SCHEME OF WORK

Academic year : 2021-2022

NGOMA DISTRICT

Term:1st School: …… Subject: Mathematics SUBJECT LEADER'S NAME:…… Class: senior three

Number of period per week: 6

Dates	**Unit title**	**Lesson title + evaluation**	**Learning objective + key unit competence**	**Teaching methods α techniques +evaluation procedures**	**Resources α References**	**observations**
WEEK1 **11-15/10/2021**	1.Problem sets	1. Mathematical problem set 2. Analysis and interpretation of a problem using set language(intersection, union) 3. Representation of a problem using Venn diagrams 4. Modeling and solving a problem	**<u>Knowledge and understanding</u>** 1. -express a mathematical problem set using a Venn diagram 2.Represent a mathematical problem using a Venn diagram **<u>Skill:</u>** 1.using Venn diagram to resent a mathematical problem set 2. Interpret, model, and solve a mathematical problem set. **<u>Attitude and value</u>** 1. Develop clear, logical and coherent thinking skills in solving real life problems involving sets. 2.Appreciate the importance of representing and solving a mathematical problem set	✓ In groups, analyze information given in a Venn diagram and solve related questions ✓ In groups, discuss a situation involving set theory represents it using Venn Diagrams form and questions and solve related questions.	Mathematics for Rwanda schools, student's book and teacher'book. New general mathematics	

		Summary and evaluation	using Venn diagrams **<u>Key unit competency:</u>** to solve problem sets			
WEEK2 **18-22/10/2021**	2.Number bases	1. Definition and examples of different number bases 2. conversion of numbers	**<u>Knowledge and understanding</u>** 1. List of Digital used in a given base 2. Conversion of number	✓ In groups, Convert a number from base ten to any other base and vice versa	Mathematics for Rwanda schools, student's book and teacher'book. New general mathematics	
WEEK3 **25-29/10/2021**		1. convert a number from one base to another 2. Operations on number bases 3. solving equation involving number base Summary and evaluation	**<u>Skills:</u>** 1. Carry out operations on numbers bases 2. solve equation involving bases **<u>Attitude and values</u>** 1. Develop clear, logical, while solving problem sets, 2. Appreciate the importance of bases in various contexts **<u>Key unit competency:</u>** to represent numbers in different number bases and solve related problems.	**In group,** convert a given number from base ten to any other base and vice versa. Discuss and carry out operations on number bases involving bases		
WEEK4	3.Algebraic fractions	1.Definitions and examples of an algebraic fraction	**<u>Knowledge and understanding</u>** ✓ define an algebraic	**<u>In group:</u>** State the restriction on	Mathematics for	

01-05/11/2021		2. Restrictions on the variable or conditions of existence of on algebraic fraction. 3. simplification of algebraic fractions	fraction ✓ state the restriction on the variable in algebraic fraction. ✓ recognize the rules applied to operations of algebraic fraction. **Skills** ✓ Perform operations on algebraic fraction ✓ solve rational equation with linear denomination ✓ Simplify algebraic fractions Attitudes and values 1. Develop clear, logical, and coherent thinking while working on algebraic fractions show discipline in group activities **key unit competency:** to perform operations on rational expressions and use them in different	the variable given algebraic fraction. Carry out different operations for given algebraic fractions and simplify. **Individually:** Solve given rational equations	Rwanda schools, student's book and teacher'book. New general mathematics	
WEEK5 **08-12/11/2021**		4.addition or subtraction of algebraic fractions with linear denominators 5.solution of rational equations with linear denominations				
WEEK6 **22-26/11/2021**		6. Multiplication or division of two algebraic fractions 4Solution of rational equations with linear denominators Summative evaluation				

			situations.			
WEEK7 **29/11-03/12/2021**	4.simultaneous linear equations and inequalities	1. Graphical solution of simultaneous linear equations in two unknowns. 2.Solving word problems involving simultaneous linear equation in two unknowns (graphically algebraically) 3. Definition and examples of simultaneous linear inequalities in two unknown. 4. Solving simultaneous linear inequalities in two unknowns.	**Knowledge and understanding** ✓ Define simultaneous linear inequality in two unknowns ✓ given examples of simultaneous linear inequality in two unknowns. ✓ show solution set **Skill** ✓ solve graphically simultaneous linear equations and inequalities In two unknowns. ✓ interpret graphical solutions ✓ solve word problems **Attitudes and values:** ✓ Develop clear, logical and coherent thinking	**In group:** ✓ Solve graphically simultaneous linear equations and inequalities in two unknown ✓ solve word problems ✓ deduce the solution set by observation of graphical representation	Mathematics for Rwanda schools, student's book and teacher'book. New general mathematics	

