MATHEMATICS FORM 1 SCHEMES OF WORK – TERM 1								
WEEK	LESSON	TOPIC	SUB - TOPIC	OBJECTIVES	LEARNING/TEACHING ACTIVITIES	LEARNING/TEACHING RESOURCES	REFERENCES	REMARKS
5	1-2	NATURAL NUMBERS	Place Value of Numbers	By the end of the lesson, the learner should be able to: 1) Identify, read and write natural numbers in symbols and words 2) Identify the place value of a number	• Discussions • Solving problems in groups and individually • Illustrations	• Charts showing place value of a number • The Abacus • Bank cheques and statements	• Discovering secondary mathematics Book 1 Pages 1-3 • Secondary mathematics KLB book 1 pages 1-2 • Advantages in mathematics book 1 pages 1-2	
	3-4	NATURAL NUMBERS	Round off Numbers	By the end of the lesson, the learner should be able to: Round off numbers to the nearest tens hundreds, thousands, millions and billions	•Discussions •Solving problems involving rounding off numbers •Guiding •Illustrations	• Charts to show the rounding off of numbers • Number line • Scales on a ruler, thermometer, veneer calipers	• Discovering secondary mathematics book 1 page 3 • KLB book 1 page 3 • Secondary mathematics KIE book 1 page 2 • Advancing in mathematics book 1 pages 3-4	
	5-6	NATURAL NUMBERS	Classification and operation on natural numbers	By the end of the lesson, the learner should be able to: 1) Classify numbers as odd, even and prime 2) Solve word problems involving natural numbers	•Discussions •Solving problems involving even, odd and prime numbers •Carrying out operations on natural numbers •Classification •Guiding	• Charts to show the natural numbers • Number line • Place value charts • Abacus	• Discovering secondary mathematics book 1 pages 4-8 • Secondary mathematics KLB book 1 pages 4-9 • Advancing mathematics book 1 pages 4-5 • Secondary mathematics KIE book 1 pages 9-11	

6	1	FACTORS	Factors of composite numbers	By the end of the lesson, the learner should be able to: 1) Find factors of various composite numbers 2) Express composite numbers in factor form	•Solving problems involving factors of composite numbers •Discussions •Illustrations	•Charts to show the factorization of numbers •Factor – tree diagram	• Discovering Secondary mathematics book 1 pages 9 • Secondary mathematics KLB book 1 page 10 • Secondary mathematics KIE book 1 page 12-14 • Advancing in mathematics book 1 page 7	
	2	FACTORS	Prime Factors	By the end of the lesson, the learner should be able to: 1) Define the term prime factor 2) Express numbers as products of prime factors	•Discussions •Demonstrations •Listing the prime factors of numbers •Solving problems involving prime factors •Guiding	•Charts to show the factorization of numbers •Multiplication tables	• Discovering secondary mathematics book 1 page 10 • KLB book 1 pages 10-11 • Advancing mathematics book 1 page 9 • Secondary mathematics KIE book 1 page 12	
	3-4	FACTORS	Factors in power form	By the end of the lesson, the learner should be able to: Express factors in power form	•Solving problems involving factors expressed in power form •Discussion •Guiding the learner to express prime factors in power	•Charts to show the factorization of numbers •Multiplication table	• Discovering secondary mathematics book 1 page 10 • KLB book 1 pages 10- 11 • Advancing mathematics book 1 page 9 • Secondary mathematics KIE book 1 page 12	
	5-6	DIVISIBILITY TEST	Divisibility of numbers by 2, 3, 4, 5	By the end of the lesson, the learner should be able to: Test the divisibility of numbers by 2, 3, 4, 5	•Discussions •Solving problems involving divisibility of numbers by 2, 3,	•Divisibility test charts •Multiplication table •Prime numbers	• Discovering secondary mathematics book 1 page 10 • KLB book 1 pages	

					4,5 •Dividing numbers •Listing the prime factors of numbers •Illustrations		11-15 • Advancing mathematics book 1 page 10-11 • Secondary mathematics KIE book 1 page 14	
7	1-2	DIVISIBILITY TEST	Divisibility of numbers by 6, 8, 9	By the end of the lesson, the learner should be able to: Test the divisibility of numbers by 6, 8, 9 and use the knowledge of divisibility to solve problems	•Discussions •Solving problems involving the divisibility of numbers of 6, 8, and 9 •Illustrating to the learner how to test divisibility of numbers by 6, 8, 9, 10 and 11	•Divisibility test charts •Multiplication table •Multiples of numbers •Factors of numbers •Prime numbers	• Discovering secondary mathematics book 1 page 10 - 11 • KLB book 1 pages 16 - 17 • Advancing mathematics book 1 page 11 • Secondary mathematics KIE book 1 page 14	
	3-4	DIVISIBILITY TEST	Divisibility of numbers 10 and 11	By the end of the lesson, the learner should be able to: 1) Carry out the divisibility test of 10 and 11	•Dividing numbers •Discussions •Solving problems	•Divisibility test charts •Multiplication table •Multiples of numbers •Factors of numbers •Prime numbers	• Discovering secondary mathematics book 1 page 10 • KLB book 1 pages 19 - 21 • Advancing mathematics book 1 page 12 • Secondary mathematics KIE book 1 page 14	
	5	GREATEST COMMON DIVISOR (GCD)	GCD of a set of numbers	By the end of the lesson, the learner should be able to: 1) Find the GCD of a set of numbers 2) Apply GCD in real – life situations	•Discussions •Probing learners understanding of GCD •Reinforcing earlier knowledge •Solving problems involving GCD	•Charts to show how to get GCD •Multiplication tables •Containers of different capacities	• Discovering secondary mathematics book 1 page 10 - 11 • KLB book 1 pages 22 - 23 • Advancing mathematics book 1 page 13	

							• Secondary mathematics KIE book 1 page 15	
	6	LEAST COMMON MULTIPLE (LCM)	Multiples of numbers	By the end of the lesson, the learner should be able to: 1) List the multiples of numbers	•Discussions •Working out the multiples of numbers •Solving problems involving multiples of numbers •Guiding learner exercises to list down multiples of numbers.	•Prime numbers •Multiplication tables •Natural numbers •Even numbers •Odd numbers •Containers of different capacities •Flickering light	• Discovering secondary mathematics book 1 page 11 • KLB book 1 pages 22 - 24 • Advancing mathematics book 1 page 14 • Secondary mathematics KIE book 1 page 15	
8	1-2	LEAST COMMON MULTIPLE (LCM)	LCM of a set of numbers	By the end of the lesson, the learner should be able to: 1) Find the least common multiple of a set of numbers 2) Apply the knowledge of LCM in real – life situations	•Discussions •Working out the multiples of numbers •Illustrating and solving problems involving multiples of numbers •Solving word problems from everyday life situations	•Multiplication tables •Natural numbers •Prime numbers •Multiples of numbers •Even numbers •Odd numbers Bells Flickering lights •Alarms •Containers of different capacities	• Discovering secondary mathematics book 1 page 11 • KLB book 1 pages 25 - 26 • Advancing mathematics book 1 page 15 • Secondary mathematics KIE book 1 page 15	
	3-4	INTEGERS	Integers	By the end of the lesson, the learner should be able to: 1) Define integers 2) Identify integers on a number line	•Discussions •Reading numbers on a number line •Showing numbers on a number line •Solving problems involving integers and the number line •Definition	•Number line •Stairways •Natural numbers •Whole Numbers	• Discovering secondary mathematics book 1 page 14 • KLB book 1 pages 27- 29 • Advancing mathematics book 1 page 18 • Secondary mathematics KIE book 1 page 1-3	
	5-6	INTEGERS	Operations of integers	By the end of the lesson, the learner should be able to:	•Demonstrations •Discussions •Illustrating and solving	•Charts showing integers •Number line	• Discovering secondary mathematics	

				1) Perform the four basic operations on integers using the number line	problems involving four basic operations on integers •Explanations •Discussing practical exercises	•Stair case •Ladder •Thermometer •Real life situations	book 1 page 16-20 • KLB book 1 pages 30-36 • Advancing mathematics book 1 page 22-29 • Secondary mathematics KIE book 1 page 3-8	
9	1-2	INTEGERS	Combined operations	By the end of the lesson, the learner should be able to: 1) Work out problems involving combined operations on integers in the correct order	•Discussions •Demonstrations •Guiding the learner to perform operations on integers on correct order •Solving problems involving combined operations on integers	•Number line •Stair case •Ladder •Thermometer	• Discovering secondary mathematics book 1 page 20-22 • Secondary mathematics KLB book 1 pages 37-39 • Advancing mathematics book 1 page 30-33 • Secondary mathematics KIE book 1 page 9-11 • Discovering secondary mathematics teachers book 1 pages 6-7	
	3-4	FRACTIONS	The meaning of fractions	By the end of the lesson, the learner should be able to: 1) Define fractions 2) Identify and write fractions in figures (proper and improper)	•Definition •Discussions •Solving problems involving fractions	•Charts •Illustrating operations on fractions	• Discovering secondary mathematics book 1 page 11 • Discovering secondary mathematics teachers guide pages 8-11	

							• Secondary mathematics KLB book 1 pages 40-41 • Advancing mathematics book 1 page 36 • Secondary mathematics KIE book 1 page 18	
	5-6	FRACTIONS	Equivalent fractions	By the end of the lesson, the learner should be able to: 1) Identify and write equivalent fractions	•Discussions •Dividing equally •Measuring •Weighing •Solving problems	•Sticks •Pieces of paper •Ruler •Real life - situation	• Discovering secondary mathematics book 1 page 24 • teachers book pages 8-11 • KLB book 1 pages 42-44 • Advancing mathematics book 1 pages 37-38 • Secondary mathematics KIE book 1 page 19-20	
10	1-2	FRACTIONS	Naming fractions	By the end of the lesson, the learner should be able to: 1) Name fractions correctly and convert an improper fraction to a mixed number and vise versa	•Discussions •Sharing equally •Solving problems •Converting fractions •Doing exercises	•Counters such as seeds, bottle tops, stones •Pieces of paper •Sticks	• Discovering secondary mathematics book 1 pages 25-26 • Discovering secondary mathematics teachers guide pages 8-11 • KLB book 1 page 44 • Advancing mathematics book 1 page 38-39 • Secondary	

							mathematics KIE book 1 page 20	
	3-4	FRACTIONS	Adding and subtracting fractions	By the end of the lesson, the learner should be able to: 1) Add and subtract fractions	•Showing •Discussions •Adding •Subtracting •Converting Fractions	•Oranges •Sticks •Pieces of paper •Counters	• Discovering secondary mathematics book 1 pages 25-26 • KLB book 1 page 45-48 • Advancing mathematics book 1 page 41 • Secondary mathematics KIE book 1 page 21-22	
	5-6	FRACTIONS	Multiplication and division of fractions	By the end of the lesson, the learner should be able to: 1) Perform multiplication and division of fractions	•Discussions •Multiplication •Division •Converting fractions •Showing the learner how to manipulate fractions	•Sticks •Stones •Seeds •Pieces of paper	• Discovering secondary mathematics book 1 pages 27-29 • Discovering secondary mathematics teachers guide pages 8-11 • KLB book 1 page 49-54 • Advancing mathematics book 1 page 42-45 • Secondary mathematics KIE book 1 page 23-26	
11	1-2	FRACTIONS	Order of operations	By the end of the lesson, the learner should be able to: 1) Carry out combined operations on fractions on	•Discussions •Addition’ •Subtraction •Multiplication •Division •Conversion of fractions	•Multiplication tables •Conversion tables •Real objects	• Discovering secondary mathematics book 1 pages 29-30 • Discovering secondary	

				the correct order			mathematics teachers guide pages 8-11 • KLB book 1 page 54-57 • Advancing mathematics book 1 page 47 • Secondary mathematics KIE book 1 page 28-31	
	3-4	FRACTIONS	Application of fractions in a real life situation	By the end of the lesson, the learner should be able to: 1) Solve world problems involving fractions in real life situations	•Discussions •Solving problems involving fractions in real life situation	•Multiplication tables •Conversion tables •Real objects •Counters	• Discovering secondary mathematics book 1 pages 30-31 • Discovering secondary mathematics teachers guide pages 8-11 • Secondary mathematics KLB students book 1 page 57 • Advancing mathematics book 1 page 47 • Secondary mathematics KIE book 1 page 31	
	5-6	FRACTIONS	Revision	By the end of the lesson, the learner should be able to: 1) Answer the questions in the student's book. 2) Further exercises				
12	REVISION AND EXAMINATION							

AND 13	

MATHEMATICS FORM 1 SCHEMES OF WORK – TERM 2								
WEEK	LESSON	TOPIC	SUB - TOPIC	OBJECTIVES	LEARNING/TEACHING ACTIVITIES	LEARNING/TEACHING RESOURCES	REFERENCES	REMARKS
1	1-2	DECIMALS	Fractions and decimals	By the end of the lesson, the learner should be able to: 1) Define decimals 2) Convert fractions into decimals	• Definition • Discussions • Doing exercises • Illustration • Demonstrations • Dividing • Multiplying	• Equivalent fractions • Multiplication tables • Real life situations	• Discovering secondary mathematics Book 1 Pages 32-34 • Discovering secondary mathematics teachers guide pages 12-15 • Secondary mathematics KLB book 1 pages 58-60 • Secondary mathematics KIE book 1 page 32-34 • Advancing in mathematics book 1 pages 48	
	3-4	DECIMALS	Recurring decimals	By the end of the lesson, the learner should be able to: 1) Identify and write recurring decimals	•Discussions on recurring decimals •Doing exercises •Dividing •Multiplying •Demonstrations •Explanation	• Equivalent fractions • Multiplication tables • Real – life situation	• Discovering secondary mathematics book 1 page 34 • KLB book 1 pages 61-62	

							• Secondary mathematics KIE book 1 page 43-44 • Advancing in mathematics book 1 pages 59 • Discovering secondary mathematics teachers guide pages 12-15	
	5-6	DECIMALS	Recurring decimals and fractions	By the end of the lesson, the learner should be able to: 1) Identify recurring decimals 2) Convert recurring decimals into fractions	•Guiding learner to identify recurring decimals •Discussion on recurring decimals •Doing exercises •Conversion •illustrations	• Equivalent fractions • Percentages • Multiplication tables	• Discovering secondary mathematics book 1 pages 35 • Discovering secondary mathematics teachers guide pages 25-30 • Secondary mathematics KLB book 1 pages 4-9 • Advancing mathematics book 1 pages 59 • Secondary mathematics KIE book 1 pages 44	
2	1	DECIMALS	Rounding off decimals	By the end of the lesson, the learner should be able to: 1) Round off a decimal number to the required number of decimal places	•Discussions •Estimation •Rounding off •Demonstrations •Doing exercises	•Place value charts •Ruler •Tape measure •Objects	• Discovering Secondary mathematics book 1 pages 36 • Secondary mathematics KLB book 1 page 64 • Secondary mathematics KIE book 1 page 42 • Advancing in mathematics	

							book 1 page 56-57	
	2	DECIMALS	Standard form	By the end of the lesson, the learner should be able to: 1) Write numbers in standard form and apply in real life situations	•Discussions •Writing whole numbers and decimal numbers in standard form •Doing exercises •Illustrations •explanations	•place value charts •measuring instruments •objects	• Discovering secondary mathematics book 1 page 36-37 • KLB book 1 pages 62 • Advancing mathematics book 1 page 51-55 • Discovering secondary mathematics teachers guide pages 12-15 • KLB teachers book 25-30	
	3	DECIMALS	Addition and subtraction of decimals	By the end of the lesson, the learner should be able to: 1) Add decimals 2) Subtract decimals	•Discussions •Demonstrations •Explanations •Adding •Subtracting	•Place value charts •Measuring instrments such as tape measure, ruler, meter rule •Regular shaped objects	• Discovering secondary mathematics book 1 page 37-38 • KLB book 1 pages 63 • Advancing mathematics book 1 page 49 • Secondary mathematics KIE book 1 page 36-37 • KLB teachers book 25-30	
	4-5	DECIMALS	Multiplication and division	By the end of the lesson, the learner should be able to: 1) Multiply decimals 2) Divide decimals	•Discussions •Demonstrations •Multiplying •Correcting errors caused by failure to manipulate decimal point	•Mathematical table •Multiplication table •Place value chart •Measuring instruments •Regular shaped objects	• Discovering secondary mathematics book 1 page 38-42 • KLB book 1 pages 64	

					correctly •Doing exercises		• Advancing mathematics book 1 page 42-45 • Secondary mathematics KIE book 1 page 38-40	
	6	DECIMALS	Combined operation on decimals	By the end of the lesson, the learner should be able to: 1) Carry out operations in the correct order 2) Apply the knowledge of decimals to real life situations	•Discussions •Application of decimals to real life situations •Adding •Multiplying •Dividing •Subtracting •Solving puzzles •Playing games	•Place value charts •Multiplication tables •Mathematical tables •Tape measure •Metre rule •Ruler •Strings •Regular shaped objects	• Discovering secondary mathematics book 1 page 42-43 • KLB book 1 pages 71-72 • Advancing mathematics book 1 page 60 • Secondary mathematics KIE book 1 page 44 • KLB teachers book 25-30 • Golden tips (KCSE) mathematics page 14	
3	1-2	SQUARES AND SQUARE ROOTS	Squares of numbers	By the end of the lesson, the learner should be able to: 1) Define the term square 2) Find squares of numbers by multiplication and factorization	•Discussions •Multiplication •Memorizing •Doing short test •Solving puzzles	•Multiplication tables •Mathematical tables •Calculators (scientific)	• Discovering secondary mathematics book 1 page 44-46 • KLB book 1 pages 73 • Advancing mathematics book 1 page 61-62 • Secondary mathematics KIE book 1 page 96-97 • mathematics	

							page 60	
	3	SQUARES AND SQUARE ROOTS	Squares of numbers greater than 1 and less than 10	By the end of the lesson, the learner should be able to: 1) read the mathematical table 2) find the squares of numbers from the mathematical table	•Discussions •Reading the mathematical table •Emphasizing standard form •Doing short tests •Playing games	•Mathematical tables •Multiplication tables •Calculators (scientific)	• Discovering secondary mathematics book 1 page 45 • KLB book 1 pages 75 • Advancing mathematics book 1 page 62-63 • Secondary mathematics KIE book 1 page 97 Golden tips (KCSE) mathematics page 61	
	4	SQUARES AND SQUARE ROOTS	Squares of numbers greater than 10	By the end of the lesson, the learner should be able to: 1) Find the square of numbers greater than 10 from the mathematical table.	•Discussion •Exercises •Reading mathematical tables •Illustrations	•Mathematical tables •Multiplication tables •Calculators (Scientific)	• KLB book 1 pages 75 • Discovering secondary mathematics book 1 page 45 • Advancing mathematics book 1 page 63 • Secondary mathematics KIE book 1 page 97 • Golden tips (KCSE) mathematics page 61	
	5	SQUARES AND SQUARE ROOTS	Squares of numbers less than 1	By the end of the lesson, the learner should be able to: 1) Find the squares of numbers less than 1 from mathematical tables	•Discussions •Doing exercises •Reading mathematical tables •Solving puzzles	•Mathematical tables •Multiplication tables •Calculators (Scientific)	• KLB book 1 pages 76 • Discovering secondary mathematics book 1 page 46 • Advancing mathematics book 1 page 63	

							• Secondary mathematics KIE book 1 page 97-98 • Golden tips (KCSE) mathematics page 61	
	6	SQUARES AND SQUARE ROOTS	Finding square roots by factorization	By the end of the lesson, the learner should be able to: 1) Find square roots of numbers by factorization	•Discussions •Factorizing numbers •Doing short tests •Demonstrations •Dividing numbers	•Mathematical tables •Multiplication tables	• Discovering secondary mathematics book 1 page 46-47 • Secondary mathematics KLB book 1 pages 77 • Advancing mathematics book 1 page 64-65 • Secondary mathematics KIE book 1 page 99-101 • Golden tips (KCSE) mathematics page 62	
4	1-2	SQUARES AND SQUARE ROOTS	Square root tables	By the end of the lesson, the learner should be able to: 1) Read the square root table 2) Read square roots of numbers 1< A <10 from mathematical tables	•Guiding the learner to read square roots from tables •Discussions •Doing exercises	•Mathematical tables •Multiplication tables	• Discovering secondary mathematics book 1 pages 47-48 • KLB book 1 page 78 • Advancing mathematics book 1 page 66 • Secondary mathematics KIE book 1 page 102-103	
	3-4	SQUARES	Square	By the end of the	•Discussions	•Mathematical tables	• Discovering	

		AND SQUARE ROOTS	roots of numbers less than one and greater than 100	lesson, the learner should be able to: 1) Get the Square roots of numbers less than one and greater than 100 form their mathematical tables	•Mathematical table •Doing exercises	•Multiplication tables	secondary mathematics book 1 pages 48-49 • KLB book 1 page 78 • Advancing mathematics book 1 page 67-68 • Secondary mathematics KIE book 1 page 102-103	
	5-6	SQUARES AND SQUARE ROOTS	Revision	By the end of the lesson, the learner should be able to: 1) Solve problems involving squares and square roots	•Discussions •Illustrations •Doing exercises •Supervised practice	•Mathematical table •Charts	• Discovering secondary mathematics book 1 pages 49 • KLB book 1 page 79 • Advancing mathematics book 1 page 69-72 • Secondary mathematics KIE book 1 page 104	
5	1	ANGLES	Measuring and drawing angles	By the end of the lesson, the learner should be able to: 1) Measure and draw an angle using a protractor	•Discussions •Demonstration •Measuring angles •Illustrations	•Protractor •Ruler •Models of figures •Charts	• Discovering secondary mathematics book 1 pages 50-52 • KLB book 1 page 19757 • Advancing mathematics book 1 page 173-175 • Secondary mathematics KIE book 1 page 62	
	2	ANGLES	Types of angles	By the end of the lesson, the learner	•Discussions •Drawing angles	•Protractor •Ruler	• Discovering secondary	

				should be able to: 1) Name and draw different types of angles	•Measuring angles •Naming angles	•Models of triangles, rectangles etc •Charts	mathematics book 1 pages 51-52 • Secondary mathematics KLB students book 1 page 197-198 • Advancing mathematics book 1 page 175-177 • Secondary mathematics KIE book 1 page 62-64	
	3-4	ANGLES	Angles on a straight line, vertically opposite angles and angles at a point	By the end of the lesson, the learner should be able to: 1) Identify and draw angles on a line vertically opposite angles and angles at a point	•Discussions •Drawing angles •Doing exercises •Naming angles	•Protractor •Ruler •Models of triangles, rectangles etc	• Discovering secondary mathematics book 1 pages 52-54 • Secondary mathematics KLB students book 1 page 200-201 • Advancing mathematics book 1 page 177-179 Secondary mathematics KIE book 1 page 66-67	
	5-6	ANGLES	Parallel lines corresponding alternate and interior angles	By the end of the lesson, the learner should be able to: 1) Identify and draw parallel lines, corresponding alternate and interior angles	•Discussions •Drawing angles •Measuring angles •Identifying angles	•Protractor •Ruler •Real objects	• Discovering secondary mathematics book 1 pages 55-57 • Secondary mathematics KLB students book 1 page 206-210 • Advancing mathematics	

							book 1 page 180-181 Secondary mathematics KIE book 1 page 70-72	
6	1-2	POLYGONS	Triangles	By the end of the lesson, the learner should be able to: 1) Define a polygon and identify and draw different triangles.	•Discussions •Drawing triangles •Measuring Angles •Measuring lengths •Definitions	•Protractor •Ruler •Models of different triangles	• Discovering secondary mathematics book 1 pages 58-61 • Secondary mathematics KLB students book 1 page 211 • Advancing mathematics book 1 page 182-183 Secondary mathematics KIE book 1 page 75-76	
	3-4	POLYGONS	Interior and exterior angles of a polygons	By the end of the lesson, the learner should be able to: 1) Identify and draw interior and exterior angles of a quadrilateral	•Discussions •Drawing quadrilaterals •Measuring angles •Measuring lengths •Illustrations	•Protractor •Ruler •Strings •Real Objects	• Discovering secondary mathematics book 1 pages 63-66 • Secondary mathematics KLB students book 1 page 212-213 • Advancing mathematics book 1 page 182-183 • Secondary mathematics KIE book 1 page 76-77	
	5-6	POLYGONS	Quadrilaterals	By the end of the lesson, the learner should be able to:	•Discussions •Drawing quadrilaterals •Measuring angles	•Protractor •Ruler •Strings	• Discovering secondary mathematics	

				1) Identify and draw different quadrilaterals	•Measuring lengths	•Real Objects	book 1 pages 60-63 • Secondary mathematics KLB students book 1 page 219-220 • Advancing mathematics book 1 page 185-186 • Secondary mathematics KIE book 1 page 82-83	
7	1-2	LENGTH	Units of length	By the end of the lesson, the learner should be able to: 1) State the units of measuring length and express length to a given significant figure	•Discussions •Definitions •Rounding off •Measuring lengths •Solving problems involving units of length	•Tape measure •Rulers •Strings •Measuring instruments	• Discovering secondary mathematics book 1 pages 67-68 • Secondary mathematics KLB students book 1 page 110 • Advancing mathematics book 1 page 100-101 • Secondary mathematics KIE book 1 page 106	
	3	LENGTH	Conversion of units of length	By the end of the lesson, the learner should be able to: 1) Convert the units of length	•Discussions •Conversions of units of length •Measuring length in different units •Solving problems	•Tape measure •Rulers •Strings •Conversion charts for length •Real objects	• Discovering secondary mathematics book 1 pages 68-71 • Secondary mathematics KLB students book 1 page 110-112 • Advancing mathematics book 1 page 100-101	

							• Secondary mathematics KIE book 1 page 107-108	
	4	LENGTH	Perimeter of plain figures	By the end of the lesson, the learner should be able to: 1) Find the perimeter of a plain figure	•Discussions •Measuring length •Solving problems	•Tape measure •Rulers •Strings •Conversion charts for length •Real objects	• Discovering secondary mathematics book 1 pages 71-73 • Secondary mathematics KLB students book 1 page 113-116 • Advancing mathematics book 1 page 103-104 • Secondary mathematics KIE book 1 page 109-112	
	5-6	LENGTH	Circumference	By the end of the lesson, the learner should be able to: 1) Find the circumference of a circle	•Discussions •Measuring length •Solving problems on circumference •Demonstrations	•Circular objects •Tape measure •Rulers •Strings Conversion charts for length	• Discovering secondary mathematics book 1 pages 73-76 • Secondary mathematics KLB students book 1 page 116-119 • Advancing mathematics book 1 page 105-106 • Secondary mathematics KIE book 1 page 116-118	
8	1-2	GEOMETRIC CONSTRUCTIONS	Construction of a perpendicular bisector	By the end of the lesson, the learner should be able to: 1) Use a pair of compasses	•Discussions •Construction of a perpendicular bisector of a line •Drawing shapes	•Plane figures •Geometrical sets •Polygonal shapes •Ruler •Pair of compasses	• Discovering secondary mathematics book 1 pages 77-78	

			of a line	and ruler only to construct a perpendicular bisector of a line			• Secondary mathematics KLB students book 1 page 227 • Advancing mathematics book 1 page 197-198 • Secondary mathematics KIE book 1 page 153	
	3-4	GEOMETRIC CONSTRUCTIONS	Construction of parallel lines	By the end of the lesson, the learner should be able to: 1) Construct parallel lines using a ruler and a set square or at a given distance	•Discussions •Constructions •Demonstrations •Measuring angles	•Set squares •Ruler •Pair of compass	• Discovering secondary mathematics book 1 pages 78-79 • Secondary mathematics KLB students book 1 page 235 • Advancing mathematics book 1 page 202 • Secondary mathematics KIE book 1 page 154-155	
	5-6	GEOMETRIC CONSTRUCTIONS	Dividing a line proportionally	By the end of the lesson, the learner should be able to: 1) Divide a line proportionally using a ruler and a set square	•Discussions •Dividing lines proportionally •Drawing straight lines •Measuring angles and lengths	•Set squares •Ruler •Pair of compass	• Discovering secondary mathematics book 1 pages 79-80 • Secondary mathematics KLB students book 1 page 236 • Advancing mathematics book 1 page 203 • Secondary mathematics KIE book 1 page 156	
9	1-2	GEOMETRI	Reprodu	By the end of the	•Discussions	•Ruler	• Discovering	

		C CONSTRUCTIONS	cing and bisecting angles	lesson, the learner should be able to: 1) Reproduce and bisect an angle	•Demonstrations •Illustrations •Drawing angles	•Pair of compass	secondary mathematics book 1 page80 • Secondary mathematics KLB students book 1 page 233 • Advancing mathematics book 1 page 202 • Secondary mathematics KIE book 1 page 149-150	
	3-4	GEOMETRIC CONSTRUCTIONS	Constructing angles	By the end of the lesson, the learner should be able to: 1) Construct angles at 60 degrees	•Discussions •Measuring angles •Bisecting angles •Constructing angles •Solving problems on construction of angles	•Ruler •Pair of compass •Protractor •Real objects	• Discovering secondary mathematics book 1 page 80-82 • Secondary mathematics KLB students book 1 page 233-234 • Advancing mathematics book 1 page 201-202 • Secondary mathematics KIE book 1 page 149-150-151	
	5-6	GEOMETRIC CONSTRUCTIONS	Constructing polygons	By the end of the lesson, the learner should be able to: 1) Construct regular and irregular polygons	•Discussions •Measuring angles and lengths •Bisecting angles •Constructing angles	•Ruler •Pair of compass •Protractor •Real objects	• Discovering secondary mathematics book 1 page 83-84 • Secondary mathematics KLB students book 1 page 237-240 • Advancing mathematics book 1 page 207-	

							208 • Secondary mathematics KIE book 1 page 158-159	
10	1-2	ALGEBRAIC EXPRESSIONS	Representing numbers by letters	By the end of the lesson, the learner should be able to: 1) Use letters to represent numbers	•Discussions •Doing exercises •Guessing •Demonstrations	•Counters •Groups of items	• Discovering secondary mathematics book 1 page 85-86 • Secondary mathematics KLB students book 1 page 80-81 • Advancing mathematics book 1 page 73-74 • Secondary mathematics KIE book 1 page 47-48	
	3-4	ALGEBRAIC EXPRESSIONS	Simplifying algebraic expressions	By the end of the lesson, the learner should be able to: 1) Simplify algebraic expressions	•Discussions •Doing exercises •Grouping items together •Adding objects •Multiplying and dividing	•Counters •Groups of items •charts	• Discovering secondary mathematics book 1 page 86-88 • Secondary mathematics KLB students book 1 page 82-84 • Advancing mathematics book 1 page 74-75 • Secondary mathematics KIE book 1 page 49-51	

	5	ALGEBRAIC EXPRESSIONS	Multiplying algebraic expressions	By the end of the lesson, the learner should be able to: 1) Multiply algebraic expressions	•Discussions •Simplification of algebraic expressions •Multiplying algebraic expressions •Grouping like items Doing exercises	•Groups of unlike items •Groups of like items	• Discovering secondary mathematics book 1 page 87 • Secondary mathematics KLB students book 1 page 89 • Advancing mathematics book 1 page 75 • Secondary mathematics KIE book 1 page 49-51	
	6	ALGEBRAIC EXPRESSIONS	Dividing algebraic expressions	By the end of the lesson, the learner should be able to: 1) Divide algebraic expressions	•Discussions •factorization •Grouping like items •Doing exercises •Puzzles •games	•Groups of like items	• Discovering secondary mathematics book 1 page 87-88 • Secondary mathematics KLB students book 1 page 89 • Advancing mathematics book 1 page 76 • Secondary mathematics KIE book 1 page 49-51	

11	1-2	ALGEBRAIC EXPRESSIONS	Use of brackets in algebraic expressions	By the end of the lesson, the learner should be able to: 1) Use of brackets in algebraic expressions	•Discussions •Adding •Subtracting •Demonstrations •Matching items •Multiplying •Dividing •Doing exercises	•Groups of like items/objects	• Discovering secondary mathematics book 1 page 88-89 • Secondary mathematics KLB students book 1 page 85 • Advancing mathematics book 1 page 77 • Secondary mathematics KIE book 1 page 52-53	
	3-4	ALGEBRAIC EXPRESSIONS	factorization in algebraic expressions	By the end of the lesson, the learner should be able to: 1) Use factorization in algebraic expressions	•Discussions •Factorizing •puzzles •Adding •Substitutions •Doing exercises •Playing games	•Groups of like items/objects	• Discovering secondary mathematics book 1 page 88-91 • Secondary mathematics KLB students book 1 page 90 • Advancing mathematics book 1 page 81-83 • Secondary mathematics KIE book 1 page 57-58	

	5-6	ALGEBRAIC EXPRESSIONS	Substitution and factorization	By the end of the lesson, the learner should be able to: 1) Substitute and factorize algebraic expressions	•Discussions •Dividing •multiplying •Adding •Subtracting •Solving puzzles •Substitutions •Doing exercises •Playing games	•Groups of like items/objects	• Discovering secondary mathematics book 1 page 91-94 • Secondary mathematics KLB students book 1 page 91-92 • Advancing mathematics book 1 page 80& 84 • Secondary mathematics KIE book 1 page 59-62	
12	1-2	LINEAR EQUATIONS	Solving equations	By the end of the lesson, the learner should be able to: 1) Solve linear equations in one unknown	•Discussions •Demonstrations •Solving problems on linear equations •Puzzles	•Beam balance •See – saw •Games	• Discovering secondary mathematics book 1 page 95-96 • Secondary mathematics KLB students book 1 page 160-162 • Advancing mathematics book 1 page 134 • Secondary mathematics KIE book 1 page 173-174	

