word problem can be tabulated. Assigns a word problem for the learners working in groups to solve. Let group representatives present their work on the black board. Assigns more problem sets to each individual learner to work out on their own in their exercise books. 	<p>Active mathematics book 2 pg. 21</p> <p>Fountain mathematics for secondary schools page book 2 pg. 29</p>	
6.1 Drawing a graph from a given relation	Plot and draw graphs through given points	<ul style="list-style-type: none"> Demonstrates how to draw graphs through given points. Use the previous lesson's tabulated values In their groups, the learners draw graphs to show the relations they tabulated in the previous lesson. Each individual learner draws graphs for the relations he/she tabulated in the previous lesson 	<p>Graph board for illustration</p> <p>Active mathematics book 2 pg. 22 – 23</p> <p>Fountain mathematics for secondary schools page book 2 pg. 31</p>	
6.2 Drawing a graph from a relation	Plot and draw graphs through given points	<ul style="list-style-type: none"> Teacher illustrates with an example of a word problem and plots a graph. Asks the learners to form groups and attempt a word problem that you give them. Gives individual learners more word problems to draw graphs in their exercise books. 	Active mathematics book 2 pg. 23	
6.3 Choosing an appropriate Scale	Choosing an appropriate Scale	<ul style="list-style-type: none"> Begins the lesson by explaining the importance choosing a suitable scale whenever drawing any graph. Shows the learners how a suitable scale for a graph can be chosen using an example. Gives the learners different sizes of graph paper and ask them in their groups to plot a given set 	Fountain mathematics for secondary schools page book 2 pg. 32	

		<p>of data. Check for the readability and consistence of their scales</p> <ul style="list-style-type: none">Each learner chooses a suitable scale for a given data set and draws a graph in his/her graph book										
7.1 Choosing an appropriate scale	Choosing an appropriate Scale	<ul style="list-style-type: none">Teacher gives learners more problems to solve in their discussion groups.For individual practice give learners more problem sets and monitor their progress.	Fountain mathematics for secondary schools page book 2 pg. 32									
7.2 Distance-Time Graphs	Draw, read and interpret distance-time graphs	<ul style="list-style-type: none">Uses a real-life example of a student walking to school and draw a distance time graph as the learners follow.Asks learners to draw on the same axes the distance time graphs for the movement of two objects A and B, distances of 36 and 54 kilometres respectively in one hour.Asks individual learners to draw a distance time graph for their journey from home to school and back. They should use estimated distance in kilometres.	Graph books Fountain mathematics for secondary schools page book 2 pg. 35									
7.3 Distance time graphs	Draw, read and interpret distance-time graphs	<ul style="list-style-type: none">Teacher does more worked examplesLearners do more group workAssign each individual learner more problem sets for them to work out.	<ul style="list-style-type: none">A well-prepared graph on a chart									
8.1 Speed-Time graphs	Draw read and interpret speed-time graphs	<ul style="list-style-type: none">Teacher distinguishes a speed time graph from a distance time graph by using an example.Asks learners to pair up and draw the speed time graph for the train journey summarized in the table below. <table><tr><td>Time(s)</td><td>0</td><td>2</td><td>4</td><td>6</td><td>8</td><td>10</td><td>12</td></tr></table>	Time(s)	0	2	4	6	8	10	12	Graph board Graph books Active mathematics book pg. 26	
Time(s)	0	2	4	6	8	10	12					

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		<table><tr><td>Speed(m/s)</td><td>0</td><td>2</td><td>4</td><td>4</td><td>4</td><td>2</td><td>0</td></tr><tr><td></td><td></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td></tr></table> <ul style="list-style-type: none">Asks individual learners to find the distance travelled by the train in:<ul style="list-style-type: none">i. In the first 4 secondsii. Between 4 and 10 secondsiii. Between 10 and 12 secondsAssigns individual learners more problem sets involving interpretation of already drawn graphs.	Speed(m/s)	0	2	4	4	4	2	0			0	0	0	0	0			
Speed(m/s)	0	2	4	4	4	2	0													
		0	0	0	0	0														
8.2 Speed time graphs	Draw read and interpret speed-time graphs	<ul style="list-style-type: none">Teacher does more worked examples on speed time graphs.Assigns learners group work for discussion.Assigns individual work for independent practice.	Oxford active mathematics book 2 page																	
8.3 Activity of integration	Exhibit knowledge ,skills, values attained at the end of the topic	With clear instructions, administer and score Aol																		
Theme: Numbers/Numerical Concepts 1(indices) Competency: The learner understands and uses indices and standard form																				
9.1 Approximation in Calculations	Give appropriate answers to calculations	<ul style="list-style-type: none">The teacher introduces the topic by explaining to the learners the importance of using indices to expressing very large numbers.Tasks learners in their groups to work the following numbers giving the most approximate answer<ul style="list-style-type: none">i. 2/3ii. 40.7 ÷ 17iii. 456349 x 59243iv. 18.96 x 0.4936	<ul style="list-style-type: none">CalculatorsFountain mathematics for secondary schools book 2 page 50																	