		Summative evaluation	while solving simultaneous linear equations and inequalities in two unknowns ✓ show discipline in group activities. **Key unit competency**: to represent and intreprete graphs of linear functions and apply them in real life situations, solve linear equations and inequalities……			
WEEK8 **06-10/12/2021**	5.Quadratic equations	1. Definition and examples of quadratic equation . 2. Solving quadratic equations by o Factorization o Graph 3. solving quadratic equation by o Completing squares o Quadratic forumula	✓			

WEEK9 **13-17/12/2021** **WEEK 10** **20-24/12**		4. solving quadratic equation by ○ Synthetic division 5. Problems involving quadratic equations 6.Solution of equation reducible to quadratic equations by: ○ Factorisation ○ Horner's method Summative evaluation **+REVISION** **EXAMINATIONS +** **Marking and school report.**				

TERM 2

Dates	Unit title	Lesson title + evaluation	Learning objective + key unit competence	Teaching methods α techniques +evaluation procedures	Resources α References	observations
WEEK1 **10-14/01/2022**	6.Linear and quadratic function	1. linear function: slopes, Cartesian equation, parallelism and perpendicularity of lines	**<u>Knowledge and understanding</u>** ✓ Define an Cartesian equation of a straight line ✓ Define Quadratic function ✓ List the characteristics of linear or quadratic function ✓ Differentiate linear from quadratic function **<u>Skill:</u>** ✓ Determine Cartesian equations of straight lines, coordinates of vertices, equation of axis of symmetry, ✓ Determine the intercept of quadratic function ✓ Sketch and draw graphs ✓ use linear or quadratics function to solve problems. **<u>Attitude and value</u>** ✓ Develop clear , logical and coherent thinking in solving	**In groups:** ✓ Determine equations of a straight line passes through a) a point and given its slope b) two points c) a point and parallel to a given line d) a point and perpendicular to a given line **Individually** for a quadratics function , determine its concavity , the intercepts, the vertex , the table of values and	Mathematics for Rwanda schools, student's book and teacher'book. New general mathematics	
WEEK2 **17-21/01/2022**		2. Quadratic functions: Table of values, vertex of parabola , axis of symmetry.				
WEEK3 **24-28/01/2022**		3. intercepts and graph in Cartesian plane				

		Summary and evaluation	linear and quadratic functions ✓ Importance of linear and quadratics functions in learning other subjects ✓ Discipline in group discussion **Key unit competency:** to solve problems involving linear or quadratics functions and interpret the graphs of quadratic functions	sketch the parabola		
WEEK4 **31/01-04/02/2022**	7.Compound interest, reverse percentage and compound proportional change	1. Reverse percentages 2. Compound interest and its application in banking financial activities	✓ Define compound interest reverse percentage, compound proportional change and continued proportional. ✓ Find reverse percentages in a given mathematical problem. ✓ Determine a compound interest in a given mathematical problem ✓ Simplify ratio in their	**In group** ✓ Solve problems involving reverse percentages and compound interest ✓ Compare the Overall values of different goods and draw conclusion s	Mathematics for Rwanda schools, student's book	