	3-4	LINEAR EQUATIONS	Forming linear equations	By the end of the lesson, the learner should be able to: 1) Form linear equations	•Discussions •Forming linear equations •Demonstrations •Doing exercises	•Beam balance •Real life experience	• Discovering secondary mathematics book 1 page 96-97 • Secondary mathematics KLB students book 1 page 163-168 • Advancing mathematics book 1 page 139 • Secondary mathematics KIE book 1 page 176-178	
	5-6	LINEAR EQUATIONS	Simultaneous equations and forming simultaneous equations	By the end of the lesson, the learner should be able to: 1) Solve simultaneous equations by substitution and elimination and form simultaneous equations	•Discussions •Solving simultaneous equations by substitution and elimination •Demonstrations •Forming simultaneous equations •Playing games	•Beam balance •Real life experience	• Discovering secondary mathematics book 1 page 99-102 • Secondary mathematics KLB students book 1 page 168-169 • Advancing mathematics book 1 page 137-138 • Secondary mathematics KIE book 1 page 178-180	
13	END – TERM EXAMS							

MATHEMATICS FORM 1 SCHEMES OF WORK – TERM 3

WEEK	LESSON	TOPIC	SUB - TOPIC	OBJECTIVES	LEARNING/TEACHING ACTIVITIES	LEARNING/TEACHING RESOURCES	REFERENCES	REMARKS
1	1-2	COORDINATES AND GRAPHS	The Cartesian plane	By the end of the lesson, the learner should be able to: 1) Draw and label the Cartesian plane	• Discussions • Labeling the Cartesian plane • Writing scale • Drawing the axes of the Cartesian plane • Reading points from the Cartesian plane	• Graph papers • Square board • Cartesian plane • Typographical maps • Ruler	• Discovering secondary mathematics Book 1 Pages 103-104 • Secondary mathematics KLB book 1 pages 182-183 • Secondary mathematics KIE book 1 page 223-224 • Advancing in mathematics book 1 pages 161-162	
	3-4	COORDINATES AND GRAPHS	Plotting graphs and linear graphs	By the end of the lesson, the learner should be able to: 1. Plot points on a Cartesian plane 2. Read points on linear graphs on the Cartesian plane	• Discussions • Labeling the Cartesian plane • Writing scale • Plotting points on the Cartesian plane • Reading points from the Cartesian plane • Drawing axes of a Cartesian plane	• Graph papers • protractor • Square boards • Creo boards • Grid boards • Typographical maps • Ruler	• Discovering secondary mathematics Book 1 Pages 1014-108 • Secondary mathematics KLB book 1 pages 185-186 • Secondary mathematics KIE book 1 page 226 • Advancing in mathematics book 1 pages 163-164	
	5-6	COORDINATES AND GRAPHS	Plotting linear graphs and linear equations of lines	By the end of the lesson, the learner should be able to: 1. Plot a linear graph 2. Work out the equation of a	• Discussions • Labeling the Cartesian plane • Writing scale • Plotting points on the Cartesian plane	• Graph papers • protractor • Square boards • Creo boards • Grid boards • Typographical maps	• Discovering secondary mathematics Book 1 Pages 108-111 • Secondary mathematics	

				line	• Reading points from the Cartesian plane • Drawing axes of a Cartesian plane		KLB book 1 pages 185-186 • Secondary mathematics KIE book 1 page 226 • Advancing in mathematics book 1 pages 165-166	
2	1-2	COORDINATES AND GRAPHS	Graphical solutions	By the end of the lesson, the learner should be able to: 1) Solve simultaneous linear equations graphically	• Discussions • Writing scale • Labeling the Cartesian plane • Solving linear equations graphically • Illustrations • Drawing the axes of a Cartesian plane	• Graph papers • protractor • Square boards • Typographical maps • Ruler • Grid boards	• Discovering secondary mathematics Book 1 Pages 111-113 • Secondary mathematics KLB book 1 pages 188-189 • Secondary mathematics KIE book 1 page 229-232 • Advancing in mathematics book 1 pages 167-170	
	3-4	AREA	Area of combined and conversion of units of area	By the end of the lesson, the learner should be able to: 1. Define and work out area of combined rectangular shapes 2. Convert units of area from one form to another	• Drawing rectangular shapes • Working out the area of rectangles • Discussions • Solving problems on conversion of units of area	• Regular flat surfaces • Square paper • Square boards • Rectangular objects	• Discovering secondary mathematics Book 1 Pages 114-117 • Secondary mathematics KLB book 1 pages 123-124 • Secondary mathematics KIE book 1 page 109 • Advancing in mathematics book 1 pages	

							109	
	5-6	AREA	Area of a triangle and rectangle	By the end of the lesson, the learner should be able to: 1) Calculate the area of a triangle and rectangle	• Discussions • Measuring length • Calculating the area of a triangle	• Triangular flat surfaces • Square paper • Square boards • Triangular objects	• Discovering secondary mathematics Book 1 Pages 117-118 • Secondary mathematics KLB book 1 pages 124-125 • Secondary mathematics KIE book 1 page 110 • Advancing in mathematics book 1 pages 109-110	
3	1-2	AREA	Area of a parallelogram and trapezium	By the end of the lesson, the learner should be able to: Calculate the area of a 1. Parallelogram 2. trapezium	• Discussions • Measuring length • Calculating the area of a parallelogram • Calculating the area of a trapezium	• Square board • Trapezoidal objects • Shapes with a shape of a parallelogram	• Discovering secondary mathematics Book 1 Pages 118-121 • Secondary mathematics KLB book 1 pages 125-126 • Secondary mathematics KIE book 1 page 110-111 • Advancing in mathematics book 1 pages 111-113	
	3-4	AREA	Area of a circle	By the end of the lesson, the learner should be able to: 1) Calculate the area of a circle	• Discussions • Demonstrations • Measuring the radius/diameter • Calculating the area of a circle	• Circular shapes Or objects Square paper Square board	• Discovering secondary mathematics Book 1 Pages 121-123 • Secondary mathematics KLB book 1	

							pages 129-132 • Secondary mathematics KIE book 1 page 123-125 • Advancing in mathematics book 1 pages 115	
	5-6	AREA	Area of irregular plane	By the end of the lesson, the learner should be able to: 1) Work out the area of an irregular plane figure	• Discussions • Demonstrations • Measuring length • Estimating area • Converting units of areas	• Irregular objects/shapes • Square paper • Square board	• Discovering secondary mathematics Book 1 Pages 123-124 • Secondary mathematics KLB book 1 pages 111 • Secondary mathematics KIE book 1 page 115-116 • Advancing in mathematics book 1 pages 141-142	
4	1-2	AREA	Surface area of a cuboids	By the end of the lesson, the learner should be able to: 1) Work out the surface area of a cuboids	• Discussions • Demonstrations • Measuring length • Estimating area • Converting units of areas	• Regular flat shapes • Square paper • Square board • Model cubes and cuboids	• Discovering secondary mathematics Book 1 Pages 124-125 • Secondary mathematics KLB book 1 pages 135 • Secondary mathematics KIE book 1 page 130 • Advancing in mathematics book 1 pages 118	

	3-4	AREA	Surface area of a prism	By the end of the lesson, the learner should be able to: 1) Work out the surface area of a prism	• Discussions • Demonstrations • Measuring length • Estimating area • Converting units of areas	• Regular cylinders and prisms • Square paper • Square board • Model of a prism	• Discovering secondary mathematics Book 1 Pages 125-126 • Secondary mathematics KLB book 1 pages 135-136 • Secondary mathematics KIE book 1 page 131-132 • Advancing in mathematics book 1 pages 118	
	5-6	AREA	Surface area of a cylinder	By the end of the lesson, the learner should be able to: 1) Work out the surface area of a cylinder	• Discussions • Demonstrations • Measuring length • Estimating area • Converting units of areas • Doing exercises	• Regular cylinders • Square paper • Square board • Model of a cylinder	• Discovering secondary mathematics Book 1 Pages 126-128 • Secondary mathematics KLB book 1 pages 137-138 • Secondary mathematics KIE book 1 page 131-132 • Advancing in mathematics book 1 pages 118	
5	1-2	VOLUME & CAPACITY	Units of volume	By the end of the lesson, the learner should be able to: 1) State the units of volume in cubic units and convert one from another	• Discussions • Measuring length, width and height • Measuring volume • Calculating the volume of a cuboids	• Equipment for measuring volume	• Discovering secondary mathematics Book 1 Pages 129 • Secondary mathematics KLB book 1 pages 143	

							• Secondary mathematics KIE book 1 page 131-136 • Advancing in mathematics book 1 pages 121	
	3-4	VOLUME & CAPACITY	Volume of cuboids and cylinders	By the end of the lesson, the learner should be able to: 1) Calculate the volume of cuboids and cylinders	• Discussions • Demonstrations • Measuring lengths • Calculating volume	• Cubes, cuboids and cylinders • Models of cubes cuboids and cylinders • Measuring instruments for volume	• Discovering secondary mathematics Book 1 Pages 130-131 • Secondary mathematics KLB book 1 pages 143-145 • Secondary mathematics KIE book 1 page 136-138 • Advancing in mathematics book 1 pages 121	
	5-6	VOLUME & CAPACITY	Capacity	By the end of the lesson, the learner should be able to: 1) Show the relationship between volume and capacity and solve problems involving volume and capacity	• Discussions • Demonstrations • Measuring capacity • Calculating capacity • Converting capacity to volume and vise versa	• Measuring instruments for capacity	• Discovering secondary mathematics Book 1 Pages 131-133 • Secondary mathematics KLB book 1 pages 146 • Secondary mathematics KIE book 1 page 136-138 • Advancing in mathematics book 1 pages 123-124	
6	1-2	MASS,	Units of	By the end of the	• Discussions	• Masses	• Discovering	

		WEIGHT AND DENSITY	mass, weight and density	lesson, the learner should be able to: 1. Define mass, weight and density 2. State their units and relate mass weight and density	• Measuring • Calculating • Converting	• Measuring cylinders • Weights • Spring balance • Beam balance • lactometer	secondary mathematics Book 1 Pages 134-135 • Secondary mathematics KLB book 1 pages 149-151 • Secondary mathematics KIE book 1 page 140-141 • Advancing in mathematics book 1 pages 126-127	
	3	TIME	Converting units of time	By the end of the lesson, the learner should be able to: 1) Convert the units of time from one form to another	• Discussions • Converting time, events • Calculating	• Clock, • Watches • Conversion tables • Travel timetable for trains, busses, ships and aero planes	• Discovering secondary mathematics Book 1 Pages 136-137 • Secondary mathematics KLB book 1 pages 153-154 • Secondary mathematics KIE book 1 page 142 • Advancing in mathematics book 1 pages 129	
	4-5	TIME	The 12 hour and 24 hour clocks	By the end of the lesson, the learner should be able to: 1) State time in the 12 hour and 24 hour clocks	• Discussions • Timing, events • Reading time • Converting time	• Clock, • Watches • Conversion tables • Travel timetable for trains, busses, ships and aero planes	• Discovering secondary mathematics Book 1 Pages 138-141 • Secondary mathematics KLB book 1 pages 154-155 • Secondary	

							• mathematics KIE book 1 page 129-130 • Advancing in mathematics book 1 pages 142	
	6	TIME	Travel timetables	By the end of the lesson, the learner should be able to: 1. Read and interpret travel timetable 2. Solve problems involving travel timetable	• Discussions • Solving problems • Reading the travel timetable • Travelling	• Clock, • Watches • Conversion tables • Travel timetable for trains, busses, ships and aero planes	• Discovering secondary mathematics Book 1 Pages 141-143 • Secondary mathematics KLB book 1 pages 156-157 • Advancing in mathematics book 1 pages 131-132	
7	1-2	RATE, RATIO, PERCENTAGES AND PROPORTION	Rates and ratio	By the end of the lesson, the learner should be able to: 1. Define rate and ratio 2. Solve problems involving rates 3. Use ratio to compare increase and decrease quantities	• Discussions • Solving problems • Sharing things equally • Doing exercises • Sharing quantities in given ratio	• Real life experience • Currency • Counters	• Discovering secondary mathematics Book 1 Pages 144-151 • Secondary mathematics KLB book 1 pages 96-98 • Secondary mathematics KIE book 1 page 162-164 • Advancing in mathematics book 1 pages 86-88	
	3-4	RATE, RATIO, PERCENTAGES AND PROPORTI	Proportion	By the end of the lesson, the learner should be able to: 1) Change quantities in a given ratio	• Discussions • Doing exercises • Sharing out quantities in a given ratio	• Currency • Counters • Real life experience	• Discovering secondary mathematics Book 1 Pages 151-153 • Secondary	

		ON		and proportion			mathematics KLB book 1 pages 97-102 • Secondary mathematics KIE book 1 page 165-166 • Advancing in mathematics book 1 pages 88-93	
	5-6	RATE, RATIO, PERCENTAGES AND PROPORTION	percentages	By the end of the lesson, the learner should be able to: 1. Convert fractions and decimals to percentages 2. Calculate the percentage change in a quantity	• Discussions • Doing exercises	• 100 square grid • 100 items • Counters	• Discovering secondary mathematics Book 1 Pages 153-157 • Secondary mathematics KLB book 1 pages 105-106 • Secondary mathematics KIE book 1 page 169-170 • Advancing in mathematics book 1 pages 94-97	
8	1-2	COMMERCIAL ARTHIMETRIC	Currency conversion	By the end of the lesson, the learner should be able to: 1) State the currencies of different countries and convert currency from one form to another	• Discussions • Solving problems involving currency exchange rates • Giving change and balance	• Actual currency exchange rate table • Actual currency • Newspaper/ magazine	• Discovering secondary mathematics Book 1 Pages 158-162 • Secondary mathematics KLB book 1 pages 171-173 • Secondary mathematics KIE book 1 page 208-213 • Advancing in mathematics	

							book 1 pages 149-152	
	3-4	COMMERCIAL ARTHIMETRIC	Profit and loss, Discount and commission	By the end of the lesson, the learner should be able to:	• Discussions • Doing exercises • Illustrations • Demonstrations	• Resource person • Real life • Retail shops	• Discovering secondary mathematics Book 1 Pages 162-165 • Secondary mathematics KLB book 1 pages 175-178 • Secondary mathematics KIE book 1 page 216-218 • Advancing in mathematics book 1 pages 153-155	
	5-6	SCALE DRAWING AND ANGLES OF ELEVATION AND DEPRESSION	Indicating scale	By the end of the lesson, the learner should be able to: 1) Read, interpret and indicate scale in linear statement ratio	• Discussions • Solving problems • Drawing to scale • Writing scale • Interpreting scale • Determining scale	• Ruler • Tape measure • Figure drawn to scale • photographs	• Discovering secondary mathematics Book 1 Pages 116-168 • Secondary mathematics KLB book 1 pages 248-250 • Secondary mathematics KIE book 1 page 185 • Advancing in mathematics book 1 pages 209-210	
9	1-2	SCALE DRAWING AND ANGLES OF ELEVATION AND	Angles of elevation & depression	By the end of the lesson, the learner should be able to: 1) Determine the angles of elevation and depression	• Discussions • Drawing to scale • Doing exercises • Solving problems • Measuring	• Ruler • Tape measure • Figure drawn to scale • photographs	• Discovering secondary mathematics Book 1 Pages 168-172 • Secondary mathematics	

		DEPRESSION			angles/lengths		KLB book 1 pages 256-260 • Secondary mathematics KIE book 1 page 187-192 • Advancing in mathematics book 1 pages 211	
	3-4	SCALE DRAWING AND ANGLES OF ELEVATION AND DEPRESSION	Bearing	By the end of the lesson, the learner should be able to: 1) State the bearing of a point from another point	• Discussions • Drawing to scale • Measuring angles/lengths • Solving problems involving bearings	• Ruler • Tape measure • Protractor • Set square • Plumb line	• Discovering secondary mathematics Book 1 Pages 173-175 • Secondary mathematics KLB book 1 pages 251-252 • Secondary mathematics KIE book 1 page 193-195 • Advancing in mathematics book 1 pages 211-213	
	5-6	BEARING AND SURVEYING	Methods of surveying	By the end of the lesson, the learner should be able to: 1) Apply scale drawing in methods of surveying	• Discussions • Drawing to scale • Measuring angles/lengths • Estimating area	• Geometrical sets • Clinometers • Surveying equipment • Protractor • Ruler • Playfield • School compound	• Discovering secondary mathematics Book 1 Pages 176-178 • Secondary mathematics KLB book 1 pages 262-265 • Secondary mathematics KIE book 1 page 199-202 • Advancing in mathematics book 1 pages	

							213-216	
10	1-2	BEARING AND SURVEYING	Area of irregular shapes	By the end of the lesson, the learner should be able to: 1) Determine the area of irregular shapes using surveying techniques	• Discussions • Measuring lengths/objects • Drawing scale • Estimating are	• Geometrical sets • Clinometers • Surveying equipment • Protractor • Ruler • Playfield • School compound	• Discovering secondary mathematics Book 1 Pages 178-181 • Secondary mathematics KLB book 1 pages 267-268 • Secondary mathematics KIE book 1 page 205-206 • Advancing in mathematics book 1 pages 216-220	
	3-4	COMMON SOLIDS	Regular solids	By the end of the lesson, the learner should be able to: 1) Identify and sketch common solids	• Discussions • Counting sides faces and vertices • Sketching solids	• Models of common solids • Actual solids	• Discovering secondary mathematics Book 1 Pages 182-185 • Secondary mathematics KLB book 1 pages 271-276 • Secondary mathematics KIE book 1 page 248-254 • Advancing in mathematics book 1 pages 222-227	
	5-6	COMMON SOLIDS	Nets of solids	By the end of the lesson, the learner should be able to: 1) Sketch, draw nets of solids and make models of solids from	• Discussions • Sketching • Drawing to scale • Drawing accurately • Making models	• Models of common solids • Examples of the common solids	• Discovering secondary mathematics Book 1 Pages 186-188 • Secondary mathematics KLB book 1	

				the nets			pages 277-283 • Secondary mathematics KIE book 1 page 255-260 • Advancing in mathematics book 1 pages 228-229	
11	1-2	COMMON SOLIDS	Surface area of solids	By the end of the lesson, the learner should be able to: 1) Calculate the surface area of solid from nets	• Discussions • Sketching • Making models • Drawing to scale	• Models of common solids • Actual solids	• Discovering secondary mathematics Book 1 Pages 188-189 • Secondary mathematics KLB book 1 pages 284-285 • Secondary mathematics KIE book 1 page 264-265 • Advancing in mathematics book 1 pages 230-231	
	3-4	COMMON SOLIDS	Distance between two points on the surface area of solid	By the end of the lesson, the learner should be able to: 1) Determine the distance between two points on the surface of a solid	• Discussions • Sketching • Making models • Drawing to scale • Measuring lengths/angles	• Sketches of cubes and cuboids • charts	• Discovering secondary mathematics Book 1 Pages 189-191 • Secondary mathematics KLB book 1 pages 286-288 • Advancing in mathematics book 1 pages 231-233	
	5-6	REVISION						
12	1-6	END YEAR EXAMINATIONS						

13	1-6	CLOSSING OF SCHOOL

MATHEMATICS FORM 2 SCHEMES OF WORK – TERM 1								
WEEK	LESSON	TOPIC	SUB - TOPIC	OBJECTIVES	LEARNING/TEACHING ACTIVITIES	LEARNING/TEACHING RESOURCES	REFERENCES	REMARKS
1	1-2	CUBES AND CUBE ROOTS	Cubes of numbers by multiplication and from tables	By the end of the lesson, the learner should be able to: 1. Find the cubes of numbers by multiplication 2. Find the cube roots of numbers from tables	• Multiplying numbers • Reading mathematical tables • Discussions • Demonstrations • Exercises • Exercises in given class	• Mathematical tables • Real life situation	• Discovering secondary mathematics Book 2 Pages 1-3 • Secondary mathematics KLB book 2 pages 1 and 2 • KLB teachers' guide book 2 page 1 • Golden tips mathematics pages 6 and 63	
	3	CUBES AND CUBE ROOTS	Cube roots of numbers by factor method	By the end of the lesson, the learner should be able to: 1) Find the cube roots of numbers by factor method	• Multiplying numbers • Reading mathematical tables • Discussions • Demonstrations • Exercises • Exercises in given class	• Mathematical tables • Real life situation	• Discovering secondary mathematics Book 2 Pages 5-6 • Secondary mathematics KLB book 2 page 3 • KLB teachers' guide book 2 page 1-2 • Golden tips mathematics pages 62	

	4	CUBES AND CUBE ROOTS	Evaluation of cube and cube roots expressions and application of cubes and cube roots in real life situation	By the end of the lesson, the learner should be able to: 1. Evaluate expressions involving cubes and cube roots 2. Apply the knowledge of cubes and cube roots in real life situations	• Multiplying numbers • Reading mathematical tables • Discussions • Demonstrations • Exercises • Exercises in given class	• Mathematical tables • Real life situation	• Discovering secondary mathematics Book 2 Pages 5-6 • Secondary mathematics KLB book 2 page 3 and 4 • KLB teachers' guide book 2 page 2 • Golden tips mathematics pages 63 and 64	
	5-6	RECIPROCALS	Reciprocals of numbers by division and from tables	By the end of the lesson, the learner should be able to: 1. Find reciprocals of numbers by division 2. Find reciprocals of numbers from tables	• Multiplying numbers • Dividing numbers • Reading mathematical tables • Discussions • Demonstrations • Exercises • Exercises in given class	• Mathematical tables •	• Discovering secondary mathematics Book 2 Pages 12-13 • Secondary mathematics KLB book 2 page 5 • KLB teachers' guide book 2 page 5 • Golden tips mathematics pages 64	
2	1-2	RECIPROCALS	Computation using reciprocals	By the end of the lesson, the learner should be able to: 1) Use reciprocals of numbers in computation	• Multiplying numbers • Dividing numbers • Reading mathematical tables • Discussions • Demonstrations • Exercises • Exercises in given class	• Mathematical tables •	• Discovering secondary mathematics Book 2 Pages 12-13 • Secondary mathematics KLB book 2 page 6 • KLB teachers' guide book 2 page 5-6	

							• Golden tips mathematics pages 64	
	3	INDICES AND LOGARITHMS	Indices (powers) and base	By the end of the lesson, the learner should be able to: 1. Define indices 2. Express numbers in index form 3. Express indices in number form	• Multiplying numbers • Dividing numbers • Factorizing numbers • Reading mathematical tables • Discussions • Exercises in given class	• Logarithm tables • Charts illustrations laws of indices	• Discovering secondary mathematics Book 2 Page 7 • Secondary mathematics KLB book 2 page 7 • KLB teachers' guide book 2 page 7-8 • Golden tips mathematics pages 44-46	
	4	INDICES AND LOGARITHMS	Laws of Indices	By the end of the lesson, the learner should be able to: 1. State laws of indices regarding multiplication of indices 2. State laws of indices regarding zero index 3. State laws of indices regarding division of indices	• Multiplying numbers • Dividing numbers • Factorizing numbers • Reading mathematical tables • Discussions • Exercises in given class	• Logarithm tables • Charts illustrations laws of indices	• Discovering secondary mathematics Book 2 Page 7-11 • Secondary mathematics KLB book 2 page 7-8 • KLB teachers' guide book 2 page 7-8 • Golden tips mathematics pages 44-46	
	5-6	INDICES AND LOGARITHMS	Laws of Indices	By the end of the lesson, the learner should be able to: 1. State laws of indices regarding negative indices 2. State laws of	• Multiplying numbers • Dividing numbers • Factorizing numbers • Reading mathematical tables	• Logarithm tables • Charts illustrating laws of indices	• Discovering secondary mathematics Book 2 Page 7-11 • Secondary mathematics KLB book 2 page 8-13	

				indices fractional indices 3. Apply the laws of indices in calculation	• Discussions • Exercises in given class		• KLB teachers' guide book 2 page 7-8 • Golden tips mathematics pages 44-46	
3	1-2	INDICES AND LOGARITHMS	Powers of 10 and common logarithms	By the end of the lesson, the learner should be able to: 1. Relate the powers of 10 to common logarithms 2. Identify the parts of the logarithms i.e characteristic mantissa	• Multiplying numbers • Dividing numbers • Factorizing numbers • Discussions • Exercises in given class	• Mathematical tables • Charts illustrating laws of indices	• Discovering secondary mathematics Book 2 Page 15 • Secondary mathematics KLB book 2 page 16-17 • KLB teachers' guide book 2 page 7-8 • Golden tips mathematics pages 52	
	3-4	INDICES AND LOGARITHMS	Logarithms of positive numbers less than one	By the end of the lesson, the learner should be able to: 1. Find the logarithm of a number less than 1 from mathematical tables 2. Apply the logarithms of numbers less than one in computation	• Multiplying numbers • Dividing numbers • Factorizing numbers • Discussions • Exercises in given class	• Mathematical tables • Charts illustrating laws of indices	• Discovering secondary mathematics Book 2 Page 15 • Secondary mathematics KLB book 2 page 18 • KLB teachers' guide book 2 page 7-8 • Golden tips mathematics pages 52	
	5	INDICES AND LOGARITHMS	Logarithms of numbers less than ten (X<10)	By the end of the lesson, the learner should be able to: 1. Find the logarithm numbers less than 10 but greater than 1 2. Apply the	• Multiplying numbers • Dividing numbers • Factorizing numbers • Discussions • Exercises in given class	• Mathematical tables • Charts illustrating laws of indices	• Discovering secondary mathematics Book 2 Page 16 • Secondary mathematics KLB book 2 page 18 • KLB teachers'	

				logarithms of numbers less than 10 but greater than 1 in computation			guide book 2 page 7-8 • Golden tips mathematics pages 54	
	6	INDICES AND LOGARITHMS	Logarithms of numbers greater than ten	By the end of the lesson, the learner should be able to: 1. Find the logarithm numbers greater than 10 2. Apply the logarithms of numbers l greater than 10 in computation	• Multiplying numbers • Dividing numbers • Factorizing numbers • Discussions • Exercises in given class	• Mathematical tables • Charts illustrating laws of indices	• Discovering secondary mathematics Book 2 Page 16 • Secondary mathematics KLB book 2 page 18 • KLB teachers' guide book 2 page 7-8 • Golden tips mathematics pages 54	
4	1	INDICES AND LOGARITHMS	Antilogarithms	1. By the end of the lesson, the learner should be able to: 2. Find antilogarithms of numbers 3. Apply the antilogarithms of numbers in numerical	• Multiplying numbers • Dividing numbers • Factorizing numbers • Discussions • Exercises in given class	• Mathematical tables • Charts illustrating laws of indices	• Discovering secondary mathematics Book 2 Page 17 • Secondary mathematics KLB book 2 page 19 • KLB teachers' guide book 2 page 7-8 • Golden tips mathematics pages 54	
	2	INDICES AND LOGARITHMS	Multiplication of numbers	By the end of the lesson, the learner should be able to: 1) Use logarithms to work out the multiplication of numbers	• Multiplying numbers • Dividing numbers • Factorizing numbers • Discussions • Exercises in given class	• Mathematical tables • Charts illustrating laws of indices	• Discovering secondary mathematics Book 2 Page 18 • Secondary mathematics KLB book 2 page 20 • KLB teachers'	

							guide book 2 page 7-8 • Golden tips mathematics pages 55	
	3	INDICES AND LOGARITHMS	division of numbers	By the end of the lesson, the learner should be able to: 1. Use logarithms to work out the division of numbers	• Multiplying numbers • Dividing numbers • Factorizing numbers • Discussions • Exercises in given class	• Mathematical tables • Charts illustrating laws of indices	• Discovering secondary mathematics Book 2 Page 19 • Secondary mathematics KLB book 2 page 20 • KLB teachers' guide book 2 page 7-8 • Golden tips mathematics pages 56	
	4	INDICES AND LOGARITHMS	Combines multiplication and division of numbers	By the end of the lesson, the learner should be able to: 1. Combine multiplication and division of numbers to work out logarithm problems	• Multiplying numbers • Dividing numbers • Factorizing numbers • Discussions • Exercises in given class	• Mathematical tables • Charts illustrating laws of indices	• Discovering secondary mathematics Book 2 Page 19 • Secondary mathematics KLB book 2 page 20 • KLB teachers' guide book 2 page 7-8 • Golden tips mathematics pages 56	
	5	INDICES AND LOGARITHMS	Negative characteristics	By the end of the lesson, the learner should be able to: 1. Use negative logarithms	• Multiplying numbers • Dividing numbers • Factorizing numbers • Discussions • Exercises in given class	• Mathematical tables • Charts illustrating laws of indices	• Discovering secondary mathematics Book 2 Page 20 • Secondary mathematics KLB book 2 page 18 • KLB teachers' guide book 2	

							page 7-8 • Golden tips mathematics pages 55	
	6	INDICES AND LOGARITHMS	Application of logarithms	By the end of the lesson, the learner should be able to: 1. Apply the knowledge of logarithms and indices in daily computation 2. Find roots and squares of numbers using logarithms	• Multiplying numbers • Dividing numbers • Factorizing numbers • Discussions • Exercises in given class	• Mathematical tables • Charts illustrating laws of indices	• Discovering secondary mathematics Book 2 Page 21 • Secondary mathematics KLB book 2 page 20 • KLB teachers' guide book 2 page 7-8 • Golden tips mathematics pages 53	
5	1	GRADIENTS AND EQUATIONS OF STRAIGHT LINES	Gradient of a straight line	By the end of the lesson, the learner should be able to: 1. Define gradient of a straight line 2. Determine the gradient of a straight line through known points	• Drawing linear graphs • Plotting co-ordinates on the Cartesian plane • Reading co-ordinates of points on the Cartesian plane	• Square boards • Graph books • Straight edged ruler • Real life situation	• Discovering secondary mathematics Book 2 Page 25-23 • Secondary mathematics KLB book 2 page 27-34 • KLB teachers' guide book 2 page 14-15 • Golden tips mathematics pages 174	
	2	GRADIENTS AND EQUATIONS OF STRAIGHT LINES	equation of a straight line	By the end of the lesson, the learner should be able to: 1. Determine the equation f a straight line using gradient and a known point 2. Determine the	• Drawing linear graphs • Plotting co-ordinates on the Cartesian plane • Reading co-ordinates of points on the Cartesian plane	• Square boards • Graph books • Straight edge/ruler • Real life situation	• Discovering secondary mathematics Book 2 Page 25-26 • Secondary mathematics KLB book 2 page 34-35 • KLB teachers'	

				equation of a straight line given two points			guide book 2 page 14-15 • Golden tips mathematics pages 171	
	3-4	GRADIENTS AND EQUATIONS OF STRAIGHT LINES	General equation of a straight line	By the end of the lesson, the learner should be able to: 1. Express the equation of a straight line in the form of y=mx+c 2. Interpret the equation y=mx+c	• Drawing linear graphs • Plotting co-ordinates on the Cartesian plane • Reading co-ordinates of points on the Cartesian plane	• Square boards • Graph books • Straight edge/rulers • Real life situation	• Discovering secondary mathematics Book 2 Page 27 • Secondary mathematics KLB book 2 page 34 • KLB teachers' guide book 2 page 14-15 • Golden tips mathematics pages 171	
	5-6	GRADIENTS AND EQUATIONS OF STRAIGHT LINES	The intercept of a straight line	By the end of the lesson, the learner should be able to: 1. Find the x and the y intercept of a straight line 2. Express a double intercept equation of a straight line	• Drawing linear graphs • Plotting co-ordinates on the Cartesian plane • Reading co-ordinates of points on the Cartesian plane	• Square boards • Graph books • Straight edge/rulers • Real life situation	• Discovering secondary mathematics Book 2 Page 28 • Secondary mathematics KLB book 2 page 36 • KLB teachers' guide book 2 page 14-15 • Golden tips mathematics pages 171	
6	1-2	GRADIENTS AND EQUATIONS OF STRAIGHT LINES	The gradient of parallel lines	By the end of the lesson, the learner should be able to: 1. Find the gradient of parallel lines 2. Relate parallel lines in terms of their gradients	• Drawing linear graphs • Plotting co-ordinates on the Cartesian plane • Reading co-ordinates of points on the Cartesian plane	• Square boards • Graph books • Straight edge/ rulers • Real life situation	• Discovering secondary mathematics Book 2 Page 29 • Secondary mathematics KLB book 2 page 43-44 • KLB teachers' guide book 2	

							page 14-15 • Golden tips mathematics pages 175	
	3-4	GRADIENTS AND EQUATIONS OF STRAIGHT LINES	The gradient of perpendicular lines	By the end of the lesson, the learner should be able to: 1. Find the gradient of perpendicular lines 2. Relate perpendicular lines in terms of their gradients	• Drawing linear graphs • Plotting co-ordinates on the Cartesian plane • Reading co-ordinates of points on the Cartesian plane	• Square boards • Graph books • Straight edge/ rulers • Real life situation	• Discovering secondary mathematics Book 2 Page 30 • Secondary mathematics KLB book 2 page 41-43 • KLB teachers' guide book 2 page 14-15 • Golden tips mathematics pages 172	
	5-6	REFLECTION AND CONGRUENCE	Geometric transformation (reflection)	By the end of the lesson, the learner should be able to: 1. State the properties of reflection 2. Construct and identify the images and the objects in a reflection using the properties 3. Make geometrical deductions using reflection	• Observing objects in plane mirrors • Identifying the objects and their images in a plan mirror • Drawing • Identifying lines of symmetry • Identifying the mirror line in a plane mirror	• Mirrors • Cartesian plane • Various symmetrical objects • Tracing and graph papers • Real life experiences	• Discovering secondary mathematics Book 2 Page 32 • Secondary mathematics KLB book 2 page • KLB teachers' guide book 2 page 14-20 • Golden tips mathematics pages 230	
7	1	REFLECTION AND CONGRUENCE	Lines and planes of symmetry	By the end of the lesson, the learner should be able to: 1. Identify the line of symmetry in a	• Observing objects in plane mirrors • Identifying the objects and their images in	• Mirrors • Cartesian plane • Various symmetrical objects	• Discovering secondary mathematics Book 2 Page 32 • Secondary mathematics	