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		<ul style="list-style-type: none"> Gives learners more problem sets to practice in their exercise books. 		
9.2 Significant Numbers	Write numbers to given number of significant figures	<ul style="list-style-type: none"> Teacher explain to the learners what a significant figure is, when a zero is significant and when it is not. Asks learners in pairs to write the number of significant figures in the following numbers <ol style="list-style-type: none"> 47 6.073 0.2340 0.000053 Asks individual learners to write the following numbers to the number of significant figures given in the bracket <ol style="list-style-type: none"> 4268 (1 sf) 0.000299 (1 sf) 0.00368 (2 sf) 1.272 (6 sf) 	<ul style="list-style-type: none"> Calculators Fountain mathematics for secondary schools book 2 page 52 	
9.3 Expressing Numbers in standard form	Express numbers in standard form	<ul style="list-style-type: none"> The teacher explains to the learners what standard form is and emphasize the importance of writing numbers in standard form. Demonstrates how a number can be written in standard form. Asks the learners to pair up and write the following numbers in standard form. <ol style="list-style-type: none"> 4381 0.00000614 0.02301 Gives individual learner different problem sets to practice writing numbers in standard form. 	Fountain secondary school mathematics book 2 pg. 32	

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10.1 Identifying the base number and index	Identify the base number and index	<ul style="list-style-type: none">Defines a base number and an index of a numberTasks the learners in pair to fold a piece of paper into two equal parts successively six times and they record their results in a table shown below. <table><tr><td>Number of folds</td><td>Number of parts</td><td>In index form</td></tr><tr><td>0</td><td>1</td><td>2^0</td></tr><tr><td>1</td><td>2</td><td>2^1</td></tr><tr><td>2</td><td>$4 = 2 \times 2$</td><td>2^2</td></tr><tr><td>.....</td><td>.....</td><td>.....</td></tr></table> <ul style="list-style-type: none">Gives individual learners numerical problems involving a base number and an index	Number of folds	Number of parts	In index form	0	1	2^0	1	2	2^1	2	$4 = 2 \times 2$	2^2	Pieces of paper for folding Fountain mathematics for secondary schools book 2 pg. 58	
Number of folds	Number of parts	In index form																	
0	1	2^0																	
1	2	2^1																	
2	$4 = 2 \times 2$	2^2																	
.....																	
10.2 Laws of indices	State and apply the laws of indices in calculations	<ul style="list-style-type: none">The teacher derives the laws of indices using the numbers 27 and 9 with 3 as their base.Asks learners to work in groups and simplify the following numbers leaving their answers in index form.<ul style="list-style-type: none">i. $5^6 \div 5^2$ii. $(5p^3)^2$iii. $7^6 \times 7^4$Individually each learner works on a given problem set given by the teacher.	Fountain mathematics for secondary school book 2 pg. 60																
10.3 Using calculators to find power and roots	Use a calculator to find the powers and roots of numbers	<ul style="list-style-type: none">The teacher demonstrates using an appropriate and commonly used calculator how to find the powers and roots of numbers.Asks learners in pairs to evaluate given set of expressions using calculators.	Calculators to ease computations Fountain mathematics for secondary schools book 2 pg. 68																

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		<ul style="list-style-type: none"> Gives more problem sets to individual learners for more practice 		
11.1- Activity of integration	Assess ability of students to apply values, skills and understanding of concepts taught through Activities of integration	Set, administer AoI and Mark assessment		
12	Assess ability of students to apply values, skills and understanding of concepts taught, through Activities of integration.	Marking & Preparing report forms		

Subject: Mathematics

Class: Senior Two

Term: Two

Teacher's Name:

When it comes to planning your lessons use the structure: starter, I do, we do, you do, plenary. The starter is a written task that reviews previous learning. Ensure your lessons provide regular and extended opportunities for independent practice.

YPR:

Y= yes, I taught the lesson

P= I partially taught it e.g. I didn't get through all the content.