WEEK5 **07-11/02/2022**		3.Compound proportional change on continued proportions. Summary and evaluation	simplest form **Skills** ✓ Solve problems ✓ Apply compound interest ✓ Apply reverse percentage and compound proportional change in real life **Attitudes and values** Appreciate the role of compound interest in banking and financial activities. Appreciate that in the case of the compound interest, saving and investing money can increasing the value of wealth. Show concern for paying takes and being honest in daily activities involving money. Develop critical thinking **<u>Key unit competency</u>**: To solve problems involving compound	✓ Solve problems involving compound proportional change or continued proportions change or continued proportions.	and teacher'book. New general mathematics	

			interest, reverse percentage and proportional change using multipliers			
WEEK6 **14-18/02/2022**	8.Right angled triangles	1. Median through the vertex of the right angle 2. height using the vertex of a right angled triangle and the sides of the right angle triangle. 3. height using the vertex of a right angled triangle and the lengths of the segments on the hypotenuse.	**<u>Knowledge and understanding</u>** ✓ given and define the elements of a right angled triangle. ✓ show relationship between the elements of a right angled triangle **<u>Skill</u>** ✓ use Pythagoras, theorem ✓ solve problems about right angled triangle **<u>Attitude and values</u>** ✓ Appreciate the importance of right angled triangle in various situation ✓ promote team work ✓ show discipline in solving and discussion problems	**<u>In groups:</u>** Find the missing lengths of a triangle **<u>In pairs:</u>** ✓ -find the length of the hypotenuse given two sides of the right angled triangle **<u>In group</u>** Solve problems about the height and the median of the right angled triangle **<u>Individually</u>** Use sine, cosine and tangent to find the length of a right angled	Mathematics for Rwanda schools, student's book and teacher'book. New general mathematics	
WEEK7 **21-25/02/2022**		4. finding the sides of right angled of triangle given their orthogonal projection on the hypotenuse 5. trigonometric ratios in				

		a right angled triangle: sine, cosine, tangent summative evaluation	**<u>Key unit competency</u>:** to find length of side and angles in right angle triangles using trigonometric ratios	triangle		
WEEK8 **28/02-04/03/2022**	9.Circle Theorem	1. Elements of circle and Disk : Center radius ,diameter,circomference ,area ,chord,tangent,secant ,sector 2. first circle theorems: angles at the centerand at the circumference. . Second circle theorem: angle in a semicircle.	**Knowledge and understanding** ✓ Recognise and identify the elements of a circle ✓ Identify angle properties in a circle **Skills** ✓ Find the length of elements of a circle. ✓ Calculate the area of disk and its sector' ✓ Solve problems ✓ Use tangent properties to solve problems **Attitudes and values** ✓ Develop clear, logical and coherent thinking. ✓ Importance of circle theorems in dividing into sectors	**In group** Discuss and solve problems **In Pairs** ✓ For given circles, involving arcs ,find the minor arc length, major arc length ,minor sector area and major sector area	Mathematics for Rwanda schools, student's book and teacher'book. New general mathematics	
WEEK9 **07-11/03/2022**		3.Third circle theorem: angles in the same segment. . Fourth circle theorem: angles in cyclic quadrilateral.				
WEEK10		**4.** Fifth circle theorem:				

14-18/03/2022		length of tangents . Sixth circle circle theorem: angle between circle tangent and radius	✓ Promote team work ✓ Show discipline in group discussions **<u>Key unit competency</u>:** to construct mathematical arguments about circles and disks and use circle theorem to solve related problems.	**In group** Discuss the properties of points in a cyclic quadrilateral and properties of chords involving circle theorem.		
		5. Seventh circle theorem: alternate segment theorem .Eight circle theorem: perpendicular from the centre bisects the chord Summative evaluation				
WEEK11 **21-25/03/2022**	**EXAMS**					
WEEK12 **28-31/03/2022**	**Marking and school report.**					

TERM 3

Dates	Unit title	Lesson title + evaluation	Learning objective + key unit competence	Teaching methods α techniques +evaluation procedures	Resources α References	observations
WEEK1 **18-22/4/2022**	10.Colinear points and orthogonal vectors	1. Conditions for points to be collinear and vectors to be orthogonal 2. Problems about points and vectors in 2 D Summative evaluation	**Knowledge and understanding** ✓ State the conditions and properties of collinearity and orthogonality. **Skills** ✓ Use definition and properties to show collinearity of three points and orthogonality of two vectors. **Attitudes and values** ✓ Appreciate the use of properties of collinearity and orthogonalityto solve problems. ✓ Show discipline in group discussion **Key unit competency**: to apply	**In group** Discuss whether three points are collinear in a given situation. Discuss whether vectors are parallel or orthogonal	Mathematics for Rwanda schools, student's book and teacher'book. New general mathematics	