				reflection given the image and the object	a plan mirror • Drawing • Identifying lines of symmetry • Identifying the mirror line in a plane mirror	• Tracing and graph papers • Real life experiences	KLB book 2 page 46-48 • KLB teachers' guide book 2 page 19-20 • Golden tips mathematics pages 230	
	2	REFLECTION AND CONGRUENCE	Lines and planes of symmetry	By the end of the lesson, the learner should be able to: 1. Identify the line of symmetry in a reflection 2. Relate lines and planes of symmetry	• Observing objects in plane mirrors • Identifying the objects and their images in a plan mirror • Drawing • Identifying lines of symmetry • Identifying the mirror line in a plane mirror	• Mirrors • Cartesian plane • Various symmetrical objects • Tracing and graph papers • Real life experiences	• Discovering secondary mathematics Book 2 Page 32 • Secondary mathematics KLB book 2 page 46-48 • KLB teachers' guide book 2 page 19-20 • Golden tips mathematics pages 230	
	3-4	REFLECTION AND CONGRUENCE	Reflection in the Cartesian plane	By the end of the lesson, the learner should be able to: 1. Apply the properties of a rotation in the Cartesian plane	• Observing objects in plane mirrors • Identifying the objects and their images in a plan mirror • Drawing • Identifying lines of symmetry • Identifying the mirror line in a plane mirror	• Mirrors • Cartesian plane • Various symmetrical objects • Tracing and graph papers • Real life experiences	• Discovering secondary mathematics Book 2 Page 37 • Secondary mathematics KLB book 2 page 48 • KLB teachers' guide book 2 page 19-20 • Golden tips mathematics pages 230	
	5-6	REFLECTION AND CONGRUENCE	Congruent triangles	By the end of the lesson, the learner should be able to: 1. Identify congruency 2. Solve problems	• Observing objects in plane mirrors • Identifying the objects and their images in a plan mirror	• Mirrors • Cartesian plane • Various symmetrical objects • Tracing and	• Discovering secondary mathematics Book 2 Page 39 • Secondary mathematics KLB book 2	

				involving congruency	• Drawing • Identifying lines of symmetry • Identifying the mirror line in a plane mirror	graph papers • Real life experiences	page 64-65 • KLB teachers' guide book 2 page 19-20 • Golden tips mathematics pages 230	
8	1-2	REFLECTION AND CONGRUENCE	Congruent triangles	By the end of the lesson, the learner should be able to: 1. Identify congruency 2. Solve problems involving congruency	• Observing objects in plane mirrors • Identifying the objects and their images in a plan mirror • Drawing • Identifying lines of symmetry • Identifying the mirror line in a plane mirror	• Mirrors • Cartesian plane • Various symmetrical objects • Tracing and graph papers • Real life experiences	• Discovering secondary mathematics Book 2 Page 39 • Secondary mathematics KLB book 2 page 64-65 • KLB teachers' guide book 2 page 19-20 • Golden tips mathematics pages 230	
	3	REFLECTION AND CONGRUENCE	Congruent figures	By the end of the lesson, the learner should be able to: 1. Identify figures which are congruent through reflection	• Observing objects in plane mirrors • Identifying the objects and their images in a plan mirror • Drawing • Identifying lines of symmetry • Identifying the mirror line in a plane mirror	• Mirrors • Cartesian plane • Various symmetrical objects • Tracing and graph papers • Real life experiences	• Discovering secondary mathematics Book 2 Page 40-41 • Secondary mathematics KLB book 2 page 66 • KLB teachers' guide book 2 page 19-20 • Golden tips mathematics pages 230	
	4-5	ROTATION	The properties s of rotation	By the end of the lesson, the learner should be able to: 1. Define rotation as a transformation 2. State the	• Rotating objects • Measuring angles/lengths • Drawing objects • Identifying the lines of symmetry	• Square boards • Graph papers • Geometrical instruments • Tracing paper and real life situations	• Discovering secondary mathematics Book 2 Page 44-45 • Secondary mathematics	

				properties of a rotation as a transformation			KLB book 2 page 73 • KLB teachers' guide book 2 page 24-25 • Golden tips mathematics pages 228	
	6	ROTATION	Center of angle of rotation	By the end of the lesson, the learner should be able to: 1. Determine the center of rotation 2. Determine the angle of rotation	• Rotating objects • Measuring angles/lengths • Drawing objects • Identifying the lines of symmetry	• Square boards • Graph papers • Geometrical instruments • Tracing paper • real life situations	• Discovering secondary mathematics Book 2 Page 46 • Secondary mathematics KLB book 2 page 73 • KLB teachers' guide book 2 page 24-25 • Golden tips mathematics pages 228	
9	1-2	ROTATION	Center of angle of rotation	By the end of the lesson, the learner should be able to: 1. Rotate objects through a given angle of rotation and center of rotation 2. Establish the angle of rotation given an object and its image	• Rotating objects • Measuring angles/lengths • Drawing objects • Identifying the lines of symmetry	• Square boards • Graph papers • Geometrical instruments • Tracing paper • real life situations	• Discovering secondary mathematics Book 2 Page 46 • Secondary mathematics KLB book 2 page 74 • KLB teachers' guide book 2 page 24-25 • Golden tips mathematics pages 228	
	3-4	ROTATION	Rotation in a Cartesian plane	By the end of the lesson, the learner should be able to: 1. Apply the properties of rotation in the	• Rotating objects • Measuring angles/lengths • Drawing objects • Identifying the lines of	• Square boards • Graph papers • Geometrical instruments • Tracing paper • real life	• Discovering secondary mathematics Book 2 Page 47 • Secondary mathematics	

				Cartesian plane	symmetry	situations	KLB book 2 page 75 • KLB teachers' guide book 2 page 24-25 • Golden tips mathematics pages 228	
	5-6	ROTATION	Rotational symmetry	By the end of the lesson, the learner should be able to: 1. Identify point of rotational symmetry 2. State the order of rotational symmetry of plane figures 3. Identify the axis of rotational symmetry	• Rotating objects • Measuring angles/lengths • Drawing objects • Identifying the lines of symmetry	• Square boards • Graph papers • Geometrical instruments • Tracing paper • real life situations	• Discovering secondary mathematics Book 2 Page 49 • Secondary mathematics KLB book 2 page 78 • KLB teachers' guide book 2 page 24-25 • Golden tips mathematics pages 228	
10	1-2	ROTATION	Congruence and Rotation	By the end of the lesson, the learner should be able to: 1. Deduce congruence from rotation	• Rotating objects • Measuring angles/lengths • Drawing objects • Identifying the lines of symmetry	• Square boards • Graph papers • Geometrical instruments • Tracing paper • real life situations	• Discovering secondary mathematics Book 2 Page 48 • Secondary mathematics KLB book 2 page 84 • KLB teachers' guide book 2 page 24-25 • Golden tips mathematics pages 228	
	3-4	ROTATION	REVISION	By the end of the lesson, the learner should be able to: 1. Answer all questions	• Rotating objects • Measuring angles/lengths • Drawing objects • Identifying the	• Square boards • Graph papers • Geometrical instruments • Tracing paper	• Discovering secondary mathematics Book 2 Page 50 • Secondary	

				involving rotations 2. Apply rotation in real life situations	lines of symmetry	• real life situations	mathematics KLB book 2 page 84-86 • KLB teachers' guide book 2 page 24-25 • Golden tips mathematics pages 228	
	5-6	SIMILARITY AND ENLARGEMENT	Similar figures	By the end of the lesson, the learner should be able to: 1. Identify similar figures 2. Construct similar figures	• Identifying similar figures • Tracing figures • Constructing similar figures • enlarging figures • Drawing figures on the Cartesian plane • measuring lengths/ angles	• Geometrical instruments • Model maps • Photographs • Charts illustrating similarity and enlargement	• Discovering secondary mathematics Book 2 Page 52 • Secondary mathematics KLB book 2 page 87 • KLB teachers' guide book 2 page 27-28 • Golden tips mathematics pages 125	
11	1-2	SIMILARITY AND ENLARGEMENT	Properties of enlargement	By the end of the lesson, the learner should be able to: 1. State the properties of enlargement as a transformation 2. Apply the properties of enlargement to construct objects and images	• Identifying similar figures • Tracing figures • Constructing similar figures • enlarging figures • Drawing figures on the Cartesian plane • measuring lengths/ angles	• Geometrical instruments • Model maps • Photographs • Charts illustrating similarity and enlargement	• Discovering secondary mathematics Book 2 Page 52 • Secondary mathematics KLB book 2 page 97 • KLB teachers' guide book 2 page 27-28 • Golden tips mathematics pages 125	
	3-4	SIMILARITY AND ENLARGEMENT	Enlargement	By the end of the lesson, the learner should be able to: 1. State the scale factor	• Identifying similar figures • Tracing figures • Constructing similar figures	• Geometrical instruments • Model maps • Photographs • Charts	• Discovering secondary mathematics Book 2 Page 57-58	

				2. State the center of enlargement	• enlarging figures • Drawing figures on the Cartesian plane • measuring lengths/ angles	illustrating similarity and enlargement	• Secondary mathematics KLB book 2 page 97 • KLB teachers' guide book 2 page 27-28 • Golden tips mathematics pages 125	
	5-6	SIMILARITY AND ENLARGEMENT	Enlargement on the Cartesian plane	By the end of the lesson, the learner should be able to: 1. Apply enlargement on Cartesian planes	• Identifying similar figures • Tracing figures • Constructing similar figures • enlarging figures • Drawing figures on the Cartesian plane • measuring lengths/ angles	• Geometrical instruments • Model maps • Photographs • Charts illustrating similarity and enlargement	• Discovering secondary mathematics Book 2 Page 61-62 • Secondary mathematics KLB book 2 page 97 • KLB teachers' guide book 2 page 27-28 • Golden tips mathematics pages 125	
12	1-2	SIMILARITY AND ENLARGEMENT	Linear, area and volume scale factors	By the end of the lesson, the learner should be able to: 1. Determine linear scale factor 2. Determine area scale factors 3. Determine volume scale factors 4. Relate area scale factor, volume scale factor, and linear scale factor	• Identifying similar figures • Tracing figures • Constructing similar figures • enlarging figures • Drawing figures on the Cartesian plane • measuring lengths/ angles	• Geometrical instruments • Model maps • Photographs • Charts illustrating similarity and enlargement	• Discovering secondary mathematics Book 2 Page 62-65 • Secondary mathematics KLB book 2 page 97-110 • KLB teachers' guide book 2 page 27-28 • Golden tips mathematics pages 125	

	3-4	SIMILARITY AND ENLARGEMENT	Areas of similar figures	By the end of the lesson, the learner should be able to: 1. Apply volume area and linear scale factors in establishing areas of similar figures	• Identifying similar figures • Tracing figures • Constructing similar figures • enlarging figures • Drawing figures on the Cartesian plane • measuring lengths/ angles	• Geometrical instruments • Model maps • Photographs • Charts illustrating similarity and enlargement	• Discovering secondary mathematics Book 2 Page 62-64 • Secondary mathematics KLB book 2 page 106-108 • KLB teachers' guide book 2 page 27-28 • Golden tips mathematics pages 125	
	5-6	SIMILARITY AND ENLARGEMENT	Volume of similar figures	By the end of the lesson, the learner should be able to: 1. Apply knowledge of linear scale factor and volume scale factor to determine values of similar figures	• Identifying similar figures • Tracing figures • Constructing similar figures • enlarging figures • Drawing figures on the Cartesian plane • measuring lengths/ angles	• Geometrical instruments • Model maps • Photographs • Charts illustrating similarity and enlargement	• Discovering secondary mathematics Book 2 Page 64-65 • Secondary mathematics KLB book 2 page 109-111 • KLB teachers' guide book 2 page 27-28 • Golden tips mathematics pages 125	
13	1-2	SIMILARITY AND ENLARGEMENT	Application of scale factors in real life situations	By the end of the lesson, the learner should be able to: 1. Apply knowledge of linear scale factor and volume scale factor to determine values of similar figures	• Identifying similar figures • Tracing figures • Constructing similar figures • enlarging figures • Drawing figures on the Cartesian plane • measuring lengths/ angles	• Geometrical instruments • Model maps • Photographs • Charts illustrating similarity and enlargement	• Discovering secondary mathematics Book 2 Page 66 • Secondary mathematics KLB book 2 page 109-111-112 • KLB teachers' guide book 2 page 27-28	

							• Golden tips mathematics pages 128	

MATHEMATICS FORM 2 SCHEMES OF WORK – TERM 2								
WEEK	LESSON	TOPIC	SUB - TOPIC	OBJECTIVES	LEARNING/TEACHING ACTIVITIES	LEARNING/ TEACHING RESOURCES	REFERENCES	REMARKS
1	1-2	THE PYTHOGOROUS THEOREM	Deriving the Pythagoras theorem	By the end of the lesson, the learner should be able to: 1) Derive the Pythagoras theorem	• Measuring lengths • Squaring numbers • Getting square roots of numbers • Drawing right angled triangles • Drawing squares • Working out the area of a square	• Right angled triangles • Square paper • Ruler • protractor	• Discovering secondary mathematics Book 2 Pages 67 • Secondary mathematics KLB book 2 pages 119-120 • KLB teachers' guide book 2 page 16-17 • Golden tips mathematics pages	
	3-4	THE PYTHOGOROUS THEOREM	Applying the Pythagoras theorem	By the end of the lesson, the learner should be able to: 1) Solve problems using the Pythagoras theorem	• Measuring lengths • Squaring numbers • Getting square roots of numbers • Drawing right angled triangles • Drawing squares • Working out the area of a square	• Right angled triangles • Square paper • Ruler • protractor	• Discovering secondary mathematics Book 2 Pages 68-69 • Secondary mathematics KLB book 2 pages 121 • KLB teachers' guide book 2 page 16-17 • Golden tips mathematics pages	
	5-6	THE PYTHOGOROUS THEOREM	Applying the Pythagoras theorem	By the end of the lesson, the learner should be able to: 1) Solve problems using the Pythagoras theorem	• Measuring lengths • Squaring numbers • Getting square roots of numbers • Drawing right angled triangles • Drawing squares • Working out the area of a square	• Right angled triangles • Square paper • Ruler • protractor	• Discovering secondary mathematics Book 2 Pages 68-69 • Secondary mathematics KLB book 2 pages 121 • KLB teachers' guide book 2 page 16-17 • Golden tips mathematics pages	
2	1	THE TRIGONOMETRIC	The tangent of an angle	By the end of the lesson, the learner should be able to:	• Measuring lengths/angles • Dividing numbers	• Right corners • Ruler	• Discovering secondary mathematics Book 2 Pages 70-71	

		RATIOS		1) Determine the tangent of an angle	• Drawing right angles	• protractor	• Secondary mathematics KLB book 2 pages 123 • KLB teachers' guide book 2 page 36 • Golden tips mathematics pages 132	
	2	THE TRIGONO METRIC RATIOS	The table of tangents	By the end of the lesson, the learner should be able to: 1) Read the tangent of an angle from the tangent tables	• Measuring lengths/angles • Dividing numbers • Drawing right angles • Reading mathematical tables	• Right corners • Ruler • Protractor • Mathematical tables	• Discovering secondary mathematics Book 2 Pages 71-72 • Secondary mathematics KLB book 2 pages 126 • KLB teachers' guide book 2 page 36-37 • Golden tips mathematics pages 132	
	3	THE TRIGONO METRIC RATIOS	Using tangents in calculations	By the end of the lesson, the learner should be able to: 1) Use tangents of angles in calculation	• Measuring lengths/angles • Dividing numbers • Drawing right angles • Reading mathematical tables	• Right corners • Ruler • Protractor • Mathematical tables	• Discovering secondary mathematics Book 2 Pages 74-75 • Secondary mathematics KLB book 2 pages 127 • KLB teachers' guide book 2 page 38 • Golden tips mathematics pages 133	
	4	THE TRIGONO METRIC RATIOS	Application of tangents	By the end of the lesson, the learner should be able to: 1) Apply tangents in real life situations	• Measuring lengths/angles • Dividing numbers • Drawing right angles • Reading mathematical tables	• Right corners • Ruler • Protractor • Mathematical tables	• Discovering secondary mathematics Book 2 Pages 74-75 • Secondary mathematics KLB book 2 pages 127 • KLB teachers' guide book 2 page 36-39 • Golden tips mathematics pages 136	
	5-6	THE TRIGONO METRIC RATIOS	Sines	By the end of the lesson, the learner should be able to: 1. Determine the sine of an angle 2. Read the sine of an angle from	• Measuring lengths/angles • Dividing numbers • Drawing right angles • Reading mathematical tables	• Right corners • Ruler • Protractor • Mathematical tables	• Discovering secondary mathematics Book 2 Pages 76-77 • Secondary mathematics KLB book 2 pages 132 • KLB teachers' guide book 2 page 17-19 • Golden tips mathematics pages 132	

				mathematical tables and apply sines of an angle in real life situations				
3	1-2	THE TRIGONOMETRIC RATIOS	Cosines	By the end of the lesson, the learner should be able to: 1. Determine the cosine of an angle 2. Read the cosine of an angle from mathematical tables 3. Apply cosines of angles in real life situations	• Measuring lengths/angles • Dividing numbers • Drawing right angles • Reading mathematical tables	• Right corners • Ruler • Protractor • Mathematical tables •	• Discovering secondary mathematics Book 2 Pages 78-79 • Secondary mathematics KLB book 2 pages 132 • KLB teachers' guide book 2 page 17-19 • Golden tips mathematics pages 133	
	3-4	THE TRIGONOMETRIC RATIOS	Complimentary angles	By the end of the lesson, the learner should be able to: 4. Establish the relationship of cosines and sines of complimentary angles 5. Use the relationship of sines and cosines of complimentary angles	• Measuring lengths/angles • Dividing numbers • Drawing right angles • Reading mathematical tables	• Right corners • Ruler • Protractor • Mathematical tables •	• Discovering secondary mathematics Book 2 Pages 81-83 • Secondary mathematics KLB book 2 pages 145 • KLB teachers' guide book 2 page 33-36 • Golden tips mathematics pages 133	
	5-6	THE TRIGONOMETRIC RATIOS	Trigonometric ratios of some angles	By the end of the lesson, the learner should be able to: 1) Determine	• Measuring lengths/angles • Dividing numbers • Drawing right	• Right corners • Ruler • Protractor	• Discovering secondary mathematics Book 2 Pages 83-84 • Secondary mathematics	

				the trigonometric ratios of some special angles	angles • Reading mathematical tables	• Mathematical tables •	KLB book 2 pages 146 • KLB teachers' guide book 2 page 17-19 • Golden tips mathematics pages 134	
4	1-2	THE TRIGONOMETRIC RATIOS	The logarithms of sines, cosines and tangents	By the end of the lesson, the learner should be able to: 1. Read tables of logarithms of sines cosines and tangents 2. Use the tables of logarithms of sines cosines and tangents to work out numerals.	• Measuring lengths/angles • Dividing numbers • Drawing right angles • Reading mathematical tables	• Right corners • Ruler • Protractor • Mathematical tables •	• Discovering secondary mathematics Book 2 Pages 83-85 • Secondary mathematics KLB book 2 pages 149 • KLB teachers' guide book 2 page 17-19 • Golden tips mathematics pages 136	
	3-4	AREA OF TRIANGLE	The formula A=1/2 ab sin C	By the end of the lesson, the learner should be able to: 1) Determine the formula 2) A=1/2 ab sin C	• Discussions • Drawing triangles • Measuring lengths/angles • Calculating areas	• Right corners • Ruler • Protractor • Mathematical tables •	• Discovering secondary mathematics Students' Book 2 Pages 85-86 • Teachers' Book 2 Pages 19-20 • Secondary mathematics KLB book 2 pages 155-156 • KLB teachers' guide book 2 page 43 • Golden tips mathematics pages 138	
	5-6	AREA OF TRIANGLE	The formula A= s(s-a) (s-b)(s-c)	By the end of the lesson, the learner should be able to: 1) Use the formula 2) A= s(s-a) (s-b)(s-c) 3) To get the area of a	• Discussions • Drawing triangles • Measuring lengths/angles • Calculating areas	• Right corners • Ruler • Protractor • Mathematical tables	• Discovering secondary mathematics Students' Book 2 Pages 86-87 • Teachers' Book 2 Pages 19-20 • Secondary mathematics KLB book 2 pages 157 • KLB teachers' guide book 2 page 43	

				triangle			• Golden tips mathematics pages 70	
5	1-2	AREA OF POLYGONS	Area of a parallelogram	By the end of the lesson, the learner should be able to: 1) Find the area of a parallelogram using the fomular A= bh and trigonometric ratios	• Drawing parallelograms • Reading mathematical tables • Measuring lengths/angles • Discussions	• Parallelograms • Squares/ rectangles • Mathematical tables	• Discovering secondary mathematics Students' Book 2 Pages 88-90 • Teachers' Book 2 Pages 20-21 • Secondary mathematics KLB book 2 pages 160 • KLB teachers' guide book 2 page 45 • Golden tips mathematics pages 69	
	3-4	AREA OF POLYGONS	Area of a trapezium and other polygons	By the end of the lesson, the learner should be able to: 1) Find the area of a trapezium and other polygons	• Drawing trapezium/polygons • Reading mathematical tables • Measuring lengths/angles • Discussions	• Trapezium • polygons • Squares/ rectangles • Mathematical tables	• Discovering secondary mathematics Students' Book 2 Pages 90-92 • Teachers' Book 2 Pages 20-21 • Secondary mathematics KLB book 2 pages 162 • KLB teachers' guide book 2 page 45 • Golden tips mathematics pages 69	
	5-6	AREA OF A CIRCLE	Area of a sector	By the end of the lesson, the learner should be able to: 1. Find the area of a sector of a circle	• Drawing circles • Measuring radii/diameters • Calculating the area of a circle • Measuring angles • Discussions	• circles	• Discovering secondary mathematics Students' Book 2 Pages 93-94 • Teachers' Book 2 Pages 21-22 • Secondary mathematics KLB book 2 pages 167 • KLB teachers' guide book 2 page 45 • Golden tips mathematics pages 70	
6	1-2	AREA OF PART OF A CIRCLE	Area of a segment	By the end of the lesson, the learner should be able to: 1. Find the area of a segment of a circle	• Drawing circles • Measuring radii/diameters • Calculating the area of a circle • Measuring angles • Discussions	• circles	• Discovering secondary mathematics Students' Book 2 Pages 95-96 • Teachers' Book 2 Pages 21-22 • Secondary mathematics KLB book 2 pages 169	

							• KLB teachers' guide book 2 page 46 • Golden tips mathematics pages 68	
	3-4	AREA OF PART OF A CIRCLE	Area of intersecting segments	By the end of the lesson, the learner should be able to: 1. Find the area of intersecting segments of a circle	• Drawing circles • Measuring radii/diameters • Calculating the area of a circle • Measuring angles • Discussions	• circles	• Discovering secondary mathematics Students' Book 2 Pages 97-98 • Teachers' Book 2 Pages 21-22 • Secondary mathematics KLB book 2 pages 173 • KLB teachers' guide book 2 page 46 • Golden tips mathematics pages 68	
	5-6	SURFACE AREA OF SOLIDS	Surface area of prisms	By the end of the lesson, the learner should be able to: 1. Find the surface area of a prism	• Drawing prisms • Measuring lengths • Opening prisms to form nets • Discussions • Calculating area	• prisms	• Discovering secondary mathematics Students' Book 2 Pages 99-100 • Teachers' Book 2 Pages 23-34 • Secondary mathematics KLB book 2 pages 177 • KLB teachers' guide book 2 page 46 • Golden tips mathematics pages 71	
7	1-2	SURFACE AREA OF SOLIDS	Surface area of prisms	By the end of the lesson, the learner should be able to: 1. Find the surface area of a prism	• Drawing prisms • Measuring lengths • Opening prisms to form nets • Discussions • Calculating area	• prisms	• Discovering secondary mathematics Students' Book 2 Pages 99-100 • Teachers' Book 2 Pages 23-34 • Secondary mathematics KLB book 2 pages 177 • KLB teachers' guide book 2 page 46 • Golden tips mathematics pages 71	
	3-4	SURFACE AREA OF SOLIDS	Surface area of cones and frustum	By the end of the lesson, the learner should be able to: 1. Find the surface area of a cone	• Drawing cones/frustums • Making spheres • Measuring diameters/radii of spheres	• spheres	• Discovering secondary mathematics Students' Book 2 Pages 102-104 • Teachers' Book 2 Pages 23-34 • Secondary mathematics	

				and a frustum	• Discussions		KLB book 2 pages 180 • KLB teachers' guide book 2 page 51 • Golden tips mathematics pages 71	
	5-6	SURFACE AREA OF SOLIDS	Surface area of spheres	By the end of the lesson, the learner should be able to: 1. Find the surface area of a sphere	• Sketching spheres • Making spheres • Measuring diameters/radii of spheres • Discussions	• spheres	• Discovering secondary mathematics Students' Book 2 Pages 104-106 • Teachers' Book 2 Pages 23-24 • Secondary mathematics KLB book 2 pages 183 • KLB teachers' guide book 2 page 51 • Golden tips mathematics pages 71	
8	1-2	VOLUME OF SOLIDS	Volume of a prism	By the end of the lesson, the learner should be able to: 1. Find the volume of a solid	• Identifying prisms • Identifying cross sectional area • Drawing/ sketching prisms	• prisms	• Discovering secondary mathematics Students' Book 2 Pages 107-110 • Teachers' Book 2 Pages 24-26 • Secondary mathematics KLB book 2 pages 186 • KLB teachers' guide book 2 page 56 • Golden tips mathematics pages 75	
	3-4	VOLUME OF SOLIDS	Volume of cylinders	By the end of the lesson, the learner should be able to: 1. Find the volume of a cylinder	• Drawing cylinders • Opening cylinders to form nets • discussions	• cylinders	• Discovering secondary mathematics Students' Book 2 Pages 110-111 • Teachers' Book 2 Pages 24-26 • Secondary mathematics KLB book 2 pages 191 • KLB teachers' guide book 2 page 56 • Golden tips mathematics pages 73	
	5-6	VOLUME OF SOLIDS	Volume of pyramids	By the end of the lesson, the learner should be able to: 1. Find the volume of a	• Drawing pyramids • Making pyramids • Opening pyramids to form nets • discussions	• pyramids	• Discovering secondary mathematics Students' Book 2 Pages 111-112 • Teachers' Book 2 Pages 24-26	

				pyramid			• Secondary mathematics KLB book 2 pages 189 • KLB teachers' guide book 2 page 56 • Golden tips mathematics pages 75	
9	1-2	VOLUME OF SOLIDS	Volume of cones and frustums	By the end of the lesson, the learner should be able to: 1. Find the volume of a cone 2. Find the volume of a frustum	• Making cones/frustums • Opening cones/frustums to form nets	• Cones • frustums	• Discovering secondary mathematics Students' Book 2 Pages 112-114 • Teachers' Book 2 Pages 24-26 • Secondary mathematics KLB book 2 pages 192 • KLB teachers' guide book 2 page 56 • Golden tips mathematics pages 75	
	3-4	VOLUME OF SOLIDS	Volume of spheres	By the end of the lesson, the learner should be able to: 1. Find the volume of a sphere	• Identifying spheres • Sketching spheres • Measuring radii/diameters • Discussions	• spheres	• Discovering secondary mathematics Students' Book 2 Pages 114-116 • Teachers' Book 2 Pages 24-26 • Secondary mathematics KLB book 2 pages 195 • KLB teachers' guide book 2 page 57 • Golden tips mathematics pages 75	
	5-6	QUADRATIC EXPRESSIONS AND EQUATIONS	Examples of algebraic expressions	By the end of the lesson, the learner should be able to: 1. Expand algebraic expressions	• Discussions • Multiplying numbers • Dividing numbers • Adding numbers • Subtracting numbers • Exercises given in class	• Real life experiences • Worked out expressions	• Discovering secondary mathematics Students' Book 2 Pages 117 • Teachers' Book 2 Pages 27-29 • Secondary mathematics KLB book 2 pages 203 • KLB teachers' guide book 2 page 61 • Golden tips mathematics pages 20	
10	1-2	QUADRATIC EXPRESSI	Quadratic expressions	By the end of the lesson, the learner should be able to:	• Discussions • Multiplying numbers	• Real life experiences	• Discovering secondary mathematics Students' Book 2 Pages 117-118	

		ONS AND EQUATIONS		1. Form Quadratic expressions	• Dividing numbers • Adding numbers • Subtracting numbers • Exercises given in class	• Worked out expressions	• Teachers' Book 2 Pages 27-29 • Secondary mathematics KLB book 2 pages 203 • KLB teachers' guide book 2 page 61 • Golden tips mathematics pages 27	
	3-4	QUADRATIC EXPRESSIONS AND EQUATIONS	The Quadratic identities	By the end of the lesson, the learner should be able to: 1. Determine the three Quadratic identities	• Discussions • Multiplying numbers • Dividing numbers • Subtracting numbers • Exercises given in class	• Real life experiences • Worked out expressions	• Discovering secondary mathematics Students' Book 2 Pages 118-119 • Teachers' Book 2 Pages 27-29 • Secondary mathematics KLB book 2 pages 204 • KLB teachers' guide book 2 page 61 • Golden tips mathematics pages 27	
	5-6	QUADRATIC EXPRESSIONS AND EQUATIONS	Factorizing Quadratic expressions	By the end of the lesson, the learner should be able to: 1. Factorize Quadratic expressions	• Discussions • Multiplying numbers • Dividing numbers • Subtracting numbers • Adding numbers • Exercises given in class	• Real life experiences • Worked out expressions	• Discovering secondary mathematics Students' Book 2 Pages 120-121 • Teachers' Book 2 Pages 27-29 • Secondary mathematics KLB book 2 pages 205 • KLB teachers' guide book 2 page 63 • Golden tips mathematics pages 28	
11	1-2	QUADRATIC EXPRESSIONS AND EQUATIONS	The difference of two squares	By the end of the lesson, the learner should be able to: 1. solve Quadratic equations using the difference of two squares	• Discussions • Multiplying numbers • Subtracting numbers • Adding numbers • Exercises given in class	• Real life experiences • Worked out expressions	• Discovering secondary mathematics Students' Book 2 Pages 121-122 • Teachers' Book 2 Pages 27-29 • Secondary mathematics KLB book 2 pages 204 • KLB teachers' guide book 2 page 63 • Golden tips mathematics pages 29	
	3-4	QUADRATIC	Solving quadratic	By the end of the lesson, the learner	• Discussions • Multiplying	• Real life experience	• Discovering secondary mathematics Students'	

		EXPRESSIONS AND EQUATIONS	equations	should be able to: 1. solve quadratic equations	numbers • Subtracting numbers • Adding numbers • Exercises given in class	s • Worked out expressions	Book 2 Pages 122-123 • Teachers' Book 2 Pages 27-29 • Secondary mathematics KLB book 2 pages 209 • KLB teachers' guide book 2 page 64 • Golden tips mathematics pages 29	
	5-6	QUADRATIC EXPRESSIONS AND EQUATIONS	Forming quadratic equations	By the end of the lesson, the learner should be able to: 1. Form quadratic equations	• Discussions • Multiplying numbers • Dividing numbers • Subtracting numbers • Adding numbers • Exercises given in class	• Real life experiences • Worked out expressions	• Discovering secondary mathematics Students' Book 2 Pages 123-124 • Teachers' Book 2 Pages 27-29 • Secondary mathematics KLB book 2 pages 208 • KLB teachers' guide book 2 page 64 • Golden tips mathematics pages 29	
12	1-2	LNEAR INEQUALITIES	Inequalities on a number line	By the end of the lesson, the learner should be able to: 1. Illustrate Inequalities on a number line	• Comparing numbers using the symbols for greater than and less than • Drawing number lines • counting whole numbers • making scale on lines	• number lines • graph papers • square boards • negative and positive numbers	• Discovering secondary mathematics Students' Book 2 Pages 125 • Teachers' Book 2 Pages 29-30 • Secondary mathematics KLB book 2 pages 213 • KLB teachers' guide book 2 page 70 • Golden tips mathematics pages 176	
	3-4	LNEAR INEQUALITIES	Solving linear Inequalities	By the end of the lesson, the learner should be able to: 1. Solve linear Inequalities	• Comparing numbers using the symbols for greater than and less than • Drawing number lines • counting whole numbers • making scale on lines	• number lines • graph papers • square boards • negative and positive numbers	• Discovering secondary mathematics Students' Book 2 Pages 126-127 • Teachers' Book 2 Pages 29-30 • Secondary mathematics KLB book 2 pages 215 • KLB teachers' guide book 2 page 71 • Golden tips mathematics pages 176	

	5-6	LNEAR INEQUALITIES	Compound Inequalities	By the end of the lesson, the learner should be able to: 1. Solve Compound Inequalities	• Comparing numbers using the symbols for greater than and less than • Drawing number lines • counting whole numbers • making scale on lines	• number lines • graph papers • square boards • negative and positive numbers	• Discovering secondary mathematics Students' Book 2 Pages 127-128 • Teachers' Book 2 Pages 29-30 • Secondary mathematics KLB book 2 pages 213 • KLB teachers' guide book 2 page 71 • Golden tips mathematics pages 177	
13	1	LNEAR INEQUALITIES	Graphical representation of linear inequalities	By the end of the lesson, the learner should be able to: 1. Represent linear inequalities graphically	• Drawing graphs of inequalities • Determining the scale of a graph • Shading unwanted regions • Discussions	• number lines • graph papers • square boards • negative and positive numbers	• Discovering secondary mathematics Students' Book 2 Pages 128-129 • Teachers' Book 2 Pages 29-30 • Secondary mathematics KLB book 2 pages 219 • KLB teachers' guide book 2 page 71 • Golden tips mathematics pages 178	
	2-3	LNEAR INEQUALITIES	Inequalities with two variables	By the end of the lesson, the learner should be able to: 1. Solve inequalities with two unknowns graphically	• Drawing graphs of inequalities • Determining the scale of a graph • Shading unwanted regions • Discussions	• number lines • graph papers • square boards • negative and positive numbers	• Discovering secondary mathematics Students' Book 2 Pages 130-131 • Teachers' Book 2 Pages 29-30 • Secondary mathematics KLB book 2 pages 219 • KLB teachers' guide book 2 page 71- 72 • Golden tips mathematics pages 129	