R= I taught the lesson, but I think students would benefit from a review

Week Subtopics	Learning Outcome	Methodology	Teaching/Learning Resources	Y P R
Theme: Patterns and algebra /Inequalities and regions Competency: The learner represents and solves problems involving inequalities				

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1.1 Inequality symbols and their meanings	Identify and use inequality symbols	<ul style="list-style-type: none"> Illustrate with real life examples how inequalities can be used. Demonstrates to them how an inequality can be formed from word problems. Learners in their groups write inequalities from word statements e.g. <ol style="list-style-type: none"> Martin weighs more than Marvin t is greater than or equal to 9 y is less than or equal to 5 Individual learners write down the meaning of given inequalities. 	Fountain mathematics for secondary schools by 2 pg. 74	
1.2 Illustrating numbers on a number line	Illustrate inequalities on the number line	<ul style="list-style-type: none"> The teacher shows the learners with appropriate examples, how an inequality can be represented on a number line. Learners work in pairs and draw a number line and represent the following inequalities on the number line. <ol style="list-style-type: none"> $X > 5$ $-2 \leq x \leq 3$ $X \geq 0$ Each learner number lines on the black board and ask each learner to write down the inequalities represented by each of the number lines. 	Fountain secondary school mathematics book 2 pg. 77	
1.3 Solving linear inequalities in one unknown	Solve linear inequalities in one unknown	<ul style="list-style-type: none"> A teacher writes two inequalities on the black board and illustrate to the learners how they can be solved. Emphasize that multiplying both sides by a negative number changes the direction of the inequality. Assigns problems to the learners to solve in their groups and let group representatives 	Fountain secondary school mathematics book 2 pg. 79	

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		<p>draw number lines on the black board showing their solutions.</p> <ul style="list-style-type: none"> • Assigns more inequalities to individual learners to solve in their exercise books. 		
2.1 Solving linear inequalities in one unknown (Word Problems)	Solve linear inequalities in one unknown in a word problem	<ul style="list-style-type: none"> • Teacher works out word problem one word on inequalities involving one unknown. • Learners work in groups and come with solutions to the various inequalities given. • Teacher assigns a word problem to individual learners to work out in their exercise books. 	Fountain secondary school mathematics book 2 pg. 80	
2.2 Graphical representation of linear inequalities	Represent linear inequalities graphically	<ul style="list-style-type: none"> • The teacher demonstrates to the learners how an inequality can be represented on the graph. Shows them when to use dotted or solid lines. • Learners to pair up and show the solutions of the following inequalities and shade the wanted regions. <ul style="list-style-type: none"> i. $Y \geq -8$ ii. $Y < 2x + 3$ • Teachers assigns more inequalities for learners to draw graphs in their exercise books on individual basis. 	<p>Graph board</p> <p>Graph books</p> <p>Fountain secondary school mathematics book 2 pg. 81</p> <p>Active mathematics book 2 pg. 42</p>	
2.3 Graphical representation of linear inequalities	Represent linear inequalities graphically	<ul style="list-style-type: none"> • The teacher works out one more example illustrating how to shade wanted and unwanted regions. • Learners work in pairs and sketch the regions satisfying: <ul style="list-style-type: none"> i. $Y - x < 5$ ii. $Y \leq 2x - 1$ 	<p>Graph board</p> <p>Graph papers</p> <p>Fountain secondary school mathematics book 2 pg. 82 - 84</p>	

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		<ul style="list-style-type: none"> Assigns a problem for the learners to work out in their books. 		
3.1 Forming simple linear inequalities for regions on a graph	Form simple linear inequalities for regions on a graph	<ul style="list-style-type: none"> Using a graph, the teacher shows the learners how to form simple linear inequalities from graphs. Also show them how to find values of the variables that are solutions to both inequalities. Groups the learners and assign more graphs and ask them to form inequalities from the graphs. Individual learners solve more problems in their exercise books. 	Fountain secondary school mathematics book 2 pg. 87	
3.2 Forming simple linear inequalities for regions on a graph	Form simple linear inequalities for regions on a graph	<ul style="list-style-type: none"> Teacher works out more examples for the learners on formation of simple linear inequalities for regions on a graph. (Focus on graphs with more than two inequalities) For learners working in pairs, ask them to give the inequalities which define the marked regions on the graphs you will provide. Assigns more problem sets to individual learners to work out in their exercise books. 	Graph board Graph books Active mathematics book 2 pg. 44	
3.3 Activity of integration				
Theme: Patterns and algebra /Algebra II Competency: The learner understands and uses indices and standard form				
4.1	Recognize equivalent quadratic expressions	<ul style="list-style-type: none"> Teacher demonstrates to the learners what equivalent quadratics expressions are. Gives the learners in their groups more 	Fountain secondary school mathematics book 2 pg. 92	