			properties of collinearity and orthogonality to solve problems involving vectors			
WEEK2 **25-29/04/2022**	11.Enlargement And Similarity In 2D	1. .Definition of enlargement .Definition of similarity examples of similar shapes 2. properties of enlargement and similarities	**<u>Knowledge and understanding</u>** ✓ Define enlargement similarity ✓ identify similar shapes ✓ list properties of enlargement and similarity **<u>Skill</u>** ✓ Scare factor of an enlargement ✓ -center of an enlargement ✓ -Construction of images	**<u>In groups:</u>** ✓ construct images of enlarged shapes ✓ -find the area, volume of given similar shapes and solid **<u>In pairs:</u>** ✓ construction of	Mathematics for Rwanda	
WEEK3		3. Linear scale factor				

02-06/05/2022		of enlargement 4. centre of enlarged shape	under an enlargement or composite enlargement ✓ -find lengths of sides, area and volume of similar shapes **Attitude and values** ✓ appreciate the importance of enlargement and similarities to transform shapes ✓ show discipline in group discussions	images under composite and inverse enlargement **Individually** ✓ Find linear scale factor	schools, student's book and teacher'book. New general mathematics	
WEEK4 **09-13/05/2022**		5. finding length of sides of similar shapes using Thales'theorem Areas of similar shapes				
WEEK5 **23-27/05/2022**		6. volumes of similar objects 7. composite and inverse enlargements summative evaluation	**Key unit competency**: to solve problem regarding shape enlargement and similarities in 2D			
WEEK6 **30/05-03/06/2022**	12.Inverse and composite transforma	1. composite transformation 2. composite translations in 2D	**Knowledge and understanding** ✓ -State and explain properties of composite and inverse transformation in	**Induvidually:** -construct an image of given object under	Mathematics for Rwanda schools, student's book	

WEEK7 **06-10/06/2022**	tions In 2D	3. Composite reflections in 2D 4. Composite rotation in 2D 5. mixed transformations in 2D 6. inverse transformations in 2D Summative evaluation	2D ✓ -identify type of transformations used in given drawings in 2D ✓ -show an image of an object from different transformation shapes in 2D **Skill:** Construction image of an object -Solve Problems **Attitudes and value** importance of inverse and composition transformation to transform shapes -show discipline in group discussion **Key unit competency**: to solve problems involving the inverse and composite transformations of shapes	inverse and composite transformation in 2D **In group:** Observe discuss and show image of objects from given different transformed shapes in 2D **In pair:** Construct images of objects under mixed transformation	and teacher'book. New general mathematics	
WEEK8 **20-24/06/2022**	13 Statistics (bivariate data)	Definition and examples of bivariate data Frequency distribution table for bivariate data	**Knowledge and understanding:** - define bivariate data. - Make a frequency distribution table of	In groups, collecting bivariate data and organise them in frequency distribution table	Mathematics for Rwanda schools,	

WEEK9 **27/06-01/07/2022**		Review of data presentation using graphs Scatter diagram Types of correlation o positive correlation o negative correlation Summative evaluation	collected bivariate data - Interpret scatter diagrams - Identify type of correlation on a scatter diagram **Skills**: - Draw a scatter diagram for bivariate data and indicate the type of correlation. - Analyse a scatter diagram and infer conclusion. **Attitudes and values**: - Develop clear, logical and coherent thinking while drawing conclusion related to bivariate data or scatter diagrams. - Appreciate the use of scatter diagrams to represent information. - Show patience, mutual respect, tolerance, and curiosity in collecting, representing, interpreting bivariate data. **Key unit competency:** to be able	and plot them on a scatter diagram In pairs, analyse given information on the graphs (scatter diagrams), determine the correlation between the dat. Analyse and interpret the data and infer conclusion	student's book and teacher'book. New general mathematics	

			to collect, represent, and interpret bivariate data.			
WEEK10				**EXAMS**		

04-08/07/2022	
WEEK11 **11-15/07/2022**	**Marking and school report**