	4-5	LNEAR INEQUALITIES	Graphical solutions of simultaneous inequalities	By the end of the lesson, the learner should be able to: 1. Solve inequalities with two unknowns graphically	• Drawing graphs of inequalities • Determining the scale of a graph • Shading unwanted regions • Discussions	• number lines • graph papers • square boards • negative and positive numbers	• Discovering secondary mathematics Students' Book 2 Pages 129-131 • Teachers' Book 2 Pages 29-30 • Secondary mathematics KLB book 2 pages 224 • KLB teachers' guide book 2 page 71 • Golden tips mathematics pages 178	
	6	LINEAR INEQUALITIES	Interpretation of the regions in an inequality graph	By the end of the lesson, the learner should be able to: 1. Interpret regions in inequality graphs	• Drawing graphs of inequalities • Determining the scale of a graph • Shading unwanted regions • Discussions	• number lines • graph papers • square boards • negative and positive numbers	• Discovering secondary mathematics Students' Book 2 Pages 131-135 • Teachers' Book 2 Pages 29-30 • Secondary mathematics KLB book 2 pages 224 • KLB teachers' guide book 2 page 71 • Golden tips mathematics pages 179	

MATHEMATICS FORM 2 SCHEMES OF WORK – TERM 3								
WEEK	LESSON	TOPIC	SUB - TOPIC	OBJECTIVES	LEARNING/TEACHING ACTIVITIES	LEARNING/ TEACHING RESOURCES	REFERENCES	REMARKS
1	1-2	ANGLE PROPERTIES OF A CIRCLE	Parts of a circle	By the end of the lesson, the learner should be able to: 1. Identify the parts of a circle	• Discussions • Drawing circles • Measuring radii/diameters/angles • Identifying parts	• Circles showing the different parts	• Discovering secondary mathematics Students' Book 2 Pages 136-138 • Teachers' Book 2 Pages 30-32 • Secondary mathematics	

				2. Solve problems involving them	of a circle		KLB book 2 pages 264 • KLB teachers' guide book 2 page 91 • Golden tips mathematics pages 163 and 102	
	3-4	ANGLE PROPERTIES OF A CIRCLE	Parts of a circle	By the end of the lesson, the learner should be able to: 1. Identify the parts of a circle 2. Solve problems involving them	• Discussions • Drawing circles • Measuring radii/diameters/angles • Identifying parts of a circle	• Circles showing the different parts	• Discovering secondary mathematics Students' Book 2 Pages 138-140 • Teachers' Book 2 Pages 30-32 • Secondary mathematics KLB book 2 pages 264 • KLB teachers' guide book 2 page 91 • Golden tips mathematics pages 163 and 102	
	5-6	ANGLE PROPERTIES OF A CIRCLE	Cyclic quadrilateral	By the end of the lesson, the learner should be able to: 1. State the angle property of a cyclic quadrilateral	• Discussions • Drawing circles • Measuring radii/diameters/angles • Identifying parts of a circle	• Circles showing the different parts	• Discovering secondary mathematics Students' Book 2 Pages • Teachers' Book 2 Pages • Secondary mathematics KLB book 2 pages 278 • KLB teachers' guide book 2 page 92 • Golden tips mathematics pages 163 and 104	
2	1-2	VECTORS	Scalar quantities and translation	By the end of the lesson, the learner should be able to: 1. Define vectors 2. Define scalar quantities 3. Define transition	• Show the direction of a vector • Writing the matrix of a vector • Drawing lines • Plotting the co-ordinates of points on the Cartesian plane	• 1X2 matrices • Graph papers • Square boards • Ruler •	• Discovering secondary mathematics Students' Book 2 Pages 145-146 • Teachers' Book 2 Pages 33-34 • Secondary mathematics KLB book 2 pages 284 • KLB teachers' guide book 2 page 92 • Golden tips mathematics pages 203	
	3-4	VECTORS	Equivalent and column	By the end of the lesson, the learner should be able to:	• Show the direction of a vector	• 1X2 matrices • Graph	• Discovering secondary mathematics Students' Book 2 Pages 146-148	

			vectors	1. Identify equivalent vectors 2. Write column vectors	• Writing the matrix of a vector • Drawing lines • Plotting the co-ordinates of points on the Cartesian plane • Adding numbers	papers • Square boards • Ruler	• Teachers' Book 2 Pages 33-34 • Secondary mathematics KLB book 2 pages 285 • KLB teachers' guide book 2 page 94 • Golden tips mathematics pages 204	
	5-6	VECTORS	Addition of vectors	By the end of the lesson, the learner should be able to: 1. Add position vectors	• Show the direction of a vector • Writing the matrix of a vector • Drawing lines • Plotting the co-ordinates of points on the Cartesian plane • Adding numbers	• 1X2 matrices • Graph papers • Square boards • Ruler	• Discovering secondary mathematics Students' Book 2 Pages 148-149 • Teachers' Book 2 Pages 33-34 • Secondary mathematics KLB book 2 pages 286 • KLB teachers' guide book 2 page 95 • Golden tips mathematics pages 205	
3	1-2	VECTORS	Subtracting vectors and zero vectors	By the end of the lesson, the learner should be able to: 1. Subtract vectors 2. Identify the null (zero) vectors	• Show the direction of a vector • Writing the matrix of a vector • Drawing lines • Plotting the co-ordinates of points on the Cartesian plane • subtracting numbers	• 1X2 matrices • Graph papers • Square boards • Ruler	• Discovering secondary mathematics Students' Book 2 Pages 150-152 • Teachers' Book 2 Pages 33-34 • Secondary mathematics KLB book 2 pages 289 • KLB teachers' guide book 2 page 95 • Golden tips mathematics pages 205	
	3-4	VECTORS	Multiplication of vectors by scalar	By the end of the lesson, the learner should be able to: 1. Multiply vectors by a scalar	• Writing position vectors • Adding and subtracting vectors • Multiplying vectors by a scalar	• 1X2 matrices • Graph papers • Square boards • Ruler	• Discovering secondary mathematics Students' Book 2 Pages 152-154 • Teachers' Book 2 Pages 33-34 • Secondary mathematics KLB book 2 pages 290 • KLB teachers' guide book 2 page 95	

							• Golden tips mathematics pages 203	
	5-6	VECTORS	The magnitude of a vector	By the end of the lesson, the learner should be able to: 1. Determine the magnitude of a vector	• Writing position vectors • Adding and subtracting numbers • Squaring and getting the square root of numbers	• 1X2 matrices • Graph papers • Square boards • Ruler	• Discovering secondary mathematics Students' Book 2 Pages 154-155 • Teachers' Book 2 Pages 33-34 • Secondary mathematics KLB book 2 pages 301 • KLB teachers' guide book 2 page 95 • Golden tips mathematics pages 205	
4	1-2	VECTORS	The mid point of a vector	By the end of the lesson, the learner should be able to: 1. Establish the equality of vectors and determine the midpoint of a vector	• Writing position vectors • Adding and subtracting numbers • Squaring and getting the square root of numbers	• 1X2 matrices • Graph papers • Square boards • Ruler	• Discovering secondary mathematics Students' Book 2 Pages 156-157 • Teachers' Book 2 Pages 33-34 • Secondary mathematics KLB book 2 pages 302 • KLB teachers' guide book 2 page 96 • Golden tips mathematics pages 208	
	3-4	REPRESENTATION OF DATA	Collection and representation of data	By the end of the lesson, the learner should be able to: 1. Collect organize and represent data for easy interpretation	• Collecting data • Measuring lengths/mass/age • Drawing graphs • Drawing tables • Using symbols to represent data • Discussion	• Weighing balance • Ruler • Tape measure • Pieces of sticks • Arm length and foot length	• Discovering secondary mathematics Students' Book 2 Pages 158-159 • Teachers' Book 2 Pages 34-37 • Secondary mathematics KLB book 2 pages 241-252 • KLB teachers' guide book 2 page 77 • Golden tips mathematics pages 184	
	5-6	REPRESENTATION OF DATA	pictograms	By the end of the lesson, the learner should be able to: 1. Represent data in a pictogram	• Collecting data • Measuring lengths/mass/age • Drawing graphs • Drawing tables • Using symbols to	• Weighing balance • Ruler • Tape measure • Pieces of sticks	• Discovering secondary mathematics Students' Book 2 Pages 160-161 • Teachers' Book 2 Pages 34-37 • Secondary mathematics KLB book 2 pages 253	

					represent data • Discussion	• Arm length • foot length • graph papers	• KLB teachers' guide book 2 page 78 • Golden tips mathematics pages 192	
5	1-2	REPRESENTATION OF DATA	Bar graphs	By the end of the lesson, the learner should be able to: 1. Represent data in bar graphs	• Collecting data • Measuring lengths/mass/age • Drawing graphs • Drawing tables • Using symbols to represent data • Discussion	• Weighing balance • Ruler • Tape measure • Pieces of sticks • Arm length • foot length • graph papers	• Discovering secondary mathematics Students' Book 2 Pages 161-164 • Teachers' Book 2 Pages 34-37 • Secondary mathematics KLB book 2 pages 252 • KLB teachers' guide book 2 page 78 • Golden tips mathematics pages 188	
	3-4	REPRESENTATION OF DATA	line graphs	By the end of the lesson, the learner should be able to: 1. Represent data in line graph	• Collecting data • Measuring lengths/mass/age • Drawing graphs • Drawing tables • Using symbols to represent data • Discussion	• Weighing balance • Ruler • Tape measure • Pieces of sticks • Arm length • foot length • graph papers	• Discovering secondary mathematics Students' Book 2 Pages 164-165 • Teachers' Book 2 Pages 34-37 • Secondary mathematics KLB book 2 pages 255 • KLB teachers' guide book 2 page 78 • Golden tips mathematics pages 191	

	5-6	REPRESENTATION OF DATA	Pie charts	By the end of the lesson, the learner should be able to: 1. Represent data in a pie chart	• Collecting data • Measuring lengths/mass/age • Drawing graphs • Drawing tables • Using symbols to represent data • Discussion	• Weighing balance • Ruler • Tape measure • Pieces of sticks • Arm length • foot length • graph papers	• Discovering secondary mathematics Students' Book 2 Pages 166-167 • Teachers' Book 2 Pages 34-37 • Secondary mathematics KLB book 2 pages 254 • KLB teachers' guide book 2 page 78 • Golden tips mathematics pages 187	
6	1-2	REPRESENTATION OF DATA	Grouped and ungrouped data	By the end of the lesson, the learner should be able to: 1. Group data into classes for easy representation 2. Interpret data	• Collecting data • Grouping data into classes • Determining class intervals	• Weighing balance • Ruler • Tape measure • Pieces of sticks • Arm length • foot length • graph papers	• Discovering secondary mathematics Students' Book 2 Pages 167-170 • Teachers' Book 2 Pages 34-37 • Secondary mathematics KLB book 2 pages 241 and 247 • KLB teachers' guide book 2 page 78 • Golden tips mathematics pages 193	
	3-4	REPRESENTATION OF DATA	Grouped and ungrouped data	By the end of the lesson, the learner should be able to: 1. Group data into classes for easy representation	• Collecting data • Grouping data into classes • Determining class intervals	• Weighing balance • Ruler • Tape measure • Pieces of sticks • Arm length • foot length • graph papers	• Discovering secondary mathematics Students' Book 2 Pages 167-170 • Teachers' Book 2 Pages 34-37 • Secondary mathematics KLB book 2 pages 241 and 247 • KLB teachers' guide book 2 page 78 • Golden tips mathematics pages 193	

	5-6	REPRESENTATION OF DATA	Frequency polygons	By the end of the lesson, the learner should be able to: 1. Represent data in frequency polygons	• Collecting data • Grouping data into classes • Determining class intervals	• Weighing balance • Ruler • Tape measure • Pieces of sticks • Arm length • foot length • graph papers	• Discovering secondary mathematics Students' Book 2 Pages 170-172 • Teachers' Book 2 Pages 34-37 • Secondary mathematics KLB book 2 pages 258 • KLB teachers' guide book 2 page 78 • Golden tips mathematics pages 196	
7	1-2	MEASURING OF CENTRAL TENDENCY	The mean	By the end of the lesson, the learner should be able to: 1. Calculate the mean of a certain set of data	• Measuring length/age mass • Adding numbers • Dividing numbers • Demonstrations • Exercises given in class	• Weighing balance • Ruler • Tape measure • Counters • Mathematical tables • Multiplication tables	• Discovering secondary mathematics Students' Book 2 Pages 173-174 • Teachers' Book 2 Pages 38-40 • Secondary mathematics KLB book 2 pages 243 • KLB teachers' guide book 2 page 78 • Golden tips mathematics pages 192	
	3-4	MEASURING OF CENTRAL TENDENCY	The mode	By the end of the lesson, the learner should be able to: 1. Calculate the mode of a certain set of data	• Measuring length/age mass • Adding numbers • Dividing numbers • Demonstrations • Exercises given in class	• Weighing balance • Ruler • Tape measure • Counters • Mathematical tables • Multiplication tables	• Discovering secondary mathematics Students' Book 2 Pages 174 • Teachers' Book 2 Pages 38-40 • Secondary mathematics KLB book 2 pages 244 • KLB teachers' guide book 2 page 78 • Golden tips mathematics pages 195	

	5-6	MEASURING OF CENTRAL TENDENCY	The median	By the end of the lesson, the learner should be able to: 1. Calculate the median of a given set of data	• Measuring length/age mass • Adding numbers • Dividing numbers • Demonstrations • Exercises given in class	• Weighing balance • Ruler • Tape measure • Counters • Mathematical tables • Multiplication tables	• Discovering secondary mathematics Students' Book 2 Pages 174-176 • Teachers' Book 2 Pages 38-40 • Secondary mathematics KLB book 2 pages 244 • KLB teachers' guide book 2 page • Golden tips mathematics pages 194	
8	1-2	MEASURING OF CENTRAL TENDENCY	The use of ∑f and ∑fx	By the end of the lesson, the learner should be able to: 1. Use ∑f and ∑fx to calculate the mean and median of a given set of data	• Measuring length/age mass • Adding numbers • Dividing numbers • Demonstrations • Exercises given in class	• Weighing balance • Ruler • Tape measure • Counters • Mathematical tables • Multiplication tables	• Discovering secondary mathematics Students' Book 2 Pages 176-177 • Teachers' Book 2 Pages 38-40 • Secondary mathematics KLB book 2 pages 249 • KLB teachers' guide book 2 page 78 • Golden tips mathematics pages 193	
	3-4	MEASURING OF CENTRAL TENDENCY	Grouped data	By the end of the lesson, the learner should be able to: 1. Determine the mid-point, the mode, the mean and the median of grouped data	• Measuring length/age mass • Adding numbers • Dividing numbers • Demonstrations • Exercises given in class	• Weighing balance • Ruler • Tape measure • Counters • Mathematical tables • Multiplication tables	• Discovering secondary mathematics Students' Book 2 Pages 176-177 • Teachers' Book 2 Pages 38-40 • Secondary mathematics KLB book 2 pages 247 • KLB teachers' guide book 2 page 78 • Golden tips mathematics pages 193	

	5-6	MEASURING OF CENTRAL TENDENCY	Revising	By the end of the lesson, the learner should be able to: 1. Answer questions on the measure of central tendency	• Asking and answering questions • Exercises given in class	• Weighing balance • Ruler • Tape measure • Counters • Mathematical tables • Multiplication tables	• Discovering secondary mathematics Students' Book 2 Pages 178 • Teachers' Book 2 Pages 40 • Secondary mathematics KLB book 2 pages 249-252 • KLB teachers' guide book 2 page 79 • Golden tips mathematics pages 199	
9	1-2	LINEAR MOTION	Velocity and speed	By the end of the lesson, the learner should be able to: 1. Define displacement 2. Distinguish between displacement and distance 3. Differentiate between velocity and speed.	• Tossing objects • Drawing graphs • Rolling objects • Observing vehicles	• Graph papers • Stones • Pieces of paper • Moving vehicles/bicycles	• Discovering secondary mathematics Students' Book 2 Pages 180-183 • Teachers' Book 2 Pages 40-41 • Secondary mathematics KLB book 2 pages 228 • KLB teachers' guide book 2 page 74 • Golden tips mathematics pages 80-81	
	3-4	LINEAR MOTION	Distance – time graphs	By the end of the lesson, the learner should be able to: Plot and draw distance-time graphs	• Plotting graphs • Drawing graphs	• Graph papers • Stones • Pieces of paper • Moving vehicles/bicycles	• Discovering secondary mathematics Students' Book 2 Pages 183-185 • Teachers' Book 2 Pages 40-41 • Secondary mathematics KLB book 2 pages 231 • KLB teachers' guide book 2 page 74 • Golden tips mathematics pages 82	

	5-6	LINEAR MOTION	Distance – time graphs	By the end of the lesson, the learner should be able to: 1. Plot and draw speed-time graphs	• Plotting graphs • Drawing graphs	• Graph papers • Stones • Pieces of paper • Moving vehicles/bicycles	• Discovering secondary mathematics Students' Book 2 Pages 185-186 • Teachers' Book 2 Pages 40-41 • Secondary mathematics KLB book 2 pages 228-234 • KLB teachers' guide book 2 page 74 • Golden tips mathematics pages 83	
10	1-2	LINEAR MOTION	Velocity and acceleration	By the end of the lesson, the learner should be able to: 1. Define velocity and acceleration 2. Distinguish between velocity and acceleration	• Plotting graphs • Drawing graphs	• Graph papers • Stones • Pieces of paper • Moving vehicles/bicycles	• Discovering secondary mathematics Students' Book 2 Pages 186-187 • Teachers' Book 2 Pages 40-41 • Secondary mathematics KLB book 2 pages 230 • KLB teachers' guide book 2 page 74 • Golden tips mathematics pages 81	
	3-4	LINEAR MOTION	Velocity – time graph	By the end of the lesson, the learner should be able to: 1. Plot and draw velocity -time graphs	• Plotting graphs • Drawing graphs	• Graph papers • Stones • Pieces of paper • Moving vehicles/bicycles	• Discovering secondary mathematics Students' Book 2 Pages 187-190 • Teachers' Book 2 Pages 40-41 • Secondary mathematics KLB book 2 pages 234 • KLB teachers' guide book 2 page 74 • Golden tips mathematics pages 83	

	5-6	LINEAR MOTION	Relative speed	By the end of the lesson, the learner should be able to: 1. State the problems involving relative speed	• Plotting graphs • Drawing graphs	• Graph papers • Stones • Pieces of paper • Moving vehicles/bicycles	• Discovering secondary mathematics Students' Book 2 Pages 190-194 • Teachers' Book 2 Pages 40-41 • Secondary mathematics KLB book 2 pages 238 • KLB teachers' guide book 2 page 75 • Golden tips mathematics pages 82	
REVISION AND EXAMINATIONS								

MATHEMATICS FORM 4 SCHEMES OF WORK – TERM 1								
WEEK	LESSON	TOPIC	SUB - TOPIC	OBJECTIVES	LEARNING/TEACHING ACTIVITIES	LEARNING/ TEACHING RESOURCES	REFERENCES	REMARKS
1	1	MATRIX AND TRANSFORMATION	Translation	By the end of the lesson, the learner should be able to: 1. Define translation and describe an image and an object of a given	• Reflecting objects in a mirror • Rotating objects • Translating objects • Enlarging objects • Drawing images	• Square boards • Graph papers • Rubber band • Models • Calculators • Peg	• Discovering secondary mathematics Students' Book 4 Pages 1-3 • Teachers' Book 4 Pages 1-3 • Longman Explore mathematics students book 4 page 129 • Secondary	

				translation	and objects on the Cartesian plane • Multiplying, adding, subtracting, and dividing numbers • Discussions • Solving problems		mathematics KLB book 4 pages 1 • Golden tips mathematics pages 227	
	2	MATRIX AND TRANSFORMATION	Rotations	By the end of the lesson, the learner should be able to: 1. Define rotation and describe an image and an object under a given rotation	• Reflecting objects in a mirror • Rotating objects • Translating objects • Enlarging objects • Drawing images and objects on the Cartesian plane • Multiplying, adding, subtracting, and dividing numbers • Discussions • Solving problems	• Square boards • Graph papers • Rubber band • Models • Calculators • Peg	• Discovering secondary mathematics Students' Book 4 Pages 1-2 • Teachers' Book 4 Pages 1-3,23 • Longman Explore mathematics students book 4 page 130 • Secondary mathematics KLB book 4 pages 3 • Golden tips mathematics pages 228	
	3	MATRIX AND TRANSFORMATION	Reflections	By the end of the lesson, the learner should be able to: 1. Define reflection 2. Describe the image and the object under a given reflection	• Reflecting objects in a mirror • Rotating objects • Translating objects • Enlarging objects • Drawing images and objects on	• Square boards • Graph papers • Rubber band • Models • Calculators • Peg	• Discovering secondary mathematics Students' Book 4 Pages 2 • Teachers' Book 4 Pages 1-3,23 • Longman Explore mathematics students book 4 page 135 • Secondary mathematics KLB book	

					the Cartesian plane • Multiplying, adding, subtracting, and dividing numbers • Discussions • Solving problems		4 pages 2 • Golden tips mathematics pages 230-234	
	4-5	MATRIX AND TRANSFORMATION	Enlargement	By the end of the lesson, the learner should be able to: 1. Define reflection 2. Describe the image and the object under a given reflection	• Reflecting objects in a mirror • Rotating objects • Translating objects • Enlarging objects • Drawing images and objects on the Cartesian plane • Multiplying, adding, subtracting, and dividing numbers • Discussions • Solving problems	• Square boards • Graph papers • Rubber band • Models • Calculators • Peg	• Discovering secondary mathematics Students' Book 4 Pages 3-4 • Teachers' Book 4 Pages 1-3,23 • Longman Explore mathematics students book 4 page 139 • Secondary mathematics KLB book 4 pages 3 • Golden tips mathematics pages 230-235	
	6-7	MATRIX AND TRANSFORMATION	Exercise	By the end of the lesson, the learner should be able to: 1. Answer questions on reflection, rotation and enlargement	• Reflecting objects in a mirror • Rotating objects • Translating objects • Enlarging objects • Drawing images and objects on the Cartesian	• Square boards • Graph papers • Rubber band • Models • Calculators • Peg	• Discovering secondary mathematics Students' Book 4 Pages 3-4 • Teachers' Book 4 Pages 1-3,23 • Longman Explore mathematics students book 4 page 139 • Secondary mathematics KLB book 4 pages 8	

					plane • Multiplying, adding, subtracting, and dividing numbers • Discussions • Solving problems		• Golden tips mathematics pages 241-243	
1	**1-2**	Quadratic expression and equations	Factorizing quadratic expression	By the end of the lesson, the learner should be able to 1. identify and factorize quadratic expression	• Substituting values • Draining graphs • Writing algebraic expressions • Factorizing numbers • Dividing numbers • Discussions • Doing exercises	• Square boards • Graph papers • Factors of production • Algebraic expression • calculators	• Discovering secondary mathematics book 3 pages 1-2 • Explore Mathematics book 3 page 66 • KLB secondary mathematics book 3 page 1 • Golden tips mathematics KCSE Revision Page 21	
	3-4	Quadratic expression and equation	Perfect squares	By the end of the lesson, the leaner should be able to (i) Identify and simplify perfect square	• Substituting values • Drawing graphs • Writing algebraic expressions • Factorizing number • Dividing number • Discussions • Solving problems	• Square boards • Graph papers • Factor of numbers • Algebraic expressions • calculators	• Discovering secondary mathematics book 3 pages 2-3 • Explore Mathematics book 3 page 66 • KLB secondary mathematics book 3 page 1 • Golden tips mathematics KCSE Revision Page 21	

	5-6	Quadratic expression and equation	Completion of squares	By the end of the lesson, the learner should be able (1. To complete the square of a quadratic equation	• Discussions • Competing squares • Solving problems • Substituting values	• Calculators • Graph paper • Square boards • Charts showing algebraic expression	• Discovering secondary mathematics book 3 pages 3-4 • Explore Mathematics book 3 page 66-69 • KLB secondary mathematics book 3 page 1-4 • Golden tips mathematics KCSE Revision Page 23	
7 REVISION								
2	**1-2**	Quadratic Expression and Equation	Solution on quadratic equations by completing the square	By the end of the lesson, the learner should be able to 1. Solve quadratic equations by completing the square	• Discussions • Illustrations • Explanations • Factorizing numbers • Completing squares • Doing exercises	• Square boards • Graph papers • Factors of number on a chart • Algebraic expression • calculator	• Discovering secondary mathematics book 3 pages 3-4 • Explore Mathematics book 3 page 66-69 • KLB secondary mathematics book 3 page 1-4 Golden tips mathematics KCSE Revision Page 23	
	3	Quadratic Expressions and Equation	Solution of quadratic by completin	By the end of the lesson, the learner should be able to 1. Solve quadratic equations by	• Drawing graphs • Writing algebraic expression • Factorizing	• Square board • Graph papers • Factor of numbers • Chart	• Discovering secondary mathematics book 3 pages 4-6	

			g the square	completing the square	number • Dividing numbers • Discussions • Solving problems	showing algebraic expression • Calculators	• Explore Mathematics book 3 page 70 • KLB secondary mathematics book 3 page 5-7 • Golden tips mathematics KCSE Revision Page 31-32	
	4-5	Quadratic expression and equation	Derivation of the quadratic formulae x=- $\frac{-b\pm\sqrt{b^2-}}{2a}$	By the end of the lesson, the learner should be able to 1. derive the quadratic formulae x=-$\frac{-b\pm\sqrt{b^2-4ac}}{2a}$ and use it to solve quadratic equations	• Discussions • Derivation • Illustrations • Solving problems • Writing algebraic equation • Drawing graphs • Factorizing numbers	• Square boards • Graph papers • Factors of numbers • Chart showing algebraic expression • calculators	• Discovering secondary mathematics book 3 pages 6-7 • Explore Mathematics book 3 page 70-71 • KLB secondary mathematics book 3 page 7-8 • Golden tips mathematics KCSE Revision Page 31	
	6-7	Quadratic Expression and equation	Forming quadratic equations	By the end of the lesson, the learner should be able to 1. Form quadratic equations and solve them	• Substituting values • Writing algebraic expression • Factorizing numbers • Dividing numbers • Discussions • Solving problems	• Square boards • Graph papers • Factors of production • Charts showing algebraic expression • calculators	• Discovering secondary mathematics book 3 pages 7-8 • Explore Mathematics book 3 page 77 • KLB secondary mathematics book 3 page 9-10 • Golden tips mathematics KCSE Revision	

							Page 26	
3	**1-2**	Quadratic expression and equation	Solving simultaneous quadratic equations	By the end of the lesson, the learner should be able to 1. Solve the simultaneous quadratic equations	• Illustrations • Doing exercise • Substituting values • Discussions • Factorizing numbers • Solving simultaneous quadratic equations	• Factors of numbers • Square boards • Calculators • Chart showing algebraic expression	• Discovering secondary mathematics book 3 pages 8-9 • Explore Mathematics book 3 page 78 • KLB secondary mathematics book 3 page 12 • Golden tips mathematics KCSE Revision Page 26-27	
	3-4	Quadratic expressions and equation	Solution of quadratic equations by completing the square	By the end of the lesson, the learner should be able to 1. Solve quadratic equations by completing the square	• Drawing graphs • Writing algebraic expression • Factors	• Square board • Graph papers • Factorizing numbers	• Discovering secondary mathematics book 3 pages 9-11 • Explore Mathematics book 3 page 70 • KLB secondary mathematics book 3 page 12-13 • Golden tips mathematics KCSE Revision Page 31	
	5-6	Quadratic expression and equations	Graphs of quadratic equations	By the end of the lesson, the learner should be able to 1. Make tables of values for quadratic relations and draw	• Substituting values • Drawing graphs • Writing algebraic expressions	• Square boards • Graph papers • Factors of numbers • Charts	• Discovering secondary mathematics book 3 pages 9-11 • Explore	

				the graph for the equation	• Factorizing numbers • Dividing numbers • Discussions solving problems	• calculators	Mathematics book 3 page 70 • KLB secondary mathematics book 3 page 12-13 • Golden tips mathematics KCSE Revision Page 31	
	7	Quadratic Expression and equations	Graphical solutions of quadratic equations	By the end of the lesson, the learner should be able to 1. Solve quadratic equations graphically	• Substituting values • Drawing graphs • Writing algebraic expressions • Factorizing numbers • Dividing numbers • discussions	• calculators • square boards • graph papers • Algebraic expressions	• Discovering secondary mathematics book 3 pages 9-14 • Explore Mathematics book 3 page 74 • KLB secondary mathematics book 3 page 15-17 • Golden tips mathematics KCSE Revision Page 31-32	
4	**1-2**	Quadratic expressions and equations	Graphical solutions of quadratic equations	By the end of the lesson, the learner should be able to 1. Solve simultaneous equations (one linear and quadratic)	• Substituting values • Drawing Graphs • Writing algebraic expressions • Factorizing numbers • Dividing numbers	• Square boards • Graph papers • Factors of numbers • Calculators • charts	• Discovering secondary mathematics book 3 pages 15-17 • Explore Mathematics book 3 page 74-83 • KLB secondary	

					• Discussions • Solving problems		mathematics book 3 page 19-21 • Golden tips mathematics KCSE Revision Page 31	
	3-4	Approximations and errors	Significant figures and truncation of numbers	By the end of the lesson, the learner should be able to 1. Express a number to a given number of significant figures and truncate number	• Measuring length and mass • Approximating numbers • Writing numbers • Solving problems	• Scientific calculators • Mathematical tables • Place value charts • Measuring instruments • Real- life experiments	• Discovering secondary mathematics book 3 pages 18-19 • Explore Mathematics book 3 page 14-15 • KLB secondary mathematics book 3 page 24 • Golden tips mathematics KCSE Revision Page 244	
	5	Approximations and Errors	Rough estimates and the calculator	By the end of the lesson, the learner should be able to 1. Make rough estimations of numbers and use of calculators	• Measuring length/mass • Approximating numbers • Writing numbers • Discussions • Doing exercises	• Calculators • Mathematical tables • Place-value charts • Measuring instruments • Real-life experience	• Discovering secondary mathematics book 3 pages 15-17 • Explore Mathematics book 3 page 16-21 • KLB secondary mathematics book 3 page 25-	

							30 • Golden tips mathematics KCSE Revision Page 244	
	6-7	Approximation and Errors	Errors	By the end of the lesson, the learner should be able to 1. Define errors, truncation errors, errors in measurements, absolute errors, relative errors and percentage errors	• Measuring length/mass • Approximating errors • Writing numbers • Truncating • Solving problems	• Calculators • Mathematical table • Place value charts • Measuring instruments • Real –life experience	• Discovering secondary mathematics book 3 pages 21-24 • Explore Mathematics book 3 page 22-24 • KLB secondary mathematics book 3 page 31-35 • Golden tips mathematics KCSE Revision Page 244	
5	**1**	Approximation and Errors	Propagation of errors	By the end of the lesson, the learner should be able to 1. Determine the possible errors made from additional and subtraction	• Measuring length/mass • Approximating errors • Writing numbers • Solving problems	• Calculators • Mathematical tables • Place value charts • Measuring instruments • Real-life experience	• Discovering secondary mathematics book 3 pages 24-25 • Explore Mathematics book 3 page 26 • KLB secondary mathematics book 3 page 35-	

							36 • Golden tips mathematics KCSE Revision Page 244	
	2-3	Approximations and errors	Propagation of errors	By the end of the lesson, the learner should be able to 1. Determine the possible error made from (i) multiplication (ii) division	• Measuring length/mass • Approximating numbers • Writing numbers • Solving problems	• Calculators • Mathematical tables • Place-value charts • Measuring instruments • Real-life experience	• Discovering secondary mathematics book 3 pages 25-28 • Explore Mathematics book 3 page 27 • KLB secondary mathematics book 3 page 36-38 • Golden tips mathematics KCSE Revision Page 244	
	4-5	**T**rigonometry	The unit - circle	By the end of the lesson, the learner should be able to 1. Define and draw the unit circle and use it to find the trigonometric ratios in terms of coordinates of point for $0^0<0<360^0$	• Drawing circle • Plotting the coordinates • Reading the coordinates of points • Measuring lengths/ angles	• The unit • Calculator • Graph paper • Square board • Mathematical tables	• Discovering secondary mathematics book 3 pages 29-30 • Explore Mathematics book 3 page 50-55 • KLB secondary mathematics book 3 page 41-	