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Equivalent quadratic expressions		<ul style="list-style-type: none"> Quadratic expressions and ask them to tell which are equivalent and which are not. Asks individual learners to show that $8x^2 + 3(2x - 3)$ is equivalent to $(4x-3)(2x+3)$. Gives the learners more individual practice problems. 		
4.2 Expansion of algebraic expressions	Expand algebraic expressions	<ul style="list-style-type: none"> Teacher illustrates with an example how an algebraic expression can be expanded. In their groups the learners expand the following expressions. <ul style="list-style-type: none"> i. $(2x-3)(x+4)$ ii. $(3x-2)(5x-7)$ Individual learners expand and simplify the following expressions <ul style="list-style-type: none"> i. $2(a+b)$ ii. $-2a(a+b)$ iii. $(ab + c)(2ab + 3c)$ 	<p>Fountain secondary school mathematics book 2 pg. 93</p> <p>Oxford active mathematics book 2 page 48</p>	
4.3 Perfect Squares	Identify Perfect squares	<ul style="list-style-type: none"> The teacher defines what a perfect square is to the learners. Asks learners to pair up and write down the first 10 numerical perfect squares. Still in their pairs, the learners write down the squares of the following. <ul style="list-style-type: none"> i. $2p + 5q$ ii. $3p - 7q$ Individually, the learners find out whether the following are perfect squares. <ul style="list-style-type: none"> i. $4a^2 + 24ab + 36b^2$ ii. $25a^2 - 40ab + 64b^2$ 	<p>Fountain secondary school mathematics book 2 pg. 94</p> <p>Oxford active mathematics book 2-page 50</p>	

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5.1 Factorization of quadratic expressions	Factorize quadratic expressions	<ul style="list-style-type: none"> Teacher explains to the learners what the sum and product are in a quadratic expression. A teacher Illustrates with an example how to identify two numbers that when multiplied give the product above and when added give the sum above and precede to factories the expression. In pairs, learners are asked to find the two numbers whose sum is the first number given and the product is the second number given. <ul style="list-style-type: none"> i. 7,6 ii. -5,-24 Individually each learner factorizes the following. <ul style="list-style-type: none"> i. $t^2 - 16t + 64$ 	Fountain secondary school mathematics book 2 pg. 96	
5.2 Factorization of quadratic equations	Factorize quadratic expressions	<ul style="list-style-type: none"> The teacher works out more examples on factorization of quadratic expressions. Assigns more group work for the learners and let them present their answers on the black board. Assigns each individual learner more problems to solve in their exercise books. 	Oxford active mathematics book 2 page 53	
5.3 Solving quadratic equations by factorization	Solve quadratic equations by factorization	<ul style="list-style-type: none"> The teacher explains to the learners when a quadratic expression becomes a quadratic equation. Illustrates with an example how a quadratic equation is solved by factorization. Groups learners and assign them equations to solve. 	Oxford active mathematics book 2 pg. 55 Fountain secondary school mathematics book 2 pg. 97	

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		<ul style="list-style-type: none"> Provides more problem sets to the individual learner to practice. 		
6.1 Solving quadratic equations by factorization	Solve quadratic equations by factorization.	<ul style="list-style-type: none"> The teacher works out more examples on the chalk board on how to solve quadratic equations by factorization. Working in groups, the learners solve more problems and present their answers the class. Assign individual problems for the learners to workout in their exercise books. 	Fountain secondary school mathematics book 2 pg. 98	
6.2 Activity of integration		<ul style="list-style-type: none"> The teacher administers the activity of integration and communicates the expectations from the students. 		
Theme: Geometry and Measures/ Similarities and Enlargement				
Competency: The learner understands and applies relationships between lengths, areas and volumes of similar shapes and objects				
6.3 Similarity	Identify similar figures State and use the properties of similar figures	<ul style="list-style-type: none"> Teacher explains what similar figures are. Learners work in groups to obtain the ratios for corresponding sides and angles on the figures. Ask what they notice about the ratios. Teacher gives each individual learners pairs of rectangles and ask them to determine whether they are similar or not, giving reasons for their answers. 	Chart of figures Fountain secondary school mathematics book 2 pg. 101 Oxford secondary mathematics book 2 pg. 59	
7.1 Enlargement	Define enlargement	<ul style="list-style-type: none"> The teacher explains to the learners what is meant by enlargement. Explains the scale factor of enlargement Draws two similar figures on the black board and ask the learners to compare their size and shape. 	Oxford secondary school mathematics book 2 pg. 61 Fountain secondary mathematics book 2 pg. 104	