							44 • Golden tips mathematics KCSE Revision Page 132	
	6-7	Trigonometry	Trigonometric rations in the unit circle	By the end of the lesson, the learner should be able to 1. Use the unit circle to find trigonometric ratios of angles	• Drawing circles • Plotting the coordinates of points • Reading the coordinates of points • Measuring lengths/angles	• The unit circle • Calculator • Graph papers • Square boards • Mathematical tables	• Discovering secondary mathematics book 3 pages 30-31 • Explore Mathematics book 3 page 55 • KLB secondary mathematics book 3 page 41-44 • Golden tips mathematics KCSE Revision Page 132	
6	**1-2**	Trigonometry	Ratios of angles grater than 90^0	By the end of the lesson, the learner should be able to 1. Find the trigonometric ratios of angles greater than 90^0	• Drawing circle • Potting the coordinates of points • Reading the coordinates of points • Measuring length/angles	• Calculator • The unit circle • Graph papers • Square boards • Mathematical tables	• Discovering secondary mathematics book 3 pages 31-32 • Explore Mathematics book 3 page 55-57 • KLB secondary mathematics	

							book 3 page 44-47 • Golden tips mathematics KCSE Revision Page 136-138	
	3	Trigonometry	Ratios of negative angles	By the end of the lesson, the learner should be able to 1. Find the trigonometric ratios of negative angles	• Drawing circles • Plotting points • Reading the coordinates of points • Measuring length/angles	• The unit circle • Calculator • Graph papers • Square board • Mathematical table	• Discovering secondary mathematics book 3 pages 31-32 • Explore Mathematics book 3 page 56 • KLB secondary mathematics book 3 page 48-49 • Golden tips mathematics KCSE Revision Page 134	
	3-4	Trigonometry	Using trigonometric tables and calculator	By the end of the lesson, the learner should be able to 1. Use mathematical tables and calculators to find the trigonometric ratios of angles in the range of $0^0<0<360$	• Drawing circles • Plotting the coordinates of points • Recording the coordinates of points • Measuring length/angles	• Unit circle • Calculator • Graph paper • Square boards • Mathematical tables	• Discovering secondary mathematics book 3 pages 34-35 • Explore Mathematics book 3 page 56 • KLB secondary mathematics	

							book 3 page 51-55 • Golden tips mathematics KCSE Revision Page 136	
	5-6	Trigonometry	Finding the angle given the ratio	By the end of the lesson, the learner should be able to 1. Find the size of an angle given the trigonometric ratio for the angle	• Drawing circles • Plotting the coordinates of points • Measuring lengths/angles	• The unit circle • Calculator • Graph paper • Square board • Mathematical tables	• Discovering secondary mathematics book 3 pages 35-36 • Explore Mathematics book 3 page 56 • KLB secondary mathematics book 3 page 51-55	
	7	Trigonometry	The ratio of angles greater than 360^0	By the end of the lesson, the learner should be able to 1. Find the trigonometric ratio of angle $>360^0$ from mathematical tables and calculator	• Plotting the co-ordinates of points • Drawing circles • Reading the coordinates of points • Measuring length angles	• The unit circle • Calculator • Graph paper • Square board • Mathematical tables	• Discovering secondary mathematics book 3 pages 36-37 • Explore Mathematics book 3 page 57 • KLB secondary mathematics book 3 page 49-50	

7	**1-2**	Trigonometry	The radian measure	By the end of the lesson, the learner should be able to 1. Define the radian measure and covert radians to degrees and vice versa	• Drawing circles • Plotting the coordinates • Reading the coordinates of points • Measuring length/angles	• The unit circle • Calculator • Charts • Graph papers • Square boards • Mathematical tables and boards	• Discovering secondary mathematics book 3 pages 37-38 • Explore Mathematics book 3 page 59 • KLB secondary mathematics book 3 page 58-61 • Golden tips mathematics KCSE Revision Page 150-151	
	3-4	Trigonometry	Application of radians in calculations	By the end of the lesson, the learner should be able to 1. Radian in calculation	• Drawing circles • Plotting the coordinates of points • Reading the coordinates of points • Measuring length/angle	• Mathematical tables • Graph papers • Square boards • Calculators and boards	• Discovering secondary mathematics book 3 pages 39 • Explore Mathematics book 3 page 59 • KLB secondary mathematics book 3 page 58-61 • Golden tips mathematics KCSE Revision Page 134	
	5-6	Trigonometry	Trigonometric graphs	By the end of the lesson, the learner should be able 1. Draw the graph of	• Drawing graphs • Discussions • Illustrations	• Arid boards • Calculators • Square	• Discovering secondary	

				y=sinx, y=cos x and y= tanx	• Potting coordinates of points • Reading coordinates of points	boards • Mathematical tables • Graph paper • The unit circle	mathematics book 3 pages 39-41 • Explore Mathematics book 3 page 61 • KLB secondary mathematics book 3 page 62-65 • Golden tips mathematics KCSE Revision Page 151	
	7	Trigonometry	Trigonometric graphs	By the end of the lesson, the learner should e able to (i) Draw the graph of y=sin x, y=cos x and y=tan x	• Drawing graphs • Discussions • Reading coordinates of points • Plotting the coordinates of points • Illustrations • Doing exercises	• Arid boards • Graph papers • Calculators • Mathematical tables • Square boards	• Discovering secondary mathematics book 3 pages 39-41 • Explore Mathematics book 3 page 62-65 • KLB secondary mathematics book 3 page 61 • Golden tips mathematics KCSE Revision Page 151	
8	**1-2**	Trigonometry	The sine rule	By the end of the lesson, the learner should be able to 1. Derive the sin	• Drawing triangle • Measuring angles/length	• Triangles • Calculator • Graph papers • Mathematical	• Discovering secondary mathematics	

				rule 2. Use sine rule to solve problems involving the sides and angles of triangles	• Derivations • Solving problems	tables	book 3 pages 42-43 • Explore Mathematics book 3 page 61 • KLB secondary mathematics book 3 page 65-70 • Golden tips mathematics KCSE Revision Page 138	
	3-4	Trigonometry	The sine rule	By the end of the lesson, the learner should be able to 1. Solve problems involving sides and angles of triangles	• Drawing triangles • Measuring angles/lengths • Solving problems • Discussions • illustrations	• triangular figures • square boards • mathematical tables • graph papers • calculators	• Discovering secondary mathematics book 3 pages 42-43 • Explore Mathematics book 3 page 61 • KLB secondary mathematics book 3 page 65-70 • Golden tips mathematics KCSE Revision Page 138	
	5-6	Trigonometry	The cosine rule	By the end of the lesson, the learner should be able to 1. Derive cosine	• Drawing triangles • Solving problems	• Triangular item/objects • Mathematical tables	• Discovering secondary mathematics book 3 pages	

				rule 2. Use cosine rule to solve problems involving the sides and angles of a triangle	• Illustrations • Derivations • Discussions • Measuring angles/length	• Triangles • Graph papers • calculators	44-45 • Explore Mathematics book 3 page 61 • KLB secondary mathematics book 3 page 71-75 • Golden tips mathematics KCSE Revision Page 139-140	
	7	Surds	Rational , irrational numbers and simplifying surds	By the end of the lesson, the learner should be able to 1. Define rational and irrational numbers and simplifying surds	• Simplifying numbers • Definitions • Creating the square roots of numbers • Squaring numbers • discussions	• square of numbers • mathematical tables • multiplication tables • calculator • square roots of numbers	• Discovering secondary mathematics book 3 pages 46 • Explore Mathematics book 3 page 41-44 • KLB secondary mathematics book 3 page 78-79 • Golden tips mathematics KCSE Revision Page 46	
9	**1-2**	Surds	Like and unlike surds	By the end of the lesson, the learner should be able to 1. Define the order of surds and identify	• Definitions • Illustrations • Simplifying numbers • Grating square	• Chart showing squares of numbers • Mathematical	• Discovering secondary mathematics book 3 pages	

				like and unlike surds	roots of numbers • Squaring numbers	tables • Multiplication tables • Calculators • Factors of numbers	47-48 • Explore Mathematics book 3 page 44 • KLB secondary mathematics book 3 page 79-80 • Golden tips mathematics KCSE Revision Page 46-47	
	3	Surds	Multiplication involving surds and division	By the end of the lesson, the learner should be able to 1. Carry out multiplication involving surds	• Multiplying numbers • Squaring numbers • Discussions • Illustrations • Doing exercises	• Mathematical tables • Multiplication tables • Calculators • Charts showing factors of numbers	• Discovering secondary mathematics book 3 pages 48-49 • Explore Mathematics book 3 page 44-45 • KLB secondary mathematics book 3 page 80-82 • Golden tips mathematics KCSE Revision Page 48	
	4-5	Surds	Rationalizing denominators	By the end of the lesson, the learner should be able to 1. Rationalize	• Simplifying numbers • Rationalizing numbers	• Mathematical table • Multiplication table	• Discovering secondary mathematics book 3 pages	

				denominators in surds	• Squaring numbers • Illustrations • Doing exercises	• Charts showing factors of numbers • calculators	49-50 • Explore Mathematics book 3 page 46-48 • KLB secondary mathematics book 3 page 85-87 • Golden tips mathematics KCSE Revision Page 48	
	6-7	Logarithms	The logarithmic notation	By the end of the lesson, the learner should be able to 1. Derive the logarithmic relation from index form and vice versa	• Computing using the calculator • Reading mathematical table • Writing numbers in standard form • Writing numbers in index form • discussions	• chart showing laws of logarithms • mathematical table • calculators	• Discovering secondary mathematics book 3 pages 51 • Explore Mathematics book 3 page 86 • KLB secondary mathematics book 3 page 89-90 • Golden tips mathematics KCSE Revision Page 52	
10	**1**	Logarithms	The law of logarithm	By the end of the lesson, the learner should be able to 1. State the laws of logarithms and use	• Stating • Illustrations • Discussions • Doing exercises	• Chart showing laws of logarithms • Mathematical tables	• Discovering secondary mathematics book 3 pages 51 • Explore	

				them to solve problems involving logarithims	• Writing numbers in Standard form	• calculators	Mathematics book 3 page 46-48 • KLB secondary mathematics book 3 page 90-93 • Golden tips mathematics KCSE Revision Page 52-54	
	2-3	Logarithms	Simplifying logarithmic expressions	By the end of the lesson, the learner should be able to 1. simplify logarithmic expressions using the laws of logarithms	• Simplifying logarithmic expression • Discussions • Illustrations • Doing exercise • Reading mathematical tables • Computing using the calculator	• Mathematical tables • Calculators • Chart showing laws of logarithms	• Discovering secondary mathematics book 3 pages 52-53 • Explore Mathematics book 3 page 93-94 • KLB secondary mathematics book 3 page 90-93 • Golden tips mathematics KCSE Revision Page 54-56	
	4-5	Logarithms	Solving logarithmic equations	By the end of the lesson, the leaner should be able to 1. Solve logarithmic equations	• Computing using calculator • Recording mathematical table	• Mathematical tables • Calculators • Chart showing logarithmic	• Discovering secondary mathematics book 3 pages	

					• Solving logarithmic equations • Writing numbers in index form0	laws • indices	53-54 • Explore Mathematics book 3 page 88-90 • KLB secondary mathematics book 3 page 95-96 • Golden tips mathematics KCSE Revision Page 54-56	
11-13 REVISION, END OF TERM EXAMS MARKING AND CLOSING OF SCHOOL								
MATHEMATICS FORM THREE SCHEMES OF WORK TERM TWO								
1	**1-2**	Commercial Arithmetic	Simple interest	By the end of the lesson, t he learner should be able to 1. Define principle rate and interest and calculate simple interest	• Calculating interest • Multiplying dividing, subtracting and adding numbers • Discussions • Demonstrations • Providing theories • Reading newspapers	• Income tax schedules/bands • Calculators • Mathematical tables • Multiplication tables • Advertisement in local dailies • Higher purchase terms	• Discovering secondary mathematics book 3 pages 55-56 • Explore Mathematics book 3 page 213 • KLB secondary mathematics book 3 page 98-100 • Golden tips mathematics KCSE Revision Page 89	

	3	Commercial Arithmetic	Compound interest	By the end of the lesson, the learner should be able to 1. Calculate compound interest using step by step method	• Calculating interest • Multiplying dividing numbers • Deriving formulae • Providing theories • Discussions • Demonstrations • Doing exercises • Reading newspapers	• Income tax schedule/bands • Calculators • Mathematical tables • Multiplication tables • Advertisement on local dailies	• Discovering secondary mathematics book 3 pages 57 • Explore Mathematics book 3 page 215 • KLB secondary mathematics book 3 page 102-106	
	4-5	Commercial Arithmetic	Deriving the compound interest formulae	By the end of the lesson, the learner should be able to 1. Derive the compound interest formula and use it to solve problems involving compound interest	• Deriving formulae • Providing theories • Doing exercises • Reading newspaper • Multiplying • Calculating interests • Discussions • demonstrations	• income tax schedule • calculators • mathematical tables • newspaper • chart showing hire purchase terms	• Discovering secondary mathematics book 3 pages 57-59 • Explore Mathematics book 3 page 217 • KLB secondary mathematics book 3 page 104-106 • Golden tips mathematics KCSE Revision Page 89-90	
	6-	Commercial	Ha17	By the end of the lesson,	• Calculating	• Income tax	• Discovering	

	7	Arithmetic	yearly and quarterly interest	the learner should be able to 1. Apply the compound interest formulae to calculate interest half yearly and quarterly	interest • Multiplying, dividing • Discussions • Deriving formulae • Demonstrations • Doing exercises	schedule • Calculators • Charts showing hire purchase terms • Newspapers • Mathematical tables	secondary mathematics book 3 pages 59-60 • Explore Mathematics book 3 page 217 • KLB secondary mathematics book 3 page 104-106	
	1-2	Commercial Arithmetic	Appreciation and depreciation	By the end of the lesson, the learner should be able to 1. Define appreciation and depreciation and work our problems involving them0	• Discussions • Illustrations • Calculating appreciation and depreciation • Deriving formulae • Definitions • multiplying	• mathematical table • calculators • multiplication tables • newspapers • chart showing hire purchase terms • income tax schedule	• Discovering secondary mathematics book 3 pages 60-61 • Explore Mathematics book 3 page 218-219 • KLB secondary mathematics book 3 page 108-110 • Golden tips mathematics KCSE Revision Page 90-91	
	3-4	Commercial arithmetic	Hire purchase	By the end of the lesson, the learner should be able to 1. Calculate hire purchase	• Calculating hire purchase • Discussions • Demonstrations • Illustrations	• Income tax schedule • Newspapers • Calculators • Chart showing hire	• Discovering secondary mathematics book 3 pages 61-62 • Explore Mathematics	

					• Solving problems involving hire purchase • Doing exercises • Reading newspapers	purchase terms • Mathematical tables • Multiplication tables	book 3 page 223 • KLB secondary mathematics book 3 page 110-112 • Golden tips mathematics KCSE Revision Page 91	
	5-6	Commercial arithmetic	Income tax	By the end of the lesson, the learner should be able to 1. Calculate the income tax given the tax bonds	• Calculating interest • Discussion • Calculating income tax • Doing exercise • Reading relevant newspaper cuttings • Illustrations • Lecture from resource persons	• Income tax schedule • Mathematical table • Multiplication table • Newspapers • calculators	• Discovering secondary mathematics book 3 pages 62-64 • Explore Mathematics book 3 page 125 • KLB secondary mathematics book 3 page 112-116 • Golden tips mathematics KCSE Revision Page 91-94	
	7	Commercial Arithmetic	Income tax	By the end of the lesson, the learner should be able to 1. Calculate the income tax given the tax bonds	• Calculating interest • Discussions • Calculating income tax • Doing exercises • Illustrations • Reading	• Income tax schedule • Mathematical table • Multiplication table • Newspapers • calculator	• Discovering secondary mathematics book 3 pages 62-64 • Explore Mathematics book 3 page	

					relevant newspaper cuttings • Solving problems involving income tax		225 • KLB secondary mathematics book 3 page 112-116 • Golden tips mathematics KCSE Revision Page 91-94	
3	**1-2**	Circles chords and triangles	Properties of chord	By the end of the lesson, t he learner should be able to 1. State the properties of chords	• Drawing circles • Drawing chords • Drawing tangents/radii/ diameter • Measuring length/ angels • discussions	• chart illustrating the properties of chord • protractor • calculator • ruler • pair of compass	• Discovering secondary mathematics book 3 pages 65 • Explore Mathematics book 3 page 101 • KLB secondary mathematics book 3 page 124 • Golden tips mathematics KCSE Revision Page 162	
	3-4	Circles chords and tangents	The lengths of arcs	By the end of the lesson, the learner should be able to 1. Calculate the length of an arc and a chord	• Drawing circles • Drawing chords/tangent s/diameters • Measuring lengths/angles • Doing exercises • discussions	• pulleys and wheels • charts illustrating the properties of the chords • calculators • protractor • ruler • pair of	• Discovering secondary mathematics book 3 pages 66-67 • Explore Mathematics book 3 page 101 • KLB secondary	

						compass	mathematics book 3 page 124 • Golden tips mathematics KCSE Revision Page 162	
	5	Circles and tangents	Equal chords	By the end of the lesson, the learner should be able to 1. Identify equal chords	• Drawing chords/circles/tangents • Discussions • Doing exercises • Illustrations • Measuring length/angles	• Charts illustrating properties of chords • Calculators • Protractors • Ruler • Pair of compass • Pulleys and wheels	• Discovering secondary mathematics book 3 pages 67 • Explore Mathematics book 3 page 103 • KLB secondary mathematics book 3 page 131-132 • Golden tips mathematics KCSE Revision Page 165	
	6-7	Circles chords and tangents	Equal chords	By the end of the lesson, the learner should be able to 1. Identify equal chords	• Drawing chords/circles/tangents • Discussions • Doing exercises • Illustrations • Measuring length/angles	• Charts illustrating properties of chords • Calculators • Protractors • Ruler • Pair of compass • Pulleys and wheels	• Discovering secondary mathematics book 3 pages 67-67 • Explore Mathematics book 3 page 104 • KLB secondary mathematics	

							book 3 page 132-135 • Golden tips mathematics KCSE Revision Page 165-166	
4	**1-2**	Circles chords and tangents	Constructing tangents to a circle	By the end of the lesson, the learner should be able to 1. Construct a tangent to a circle	• Drawing circles/chords/radii • Measuring angles • Measuring lengths • Discussions • Demonstrations • Doing exercises	• Ruler • Protractor • A pair of compasses • Calculator • Charts illustrating properties of chords	• Discovering secondary mathematics book 3 pages 70-72 • Explore Mathematics book 3 page 140-143 • KLB secondary mathematics book 3 page 139-142 • Golden tips mathematics KCSE Revision Page 113	
	3-4	Circles chords and tangents	Angles in alternate segments	By the end of the lesson, the learner should be able to 1. Relate angles in alternate segments	• Drawing circles/tangents/diameters • Discussions • Measuring lengths angles • Demonstrations • Doing exercises	• Ruler • Protractor • A pair of compasses • Calculator • Charts illustrating alternate segments	• Discovering secondary mathematics book 3 pages 73-74 • Explore Mathematics book 3 page 142-144 • KLB secondary mathematics book 3 page	

							142-144 • Golden tips mathematics KCSE Revision Page 114	
	5-6	Circles Chords and tangents	Common tangents	By the end of the lesson, the learner should be able to 1. Construct direct and transverse common tangents to two circles	• Drawing tangents/chords/radii • Measuring angels/lengths • Discussions • Demonstrations • Doing exercises	• Protractor • Ruler • Pulleys and wheels • Calculator • Chart illustrating common tangents	• Discovering secondary mathematics book 3 pages 73-74 • Explore Mathematics book 3 page 142-144 • KLB secondary mathematics book 3 page 142-144 • Golden tips mathematics KCSE Revision Page 114	
	7	Circles chords and tangents	Common tangents	By the end of the lesson, the learner should be able to 1. Construct direct transverse common tangents to two circles	• Drawing tangents chords/radii/diameters • Measuring lengths/angles • Demonstrations • Discussions • Doing exercises	• Ruler • Protractor • Calculator • Charts illustrating common tangents	• Discovering secondary mathematics book 3 pages 75-77 • Explore Mathematics book 3 page 151 • KLB secondary mathematics book 3 page 148-154 • Golden tips	

							mathematics KCSE Revision Page 114	
5	**1**	Circles chords and tangents	Inscribed circles	By the end of the lesson, the learner should be able to 1. Construct inscribed circles	• Drawing circles • Inscribing circles • Measuring lengths • Discussions • Illustration • Doing exercises	• Ruler • A pair of compass • Calculator • Chart illustrating inscribed circle • protractor	• Discovering secondary mathematics book 3 pages 73-74 • Explore Mathematics book 3 page 208 • KLB secondary mathematics book 3 page 142-144 • Golden tips mathematics KCSE Revision Page 120	
	2-3	Circles chords and tangents	Circumcircle and Enscribed circles	By the end of the lesson, the learner should be able to construct 1. Circmcircles 2. Enscribed circles	• Constructing circumcircles • Constructing enscribed circles • Discussions • Demonstrations • Measuring length/angles • Doing exercises	• Ruler • Pair of compasses • Calculator • Chart illustrating circumcircles and enscribed circles • protractor	• Discovering secondary mathematics book 3 pages 73-74 • Explore Mathematics book 3 page 208 • KLB secondary mathematics book 3 page 142-144 • Golden tips mathematics	

							KCSE Revision Page 121	
	4	Circles, chords and tangents	The centric of a triangle and orthocenter of it	By the end of the lesson, the learner should be able to 1. Locate the centroid of triangle and orthocenter of a circle	• Drawing circles, triangles/radii • Measuring length, angles • Discussions • Demonstrations • Doing exercises • Locating centroid of a triangle	• Ruler • Protractor • Calculator • Chart illustrating centroid of a triangle • Triangular shape	• Discovering secondary mathematics book 3 pages 73-74 • Explore Mathematics book 3 page 208 • KLB secondary mathematics book 3 page 142-144 • Golden tips mathematics KCSE Revision Page 121	
	5-6	Matrices	Definition order and notation of matrices	By the end of the lesson, the learner should be able to 1. Define a matrix given the order of matrix and use the matrix notation	• Identifying matrices • Definitions • Forming rows and columns • Forming matrices • Solving problems • Discussions • Doing exercises		• Discovering secondary mathematics book 3 pages 83-85 • Explore Mathematics book 3 page 180 • KLB secondary mathematics book 3 page 168-170 • Golden tips mathematics KCSE Revision	

							Page 219	
	7	Matrices	Adding and subtracting matrices	By the end of the lesson, the learner should be able to 1. Add and subtract matrices	• Forming matrices • Adding and subtracting matrices • Solving problems • Discussions • illustrations	• mathematical table • multiplication table • calculator • counters	• Discovering secondary mathematics book 3 pages 83-85 • Explore Mathematics book 3 page 180 • KLB secondary mathematics book 3 page 168-170 • Golden tips mathematics KCSE Revision Page 219	
6	**1-2**	Matrices	Multiplying a matrix by a scalar	By the end of the lesson, the learner should be able to 1. Multiply a matrix by a scalar	• Identifying matrices • Forming matrices • Multiplying matrices by scalar • Solving problems • Discussions • illustrations	• mathematical table • multiplication table • calculator • counter	• Discovering secondary mathematics book 3 pages 80-81 • Explore Mathematics book 3 page 180 • KLB secondary mathematics book 3 page 170-171 • Golden tips mathematics KCSE Revision	

							Page 219	
	3-4	Matrices	Multiplying a matrix by a matrix	By the end of the lesson, the learner should be able to 1. Determine compatibility in multiplication of matrices	• Identifying matrices • Forming matrices • Multiplying • Discussions • Solving problems • Doing exercises	• Mathematical table • Multiplication table • Calculator • counters	• Discovering secondary mathematics book 3 pages 83-84 • Explore Mathematics book 3 page 97-98 • KLB secondary mathematics book 3 page 174-179 • Golden tips mathematics KCSE Revision Page 220	
	5	Matrices	Types of matrices	By the end of the lesson, the learner should be able to 1. Identify null and equal matrices	• Identifying matrices • Forming matrices • Doing exercises • Solving problems • Forming rows and columns	• Counters • Calculator • Mathematical table • Multiplication table	• Discovering secondary mathematics book 3 pages 85-86 • Explore Mathematics book 3 page 182-183 • KLB secondary mathematics book 3 page 174-179 • Golden tips mathematics KCSE Revision	

							Page 221	
	6-7	Matrices	The determinant and inverse of a 2x2 matrix	By the end of the lesson, the learner should be able to 1. Determine the determinant and inverse of a matrix	• Calculating determinant • Forming matrix • Discussion • Solving problems • Multiplying • Doing exercises	• Charts • Mathematical tables • Multiplication table • Counters • calculators	• Discovering secondary mathematics book 3 pages 87-88 • Explore Mathematics book 3 page 182 • KLB secondary mathematics book 3 page 174-179 • Golden tips mathematics KCSE Revision Page 222	
7	**1-2**	Matrices	Solving simultaneous equations using matrices	By the end of the lesson, the learner should be able to 1. Solve simultaneous equations using matrices	• Identifying matrices • Solving problems • Doing exercises • Discussions • Multiplying , dividing	• Charts • Calculators • Counters • Multiplication tables • Mathematical tables	• Discovering secondary mathematics book 3 pages 88-89 • Explore Mathematics book 3 page 185 • KLB secondary mathematics book 3 page 188-190 • Golden tips mathematics	

							KCSE Revision Page 223	
	3-4	Matrices	Solving simultaneous equations using matrices	By the end of the lesson, the learner should be able to 1. Solve simultaneous equations using matrices	• Identifying matrices • Solving problems • Doing exercises • Discussions • Multiplying dividing, adding and subtracting	• Charts • Calculator • Multiplications tables • Mathematical tables	• Discovering secondary mathematics book 3 pages 88-89 • Explore Mathematics book 3 page 185 • KLB secondary mathematics book 3 page 188-190 • Golden tips mathematics KCSE Revision Page 223	
	5-6	Formulae and variations	Formulae and change of subject	By the end of the lesson, the learner should be able to 1. Rewrite a given formulae by changing the subject	• Reading formulae • Writing formulae • Adding, subtracting, multiplying, dividing. • Discussions • Solving problems	• Square boards • Algebraic • Quadratic equations • Calculators • Real-life experience • Linear equations	• Discovering secondary mathematics book 3 pages 92-93 • Explore Mathematics book 3 page 35-37 • KLB secondary mathematics book 3 page 191-193	

	7	Formulae and variations	Direct variations	By the end of the lesson, the learner should be able to 1. Define direct variation form and solve equations involving direct variation	• Definition • Discussions • Illustrations • Solving problems • Doing exercises	• Real-life experience • Calculators • Square boards • Linear equations • Graph papers	• Discovering secondary mathematics book 3 pages 88-89 • Explore Mathematics book 3 page 185 • KLB secondary mathematics book 3 page 188-190 • Golden tips mathematics KCSE Revision Page 223	
8	**1-2**	Formulae and variations	Inverse variations	By the end of the lesson, the learner should be able to 1. Define inverse variations form and solve equations involving indirect variations	• Reading formulae • Writing formulae • Adding, dividing subtracting and multiplying • Discussions • Solving problems	• Square boards • Real-life experience • Graph papers • Linear equations • Charts • calculators	• Discovering secondary mathematics book 3 pages 96-98 • Explore Mathematics book 3 page 119 • KLB secondary mathematics book 3 page 197-200 • Golden tips mathematics KCSE Revision	

							Page 251	
	4-5	Formulae and variations	Joint variations	By the end of the lesson, the learner should be able to 1. Define joint variations form and solve equations involving joint variations	• Reading formulae • Discussions • Doing exercises • Solving problems • Multiplying dividing • Subtracting and adding numbers	• Calculator • Linear equations • Square board • Charts • Graph papers • Quadratic equations	• Discovering secondary mathematics book 3 pages 98-99 • Explore Mathematics book 3 page 121 • KLB secondary mathematics book 3 page 204-205 • Golden tips mathematics KCSE Revision Page 251	
	6-7	Formulae and variations	Partial variations	By the end of the lesson, the learner should be able to 1. Define partial variations form and solve equations involving partial variations	• Definitions • Solving problems • Doing exercises • Discussions • Writing formulae • Reading formulae	• Charts • Calculators • Real-life experience • Linear equations • Quadratic equation • Algebraic expressions	• Discovering secondary mathematics book 3 pages 99-100 • Explore Mathematics book 3 page 123 • KLB secondary mathematics book 3 page 201-203 • Golden tips mathematics	

							KCSE Revision Page 252	
9	**1-2**	Sequence and series0	Number patterns	By the end of the lesson, the learner should be able to 1. Identify number patterns and determine the missing numbers in a pattern	• Adding, subtracting, multiplying and diving • Arranging numbers to form pattern • Drawing patterns • Discussions • demonstration	• even numbers • rectangle numbers • calculators • square numbers • triangular numbers	• Discovering secondary mathematics book 3 pages 102-103 • Explore Mathematics book 3 page 189-190 • KLB secondary mathematics book 3 page 207-209 • Golden tips mathematics KCSE Revision Page 255	
	3-4	Sequence and series	sequence	By the end of the lesson, the learner should be able to 1. Define a sequence and determine the missing term in a sequence	• Arranging numbers to form pattern • Discussions • Demonstrations • Drawing patterns • Arranging items to form patterns • Adding and subtracting numbers	• Rectangle numbers • Chart showing even, odd, prime and whole numbers • Calculators • Square numbers • Triangular numbers	• Discovering secondary mathematics book 3 pages 103-104 • Explore Mathematics book 3 page 192 • KLB secondary mathematics book 3 page 207-209 • Golden tips	

							mathematics KCSE Revision Page 255	
	5	Sequence and series	Determining a term in a sequence	By the end of the lesson the learner should be able to 1. Define and determine a term in a sequence			• Discovering secondary mathematics book 3 pages 104 • Explore Mathematics book 3 page 192 • KLB secondary mathematics book 3 page 207-209 • Golden tips mathematics KCSE Revision Page 255	
	6-7	Sequence and series	Arithmetic sequence	By the end of the lesson, the learner should be able to 1. Identify an arithmetic sequence and solve problems involving arithmetic sequence	• Adding and subtracting numbers • Arranging items to form patterns • Drawing patterns • Discussions • Solving problems • demonstrations	• square numbers • triangular numbers • rectangle numbers • chart showing even, odd, prime and whole numbers	• Discovering secondary mathematics book 3 pages 104-105 • Explore Mathematics book 3 page 194 • KLB secondary mathematics book 3 page	

							209-210 • Golden tips mathematics KCSE Revision Page 255-256	
10	**1-2**	Sequence and series	Geometric sequence	By the end of the lesson, the learner should be able to 1. Identify a geometric sequence and solve problems involving geometric sequences	• Multiplying and dividing numbers • Arranging items to form patterns • Discussions • Solving problems • Demonstration • Doing exercises	• Square numbers • Triangular numbers • Chart showing, odd, even prime and whole • Rectangle numbers	• Discovering secondary mathematics book 3 pages 106-107 • Explore Mathematics book 3 page 195 • KLB secondary mathematics book 3 page 211-213 • Golden tips mathematics KCSE Revision Page 257-258	
	3-4	Sequence and series	Arithmetic progress	By the end of the lesson, the learner should be able to 1. Recognize an arithmetic progression and solve problems involving AD's	• Adding, subtracting, multiplying and dividing numbers • Arranging items to form patterns • discussions	• rectangle numbers • triangular numbers • chart showing even, odd, prime and whole numbers • square numbers	• Discovering secondary mathematics book 3 pages 107-110 • Explore Mathematics book 3 page 197-199 • KLB secondary mathematics	

							book 3 page 214-215 • Golden tips mathematics KCSE Revision Page 256	
	6-7	Sequence and series	Geometric Progression (G.P)	By the end of the lesson, the learner should be able to 1. Recognize a geometric progression and solve problems involving GP's	• Adding and subtracting, multiplying and dividing numbers • Arranging items to form pattern • Drawing patterns • Discussions • demonstrations	• rectangle numbers • chart showing even, odd, prime and whole numbers • calculators • square numbers • triangular numbers	• Discovering secondary mathematics book 3 pages 110-112 • Explore Mathematics book 3 page 202-204 • KLB secondary mathematics book 3 page 216-218 • Golden tips mathematics KCSE Revision Page 257-258	
11-13		1-7	REVISION/END –TERM EXAMS , MARKING AND CLOSING OF SCHOOL					
FORM THREE MATHEMATICS SCHEME OF WORK TERM THREE								
1	**1-2**	Vectors	Coordinates in two and three dimension	By the end of the lesson, the learner should be able to 1. Locate a point in	• Plotting points on the artesian plane • Reading points	• Charts illustrating coordinates in 2D and 3D	• Discovering secondary mathematics	

			s	two dimension coordinate system 2. Locate a point in three coordinate system	on the Cartesian plane • Adding, subtracting, multiplying and dividing vectors	• Graph paper • Square board • Model of cuboid • Calculator • Multiplying tables • Mathematical tables	book 3 students book pages 113 Teachers book 3 pages 24-27,74 • KLB secondary mathematics book 3 page 216-218 • Golden tips mathematics KCSE Revision Page 257-258 • Mathematics for secondary schools form 3 (N.M patel) pages 198-199	
	3-4	Vectors	Column vectors in 2D and 3D	By the end of the lesson, the learner should be able to 1. Locate a vector as a column and position vectors in 3D 2. Represent a vector as a column and position vectors in 3D	• Plotting points on the Cartesian plane • Reading points on the Cartesian plane • Adding, subtracting, multiplying and dividing vectors • Solving problems • Discussions	• Charts illustrating • Coordinates in 2D and 3D • Graph papers • Square boards • Model of a cuboid • Calculator • Multiplying tables • Mathematical tables	• Discovering secondary mathematics book 3 students book pages 114 Teachers book 3 pages 24-27 • KLB secondary mathematics book 3 page 221-223 • Golden tips mathematics KCSE Revision Page 203-204 • Mathematics for secondary schools form 3	

							(N.M patel) pages 198-199	
	5-6	vectors	Operations on vectors	By the end of the lesson, the learner should be able to 1. Carry out additions, subtraction, multiplication and division on vectors	• Plotting points on the Cartesian plane • Reading points on the Cartesian plane • Adding, subtracting, multiplying and dividing vectors • Solving problems • discussions	• charts illustrating coordinates in 2D and 3D • graph papers • square boards • model of cuboid • calculator • multiplication tables • mathematical tables	• Discovering secondary mathematics book 3 students book pages 114-115 Teachers book 3 pages 24-27,74 • KLB secondary mathematics book 3 page 223-228 • Golden tips mathematics KCSE Revision Page 204-212 • Mathematics for secondary schools form 3 (N.M patel) pages 194-200	
	7	vectors	Unit vectors in 2D	By the end of the lesson, the leaner should be able to 1. Represent unit vectors in 2D	• Plotting points on the Cartesian plane • Reading points on the Cartesian plane • Adding, subtracting, multiplying and dividing vectors	• charts illustrating coordiantes in 2D and 3D • graph papers • square board • model of a cuboid • calculator • multiplication tables	• Discovering secondary mathematics book 3 students book pages 115-116 Teachers book 3 pages 24-27,75 • KLB secondary mathematics	

					• Solving problems • discussions		book 3 page 221-224 • Golden tips mathematics KCSE Revision Page 208-209 • Mathematics for secondary schools form 3 (N.M patel) pages 198-199	
2	**1**	Vectors	Unit vectors in 2D	By the end of the lesson, the learner should be able to 1. Represent unit vectors in 2D	• Plotting on the Cartesian plane • Reading points on the Cartesian plane • Adding, subtracting, multiplying and dividing vectors • Solving problems	• Chart illustrating coordinates in 2D and 3D • Graph papers • Square boards • Model of cuboid • Calculator • Multiplication tables • Mathematical tables	• Discovering secondary mathematics book 3 students book pages 115-116 Teachers book 3 pages 24-27,75 • KLB secondary mathematics book 3 page 221-224 • Golden tips mathematics KCSE Revision Page 208-209 • Mathematics for secondary schools form 3 (N.M patel) pages 198-199	
	2-							

	3	vectors	Units vectors in 3D	By the end of the lesson, the learner should be able to 1. Represent unit vectors in 3D	• Plotting points on the Cartesian plane • Reading points on the Cartesian plane • Adding, subtracting, multiplying and dividing vectors • Solving problems • discussions	• charts illustrating coordinates in 2D and 3D • graph papers • calculator	• Discovering secondary mathematics book 3 students book pages 118-119 Teachers book 3 pages 24-27,75-76 • KLB secondary mathematics book 3 page 226-228 • Golden tips mathematics KCSE Revision Page 210-211 • Mathematics for secondary schools form 3 (N.M patel) pages 206	
	4-5	Vectors	The magnitude of a vectors	By the end of the lesson, the learner should be able to 1. determine the magnitude of a vectors	• Plotting on the Cartesian plane • Reading points on the Cartesian plane • Adding, subtracting, multiplying and dividing vectors • Solving problems • discussions	• charts illustrating cordinates in 2D and 3D • graph papers • square boards • model of cuboid • calculator • multiplication tables • mathematical tables	• Discovering secondary mathematics book 3 students book pages 118-119 Teachers book 3 pages 24-27,75-76 • KLB secondary mathematics book 3 page 229-	

							230 • Golden tips mathematics KCSE Revision Page 210 • Mathematics for secondary schools form 3 (N.M patel) pages 201-203	
	6-7	Vectors	Parallel vectors	By the end of the lesson, the learner should be able to 1. Identify parallel vectors 2. Solve problems involving parallel vectors	• Plotting points on the Cartesian plane • Reading points on the Cartesian plane • Adding, subtracting, multiplying and dividing vectors • Solving problems • discussions	• charts illustrating coordinates in 2D and 3D • Graph papers • Square board • Calculators • Model of cuboid • Multiplication tables • Mathematical tables	• Discovering secondary mathematics book 3 students book pages 118-119 Teachers book 3 pages 24-27,75-76 • KLB secondary mathematics book 3 page 229-230 • Golden tips mathematics KCSE Revision Page 210 • Mathematics for secondary schools form 3 (N.M patel) pages 201-203	
3	**1-**	Vectors	Collinearl	By the end of the lesson,	• Plotting points	• charts	• Discovering	

	2		y in vectors	the learner should be able to 1. Use the vector method to show co linearity of points	on the Cartesian plane • Reading points on the Cartesian plane • Adding, subtracting, multiplying and dividing vectors • Solving problems • discussions	illustrating coordinates in 2D and 3D • graph papers • square board • model of cuboid • calculator • multiplication table, mathematical tables	secondary mathematics book 3 students book pages 120-121 Teachers book 3 pages 24-27,75-76 • KLB secondary mathematics book 3 page 231-237 • Golden tips mathematics KCSE Revision Page 267 • Mathematics for secondary schools form 3 (N.M patel) pages 204-205	
	3-4	vector	Mid-point of vector	By the end of the lesson, the learner should be able to 1. Determine the mid-point of a vector	• Plotting points on the Cartesian plane • Reading points on the Cartesian plane • Adding, subtracting, multiplying and dividing vectors • Solving problem • discussions	• charts illustrating coordinates in 2D and 3D • Graph papers • Square boards • Model of a cuboid • Calculator • Multiplication tables • Mathematical tables	• Discovering secondary mathematics book 3 students book pages 121-122 Teachers book 3 pages 24-27,76 • KLB secondary mathematics book 3 page 221-250 • Golden tips mathematics	

							KCSE Revision Page 208 • Mathematics for secondary schools form 3 (N.M patel) pages 204-205	
	5	vectors	Proportional division of a line	By the end of the lesson, the learner should be able to 1. Use the vector method to divide a line proportionally	• Plotting points on the Cartesian plane • Reading points on the Cartesian plane • Adding, subtracting, multiplying and dividing vectors • Solving problem • discussions	• charts illustrating coordinates in 2D and 3D • Graph papers • Square boards • Model of a cuboid • Calculator • Multiplication tables • Mathematical tables	• Discovering secondary mathematics book 3 students book pages 122-123 Teachers book 3 pages 24-27,76 • KLB secondary mathematics book 3 page 239-248 • Golden tips mathematics KCSE Revision Page 212 • Mathematics for secondary schools form 3 (N.M patel) pages 205-206	
	6	vectors	The ratio theorem	By the end of the lesson, the learner should be able to 1. State the ratio theorem	• Plotting points on the Cartesian plane • Reading points on the	• charts illustrating coordinates in 2D and 3D • Graph papers	• Discovering secondary mathematics book 3 students book pages 24-	

				2. Use the ration theorem in vectors	Cartesian plane • Adding, subtracting, multiplying and dividing vectors • Solving problem • discussions	• Square boards • Model of a cuboid • Calculator • Multiplication tables • Mathematical tables	27,76 • KLB secondary mathematics book 3 page 239-248 • Golden tips mathematics KCSE Revision Page 212 • Mathematics for secondary schools form 3 (N.M patel) pages 205-206	
	7	Vectors	Application of vectors in geometry	By the of the lesson, the learner should be able to 1. Apply vector methods in geometry	• Plotting points on the Cartesian plane • Reading points on the Cartesian plane • Adding, subtracting, multiplying and dividing vectors • Solving problem • discussions	• charts illustrating coordinates in 2D and 3D • Graph papers • Square boards • Model of a cuboid • Calculator • Multiplication tables • Mathematical tables	• Discovering secondary mathematics book 3 students book 3 pages 125-127 • Teacher's book 3 pages 24-27,76-78 • KLB secondary mathematics book 3 page 248-250 • Golden tips mathematics KCSE Revision Page 213-218	
4	**3**	Binominal expansions	Expanding and simplifyin	By the end of the lesson, the learner should be able to	• Plotting points on the Cartesian plane	• Pascal's triangle • mathematical	• Discovering secondary	

			g binominal expansion	1. Expand binominal expansions up to the power of form by multiplication	• Reading points on the Cartesian plane • Adding, subtracting, multiplying and dividing vectors • Solving problem • discussions	tales • multiplication tables • calculators	mathematics book 3 students book 3 pages 128 Teacher's book 3 pages 27-28,78 • KLB secondary mathematics book 3 page 256-258 • Golden tips mathematics KCSE Revision Page 261-262	
	4-5	Binominal expansions	Binominal expansion and the Pascal's triangle	By the end of the lesson, the learner should be able to 1. Build up Pascal's triangle up to the 11^{th} row 2. Use Pascal's triangle to expand binominal expressions	• Writing factors of numbers • Multiplying and dividing factors of numbers • Expanding binominal expansions • Discussions • Solving problems	• Pascal's triangle • Mathematical tables • Multiplication tablets • calculators	• Discovering secondary mathematics book 3 students book 3 pages 129-130 Teacher's book 3 pages 27-28,78 • KLB secondary mathematics book 3 page 256-259 • Golden tips mathematics KCSE Revision Page 262-264	
	6-7	Binominal expansions	Binominal expansion and the	By the end of the lesson, the leaner should be able to	• Writing factors of numbers • Multiplying and	• Pascal's triangle • Mathematical	• Discovering secondary mathematics	

			Pascal's triangle	1. Build up Pascal's triangle up to the 11^{th} row 2. Use Pascal's triangle to expand binominal expressions	dividing factors of numbers • Expanding binominal expansions • Discussions • Solving problems	tables • Calculators • Multiplication tables	book 3 students book 3 pages 129-130 Teacher's book 3 pages 27-28,78 • KLB secondary mathematics book 3 page 256-259 • Golden tips mathematics KCSE Revision Page 262-264	
5	**1-2**	Probability	The meaning of probability	By the end of the lesson, the learner should be able to 1. Define probability	• Playing probability • Picking from a bag • Tossing coins • Guessing • Discussions • Solving problems	• Probability games e.g cards • Calculator • Coins • Cards • Dies • Multiplication tables • Mathematical tables	• Discovering secondary mathematics book 3 students book 3 pages 129-130 Teacher's book 3 pages 27-28,78 • KLB secondary mathematics book 3 page 262 • Mathematics for secondary schools (N.M. patel) form 3 pages 219 • Golden tips mathematics KCSE Revision Page 262-265	

	3-4	Probability	Experimental probability	By the end of the lesson, the learner should be able to 1. Determine probability from experiment 2. Determine probability from real-life situations	• Playing probability • Picking from a bag • Tossing coins • Guessing • Discussions • Solving problems	• Probability games e.g card • Calculators • Coins • Dies • Multiplication tables • Mathematical tables	• Discovering secondary mathematics book 3 students book 3 pages 131-133 Teacher's book 3 pages 29-31,80 • KLB secondary mathematics book 3 page 262-265 • Mathematics for secondary schools (N.M. patel) form 3 pages 222-223	
	5-6	Probability	Theoretical probability	By the end of the lesson, the learner should be able to 1. Determine theoretical probability	• Playing probability • Picking from a bag • Tossing coins • Guessing • Discussions • Solving problems	• Probability games e.g card • Calculators • Coins • Dies • Multiplication tables • Mathematical tables	• Discovering secondary mathematics book 3 students book 3 pages 133-134 Teacher's book 3 pages 29-31,80 • KLB secondary mathematics book 3 page 266-272 • Mathematics for secondary schools (N.M. patel) form 3 pages 224-225 • Golden tips	

							mathematics pages 266-268	
	7	Probability	Probability space	By the end of the lesson, the learner should be able to 1. Construct a probability space	• Playing probability • Picking from a bag • Tossing coins • Guessing • Discussions • Solving problems	• Probability games e.g cards • Calculation • Coins • Dies • Multiplication tables • Mathematical tables	• Discovering secondary mathematics book 3 students book 3 pages 134-137 Teacher's book 3 pages 29-31,81 • KLB secondary mathematics book 3 page 266 • Mathematics for secondary schools (N.M. patel) form 3 pages 224 • Golden tips mathematics pages 267	
6	**1-2**	Probability	Probability space	By the end of the lesson, the learner should be able to 1. Construct a probability space	• Playing probability games • Picking from a bag • Tossing coins • Guessing • Discussions • Solving problems	• Probability games e.g cards • Calculators • Cons • Dies • Multiplication tables • Mathematical cables	• Discovering secondary mathematics book 3 students book 3 pages 134-137 Teacher's book 3 pages 29-31,81 • KLB secondary mathematics book 3 page 266 • Mathematics for	

							secondary schools (N.M. patel) form 3 pages 224 • Golden tips mathematics pages 267	
	3-4	Probability	Continuous probability	By the end of the lesson, the learner should be able to 1. Differentiate discrete and continuous probabilities	• Playing probability games • Picking from a bag • Tossing coins • Guessing • Discussions • Solving problems	• Probability games e.g cards • Calculators • Coins • Cards • Dies • Multiplication tables • Mathematical tables	• Discovering secondary mathematics book 3 students book 3 pages 135 Teacher's book 3 pages 29-31,80 • KLB secondary mathematics book 3 page 262-289 • Mathematics for secondary schools (N.M. patel) form 3 pages 225 • Golden tips mathematics pages 268	
	5	Probability	Continuous probability	By the end of the lesson, the learner should be able to 1. Differentiate discrete and continuous	• Playing probability games • Picking from a back • Tossing coins	• Probability games e.g cards • Calculators • Coins cards • Dies	• Discovering secondary mathematics book 3 students book 3 pages	

				probabilities	• Guessing • Discussions • Solving problems	• Multiplication tables • Mathematical tables	135 Teacher's book 3 pages 29-31,80 • KLB secondary mathematics book 3 page 262-289 • Mathematics for secondary schools (N.M. patel) form 3 pages 225 • Golden tips mathematics pages 268	
	6-7	Probability	Mutually exclusive events	By the end of the lesson, the learner should be able to 1. Identify mutually exclusive events 2. Solve problems involving mutually exclusive events	• Playing probability games • Picking from a back • Tossing coins • Guessing • Discussions • Solving problems	• Probability games e.g cards • Calculator • Coins • Dies • Multiplication tables • Mathematical tables	• Discovering secondary mathematics book 3 students book 3 pages 137-138 Teacher's book 3 pages 29-31,81 • KLB secondary mathematics book 3 page 272-274 • Mathematics for secondary schools (N.M. patel) form 3 pages 227-228 • Golden tips mathematics pages 268 •	

7	**1**	Probability	Mutually exclusive events	By the end of the lesson, the learner should be able to 1. Identify exclusive events 2. Solve problems involving mutually exclusive	• Playing probability games e.g cards • Picking from a bag • Tossing coins • Guessing • Discussions • Solving problems	• Playing probability games e.g cards • Calculators • Coins • Cards • Dies • Multiplication tables • Mathematical tables	• Discovering secondary mathematics book 3 students book 3 pages 137-138 Teacher's book 3 pages 29-31,81 • KLB secondary mathematics book 3 page 272-274 • Mathematics for secondary schools (N.M. patel) form 3 pages 227-228 • Golden tips mathematics pages 268	
	2-3	Probability	Independent events	By the end of the lesson, the learner should be able to 1. Identify independent events 2. Solve problems involving independent events	• Playing probability game e.g cards • Picking from a bag • Tossing coins • Guessing • Discussions • Solving problems	• Playing probability games e.g cards • Calculators • Coins • Cards • Dies • Multiplication tables • Mathematical tables	• Discovering secondary mathematics book 3 students book 3 pages 139-140 Teacher's book 3 pages 29-31,81 • KLB secondary mathematics book 3 page 274-282 • Mathematics for secondary schools (N.M. patel) form 3	

							pages 228-229 • Golden tips mathematics pages 268-269	
	4	Probability	Independent events	By the end of the lesson, the learner should be able to 1. Identify independent events 2. Solving problems involving independent events	• Playing probability games • Picking from a bag • Tossing coins • Discussion • Solving problems	• Probability games e.g cards • Calculator • Coins • Cards • Multiplication tables • Mathematical tables	• Discovering secondary mathematics book 3 students book 3 pages 139-140 Teacher's book 3 pages 29-31,81 • KLB secondary mathematics book 3 page 274-282 • Mathematics for secondary schools (N.M. patel) form 3 pages 228-229 • Golden tips mathematics pages 268-269	
	5-6	probability	Tree diagrams	By the end of the lesson, the learner should be able to 1. Use tree diagrams to determine probabilities of events	• Playing probability games e.g cards • Picking from a bag • Tossing coins • Discussions • Solving problems	• Probability games e.g cards • Calculators • Coins • Cards • Multiplication tables • Mathematical tables	• Discovering secondary mathematics book 3 students book 3 pages 140-142 Teacher's book 3 pages 29-31,82-84 • KLB secondary	

							mathematics book 3 page 282-287 • Mathematics for secondary schools (N.M. patel) form 3 pages 232-238 • Golden tips mathematics pages 269-272	
	7	Probability	Tree diagrams	By the end of the lesson, the learner should be able to 1. Use tree diagrams to determine probabilities of events	• Playing probability games • Picking from a bag • Tossing coins • Guessing • Discussions • Problem solving	• Playing games e.g cards • Calculators • Coins • Cards • Dies • Multiplication tables • Mathematical tables	• Discovering secondary mathematics book 3 students book 3 pages 140-142 Teacher's book 3 pages 29-31,82-84 • KLB secondary mathematics book 3 page 282-287 • Mathematics for secondary schools (N.M. patel) form 3 pages 232-238 • Golden tips mathematics pages 269-272	

8	**1-2**	Probability	Tree diagram	By the end of the lesson, the learner should be able to 1. Determine probability of events	• Playing probability games • Picking from a bag • Tossing • Guessing • Discussions • Problem solving	• Playing games e.g cards • Calculators • Coins • Cards • Dies • Multiplication tables • Mathematical tables	• Discovering secondary mathematics book 3 students book 3 pages 140-142 Teacher's book 3 pages 29-31,82-84 • KLB secondary mathematics book 3 page 282-287 • Mathematics for secondary schools (N.M. patel) form 3 pages 232-238 • Golden tips mathematics pages 269-272	
	3-4	Compound Proportion and rate of work	Direct and inverse proportion	By the end of the lesson, the learner should be able to 1. Solve problems involving direct proportions 2. Solving problems involving inverse proportion	• Sharing equally • Sharing according to a given ration • Multiplying and dividing numbers • Discussions • Solving problems	• Calculator • Mathematical tables • Multiplication tables	• Discovering secondary mathematics book 3 students book 3 pages 140-142 Teacher's book 3 pages 29-31,82-84 • KLB secondary mathematics book 3 page 282-287 • Mathematics for secondary	

							schools (N.M. patel) form 3 pages 232-238 • Golden tips mathematics pages 269-272	
	5	Compound proportion and rate of work	Direct and inverse proportions	By the end of the lesson, the learner should be able to 1. Solve problems involving direct proportions 2. Solve problems involving inverse proportions	• Sharing equally • Sharing according to a given ratio • Multiplying and dividing numbers • Discussions • Solving problems	• Calculators • Mathematical tables • Multiplication tables	• Discovering secondary mathematics book 3 students book 3 pages 140-142 Teacher's book 3 pages 29-31,82-84 • KLB secondary mathematics book 3 page 282-287 • Mathematics for secondary schools (N.M. patel) form 3 pages 232-238 • Golden tips mathematics pages 38-40	
	6-7	Compound proportion and rate of work	Compound proportions	By the end of the lesson, the learner should be able to 1. Solve problems involving compound proportions	• Sharing equally • Sharing according to a given ratio • Multiplying and dividing number	• Calculator • Mathematical tables • Multiplication tables	• Discovering secondary mathematics book 3 students book 3 pages 140-142 Teacher's book 3	

					• Discussions • Solving problems		pages 32-33,84 • KLB secondary mathematics book 3 page 288-294 • Mathematics for secondary schools (N.M. patel) form 3 pages 246-248 • Golden tips mathematics pages 39-40	
9	**1**	Compound proportion and rate of work	Compound proportions	By the end of the lesson, the learner should be able to 1. Solve problems involving compound proportions	• Sharing equally • Sharing according to a given ratio • Multiplying and dividing numbers • Discussions • Problems solving	• Calculators • Mathematical tables • Multiplication tables	• Discovering secondary mathematics book 3 students book 3 pages 145-146 Teacher's book 3 pages 32-33,84 • KLB secondary mathematics book 3 page 288-294 • Mathematics for secondary schools (N.M. patel) form 3 pages 246-248 • Golden tips mathematics pages 39-40	

	2-3	Compound proportion and rate of work	Rate of work	By the end of the lesson, the learner should be able to 1. Solve problems involving rate of work	• Sharing equally • Sharing according to a given ratio • Multiplying and dividing numbers • Discussions • Solving problems	• Calculator • Mathematical tables • Multiplication tables	• Discovering secondary mathematics book 3 students book 3 pages 146-147 Teacher's book 3 pages 32-33,84 • KLB secondary mathematics book 3 page 294-298 • Mathematics for secondary schools (N.M. patel) form 3 pages 243-245 • Golden tips mathematics pages 39-40	
9	**4**	Compound proportion and rate of work	Rate of work	By the end of the lesson, the learner should be able to 1. Solve problems involving the rate of work	• Sharing equally • Sharing according to a given ratio	• Calculators • Mathematical tables • Multiplication tables	• Discovering secondary mathematics book 3 students book 3 pages 146-147 Teacher's book 3 pages 32-33,84 • KLB secondary mathematics book 3 page 294-298 • Mathematics for secondary schools (N.M.	

							patel) form 3 pages 243-245 • Golden tips mathematics pages 39-40	
	5-6	Compound proportion and rate of work	Proportion in mixtures	By the end of the lesson, the learner should be able to 1. Solve problems involving proportion in mixtures	• Sharing equally • Sharing according to a given ratio • Multiplying and dividing numbers • Discussions solving problems	• Calculators • Mathematical tables • Multiplication tables	• Discovering secondary mathematics book 3 students book 3 pages 148-149 Teacher's book 3 pages 32-33,85 • KLB secondary mathematics book 3 page 294-298 • Mathematics for secondary schools (N.M. patel) form 3 pages 249-250 • Golden tips mathematics pages 40	
	7	Compound proportion and rate of work	Proportions in mixtures	By the end of the lesson, the learner should be able to 1. Solve problems involving proportions in mixtures	• Sharing equally • Sharing according to a given ratio • Multiplying and dividing numbers • Discussions • Solving	• Calculators • Mathematical tables • Multiplication tables	• Discovering secondary mathematics book 3 students book 3 pages 148-149 Teacher's book 3 pages 32-33,85 • KLB secondary	

					problems		mathematics book 3 page 294-298 • Mathematics for secondary schools (N.M. patel) form 3 pages 249-250 • Golden tips mathematics pages 40	
10	**1-2**	Graphical methods	Graphs of cubic functions	By the end of the lesson, the learner should be able to 1. Make tables of values from given cubic functions 2. Equations using graphs	• Making tables values • Drawing graphs • Reading values from graphs • discussions	• Calculator • Graph papers • Square boards	• Discovering secondary mathematics book 3 students book 3 pages 150-152 Teacher's book 3 pages 33-35,85 • KLB secondary mathematics book 3 page 299-304 • Mathematics for secondary schools (N.M. patel) form 3 pages 251-258 • Golden tips mathematics pages 273-276	
	3-4	Graphical methods	Graph of cubic	By the end of the lesson, the learner should be able	• Making table values	• Calculators • Graph papers	• Discovering secondary	

			functions	to 1. Make tables of values from given cubic functions 2. Find solutions of cubic equations using graphs	• Drawing graphs • Solving problems using graphs	• Square boards	• mathematics book 3 students book 3 pages 153-155 Teacher's book 3 pages 33-35,90 • KLB secondary mathematics book 3 page 299-304 • Mathematics for secondary schools (N.M. patel) form 3 pages 251-258 • Golden tips mathematics pages 273-276	
	5-6	Graphical methods	Rate of change	By the end of the lesson, the learner should be able to 1. Determine the average rate of change of a function over a given internal 2. Determine the average rate of change of a function over a point	• Making table of values • Drawing graphs • Reading values from graphs • Solving problems using graphs • discussions	• calculator • graph papers • square boards	• Discovering secondary mathematics book 3 students book 3 pages 153-155 Teacher's book 3 pages 33-35,90 • KLB secondary mathematics book 3 page 304-315 • Mathematics for secondary schools (N.M. patel) form 3 pages 258-263	
	7	Graphical	Rate of	By the end of the lesson,	• Making tables	• calculators	• Discovering	

		methods	change	the learner should be able to 1. Determine the average rate of a function over a given point 2. Determine the average rate of change of a function over an internal	of values • Drawing graphs • Reading values from graphs • Solving problems using graphs • discussions	• mathematical table • multiplication tables • graph papers • square boards	secondary mathematics book 3 students book 3 pages 153-155 Teacher's book 3 pages 33-35,90 • KLB secondary mathematics book 3 page 304-315 • Mathematics for secondary schools (N.M. patel) form 3 pages 258-263	
11	**1**	Graphical methods	Rate of change	By the end of the lesson, the learner should be able to 1. Determine the average rate of change rate of change of a function over a given internal 2. Determine the average rate of change of a function over a given point	• Making tables of values • Drawing graphs • Reading values from graphs • Solving problems • discussions	• calculators • mathematical tables • multiplication on tables • graph papers • square boards	• Discovering secondary mathematics book 3 students book 3 pages 153-155 Teacher's book 3 pages 33-35,90 • KLB secondary mathematics book 3 page 304-305 • Mathematics for secondary schools (N.M. patel) form 3 pages 258-263	

	2-3	Graphical methods	The equation of a circle	By the end of the lesson, the learner should be able to 1. Identify the equation of a circle 2. Solve problems involving the equation of a circle	• Making tables of values • Drawing graphs • Reading values from graphs • Solving problems using graphs • discussions	• calculators • mathematical tables • multiplication tables • graph papers • square boards	• Discovering secondary mathematics book 3 students book 3 pages 155-156 Teacher's book 3 pages 33-35,94 • KLB secondary mathematics book 3 page 325-329 • Mathematics for secondary schools (N.M. patel) form 3 pages 272-279 • Golden tips mathematical pages 277-279	
	4-5	Graphical methods	The equation of a circle	By the end of the lesson, the learner should be able to 1. Identify the equation of a circle 2. Solve problems involving the equation of a circle	• Making tables of values • Drawing graphs • Reading values from graphs • Solving from graphs • Solving problems • Using graphs • discussions	• calculators • mathematical tables • multiplication tables • graph papers • square boards	• Discovering secondary mathematics book 3 students book 3 pages 155-156 Teacher's book 3 pages 33-35,94 • KLB secondary mathematics book 3 page 325-329	

							• Mathematics for secondary schools (N.M. patel) form 3 pages 272-279 • Golden tips mathematical pages 277-279	
	6-7	Graphical methods	Empirical graphs	By the end of the lesson, the learner should be able to 1. Draw graphs of empirical data 2. Interpret graphs of empirical data	• Making tables of values • Drawing graphs • Reading values from graphs • Solving problems using graphs • discussions	• calculators • mathematical tables • multiplication tables • graph papers • square boards	• Discovering secondary mathematics book 3 students book 3 pages 157-159 Teacher's book 3 pages 33-35,94-96 • KLB secondary mathematics book 3 page 315-324 • Mathematics for secondary schools (N.M. patel) form 3 pages 266-272 • Golden tips mathematical pages 277	
12	**1-2**	Graphical methods	Empirical graphs	By the end of the lesson, the learner should be able to 1. Draw graphs of	• Making of values • Drawing graphs • Solving	• calculators • mathematical tables • multiplication	• Discovering secondary mathematics book 3 students	

				2. empirical data Interpret graphs of empirical data	problems using graphs • discussions	tables • square boards	book 3 pages 157-159 Teacher's book 3 pages 33-35,94-96 • KLB secondary mathematics book 3 page 315-324 • Mathematics for secondary schools (N.M. patel) form 3 pages 266-272 • Golden tips mathematical pages 277	
	3-4	Graphical graphs	Changing how linear relationship to linear relationships	By the end of the lesson, the learner should be able to 1. Change non-linear relationships to linear relationships	• Making tables of values • Drawing graphs • Solving problems using graphs • discussions	• calculators • mathematical tables • multiplication • graph papers • square boards	• Discovering secondary mathematics book 3 students book 3 pages 159-163 Teacher's book 3 pages 33-35,94 • KLB secondary mathematics book 3 page 318-324 • Mathematics for secondary schools (N.M. patel) form 3 pages 267-272	

	5-6	Graphical methods	Changing non-linear relationship to linear relationships	By the end of the lesson, the learner should be able to 1. Change non-linear relationships to linear relationships	• Making tables of values • Drawing graphs • Reading values from graphs • Solving problems using graph • discussions	• calculators • graph papers • square boards	• Discovering secondary mathematics book 3 students book 3 pages 159-163 Teacher's book 3 pages 33-35,94 • KLB secondary mathematics book 3 page 318-324 • Mathematics for secondary schools (N.M. patel) form 3 pages 267-272	
	7	Graphical methods	Changing linear relationships to linear relationship	By the end of the lesson, the learner should be able to 1. Change non-linear relationships	• Making tables of values • Reading values from tables • Solving problems using graphs • discussions	• calculators • graphs papers • square boards	• Discovering secondary mathematics book 3 students book 3 pages 159-163 Teacher's book 3 pages 33-35,94 • KLB secondary mathematics book 3 page 318-324 • Mathematics for secondary schools (N.M. patel) form 3 pages 267-272	

END YEAR EXAMINATIONS								
MATHEMATICS FORM IV SCHEMES OF WORK TERM 1								
1	**1-2**	Matrix and transformation	translating	By the end of the lesson, the learner should be able to 1. Define translating and describe an image and an object under a given translation	• Reflecting object in a mirror • Rotating objects • Translating objects • Enlarging objects • Drawing images and objects in the Cartesian plane • Multiplying, adding, subtracting and dividing numbers • Discussions • Solving problems	• Square boards • Graph papers • Rubber band • Models • Calculators • Peg boards • strings	• Discovering secondary mathematics book 4 students book 4 pages 1-3 Teacher's book 4 pages 54-55 • Longman explore mathematics students book 4 pages 129 • KLB secondary mathematics book 4 page 1 • Golden tips mathematics pages 227	
	2	Matrices and transformation	rotations	By the end of the lesson, the learner should be able to 1. Define rotation and describe an image and an object under a given rotation	• Reflecting object in a mirror • Rotating objects • Translating objects • Enlarging objects • Drawing images and	• Square boards • Graph papers • Rubber band • Models • Calculators • Peg boards strings	• Discovering secondary mathematics book 4 students book 4 pages 1-2 Teacher's book 4 pages 1-3,23 • Longman explore mathematics students book 4	

					objects in the Cartesian plane • Multiplying, adding, subtracting and dividing numbers • Discussions Solving problems		pages 130 • KLB secondary mathematics book 4 page 3 • Golden tips mathematics pages 228	
	3	Matrices and transportation	Reflection	By the end of the lesson, the learner should be able to 1. Define reflections 2. Describe the image and the object under a given reflection	• Reflecting object in a mirror • Rotating objects • Translating objects • Enlarging objects • Drawing images and objects in the Cartesian plane • Multiplying, adding, subtracting and dividing numbers • Discussions • Solving problems	• Square boards • Graph papers • Rubber band • Models • Calculators • Peg boards strings	• Discovering secondary mathematics book 4 students book 4 pages 2 Teacher's book 4 pages 1-3,23 • Longman explore mathematics students book 4 pages 135 • KLB secondary mathematics book 4 page 2 • Golden tips mathematics pages 230-234	
	4-5	Matrices and transformation	Enlargement	By the end of the lesson, the learner should be able to 1. Define reflection 2. Describe an image and its objects under a given reflection	• Reflecting object in a mirror • Rotating objects • Translating objects • Enlarging objects • Drawing	• Square boards • Graph papers • Rubber band • Models • Calculators • Peg boards strings	• Discovering secondary mathematics book 4 students book 4 pages 3-4 Teacher's book 4 pages 1-3,25 • Longman explore mathematics	

					images and objects in the Cartesian plane • Multiplying, adding, subtracting and dividing numbers • Discussions • Solving problems		students book 4 pages 139 • KLB secondary mathematics book 4 page 3 • Golden tips mathematics pages 235	
	6-7	Matrices and transformation	Exercise	By the end of the lesson, the learner should be able to 1. Able to answer questions on reflection, rotation translation and enlargement	• Reflecting object in a mirror • Rotating objects • Translating objects • Enlarging objects • Drawing images and objects in the Cartesian plane • Multiplying, adding, subtracting and dividing numbers • Discussions Solving problems	• Square boards • Graph papers • Rubber band • Models • Calculators • Peg boards • strings	• Discovering secondary mathematics book 4 students book 4 pages 4-7 Teacher's book 4 pages 1-3,24 • Longman explore mathematics students book 4 pages 140 • KLB secondary mathematics book 4 page 28 • Golden tips mathematics pages 235	
2	**1-2**	Matrix and transformation	sheers	By the end of the lesson, the learner should be able to 1. Define sheers 2. Describe an image and an object under a given sheer	• Reflecting object in a mirror • Rotating objects • Translating objects • Enlarging objects	• Square boards • Graph papers • Rubber band • Models • Calculators • Peg boards strings	• Discovering secondary mathematics book 4 students book 4 pages 4-7 Teacher's book 4 pages 1-3,24 • Longman explore	