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		<ul style="list-style-type: none"> • Tasks the learners in their groups to work out the ratios of corresponding sides of the two figures. Help them identify the center of enlargement. • Asks individual learners to construct the image of a given triangle under an enlargement about a given center of enlargement using a given scale factor. 		
7.2 Properties of enlargement	State the properties of enlargement to construct objects and images	<ul style="list-style-type: none"> • Teacher illustrates the properties on enlargement using an example. • Assigns a problem to learners in their groups to solve on a graph paper monitor their progress. • Provides more problem sets for individual learners to practice 	Graph papers Fountain secondary school mathematics book 2 pg. 105	
7.3 Area Scale factor	Understand and use the relationship between linear, area and volume scale factors	<ul style="list-style-type: none"> • Teacher demonstrates Area scale factor using an example. • Groups learners, and ask them to compare the length and areas of given figures. • Gives a task to individual learners involving the day to day use of area scale factor. 	Fountain secondary school mathematics book 2 pg. 109 Oxford active mathematics book 2 pg. 64	
8.1 Volume Scale factor	Understand and use the relationship between linear, area and volume scale factors.	<ul style="list-style-type: none"> • Teacher demonstrates volume scale factor using an example. • Groups learners, and ask them to compare the length and volumes of given figures. • Gives a task to individual learners involving the day to day use of area scale factor. 	Oxford active mathematics book 2 pg. 66	
8.2 Activity of integration		<ul style="list-style-type: none"> • Teacher administers activity of integration and communicates expectations 		
Theme: Geometry and measures/The circle				

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Competency: The learner understands, justifies and applies the formulae for the area and circumference of a circle				
8.3 Identifying parts of a circle	Identify the parts of a circle	<ul style="list-style-type: none"> The teacher defines a circle to the learners Draws four circles on the black board and ask the learners, working in pairs to identify the centre, Radius, Circumference and Diameter. Let them share with the rest of the class. Provides more problem set to all learners so as to practice individually. 	Fountain secondary mathematics book 2 pg. 115	
9.1 Formula for circumference of circle	State and use the formula for circumference of a circle	<ul style="list-style-type: none"> The teacher defines what a circumference is to the learners. Assigns an activity for the learners in groups where they will generate the formula for finding the circumference of a circle. Tasks individual learners to work out the perimeter of various shapes involving circles. 	Fountain secondary school mathematics book 2 pg. 115 – 116	
9.2 Formula for the area enclosed by a circle	State and use the formula for area enclosed by a circle	<ul style="list-style-type: none"> Teacher defines what an area of a circle is to the learners. Assigns an activity for the learners in groups where they will generate the formula for finding the circumference of a circle. Tasks individual learners to work out the perimeter of various shapes involving circles. 	Fountain secondary school mathematics book 2 pg. 116	
9.3 Activity of integration		<ul style="list-style-type: none"> Teacher administers the activity of integration 		
Theme: Geometry and measures				
Competency: The learner understands and applies rotation as a transformation				

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10.1 Symmetry	Identify the order of rotational symmetry of plane figures	<ul style="list-style-type: none"> Tr. Introduces the topic by asking the learners which direction do athletes normally run basing on the marked starting points. Asks learners in their groups to cut out a polygon and trace its outline a paper. They then rotate the cut out on the outline. Let them share the number of times the cut out fits exactly on the outline. Asks individual learners to do the same activity with various shapes. 	<p>Pieces of blank paper</p> <p>Cutters or razor blades for cutting</p>	
10.2 Clockwise and anti-clockwise rotation Properties of rotation as a transformation	Distinguish between clockwise and anti-clockwise rotation. State the properties of rotation as a transformation including congruency	<ul style="list-style-type: none"> Teacher explains to the learners what clockwise and anti-clockwise mean. Assigns a group activity where the learners will determine the order of rotation. Asks learners to rotate given figures on graph paper through angles of $+90$ and -90. Let them suggest the properties of rotation. 	Fountain secondary school mathematics book 2 pg. 123	
10.3 Determining the center and angle of rotation	Determine the center and angle of rotation	<ul style="list-style-type: none"> Teacher demonstrates with an example how to determine the center and angle of rotation. Assigns learners in their groups a problem and let them share the center and angle of rotation they have found. Assigns more problem sets to individual learners. 	Fountain secondary school mathematics book pg. 122	
11.1 Rotation in the Cartesian plane	Apply properties of rotation in the Cartesian plane	<ul style="list-style-type: none"> Uses an appropriate example to show the learners how the properties of rotation can be applied on the Cartesian plane. 	<p>Card board pieces of cut out shapes</p> <p>Fountain secondary school mathematics book 2 pg. 124</p>	

SCHEME OF WORK

		<ul style="list-style-type: none"> Assigns group work for the learner, draw figures in the Cartesian plane and describe what they notice. Assigns more problem sets for individual practice. 	Oxford active mathematics book 2 pg. 83	
12 Activities of integration	Assess ability of students to apply values, skills and understanding of concepts taught through Activities of integration	Administer and mark Aol assessment Prepare report cards.		