					• Drawing images and objects in the Cartesian plane • Multiplying, adding, subtracting and dividing numbers • Discussions • Solving problems		• mathematics students book 4 pages 140 • KLB secondary mathematics book 4 page 28 • Golden tips mathematics pages 236	
	3-4	Matrix and transformation	sheers	By the end of the lesson, the learner should be able to 1. Define sheer and describe an image and objects under a given sheer	• Reflecting object in a mirror • Rotating objects • Translating objects • Enlarging objects • Drawing images and objects in the Cartesian plane • Multiplying, adding, subtracting and dividing numbers • Discussions • Solving problems	• Square boards • Graph papers • Rubber band • Models • Calculators • Peg boards strings	• Discovering secondary mathematics book 4 students book 4 pages 4-7 Teacher's book 4 pages 1-3,24 • Longman explore mathematics students book 4 pages 140 • KLB secondary mathematics book 4 page 28 • Golden tips mathematics pages 236	
	5-6	Matrices and transformation	stretches	By the end of the lesson, the learner should be able to 1. Define stretch 2. Describe an image and an object under a given stretch	• Reflecting object in a mirror • Rotating objects • Translating objects • Enlarging	• Square boards • Graph papers • Rubber band • Models • Calculators • Peg boards strings	• Discovering secondary mathematics book 4 students book 4 pages 7-9 Teacher's book 4	

					• objects • Drawing images and objects in the Cartesian plane • Multiplying, adding, subtracting and dividing numbers • Discussions • Solving problems		• pages 1-3,24-25 • Longman explore mathematics students book 4 pages 141 • KLB secondary mathematics book 4 page 28 • Golden tips mathematics pages 237	
	7	Matrix and transformation	Stretches	By the end of the lesson, the learner should be able to 1. Define stretch and describe an image and an object under a given stretch	• Reflecting object in a mirror • Rotating objects • Translating objects • Enlarging objects • Drawing images and objects in the Cartesian plane • Multiplying, adding, subtracting and dividing numbers • Discussions Solving problems	• Square boards • Graph papers • Rubber band • Models • Calculators • Peg boards strings	• Discovering secondary mathematics book 4 students book 4 pages 7-9 Teacher's book 4 pages 1-3,24-25 • Longman explore mathematics students book 4 pages 141 • KLB secondary mathematics book 4 page 28 • Golden tips mathematics pages 237	
3	**1**	Matrix and transformation	Transformation matrix	By the end of the lesson, the learner should be able to 1. Define stretch and describe an image and an object under a given stretch	• Reflecting object in a mirror • Rotating objects • Translating objects	• Square boards • Graph papers • Rubber band • Models • Calculators • Peg boards	• Discovering secondary mathematics book 4 students book 4 pages 7-9 Teacher's book 4	

					• Enlarging objects • Drawing images and objects in the Cartesian plane • Multiplying, adding, subtracting and dividing numbers • Discussions Solving problems	strings	pages 1-3,24-25 • Longman explore mathematics students book 4 pages 141 • KLB secondary mathematics book 4 page 28 • Golden tips mathematics pages 237	
	2-3	Matrix and transformations	Transformation matrix	By the end of the lesson, the learner should be able to 1. Identify a transformation matrix given the image and the object and vice versa	• Reflecting object in a mirror • Rotating objects • Translating objects • Enlarging objects • Drawing images and objects in the Cartesian plane • Multiplying, adding, subtracting and dividing numbers • Discussions Solving problems	• Square boards • Graph papers • Rubber band • Models • Calculators • Peg boards strings	• Discovering secondary mathematics book 4 students book 4 pages 10-14 Teacher's book 4 pages 1-3,25-26 • Longman explore mathematics students book 4 pages 142 • KLB secondary mathematics book 4 page 6 • Golden tips mathematics pages 239	
	4-5	Matrix and transformation	Transforming matrix	By the end of the lesson, the learner should be able to 1. Identify a transformation matrix given the	• Reflecting object in a mirror • Rotating objects • Translating	• Square boards • Graph papers • Rubber band • Models • Calculators	• Discovering secondary mathematics book 4 students book 4 pages 10-	

				image and the object and vice versa	objects • Enlarging objects • Drawing images and objects in the Cartesian plane • Multiplying, adding, subtracting and dividing numbers • Discussions • Solving problems	• Peg boards strings	14 Teacher's book 4 pages 1-3,25-26 • Longman explore mathematics students book 4 pages 142 • KLB secondary mathematics book 4 page 6 • Golden tips mathematics pages 239	
	6-7	Matrix and transformation	Transformation matrix	By the end of the lesson, the learner should be able to 1. Identify a transformation matrix, given the image and the object and the vice versa	• Reflecting object in a mirror • Rotating objects • Translating objects • Enlarging objects • Drawing images and objects in the Cartesian plane • Multiplying, adding, subtracting and dividing numbers • Discussions • Solving problems	• Square boards • Graph papers • Rubber band • Models • Calculators • Peg boards • strings	• Discovering secondary mathematics book 4 students book 4 pages 10-14 Teacher's book 4 pages 1-3,25-26 • Longman explore mathematics students book 4 pages 142 • KLB secondary mathematics book 4 page 6 • Golden tips mathematics pages 239	
4	**1-2**	Matrix and transformation	Isometric and non-isometric transformation	By the end of the lesson, the learner should be able to 1. Define isometric and non-isometric	• Reflecting object in a mirror • Rotating objects	• Square boards • Graph papers • Rubber band • Models	• Discovering secondary mathematics book 4 students	

				transformation	• Translating objects • Enlarging objects • Drawing images and objects in the Cartesian plane • Multiplying, adding, subtracting and dividing numbers • Discussions Solving problems	• Calculators • Peg boards strings	book 4 pages 14 Teacher's book 4 pages 1-3,25-26 • Longman explore mathematics students book 4 pages 142 • KLB secondary mathematics book 4 page 35 • Golden tips mathematics pages 234	
	3-4	Matrix and transformations	Successive transformations	By the end of the lesson, the learner should be able to 1. Perform successive transformations on an object and describe the image	• Reflecting object in a mirror • Rotating objects • Translating objects • Enlarging objects • Drawing images and objects in the Cartesian plane • Multiplying, adding, subtracting and dividing numbers • Discussions Solving problems	• Square boards • Graph papers • Rubber band • Models • Calculators • Peg boards • strings	• Discovering secondary mathematics book 4 students book 4 pages 14-16 Teacher's book 4 pages 1-3,25-27 • Longman explore mathematics students book 4 pages 145 • KLB secondary mathematics book 4 page 16 • Golden tips mathematics pages 238	
	5	Matrix and transformation	Successive transformations	By the end of the lesson, the learner should be able to 1. Perform successive	• Reflecting object in a mirror • Rotating	• Square boards • Graph papers • Rubber band	• Discovering secondary mathematics book 4 students	

				transformation in an object and describe the image	objects • Translating objects • Enlarging objects • Drawing images and objects in the Cartesian plane • Multiplying, adding, subtracting and dividing numbers • Discussions Solving problems	• Models • Calculators • Peg boards • strings	book 4 pages 14-16 Teacher's book 4 pages 1-3,25-27 • Longman explore mathematics students book 4 pages 145 • KLB secondary mathematics book 4 page 16 • Golden tips mathematics pages 238	
	6-7	Matrix and transformation	Matrix successive transformations	By the end of the lesson, the learner should be able to 1. Identify and determine a single matrix for successive transformations	• Reflecting object in a mirror • Rotating objects • Translating objects • Enlarging objects • Drawing images and objects in the Cartesian plane • Multiplying, adding, subtracting and dividing numbers • Discussions Solving problems	• Square boards • Graph papers • Rubber band • Models • Calculators • Peg boards strings	• Discovering secondary mathematics book 4 students book 4 pages 16-19 Teacher's book 4 pages 1-3,27-28 • Longman explore mathematics students book 4 pages 145 • KLB secondary mathematics book 4 page 21 • Golden tips mathematics pages 239	
5	**1-**	Matrix and	Matrix of	By the end of the lesson,	• Reflecting	• Square	• Discovering	

	2	transformations	successive transformations	the learner should be able to 1. Identify and determine a single matrix for successive transformation	object in a mirror • Rotating objects • Translating objects • Enlarging objects • Drawing images and objects in the Cartesian plane • Multiplying, adding, subtracting and dividing numbers • Discussions Solving problems	boards • Graph papers • Rubber band • Models • Calculators • Peg boards strings	secondary mathematics book 4 students book 4 pages 16-19 Teacher's book 4 pages 1-3,27-28 • Longman explore mathematics students book 4 pages 145 • KLB secondary mathematics book 4 page 21 • Golden tips mathematics pages 239	
	3-4	Matrix and transformations	Inverse transformation	By the end of the lesson, the learner should be able to 1. Determine the inverse of a transformation matrix	• Reflecting object in a mirror • Rotating objects • Translating objects • Enlarging objects • Drawing images and objects in the Cartesian plane • Multiplying, adding, subtracting and dividing numbers • Discussions Solving problems	• Square boards • Graph papers • Rubber band • Models • Calculators • Peg boards • strings	• Discovering secondary mathematics book 4 students book 4 pages 19-20 Teacher's book 4 pages 1-3,27-28 • Longman explore mathematics students book 4 pages 142 • KLB secondary mathematics book 4 page 24 • Golden tips mathematics pages 239	

	5-6	Matrices and transformations	Inverse of a transformation	By the end of the lesson, the learner should be able to 1. Determine the inverse of a transformation matrix	• Reflecting object in a mirror • Rotating objects • Translating objects • Enlarging objects • Drawing images and objects in the Cartesian plane • Multiplying, adding, subtracting and dividing numbers • Discussions Solving problems	• Square boards • Graph papers • Rubber band • Models • Calculators • Peg boards strings	• Discovering secondary mathematics book 4 students book 4 pages 20-23 Teacher's book 4 pages 1-3,29 • Longman explore mathematics students book 4 pages 152 • KLB secondary mathematics book 4 page 26 • Golden tips mathematics pages 240	
	7	Matrices and transformations	Area and the determinant of matrix	By the end of the lesson , the leaner should be able to 1. Establish and use the relationship between area scale factors and determinant of a matrix	• Reflecting object in a mirror • Rotating objects • Translating objects • Enlarging objects • Drawing images and objects in the Cartesian plane • Multiplying, adding, subtracting and dividing	• Square boards • Graph papers • Rubber band • Models • Calculators • Peg boards • strings	• Discovering secondary mathematics book 4 students book 4 pages 20-23 Teacher's book 4 pages 1-3,29 • Longman explore mathematics students book 4 pages 152 • KLB secondary mathematics book 4 page 26	

					• numbers • Discussions Solving problems		• Golden tips mathematics pages 240	
6	**1-2**	statistics	The mean of ungroupe d date	By the end of the new lesson, the learner should be able to 1. State the measures of central tend away 2. Calculate the mean of ungrouped data using the assumed mean method	• Collecting data • Analyzing data • Representing data • Assuming numbers • Discussions • Solving problems	• Calculators • Square boards • Graph papers • Mathematical tables	• • Discovering secondary mathematics book 4 students book 4 pages 24-27 Teacher's book 4 pages 3-6,32 • Longman explore mathematics students book 4 pages 15 • KLB secondary mathematics book 4 page 38 • Golden tips mathematics pages 192	
	3-4	statics	The mean of ungroupe d data	By the end of the lesson, the learner should be able to 1. State the measure of central tendency 2. Calculate the mean of ungrouped data using assumed mean method	• Collecting data • Analyzing data • Representing data • Assuming numbers • Discussions • Solving problems	• Calculator • Square board • Graph paper • Mathematical tables	• Discovering secondary mathematics book 4 students book 4 pages 24-27 Teacher's book 4 pages 3-6,32 • Longman explore mathematics students book 4 pages 15 • KLB secondary mathematics book 4 page 38	

							• Golden tips mathematics pages 192	
	5-6	Statistics	The mean of ungroupe d data	By the end of the lesson, the learner should be able to 1. Determine the mean of ungrouped data using an assumed mean or otherwise	• Collecting data • Presenting data • Analyzing data • Assuming numbers • Discussions • Solving problems	• Calculators • Square boards • Graph papers • Mathematical tables	• Discovering secondary mathematics book 4 students book 4 pages 26-28 Teacher's book 4 pages 3-6,32 • Longman explore mathematics students book 4 pages • KLB secondary mathematics book 4 page 38 • Golden tips mathematics pages 193	
	7	Statistics	The median of discrete data	By the end of the lesson, the learner should be able to 1. Determine the median of discrete data	• Collecting data • Presenting data • Analyzing data • Assuming numbers • Discussions • Solving problems	• Calculators • Square boards • Graph papers • Mathematical tables	• Discovering secondary mathematics book 4 students book 4 pages 29 Teacher's book 4 pages 3-6,32 • Longman explore mathematics students book 4 pages 29 • KLB secondary mathematics book 4 page 38 • Golden tips mathematics	

							pages 194	
7	**1-2**	Statics	The median of ungroupe d data	By the end of the lesson, the learner should be able to 1. Determine the median of ungrouped frequently distribution	• Collecting data • Presenting data • Analyzing data • Assuming numbers • Discussions • Solving problems	• Calculators • Square boards • Graph papers • Mathematical tables	• Discovering secondary mathematics book 4 students book 4 pages 29 Teacher's book 4 pages 3-6,32 • Longman explore mathematics students book 4 pages 29 • KLB secondary mathematics book 4 page 38 • Golden tips mathematics pages 194	
	3-4	Statistics	The median of ungroupe d frequency distributio ns	By the end of the lesson, the learner should be able to 1. Determine the median of an ungrouped frequency distribution	• Collecting data • Presenting data • Analyzing data • Assuming numbers • Discussions • Solving problems	• Calculators • Square boards • Graph papers • Mathematical tables	• Discovering secondary mathematics book 4 students book 4 pages 29 Teacher's book 4 pages 3-6,32 • Longman explore mathematics students book 4 pages 29 • KLB secondary mathematics book 4 page 38 • Golden tips mathematics pages 194	

	5-6	statistics	The median of grouped frequency distribution	By the end of the lesson, the learner should be able to 1. Determine the median of a grouped frequency distribution	• Collecting data • Presenting data • Analyzing data • Assuming numbers • Discussions • Solving problems	• Calculators • Square boards • Graph papers • Mathematical table	• Discovering secondary mathematics book 4 students book 4 pages 30-31 Teacher's book 4 pages 3-6,32 • Longman explore mathematics students book 4 pages 30 • KLB secondary mathematics book 4 page 39 • Golden tips mathematics pages 194	
	7	Statistics	The median of grouped frequency distribution	By the end of the lesson, the learner should be able to 1. Determine the median of a grouped frequency distribution	• Collecting data • Presenting data • Analyzing data • Assuming numbers • Discussions • Solving problems	• Calculators • Square boards • Graph papers • Mathematical tables	• Discovering secondary mathematics book 4 students book 4 pages 32-33 Teacher's book 4 pages 3-6,33-38 • Longman explore mathematics students book 4 pages 30 • KLB secondary mathematics book 4 page 38 • Golden tips mathematics pages 194-195	

8	**1**	Statistics	The cumulative frequency curve	By the end of the lesson, the learner should be able to 1. Make a cumulative table 2. Draw cumulative curve from the data	• Collecting data • Presenting data • Analyzing data • Assuming number • Discussions • Solving problems	• Calculators • Square boards • Graph papers • Mathematical tables	• Discovering secondary mathematics book 4 students book 4 pages 32-33 Teacher's book 4 pages 3-6,33-38 • Longman explore mathematics students book 4 pages 27-29 • KLB secondary mathematics book 4 page 48 • Golden tips mathematics pages 196	
	2-3	statistics	The quartiles	By the end of the lesson, the learner should be able to 1. Define quartile of a frequency distribution 2. Calculate the quartile of frequency distribution	• Collecting data • Presenting data • Analyzing data • Assuming numbers • Solving problems	• Calculators • Square boards • Graph papers • Mathematical tables	• Discovering secondary mathematics book 4 students book 4 pages 32-33 Teacher's book 4 pages 3-6,33-38 • Longman explore mathematics students book 4 pages 31-32 • KLB secondary mathematics book 4 page 46 • Golden tips mathematics pages 195	
	4-	Statistics	The	By the end of the lesson,	• Collecting data	• Calculators	• Discovering	

	5		cumulative percentages	the learner should be able to 1. Define cumulative percentage 2. Calculate the cumulative percentage	• Presenting data • Analyzing data • Assuming numbers • Discussions • Solving problems	• Square boards • Graph papers • Mathematical tables	secondary mathematics book 4 students book 4 pages 36-38 Teacher's book 4 pages 3-6,40 • Longman explore mathematics students book 4 pages32 • KLB secondary mathematics book 4 page 47 • Golden tips mathematics pages 195	
	6-7	statistics	Exercise	By the end of the lesson, the learner should be able to 1. Answer questions in previous exercises	• Collecting data • Presenting data • Analyzing data • Assuming number • Discussions • Solving problems	• Calculators • Square boards • Graph papers • Mathematical tables	• Discovering secondary mathematics book 4 students book 4 pages 38 Teacher's book 4 pages 3-6,40 • Longman explore mathematics students book 4 pages33 • KLB secondary mathematics book 4 page 43 • Golden tips mathematics pages 199-202	
9	**1-2**	Statistics	The range and the quartile	By the end of the lesson, the learner should be able to	• Collecting data • Presenting data • Analyzing data	• Calculators • Square boards	• Discovering secondary mathematics	

			range	1. Define range, interquartile range, and the quartile deviation 2. Calculate range, interquartile range and the quartile deviation of distribution	• Assuming data • Discussions • Solving problems	• Graph papers • Mathematical tables	book 4 students book 4 pages 38-42 Teacher's book 4 pages 3-6,32 • Longman explore mathematics students book 4 pages31 • KLB secondary mathematics book 4 page 47 • Golden tips mathematics pages 198	
	3-4	Statistics	The range and the quartile range	By the end of the lesson, the learner should be able to 1. Define and calculate the range, the interquartile range and the quartile denotations of distribution	• Collecting data • Presenting data • Analyzing data • Assuming numbers • Discussions • Solving problems	• Calculators • Square boards • Graph papers • Mathematical tables	• Discovering secondary mathematics book 4 students book 4 pages 38-42 Teacher's book 4 pages 3-6,32 • Longman explore mathematics students book 4 pages31 • KLB secondary mathematics book 4 page 47 • Golden tips mathematics pages 198	
	5-6	Statistics	The mean deviation	By the end of the lesson, the learner should be able to 1. Define mean	• Collecting data • Presenting data • Analyzing data • Assuming	• Calculators • Square boards • Graph papers	• Discovering secondary mathematics book 4 students	

				deviation 2. Calculate the mean deviation, the absolute deviation and absolute value of a distribution	numbers • Discussions • Solving problems	• Mathematical tables	book 4 pages 42-44 Teacher's book 4 pages 3-6,40 • Longman explore mathematics students book 4 pages 161 • KLB secondary mathematics book 4 page 56 • Golden tips mathematics pages 198	
	7	Statistics	The mean deviation	By the end of the lesson, the learner should be able to 1. Define mean deviation 2. Calculate the mean deviation, the absolute value, and the mean absolute deviation of distribution	• Collecting data • Presenting data • Analyzing data • Assuming numbers • Discussions • Solving problems	• Calculators • Square boards • Graph papers • Mathematical tables	• Discovering secondary mathematics book 4 students book 4 pages 42-44 Teacher's book 4 pages 3-6,40 • Longman explore mathematics students book 4 pages 161-162 • KLB secondary mathematics book 4 page 56 • Golden tips mathematics pages 198	
10	**1-2**	statics	The variance and the standard deviation	By the end of the lesson, the learner should be able to 1. Define variance and standard	• Collecting data • Presenting data • Analyzing data • Assuming numbers	• Calculators • Square boards • Graph papers • Mathematical	• Discovering secondary mathematics book 4 students book 4 pages 44-	

				deviation 2. Calculate the variance and standard deviation	• Discussions • Solving problems	tables	47 Teacher's book 4 pages 3-6,40 • Longman explore mathematics students book 4 pages 157 and163 • KLB secondary mathematics book 4 page 57 • Golden tips mathematics pages 198	
	3-4	Statistics	The variance and the standard deviation	By the end of the lesson, the learner should be able to 1. Define variance and standard deviation 2. Calculate variance and standard deviation of a distribution	• Collecting data • Presenting data • Analyzing data • Assuming numbers • Discussions • Solving problems	• Calculators • Square boards • Graph papers • Mathematical tables	• Discovering secondary mathematics book 4 students book 4 pages 44-47 Teacher's book 4 pages 3-6,40 • Longman explore mathematics students book 4 pages 157 and163 • KLB secondary mathematics book 4 page 57 • Golden tips mathematics pages 198-199	
	5-6	Statistics	Exercise	By the end of the lesson, the learner should be able to 1. Answer questions in	• Collecting data • Presenting data • Analyzing numbers	• Calculators • Square boards • Graph papers	• Discovering secondary mathematics book 4 students	

				previous exercises	• Discussions • Solving problems	• Mathematical tables	book 4 pages 47-49 Teacher's book 4 pages 3-6,40 • Longman explore mathematics students book 4 pages 168-169 • KLB secondary mathematics book 4 page 59 • Golden tips mathematics pages 199-202	
	7	Statistics	Exercise	By the end of the lesson, the learner should be able to 1. Answer questions in previous exercises	• Collecting data • Presenting data • Analyzing data • Assuming numbers • Discussions • Solving problems	• Calculators • Square boards • Graph papers • Mathematical tables	• Discovering secondary mathematics book 4 students book 4 pages 47-49 Teacher's book 4 pages 3-6,40 • Longman explore mathematics students book 4 pages 168-169 • KLB secondary mathematics book 4 page 59 • Golden tips mathematics pages 199-202	
11	**1-2**	Loci	Common Loci	By the end of the lesson, the learner should be able to 1. Define locus	• Drawing the locus of an item • Constructing	• Graph papers • Charts • Commercial patterns	• Discovering secondary mathematics book 4 students	

				2. Describe common types of loci	loci • Measuring lengths/angles • Discussions • Solving problems	• Pair of compasses • Ruler • Protractor • Square boards	book 4 pages 50-53 Teacher's book 4 pages 7-8,44-48 • Longman explore mathematics students book 4 pages 269-271 and 41 • KLB secondary mathematics book 4 page 68 • Golden tips mathematics pages 116	
	3-4	Loci	Common Loci	By the end of the lesson, the learner should be able to 1. Define locus and describe common types of loci	• Drawing the locus of items • Construction loci • Measuring lengths/angles • Discussions • Solving problems	• Graph papers • Square boards • Chard • Geometric patterns • Pair of compasses • Ruler • protractor	• Discovering secondary mathematics book 4 students book 4 pages 50-53 Teacher's book 4 pages 7-8,44-48 • Longman explore mathematics students book 4 pages 269-271 and 41 • KLB secondary mathematics book 4 page 68 • Golden tips mathematics pages 116	
	5	Loci	Common Loci	By the end of the lesson, the learner should be able to 1. Define locus and	• Drawing the locus of an item • Constructing	• Graph papers • Charts • Geometrical patterns	• Discovering secondary mathematics book 4 students	

				describe common types of loci	loci • Measuring lengths/angles • Discussions • Solving problems	• Pair of compasses • Ruler • Protractor	book 4 pages 50 Teacher's book 4 pages 7-8,44-48 • Longman explore mathematics students book 4 pages 269-271 and 41 • KLB secondary mathematics book 4 page 68 • Golden tips mathematics pages 116	
	6-7	Loci	Loci involving chords	By the end of the lesson, the leaner should be able to 1. Construct and describe a locus involving chords	• Drawing the locus from item • Constructing loci • Measuring lengths/angles • Discussions • Solving problems	• Graph papers • Square boards • Charts • Geometrical patters • Pair of compasses • Ruler • protractor	• Discovering secondary mathematics book 4 students book 4 pages 54 Teacher's book 4 pages 7-8,49 • Longman explore mathematics students book 4 pages 269-271 and 42 • KLB secondary mathematics book 4 page 84 • Golden tips mathematics pages 116-120	
12	**1-2**	Loci	Loci of inequality	By the end of the lesson, the learner should be able to	• Drawing the locus of an item	• Graph papers • Square boards	• Discovering secondary mathematics	

				1. Construct a locus of in equalities 2. Describe locus of inequalities	• Constructing loci • Measuring length/angles • Discussions • Solving problems	• Charts • Geometric patters • Pair of compasses • Ruler • protractors	book 4 students book 4 pages 55 Teacher's book 4 pages 50-51 • Longman explore mathematics students book 4 pages 269-271 and 49 • KLB secondary mathematics book 4 page 81 • Golden tips mathematics pages 116-120	
	3	Loci	Loci of inequality	By the end of the lesson, the learner should be able to 1. Construct and describe a locus for inequality	• Drawing the locus of a n item • Constructing loci • Measuring length/angles • Discussions • Solving problems	• Graph papers • Square board • Charts • Geometric patterns • Pair of compasses • Ruler • protractor	• Discovering secondary mathematics book 4 students book 4 pages 57-58 Teacher's book 4 pages 53-54 • Longman explore mathematics students book 4 pages 269-271 and 49 • KLB secondary mathematics book 4 page 81 • Golden tips mathematics pages 116-120	

	4-5	Loci	Intersecting loci	By the end of the lesson, the learner should be able to (i) Describe and construct the intersecting loci	• Drawing of the locus of an item • Constructing loci • Measuring lengths/angles • Discussions • Solving problems	• Graph papers • Square boards • Charts • Geometric patterns • Pair of compasses • Ruler • protractor	• Discovering secondary mathematics book 4 students book 4 pages 55-55 Teacher's book 4 pages 7-8,52 • Longman explore mathematics students book 4 pages 269-271 and 50 • KLB secondary mathematics book 4 page 75 • Golden tips mathematics pages 116-120	
	6-7	Loci	revision	By the end of the lesson, the learner should be able to 1. Answer the question in previous exercises	• Drawing the locus of an item • Constructing loci • Measuring length/angle • Discussions • Solving problems	• Graph papers • Square boards • Charts • Geometric patterns • Pair of compasses • Ruler • protractor	• Discovering secondary mathematics book 4 students book 4 pages 57-58 Teacher's book 4 pages 7-8,53-54 • Longman explore mathematics students book 4 pages 271-272 and 52-54 • KLB secondary mathematics book 4 page 85	

							• Golden tips mathematics pages 122-124	
EXAMINATIONS								
MATHEMATICS FORM IV SCHEMES OF WORK TERM 2								
1	**1-2**	Trigonometric ratios	Deviation of $sin^{2x}+cos^2x=1$	By the end of the lesson, the learner should be able 1. to derive the trigonometric identity 2. $Sin^2x+Cos^2x=1$ and use it to solve problems involving the trigonometric ratios	• Drawing right-angle triangle • Measuring/ angles/lengths • Squaring numbers • Discussions • Solving problems	• Square boards • Graph papers • Charts illustrating aptitude period and phase angle • Ruler • protractor	• Discovering secondary mathematics book 4 students book 4 pages 59-61 Teacher's book 4 pages 54-55 • Longman explore mathematics students book 4 pages 64-65 • KLB secondary mathematics book 4 page 90 • Golden tips mathematics pages 134-140	
	3	Trigonometric ratios	Deviation of $sin^{2x}+cos^2x=1$	By the end of the lesson, the learner should be able to 1. Identify $sin^{2x}+cos^2x=1$ and use it to solve problems involving the trigonometric ratios	• Drawing right-angle triangles • Measuring angles lengths • Squaring numbers • Discussions • Solving problems	• Square boards • Graphs papers • Charts illustrating amplitude period and phase angle • Ruler	• Discovering secondary mathematics book 4 students book 4 pages 59-61 Teacher's book 4 pages 54-55	

						• protractor	• Longman explore mathematics students book 4 pages 64-65 • KLB secondary mathematics book 4 page 90 • Golden tips mathematical pages 134-146	
	4-5	Trigonometric ratios	The graph y=sin x and y=asinx	By the end of the lesson, the learner should be able to 1. Draw graphs of y=sinx and y=asinx and determine their amplitudes, periods and wavelengths	• Drawing right-angle triangles • Measuring angles/lengths • Squaring numbers • Getting the square root of numbers • Discussion • Solving problems	• Square boards • Graph papers • Charts illustrating amplitudes period and phase angle • Ruler • protractor	• Discovering secondary mathematics book 4 students book 4 pages 61-62 Teacher's book 4 pages 54-55 • Longman explore mathematics students book 4 pages 66-69 • KLB secondary mathematics book 4 page 93 • Golden tips mathematical pages 134-146	
	6-7	Trigonometric ratios	The graph y=cos x and y=acos x	By the end of the lesson, the learner should be able to 1. Draw the graph y=cosx and y=acos x and determining their amplitudes the periods and wavelengths	• Drawing right-angle triangles • Measuring angles/lengths • Squaring numbers • Getting the square root of numbers • Discussion	• Square board • Graph papers • Charts illustrating amplitudes period and phase-angle • Ruler • protractor	• Discovering secondary mathematics book 4 students book 4 pages 61-62 Teacher's book 4 pages 59-11,54-	

					• Solving problems		55 • Longman explore mathematics students book 4 pages 66-69 • KLB secondary mathematics book 4 page 93 • Golden tips mathematical pages 134-146	
2	**1-2**	Trigonometric ratios	The graphs of y=sin bx and y=acos bx	By the end of the lesson, the learner should be able to 1. Draw graphs of y=asinbx and y=acosbx and determine their amplitudes periods and wavelengths	• Drawing right-angle triangles • Measuring angles/lengths • Squaring numbers • Getting the square roots of numbers • Discussion • Solving problems	• Square boards • Charts illustrating amplitude periods and phase angles • Ruler • protractor	• Discovering secondary mathematics book 4 students book 4 pages 61-62 Teacher's book 4 pages 9-11,54-55 • Longman explore mathematics students book 4 pages 66-69 • KLB secondary mathematics book 4 page 93 • Golden tips mathematical pages 134-146	
	3-4	Trigonometric ratios	The graphs y=asin bx and y=acosbx	By the end of the lesson, the leaner should be able to 1. Draw graphs of y=acosbx and y=asin bx and	• Drawing right-angle triangles • Measuring angles/lengths • Squaring numbers	• Square boards • Charts illustrating amplitudes periods and	• Discovering secondary mathematics book 4 students book 4 pages 63-	

				determine their amplitudes, periods and wavelengths	• Getting the square roots of numbers • Discussion • Solving problems	phase angles • Ruler • Protractor	66 Teacher's book 4 pages 9-11,54-55 • Longman explore mathematics students book 4 pages 66-69 • KLB secondary mathematics book 4 page 93 • Golden tips mathematical pages 134-146	
	5-6	Trigonometric ratios	The graphs of y=asin(bx+) and y=acos(bx+2)	By the end of the lesson, the learner should be able to 1. Draw the graphs of y= asin(bx+0) abd y=acos(bx+0) and determine their amplitudes, periods and wave lengths	• Drawing right-angle triangles • Measuring angles/lengths • Squaring numbers • Getting the square roots of numbers • Discussion • Solving problems	• Square boards • Graph papers • Charts illustrating amplitudes periods and phase angles • Ruler • protractor	• Discovering secondary mathematics book 4 students book 4 pages 66-68 Teacher's book 4 pages 9-11,54-55 • Longman explore mathematics students book 4 pages 66-69 • KLB secondary mathematics book 4 page 93 • Golden tips mathematical pages 134-146	
	7	Trigonometric ratios	The graphs of y=asin(bx	By the end of the lesson, the learner should be able to	• Drawing right angle-triangles • Measuring	• Square boards • Graphs	• Discovering secondary	

			+) and y=acos(bx+2)	1. Draw the graphs of y=asin(bx+) and y=acos(bx+2) and determine their amplitudes, periods and wavelengths	angles/heights • Squaring numbers • Getting the square roots of numbers • Discussion • Solving problems	papers • Charts illustrating amplitude periods and phase angles • Ruler • protractor	mathematics book 4 students book 4 pages 66-68 Teacher's book 4 pages 9-11,56-57 • Longman explore mathematics students book 4 pages 66-69 • KLB secondary mathematics book 4 page 93 • Golden tips mathematical pages 134-146	
3	**1-2**	Trigonometric ratios	The graphs of y=tanx and y=atanbx	By the end of the lesson, the learner should be able to 1. Draw the graphs y=tanx and y=tanx and y=atanbx and determine their amplitudes, periods and wavelengths	• Drawing right angle-triangles • Measuring angles/heights • Squaring numbers • Getting the square roots of numbers • Discussion • Solving problems	• Square boards • Graph papers • charts illustrating amplitudes period and phase angle • Ruler • protractor	• Discovering secondary mathematics book 4 students book 4 pages 68-69 Teacher's book 4 pages 9-11, • Longman explore mathematics students book 4 pages 66-69 • KLB secondary mathematics book 4 page 93 • Golden tips mathematical pages 134-146	