Subject: Mathematics

Class: Senior Two

Term: Three

Teacher's Name:

When it comes to planning your lessons use the structure: starter, I do, we do, you do, plenary. The starter is a written task that reviews previous learning. Ensure your lessons provide regular and extended opportunities for independent practice.

YPR:

Y= yes, I taught the lesson

P= I partially taught it e.g. I didn't get through all the content.

R= I taught the lesson, but I think students would benefit from a review

Week Subtopics	Learning Outcome	Methodology	Teaching/Learning Resources	Y P R
Theme: Geometry and measures/Length and area properties of two dimensional geometrical figures Competency: The learner understands, justifies and applies area and perimeter formulae for different figures				
1.1 Length and Perimeter	Describe the length of two-dimensional figures	<ul style="list-style-type: none"> Introduces the topic by asking learners to identify the length and perimeter of their classroom. 	The classroom Classroom tabletops, books Cut out shapes	

SCHEME OF WORK

		<ul style="list-style-type: none"> Asks learners in their groups to find the perimeter and length of their books, desktops. Assigns individual learners to determine the perimeter of non-rectangular plane figures. 	Fountain secondary school mathematics book 2 pg. 88	
1.2 Pythagoras's Theorem	<p>Develop, understand, and state Pythagoras' theorem</p> <p>Apply Pythagoras' theorem to right angled and isosceles triangles</p>	<ul style="list-style-type: none"> The teacher begins the lesson by stating the Pythagoras' theorem to the learners. Let's the learners pair up and draw a triangle on a graph paper and derive the Pythagoras theorem. Assigns an activity to individual learners to find use the Pythagoras' theorem to determine the unknown sides of right-angled triangles. 	<p>Graph papers</p> <p>Fountain secondary school mathematics book 2 page 130</p>	
1.3 Area	Understand the meaning of area in two dimensional geometrical figures	<ul style="list-style-type: none"> Introduces the subtopic by asking learners to draw a rectangle on a graph paper and determine its area by counting the squares. Draws figures on a chat (a triangle and rectangle) on the black board and ask them to pair up and workout their areas. Asks individual learners work out more problem sets in their exercise books. 	A chat of drawn figures	
2.1 Activity of integration		<ul style="list-style-type: none"> Teacher Administers activity of integration 		
Theme: Geometry and Measures/ Nets, Areas and Volumes of Solids Competency: The learner makes and draws 2D and 3D shapes and explains their properties.				
2.2 Nets	Form nets of common solids	<ul style="list-style-type: none"> Teacher describes to what is meant by a net to the learners. 	Carton box to be cut by learners.	

SCHEME OF WORK

		<ul style="list-style-type: none"> Provides carton boxes to groups of learners and ask them to cut it up. What do they say about the flat shape? Assigns more problem sets from textbooks for learners to practice individually. 	<p>A chart with square based pyramid drawn on it.</p> <p>Fountain mathematics for Uganda secondary schools Book 2 page 141.</p>	
2.3 Common Solids and their properties	Identify common solids and their properties including faces, edges and vertices	<ul style="list-style-type: none"> Teacher uses a carton box, to show the learners the properties of cube i.e. the edges, vertices, and faces. Provides a triangular prism, square pyramid (made from Manila paper), and other shapes possible to groups of learners. And learners working in groups determine their properties. Individual learners should draw solids from a textbook provided and fill a table with the number of faces, edges, and vertices on each 	<p>A box</p> <p>Triangular prism for learners to use.</p> <p>Active mathematics book 2, pg. 100</p> <p>Fountain mathematics for secondary school book 2, pg. 142</p>	
3.1 Units of measure	State units of measure	<ul style="list-style-type: none"> Teacher uses a tabletop to make measurements and calculate the area of the table top in both centimeters and meters. Learners' workout the area of in groups on various objects e.g., triangular prism, books, and their black board. Provide more problem sets to individual learners to work out in their exercise books. 	<p>Tape measure, or meter rule for taking measurements.</p> <p>Triangular prism for being measurement purposes.</p>	
3.2 Converting units of length, area and volume	Convert Units from one form to another	<ul style="list-style-type: none"> Models to learners who to convert from one unit of measurement to another working from first principles. Asks learners to work in groups to measure and record the dimensions of laboratory 	<p>Tables for measurement practice.</p> <p>Meter rules, tape measures for taking measurements.</p>	

SCHEME OF WORK

		<p>table. (In cm and meters), calculate the area of the tabletop in both units.</p> <ul style="list-style-type: none"> Let's individual learners convert the units of the area of the tabletop from cm^2 to m^2. Assigns more problem sets to individual learners. To measure and calculate the area and volumes of various objects. 	Active mathematics book 2 pg. 100	
3.3 Surface Area of three-dimensional figures	Calculate the surface area of three-dimensional figures	<ul style="list-style-type: none"> Teacher explains what if meant by surface area to the learners. Provides carton boxes to learner and let them work in groups to cut out its, net, and work out the area of each face. Asks the learners working individually to work out the total external surface area of diagrams of polyhedral solids that you provide. 	<p>Carton boxes</p> <p>Charts of polyhedral solids</p> <p>Active mathematics book 2 pg. 102</p>	
4.1 Volume of cubes and cuboids	Calculate the volume of cubes and cuboids	<ul style="list-style-type: none"> Teacher works out an example of the calculation of volume of solids to the learners. Poses solid figures to the learners to work out their volume in their groups. Task individual learners with more problem sets to work out from their exercise books. 	A brick, cubic boxes and other solids available.	
4.2 Volume of cubes and cuboids	Calculate the volume of cubes and cuboids	<ul style="list-style-type: none"> Teacher works out an example using a word problem to the learners using a real-life situation. Let's the learners to work in a group to work out a real-life word problem involving calculation of the volume and area of solids. 	<p>Calculators</p> <p>Fountain school mathematics book 2 pg. 148 – 149</p>	

		<ul style="list-style-type: none"> Assigns learners questions from a textbook to work out individually in their exercise books. 		
4.3 Activity of integration		Teacher administers activity of integration		
Theme: Numbers/Numerical concepts 2 Competency: The learner manipulates surds				
5.1 Identifying surds	Use surds to represent roots that cannot be represented exactly as decimals	<ul style="list-style-type: none"> The teacher begins by explaining to the learners what is meant by a surd. Asks learners working in pairs to determine the square roots of the integers (1 – 12). Let them study the answers and identify which of those are surds. Let's each individual student repeat the same activity using cube roots instead of square roots. Provides learners with more problem set from textbooks for their individual practice. 	Calculators Active mathematics book 2 pg. 107 Fountain mathematics for Uganda secondary schools book 2 pg. 154.	
5.2 Addition and subtraction of surds	Manipulate and simplify expressions with surds	<ul style="list-style-type: none"> The teacher begins the lesson by reviewing simplification of algebraic expressions. Ask the learners to simplify the expressions: <ul style="list-style-type: none"> ii. $X + X =$ iii. $8x - 5x + 3x =$ Asks the learners work in pairs and replace the x with $\sqrt{2}$ and perform the same operation as above. They should compare the substituted expressions with the algebraic expressions. 	Active mathematics book 2 pg. 108 Fountain secondary mathematics book 2 pg. 159	

SCHEME OF WORK

		<ul style="list-style-type: none"> • Still working in groups, the learners simplify algebraic expressions involving addition and subtraction. • Assigns more individual problems for the learners 		
5.3 Multiplication and Division of surds	Manipulate and simplify expressions with surds	<ul style="list-style-type: none"> • Teacher works out an example on multiplication and division to make the fundamental rules of surds clear. • Let the learners form groups and work out more problem sets that you provide to them. Monitor their progress. • Ask individual learners to work two more problems that are pose to them. • Assign more problems for them to try out in their exercise books. 	Fountain secondary mathematics book 2 pg. 159	
6.1 Expansion of expressions with surds	Manipulate and simplify expressions with surds.	<ul style="list-style-type: none"> • Demonstrate with an example how an expression can be expanded with surds. Explain the concept of conjugate surd and make it clear to the learners. • Ask learners to work in pairs and solve a set of problems that present to them. • Give individual learners more problem sets to try out independently. 	Fountain secondary school mathematics book 2 pg. 161	
6.2 Rationalization of surds	Manipulate and simplify expressions with surds.	<ul style="list-style-type: none"> • Teacher models the process of rationalization using a suitable example. Emphasize the conjugates of surds. • Asks learners to rationalize denominators of surds that you provide. They should work in pairs as the teacher monitors. • Provides more problem sets to individual learners to work out in their exercise books. 	Fountain secondary mathematics book 2 pg. 161 – 163	

SCHEME OF WORK

6.3 Activity of integration				
Theme: Data and Probability/ Set theory Competency: The learner uses sets to solve problems				
7.1 Sets and Elements	Describe a set and identify elements of a set.	<ul style="list-style-type: none"> • Mentions to the learners that a market vendor sell oranges , cabbages, green pepper, apples, pineapples, onions among others. • Let's the learners work in pairs and categorize the above items as fruits and vegetables. Select sample pairs of students to share their ideas with the class. • Displays some sets of related items on a manilla chart and ask the individual each individual learner to describe what he/she sees • Asks individual learners to categories items used in day to day life in the form of sets 	A teacher may use objects available to demonstrate sets Fountain secondary school mathematics book 2 pg. 166 – 167	
7.2 Types of sets	Identify different types of sets and their symbols	<ul style="list-style-type: none"> • Uses relevant examples to describe different types of sets to the learners. Explains disjoint and empty sets, subsets and equal sets. • Let's learners work in pairs to identify which of the sets are disjoint and which are empty, which are subsets and equal. • Gives learners more problem sets to work out at individual level. 	Fountain secondary school mathematics book 2 pg. 167	
7.3 Intersection and union sets	Identify different types of sets and their symbols	<ul style="list-style-type: none"> • Explains the concepts on intersection and union of sets. 	Active mathematics book 2 page 115	

		<ul style="list-style-type: none"> • Assigns learners task of identifying which element occur in both sets and which occur only in one set. The learners should work in groups. • Asks each individual learner to represent given sets to show which element belongs where and draw the necessary Venn diagrams. • Gives more problem sets for the learners to try out in their exercise books. 		
8.1 Universal and Complement sets	Identify different types of sets and their symbols.	<ul style="list-style-type: none"> • Explains a universal set and a complement of a set to the learners. • Provides learners with set problems and asks them to work in groups to identify their complement sets. • Asks individual learners to draw Venn diagrams to represent the information in the previously discussed activities. 	Active mathematics book 2 pg. 117	
8.2 Universal and compliment sets	Identify different types of sets and their symbols.	<ul style="list-style-type: none"> • Works out more examples for the learners involving three sets. • Poses more problem sets for the learners to work out in pairs and monitors individual learners. • Gives individual learners more problem sets to work out in their exercise books. 	Active mathematics book 2 pg. 117 – 118	
8.3 Number of elements	Determine the number of elements in a set	<ul style="list-style-type: none"> • Works out an example for the learners, on how to identify elements that belong to particular sets for instance elements of the complement set, union set among others. 	Fountain secondary school mathematics book 2 pg. 169	

		<ul style="list-style-type: none"> • Presents a problem to the learners where they have to identify elements that belong to a particular set. • Give individual learners more problem set to work out in their exercise books. 		
9.1 Presentation of regions in a Venn diagram	Represent and show different operations on sets by shading the different regions in a Venn diagram	<ul style="list-style-type: none"> • Uses two set problem and models how different operations on sets can be shaded on the Venn diagram. • Poses a problem to the learners to workout in groups. • Gives individual learners more problem sets to work out in their exercise books. 	Manilla charts for illustrations Fountain secondary school mathematics book 2 pg. 170	
9.2 Presentation of regions in a Venn diagram	Represent and show different operations on sets by shading the different regions in a Venn diagram	<ul style="list-style-type: none"> • Uses three set problem and models how different operations on sets can be shaded on the Venn diagram. • Assigns more problem sets to the learners to work in groups of six. • Assigns more problems to individual learners to workout in their exercise books. 	Active mathematics book 2 pg. 121 -122	
9.3 Practical situations	Apply sets in practical situations using two and three sets	<ul style="list-style-type: none"> • Starts lesson by asking learners to mention practical situations where sets apply. • Workouts a set problem of two sets involving day to day life situations. • Poses question for learners to work out in groups. • Assigns individual problem to learners to work out in their exercise books. 	Active mathematics book 2 pg. 122 Fountain secondary school mathematics book 2 pg. 171	
10.1 Practical situations		<ul style="list-style-type: none"> • Models more solutions for learners involving three set problem in day to day lives. • Assigns work to learners working in groups. 	Fountain secondary school mathematics book 2 pg. 171	

SCHEME OF WORK

		<ul style="list-style-type: none"> Assigns individual work to the learners to work out in their exercise books. 		
10.2 Activity of integration		<ul style="list-style-type: none"> Administers activity of integration and communicates expectations. Mark assessment and prepare a report 		
11	Assess ability of students to apply values, skills and understanding of concepts taught through Activity of integration End of year Assessments (EoY).	<ul style="list-style-type: none"> Administer and mark EoY assessments 		
12	Assess ability of students to apply values, skills and understanding of concepts taught through Activity of integration End of year Assessments (EoY).	<ul style="list-style-type: none"> Mark EoY assessments and prepare report cards 		