	3-4	Trigonometric ratios	The graphs of y=atan(bx+0)	By the end of the lesson, the learner should be able to 1. Draw the graph of y=atan(bx+0) and determine its amplitude, periods and wavelengths	• Drawing right angle-triangles • Measuring angles/lengths • Squaring numbers • Getting the square roots of numbers • Discussions • Solving problems	• Square boards • Graphs papers •	• Discovering secondary mathematics book 4 students book 4 pages 69-70 Teacher's book 4 pages 9-11,57-58 • Longman explore mathematics students book 4 pages 66-69 • KLB secondary mathematics book 4 page 93 • Golden tips mathematical pages 134-146	
	5-6	Trigonometric ratios	exercise	By the end of the lesson, the learner should be able to 1. Answer questions in exercise 4.6	• Drawing right-angle triangles • Measuring angles/lengths • Squaring numbers • Getting the square roots of numbers • Discussions • Solving problems	• Square boards • Charts illustrating amplitude period and phase angle • Graph papers • Ruler • protractor	• Discovering secondary mathematics book 4 students book 4 pages 71 Teacher's book 4 pages 9-11,57-58 • Longman explore mathematics students book 4 pages 77-78 • KLB secondary mathematics book 4 page 102 • Golden tips mathematical	

							pages 134-146	
	7	Trigonometric ratios	Solving trigonometric problems	By the end of the lesson, the learner should be able to 1. Solve trigonometric equations by calculating and graphically	• Drawing right-angle triangles • Measuring angles/lengths • Squaring numbers • Getting the square roots of numbers • Discussions • Solving problems	• Square boards • Graph papers • Charts illustrating amplitude period and phase angle • Ruler • Protractor	• Discovering secondary mathematics book 4 students book 4 pages 71-73 Teacher's book 4 pages 9-11,57-58 • Longman explore mathematics students book 4 pages 77-78 • KLB secondary mathematics book 4 page 102 • Golden tips mathematical pages 134-146	
4	**1-2**	Trigonometric ratios	Solving trigonometric equations	By the end of the lesson, the learner should be able to 1. Solve trigonometric equations by calculations and graphically	• Drawing right-angle triangles • Measuring angles/lengths • Squaring numbers • Getting the square root of numbers • Discussions • Solving problems	• Square boards • Graph papers • Charts illustrating amplitude period and phase angles • Ruler • protractor	• Discovering secondary mathematics book 4 students book 4 pages 71-73 Teacher's book 4 pages 9-11,57-58 • Longman explore mathematics students book 4 pages 77-78 • KLB secondary mathematics	

							book 4 page 100 • Golden tips mathematical pages 134-147	
	3-4	Trigonometric ratios	Revision	By the end of the lesson, the learner should be able to 1. Answer the questions in further exercise 4	• Drawing right angle triangles • Measuring angles/lengths • Squaring numbers • Getting the square root of numbers • Discussions • Solving problems	• Square boards • Graph papers • Charts illustrating amplitude period and phase angles • Ruler • protractor	• Discovering secondary mathematics book 4 students book 4 pages 71-73 Teacher's book 4 pages 9-11,58 • Longman explore mathematics students book 4 pages 77-78 • KLB secondary mathematics book 4 page 102 • Golden tips mathematical pages 147-149	
	5-6	Three dimensional geometry	Geometrical properties of solids	By the end of the lesson, the learner should be able to 1. State the geometrical properties of column solids	• Making models of column solids • Sketching nets of solids • Measuring angles/lengths • Discussions • Solving problems	• 3D models • Column solids • Net cents of solids • Nets of column solids	• Discovering secondary mathematics book 4 students book 4 pages 74-75 Teacher's book 4 pages 11-13,59 • Longman explore mathematics students book 4	

							pages 79 • KLB secondary mathematics book 4 page 104 • Golden tips mathematical pages 280	
	7	Three dimensional geometry	Geometric properties of solids	By the end of the lesson, the learner should be able to 1. State the geometric properties of column solids	• Making models of column solids • Measuring angles/strengths • Discussions • Solving problems	• 3D models • Column solids • Net our of column solids • Nets of column solids	• Discovering secondary mathematics book 4 students book 4 pages 74-75 Teacher's book 4 pages 11-13,59 • Longman explore mathematics students book 4 pages 79 • KLB secondary mathematics book 4 page 104 • Golden tips mathematical pages 280	
5	**1-2**	Three dimensional geometry	Projection of line on in pane	By the end of the lesson, the learner should be able to 1. Identify the projection of a line on a plane	• Making models of column solids • Sketching nets of solids • Drawing the shape of solids • Measuring	• 3D models • Column solids • Net cuts of column solids • Nets of column solids	• Discovering secondary mathematics book 4 students book 4 pages 75-76 Teacher's book 4	

					angles/lengths • Discussions • Solving problems		pages 11-13,60 • Longman explore mathematics students book 4 pages 85 • KLB secondary mathematics book 4 page 106 • Golden tips mathematical pages 280	
	3-4	Three dimensional geometry	An angle between two lines	By the end of the lesson, the learner should be able to 1. Identify and calculate the angle between two lines	• Making models of column solids • Sketching nets of solids • Drawing the shape of solids • Measuring lengths • Discussions • Solving problems	• 3D models column solids • Nets of column solids	• Discovering secondary mathematics book 4 students book 4 pages 76 Teacher's book 4 pages 11-13,60 • Longman explore mathematics students book 4 pages 82 • KLB secondary mathematics book 4 page 106 • Golden tips mathematical pages 280	
	4-5	Three dimensional geometry	Skew lines	By the end of the learner should be able to 1. Identify skew lines and determine the angle between them	• Making models of column solids • Sketching nets of solids • Drawing the shape of solids	• 3D models common solids • Cut out of common solids • Net of	• Discovering secondary mathematics book 4 students book 4 pages 76-78	

					• Measuring angles/lengths • Discussions • Solving problems	common solids	Teacher's book 4 pages 11-13,60 • Longman explore mathematics students book 4 pages 90 • KLB secondary mathematics book 4 page 118 • Golden tips mathematical pages 281	
	6-7	Three dimensional geometry	Skew lines	By the end of the lesson, the learner should be able to 1. Identify skew lines and determine the angle between them	• Making models of common solids • Drawing the shape of solids • Measuring angles/lengths • Discussions • Solving problems	• 3D models common solids • Cut out common solids • Nets of common solids	• Discovering secondary mathematics book 4 students book 4 pages 76-78 Teacher's book 4 pages 11-13,60 • Longman explore mathematics students book 4 pages 90 • KLB secondary mathematics book 4 page 118 • Golden tips mathematical pages 281	
6	**1-2**	Three dimensional geometry	The length of a line on	By the end of the lesson, the learner should be able to	• Making models of common solids	• 3D models • Common solids	• Discovering secondary mathematics	

			a solid	1. Identify and contribute the length of a line on a solid	• Sketching nets of solids • Drawing the shapes solids • Measuring lengths/angles • Discussions • Solving problems	• Cut outs of common solids • Nets of common solids	book 4 students book 4 pages 78-79 Teacher's book 4 pages 11-13,60 • Longman explore mathematics students book 4 pages 87 • KLB secondary mathematics book 4 page 106 • Golden tips mathematical pages 281-286	
	3	Three dimensional geometry	The length of a line on a solid	By the end of the lesson, the learner should be able to 1. Identify and calculate the length of a line on solid	• Making models of common solids • Sketching nets of solids • Drawing the shapes of solids • Measuring angles/lengths • Discussions • Solving problems	• 3D models • Common solids • Cut outs of common solids • Nets of common solids	• Discovering secondary mathematics book 4 students book 4 pages 78-79 Teacher's book 4 pages 11-13,60 • Longman explore mathematics students book 4 pages 87 • KLB secondary mathematics book 4 page 106 • Golden tips mathematical pages 281-286	
	4-	Three	An angle	By the end of the lesson,	• Making models	• 3D models	• Discovering	

	5	dimensional geometry	between a line and a plane	the learner should be able to 1. Identify and calculate an angle between a line and a plane	of common solids • Sketching nets of solids • Drawing nets of solids • Measuring lengths /angles • Discussions • Solving problems	• Common solids • Cut out of common solids • Nets of common solids	secondary mathematics book 4 students book 4 pages 79-81 Teacher's book 4 pages 11-13,60-61 • Longman explore mathematics students book 4 pages 82 • KLB secondary mathematics book 4 page 106 • Golden tips mathematical pages 281-282	
	6-7	Three dimensional geometry	An angle between a line plane	By the end of the lesson, the learner should be able to 1. Identify and calculate the length of an enable between a line and a plane	• Making models of common solids • Sketching nets of solids • Drawing nets of solids • Measuring angles/lengths • Discussions • Solving problems	• 3D models of common solids • Cut outs of common solids • Nets of common solids	• Discovering secondary mathematics book 4 students book 4 pages 79-81 Teacher's book 4 pages 11-13,60-61 • Longman explore mathematics students book 4 pages 82 • KLB secondary mathematics book 4 page 106 • Golden tips mathematical	

							pages 281-282	
7	**1-2**	The dimensional geometry	An angle between two planes	By the end of the lesson, the learner should be able to 1. Identify and calculate an angle between two planes	• Making models of common solids • Sketching nets of solids • Drawing the shapes of solids • Measuring angles/lengths • Discussions • Solving problems	• 3D models • Common solids • Nets of common solids	• Discovering secondary mathematics book 4 students book 4 pages 81-83 Teacher's book 4 pages 11-13,61 • Longman explore mathematics students book 4 pages 85 • KLB secondary mathematics book 4 page 113 • Golden tips mathematical pages 281	
	3-4	The dimensional geometry	An angle between two planes	By the end of the lesson, the learner should be able to 1. Identify and calculate on angle between two planes	• Making models of common solids • Sketching nets of solids • Drawing the shapes of solids • Measuring lengths • Discussions • Solving problems	• 3D models • Common solids • Cut outs of common solids • Nets of common solids	• Discovering secondary mathematics book 4 students book 4 pages 81-83 Teacher's book 4 pages 11-13,61 • Longman explore mathematics students book 4 pages 85 • KLB secondary mathematics book 4 page 113	

							• Golden tips mathematical pages 281	
	5-7	The dimensional geometry	Revision	By the end of the lesson, the learner should be able to 1. Answer the questions on the further Exercise 5	• Making models of common solids • Sketching nets of solids • Drawing the shapes of solids • Measuring lengths • Discussions • Solving problems	• 3D models • Common solids • Cut outs column solids • Nets of common solids	• Discovering secondary mathematics book 4 students book 4 pages 81-83 Teacher's book 4 pages 11-13,61 • Longman explore mathematics students book 4 pages 85 • KLB secondary mathematics book 4 page 113 • Golden tips mathematical pages 281	
8	**1**	Longitudes and latitude	Great and small circles	By the end of the lesson, the learner should be able to 1. Define the great and small circles in relation to a spere	• Drawing circles • Rolling balls • Spinning and writing time • Discussions • Solving problems	• Globe calculations • Ball • Graph papers • Square boards • Mathematical tables • Multiplication tables	• Discovering secondary mathematics book 4 students book 4 pages 85-86 Teacher's book 4 pages 11-13,63 • Longman explore mathematics students book 4 pages 101 • KLB secondary	

							mathematics book 4 page 125 • Golden tips mathematical pages 292	
	2	Longitudes and latitudes	Longitudes and latitudes	By the end of the lesson, the learner should be able to 1. Identify and define latitudes and longitudes	• Drawing circles • Rolling balls • Spinning the globe • Reading and writing time • Discussion • Solving problems	• Globe • Calculators • Ball • Graph papers • Square boards • Mathematical tables • Multiplication tables	• Discovering secondary mathematics book 4 students book 4 pages 86-87 Teacher's book 4 pages 13-13,63 • Longman explore mathematics students book 4 pages 102 • KLB secondary mathematics book 4 page 125 • Golden tips mathematical pages 292	
	3-4	Longitudes and latitudes	Position on the surface of the earth	By the end of the lesson, the learner should be able to 1. Locate a place on earths surface in terms of latitudes and longitudes	• Drawing circles • Rolling balls • Spinning the globe • Reading and writing time • Discussions • Solving problems	• Globe • Calculators • Ball • Graph papers • Square boards • Mathematical tables • Multiplication tables	• Discovering secondary mathematics book 4 students book 4 pages 87-88 Teacher's book 4 pages 13-13,63 • Longman explore mathematics students book 4 pages 103	

							• KLB secondary mathematics book 4 page 128 • Golden tips mathematical pages 293	
	5	Longitudes and latitude	Positions of points on the surface of the earth	By the end of the lesson, the learner should be able to 1. Locate a place on earths surface in terms of latitudes and longitudes	• Drawing circles • Rolling balls • Spinning the globe • Reading and writing time • Discussions • Solving problems	• Globe • Calculators • Ball • Graph papers • Square boards • Mathematical tables • Multiplications tables	• Discovering secondary mathematics book 4 students book 4 pages 87-88 Teacher's book 4 pages 13-13,63 • Longman explore mathematics students book 4 pages 103 • KLB secondary mathematics book 4 page 128 • Golden tips mathematical pages 293	
	6-7	Longitudes and latitudes	The distance between two points a long a great circle	By the end of the lesson, the learner should be able to 1. Calculate the distance between two points a long great circle in practical rules and kilometers and convert nautical	• Drawing circles • Rolling balls • Spinning the globe • Reading and writing time • Discussions • Solving problems	• Drawing circles • Calculators • Ball • Graph papers • Square boards • Mathematical tables • Multiplication	• Discovering secondary mathematics book 4 students book 4 pages 89-91 Teacher's book 4 pages 13-13,63 • Longman explore	

				unites to kilometers and viz.		tables	mathematics students book 4 pages 105 • KLB secondary mathematics book 4 page 130 • Golden tips mathematical pages 293-297	
9	**1-2**	Longitudes and latitudes	The distance between two points along a great circle	By the end of the lesson, the learner should be able to 1. Calculate the distance between two points along a great circle in nautical miles and kilometers and convert nautical miles to kilometers	• Drawing circles • Rolling balls • Spinning the globe • Reading and writing time • Discussions • Solving problems	• Globe calculators • Ball • Graph papers • Square boards • Mathematical tables • Multiplication tables	• Discovering secondary mathematics book 4 students book 4 pages 89-91 Teacher's book 4 pages 13-13,63 • Longman explore mathematics students book 4 pages 105 • KLB secondary mathematics book 4 page 130 • Golden tips mathematical pages 293-297	
	3-4	Longitudes and latitudes	The distance between two points along in small circle	By the end of the lesson, the learner should be able to 1. Calculate the distance between two points along a small circle in	• Drawing circles • Rolling balls • Spinning the globe • Reading and writing time • Discussions	• Globe • Calculators • Balls • Graph papers • Square boards • Mathematical	• Discovering secondary mathematics book 4 students book 4 pages 91-93	

				nautical miles and kilometers	• Solving problems	tables • Multiplication tables	Teacher's book 4 pages 13-45,63 • Longman explore mathematics students book 4 pages 108 • KLB secondary mathematics book 4 page 133 • Golden tips mathematical pages 295-297	
	5	Longitudes and latitudes	The distance between two points along a small circle	By the end of the lesson, the learner should be able to 1. Calculate the distance between two points along a small circle in nautical miles and kilometers	• Drawing circles • Rolling balls • Spinning the globe • Reading and writing time • Discussions • Solving problems	• Globe • Calculator • Balls • Graph papers • Square boards • Mathematical tables • Multiplication tables	• Discovering secondary mathematics book 4 students book 4 pages 91-93 Teacher's book 4 pages 13-45,63 • Longman explore mathematics students book 4 pages 108 • KLB secondary mathematics book 4 page 133 • Golden tips mathematical pages 293-297	
	6-7	Longitudes and latitudes	Time and longitude	By the end of the lesson, the learner should be able to 1. Calculate time in	• Drawing circles • Rolling balls • Spinning the globe	• Globe • Calculator • Balls • Graph papers	• Discovering secondary mathematics book 4 students	

				relation to longitudes	• Reading and writing time • Discussions • Solving problems	• Square boards • Mathematical tables • Multiplication tables	book 4 pages 93-94 Teacher's book 4 pages 13-15,63 • Longman explore mathematics students book 4 pages 112 • KLB secondary mathematics book 4 page 141 • Golden tips mathematical pages 298	
10	**1-2**	Longitudes and latitudes	speed	By the end of the lesson, the learner should be able to 1. Calculate speed in knots and kilometer per hour	• Drawing circles • Rolling balls • Spinning the globe • Reading and writing time • Discussions • Solving problems	• Globe • Calculators • Balls • Graph paper • Square boards • Mathematical tables • Multiplications tables	• Discovering secondary mathematics book 4 students book 4 pages 94-96 Teacher's book 4 pages,63-64 • Longman explore mathematics students book 4 pages 111 • KLB secondary mathematics book 4 page 142 • Golden tips mathematical pages 298	
	3-4	Longitudes and latitudes	Speed	By the end of the lesson, the learner should be able	• Drawing circles • Rolling balls	• Globe • Calculator	• Discovering secondary	

				to 1. Calculate speed in knots and kilometers per hour	• Spinning the globe • Reading and writing time • Discussions • Solving problems	• Graph papers • Square boards • Mathematical tables • Multiplication tables	mathematics book 4 students book 4 pages 94-96 Teacher's book 4 pages,63-64 • Longman explore mathematics students book 4 pages 111 • KLB secondary mathematics book 4 page 142 • Golden tips mathematical pages 298	
	5-6	Linear programming	Forming and solving inequalities	By the end of the lesson, the learner should be able to 1. Form linear inequalities based on real life situations	• Forming inequalities • Forming algebraic equations • Shading unwanted regions • Discussions • Solving problems	• Square boards • Graph papers • Calculators • Mathematical tables • Multiplication tables • rulers	• Discovering secondary mathematics book 4 students book 4 pages 94-96 Teacher's book 4 pages,15-17, 64-67 • Longman explore mathematics students book 4 pages 118 • KLB secondary mathematics book 4 page 150 • Golden tips mathematical	

							pages 176	
	7	Linear programming	Forming and solving inequalities	By the end of the lesson, the learner should be able to 1. Form and represent linear inequalities in graph	• Forming inequalities • Forming algebraic expressions • Plotting graphs • Discussions • Solving problems	• Square boards • Papers • Calculator • Mathematical tables • Multiplication tables • Ruler	• Discovering secondary mathematics book 4 students book 4 pages 97-100 Teacher's book 4 pages,15-1763-64 • Longman explore mathematics students book 4 pages 118 • KLB secondary mathematics book 4 page 150 • Golden tips mathematical pages 176	
11	**1-2**	Linear programming	Forming and solving linear equations	By the end of the lesson, the learner should be able to 1. Form and represent linear inequalities in a graph	• Forming inequalities • Forming algebraic equation • Plotting graphs • Shading unrated region • Discussions • Solving problems	• Square boards • Graph papers • mathematical tables • ruler	• Discovering secondary mathematics book 4 students book 4 pages 98-100 Teacher's book 4 pages, 67-73 • Longman explore mathematics students book 4 pages 121-125 • KLB secondary mathematics	

							book 4 page 157 • Golden tips mathematical pages 181	
	3-4	Linear programming	optimization	By the end of the lesson, the learner should be able to 1. Solve and interpret the optimum solution of linear inequalities	• Forming inequalities • Forming algebraic expressions • Plotting graphs • Shading unwanted regions • Discussions • Solving problems	• Square board • Graph papers • Calculators • Mathematical tables • ruler	• Discovering secondary mathematics book 4 students book 4 pages 98-100 Teacher's book 4 pages, 67-73 • Longman explore mathematics students book 4 pages 121-125 • KLB secondary mathematics book 4 page 157 • Golden tips mathematical pages 181	
	5-6	Linear programming	The objective function		• Forming inequalities • Forming algebraic expressions • Plotting graphs • Shading unwanted regions • Discussions • Solving	• Square boards • Graph papers • Calculators • Mathematical tables	• Discovering secondary mathematics book 4 students book 4 pages 98-100 Teacher's book 4 pages, 67-73 • Longman explore mathematics	

					problems		students book 4 pages 121-125 • KLB secondary mathematics book 4 page 157 • Golden tips mathematical pages 181	
	7	Linear programming	The objective function		• Forming inequalities • Forming algebraic expressions • Plotting graphs • Shading unwanted regions • Solving problems • discussions	• square boards • graph papers • calculators • mathematical tables • ruler	• Discovering secondary mathematics book 4 students book 4 pages 98-100 Teacher's book 4 pages, 67-73 • Longman explore mathematics students book 4 pages 121-125 • KLB secondary mathematics book 4 page 158 • Golden tips mathematical pages 181	
MATHEMATICS FORM IV SCHEMES OF WORK TERM 3								
1	**1-2**	Differentiation	Average and instantaneous rate	By the end of the lesson, the learner should be able to 1. Define	• Sketching curves • Determining the gradient of	• Square board • Graph paper • Calculators • Ruler	• Discovering secondary mathematics book 4 students	

			of charge	differentiation 2. Find the average rate of charge and instantaneous rate of change	a curve • Deriving formulae • Discussions • Solving problems	• Mathematical tables	book 4 pages 105-107 Teacher's book 4 pages, 17-19,91 • Longman explore mathematics students book 4 pages 170 • KLB secondary mathematics book 4 page 162 • Golden tips mathematical pages 302-303	
	3-4	differentiation	Average instantaneous rate of change	By the end of the lesson, the learner should be able to 1. Define differentiation 2. Find average rate of change and instantaneous rate of change	• Determining the gradient of a curve • Deriving formulae • Discussions • Solving problems	• square board • Graph papers • Calculators • Ruler • Mathematical tables	• Discovering secondary mathematics book 4 students book 4 pages 105-107 Teacher's book 4 pages, 17-19,91 • Longman explore mathematics students book 4 pages 170 • KLB secondary mathematics book 4 page 162 • Golden tips mathematical pages 302-303	
	5-6	Differentiation	The gradient	By the end of the lesson the learner should be able to	• Sketching curves • Determining	• Square boards	• Discovering secondary	

			of a curve at a point	1. Define a tangent 2. Find the gradient of a curve at a point using tangent	the gradient of a curve • Deriving formulae • Discussions • Solving problems	• Graph papers • Calculators • Ruler • Mathematical tables	mathematics book 4 students book 4 pages 107-108 Teacher's book 4 pages, 17-19,91 • Longman explore mathematics students book 4 pages 171-174 • KLB secondary mathematics book 4 page 163-164 • Golden tips mathematical pages 304-305	
	7	differentiation	the gradient of $y=x^n$	By the end of the lesson, the learner should be able to 1. Find the gradient of a function in the form $y=x^n$ where n is a positive integer	• Sketching curves • Determining the gradient of a curve • Deriving formulae • Discussions • Solving problems	• Square boards • Graph papers • Calculators • Ruler • Mathematical tables	• Discovering secondary mathematics book 4 students book 4 pages 108-109 Teacher's book 4 pages, 17-19,91 • Longman explore mathematics students book 4 pages 171-174 • KLB secondary mathematics book 4 page 164-166 • Golden tips mathematical	

							pages 304-305	
2	**1**	Differentiation	The gradient of $y=x^n$	By the end of the lesson, the leaner should be able to 1. Find the gradient function of a function in the form $y=x^n$ where n is a positive integer	• Sketching curves • Determining the gradient of a curve • Deriving formulae • Discussions • Solving problems	• Square boards • Graph papers • Calculators • Ruler • Mathematical tables	• Discovering secondary mathematics book 4 students book 4 pages 108-109 Teacher's book 4 pages, 17-19,91 • Longman explore mathematics students book 4 pages 174-177 • KLB secondary mathematics book 4 page 164-166 • Golden tips mathematical pages 304-305	
	2-3	Differentiation	The gradient of $y=ax^n$	By the end of the lesson, the learner should be able to 1. Find the gradient function of a function in the form $y=ax^n$ where n is a positive integer	• Sketching curves • Determining the gradient of a curve • Deriving formulae • Discussions • Solving problems	• Square boards • Graph papers • Calculators • Ruler • Mathematical tables	• Discovering secondary mathematics book 4 students book 4 pages 109-110 Teacher's book 4 pages, 17-19,91 • Longman explore mathematics students book 4 pages 177-180 • KLB secondary mathematics	

							book 4 page 166-167 • Golden tips mathematical pages 304-305	
	4-5	Differentiation	The delta notation	By the end of the lesson, the learner should be able to 1. Find the derivative of a function using delta notation	• Sketching curves • Determining the gradient of a curve • Deriving formulae • Discussions • Solving problems	• Square curves • Determining the gradient of a curve • Deriving formulae • Discussions • Solving problems	• Discovering secondary mathematics book 4 students book 4 pages 110-111 Teacher's book 4 pages, 17-19,91 • Longman explore mathematics students book 4 pages 172-177 • KLB secondary mathematics book 4 page 167-170 • Golden tips mathematical pages 304-305	
	6-7	Differentiation	The derivative a polynomial	By the end of the lesson, the learner should be able to 1. Determine the derivative of a polynomial	• Sketching curves • Determining the gradient of a curve • Deriving formulae • Discussions • Solving problems	• Square boards • Graph calculators • Mathematical tables	• Discovering secondary mathematics book 4 students book 4 pages 111-112 Teacher's book 4 pages, 17-19,91-92 • Longman explore	

							mathematics students book 4 pages 178-180 • KLB secondary mathematics book 4 page 170-172 • Golden tips mathematical pages 305	
3	**1-2**	Differentiation	The derivative of polynomial	By the end of the lesson, the learner should be able to 1. Determine the derivative of a polynomial	• Sketching curves • Determining the gradient of a curve • Deriving formulae • Discussions • Solving problems	• Square boards • Graph papers • Calculators • Ruler • Mathematical tables	• Discovering secondary mathematics book 4 students book 4 pages 111-112 Teacher's book 4 pages, 17-19,91-92 • Longman explore mathematics students book 4 pages 178-180 • KLB secondary mathematics book 4 page 170-172 • Golden tips mathematical pages 305	
	3-4	Differentiation	Equations of tangents and normal to curves	By the end of the lesson, the learner should be able to 1. Find the equation of a tangent	• Sketching curves • Determining the gradient of a curve • Deriving	• Square boards • Papers • Calculators • Ruler • Mathematical	• Discovering secondary mathematics book 4 students book 4 pages	

				2. Find the equation of a normal to a curve	formulae • Discussions • Solving problems	tables	112-113 Teacher's book 4 pages, 17-19,93 • Longman explore mathematics students book 4 pages 180-182 • KLB secondary mathematics book 4 page 173-174 • Golden tips mathematical pages 305-306	
	5-6	Differentiation	Stationary points	By the end of the lesson, the learner should be able to 1. Determine the stationary points of a curve	• Sketching curves • Graph papers • Calculators • Ruler • Mathematical tables	• Ruler • Mathematical tables • Graph papers • Square boards	• Discovering secondary mathematics book 4 students book 4 pages 114-116 Teacher's book 4 pages, 17-19,92 • Longman explore mathematics students book 4 pages 186-188 • KLB secondary mathematics book 4 page 174-180 • Golden tips mathematical pages 306-307	
	7	differentiation	Stationary points	By the end of the lesson, the learner should be able to	• Sketching curves • Determining	• Square boards • Graph papers	• Discovering secondary	

				1. Determine the stationary points of a curve	the gradient of a curve • Deriving formulae • Discussions • Solving problems	• ruler • Mathematical tables	mathematics book 4 students book 4 pages 114-116 Teacher's book 4 pages, 17-19,92 • Longman explore mathematics students book 4 pages 186-188 • KLB secondary mathematics book 4 page 174-180 • Golden tips mathematical pages 306-307	
4	**1-2**	differentiation	Curve sketching	By the end of the lesson, the learner should be able to 1. Sketch a curve	• Sketching curves • Determining the gradient of a curve • Deriving formulae • Discussions • Problem solving	• Square boards • Graph paper • Calculators • Ruler • Mathematical table	• Discovering secondary mathematics book 4 students book 4 pages 116-117 Teacher's book 4 pages, 17-19,93 • Longman explore mathematics students book 4 pages 188-190 • KLB secondary mathematics book 4 page 180-182 • Golden tips mathematical pages 306-309	

	3-4	Differentiation	Differentiation in kinematics	By the end of the lesson, the learner should be able to 1. Apply differentiation in calculating distance 2. Apply differentiation in calculating distance 3. Apply differentiation in calculating velocity 4. Apply differentiation in calculating acceleration	• Sketching curves • Determining the gradient of a curve • Deriving formulae • Discussions • Solving problems	• Square boards • Graph papers • Ruler • Calculators • Mathematical tables	• Discovering secondary mathematics book 4 students book 4 pages 118-119 Teacher's book 4 pages, 17-19,94-95 • Longman explore mathematics students book 4 pages 182-185 • KLB secondary mathematics book 4 page 182-186 • Golden tips mathematical pages 309-310	
	5	Differentiation	Differentiation in kinematic	By the end of the lesson, the learner should be able to 1. Apply differentiation in calculating distance 2. Apply differentiation in calculating velocity 3. Apply differentiation in calculating acceleration	• Sketching curves • Determine the gradient of a curve • Deriving formulae • Discussions • Problems solving	• Graph papers • Square boards • Ruler • Calculators • Mathematical tables	• Discovering secondary mathematics book 4 students book 4 pages 118-119 Teacher's book 4 pages, 17-19,94-95 • Longman explore mathematics students book 4 pages 182-185 • KLB secondary mathematics book 4 page 182-	

							186 • Golden tips mathematical pages 309-310	
	6-7	Differentiation	Maxima and minima	By the end of the lesson, the learner should be able to 1. Apply differentiation in finding the maximum of a function 2. Apply differentiation in finding of a function	• Sketching curves • Determining the gradient of a curve • Discussions • Solving problems	Boards Graph papers Calculators Ruler Mathematical tables	• Discovering secondary mathematics book 4 students book 4 pages 119-121 Teacher's book 4 pages, 17-19,94-95 • Longman explore mathematics students book 4 pages 182-185 • KLB secondary mathematics book 4 page 186-189 • Golden tips mathematical pages 310-313	
5	**1-2**	Differentiation	Revision	By the end of the lesson, the learner should be able to 1. Answer questions in differentiations	• Sketching curves • Determining the gradient of a curve • Deriving formulae • Discussions • Solving problems	• Square boards • Graph papers • Calculators • Rulers • Mathematical tables	• Discovering secondary mathematics book 4 students book 4 pages 119-121 Teacher's book 4 pages, 17-19,94-95 • Longman explore mathematics	

							students book 4 pages 341-354 • KLB secondary mathematics book 4 page 232-283 • Golden tips mathematical pages 322-457	
	3	Approximation of area	Approximating area by counting	By the end of the lesson, the learner should be able to 1. Approximate the area of an irregular shape by counting the number of squares it curves	• Approximating area • Counting • Sketching/ drawing shapes • Tracing objects • Plotting curves • Discussions • Solving problems	• Square boards • Graph papers • Tracing papers • Calculators • Mathematical tables • Irregular and regular shapes	• Discovering secondary mathematics book 4 students book 4 pages 122-124 Teacher's book 4 pages, 19-20,95 • Longman explore mathematics students book 4 pages 197-200 • KLB secondary mathematics book 4 page 195-201 • Golden tips mathematics pages 316-317	
	4-5	Approximation of area	The trapezium rule	By the end of the lesson, the learner should be able to 1. Derive the formula for the trapezium rule 2. Use the	• Approximating area • Counting • Sketching/ drawing shapes • Tracing objects • Plotting curves	• Square boards • Graph papers • Tracing papers • Calculators • Mathematical	• Discovering secondary mathematics book 4 students book 4 pages	

				trapezium rule to solve problems	• Discussions • Solving problems	tables • Irregular and regular shapes	122-124 Teacher's book 4 pages, 19-20,95 • Longman explore mathematics students book 4 pages 197-200 • KLB secondary mathematics book 4 page 195-201 • Golden tips mathematics pages 316-317	
	6-7	Approximation of area	The trapezium rule	By the end of the lesson, the learner should be able to 1. Derive the formulae for the trapezium rule 2. Use the trapezium rule to solve problems	• Approximating area • Counting • Sketching/ drawing shapes • Tracing objects • Plotting curves • Discussions • Solving problems	• Square boards • Graph papers • Tracing papers • Calculators • Mathematical tables • Irregular and regular shapes	• Discovering secondary mathematics book 4 students book 4 pages 122-124 Teacher's book 4 pages, 19-20,95 • Longman explore mathematics students book 4 pages 197-200 • KLB secondary mathematics book 4 page 195-201 • Golden tips mathematics pages 316-317	
6	**1-2**	Approximation of area	The mid ordinate	By the end of the lesson, the learner should be able	• Approximating area	• Square boards	• Discovering	

			rule	to 1. Derive the mid-ordinate rule 2. Use mid-ordinate rule to solve problems	• Counting sketching/drawing shapes • Tracing objects • Plotting curves • Discussions • Solving problems	• Graph papers • Calculators • Mathematical tables • Irregular and regular shapes	secondary mathematics book 4 students book 4 pages 127-128 Teacher's book 4 pages, 19-20,97-100 • Longman explore mathematics students book 4 pages 201-202 • KLB secondary mathematics book 4 page 202-206 • Golden tips mathematics pages 317	
	3	Approximation of area	Revision	By the end of the lesson, the leaner should be able to 1. Answer questions on area approximation	• Approximating area • Counting • Tracing objects • Plotting curves • Discussions • Solving problems	• Square boards • Graph papers • Calculators • Mathematical tables • Irregular and regular shapes	• Discovering secondary mathematics book 4 students book 4 pages 129-130 Teacher's book 4 pages, 19-20,97-100 • Longman explore mathematics students book 4 pages 341-354 • KLB secondary mathematics book 4 page 232-283	

							• Golden tips mathematics pages 322-457	
	4	Integration	differentiation	By the end of the lesson, the learner should be able to 1. Carry out the process of differentiation	• Sketching curves • Deriving formulae • Discussions • Solving problems	• Square boards • Graph papers • Calculators • Mathematical tables • Multiplication tables	• Discovering secondary mathematics book 4 students book 4 pages 131 Teacher's book 4 pages, 21-22,100 • Longman explore mathematics students book 4 pages 341-354 • KLB secondary mathematics book 4 page 207-208 • Golden tips mathematics pages 314	
	5	Integration	Reverse differentiation	By the end of the lesson, the learner should be able to 1. Interpret integration as the reverse of differentiation	• Sketching curves • Discussions • Deriving formulae • Solving problems	• Square boards • Graph papers • Calculators • Mathematical tables • Multiplication tables	• Discovering secondary mathematics book 4 students book 4 pages 131-132 Teacher's book 4 pages, 21-22,100 • Longman explore mathematics students book 4 pages 208-209 • KLB secondary	

							mathematics book 4 page 208-212 • Golden tips mathematics pages 314	
	6	integration	The integration notation	By the end of the lesson, the learner should be able to 1. Use the integration notation to carry out integration	• Sketching curves • Deriving formulae • Discussions • Solving problems	• Square boards • Graph papers • Calculators • Mathematical tables • Multiplication tables	• Discovering secondary mathematics book 4 students book 4 pages 132 Teacher's book 4 pages, 21-22,100-101 • Longman explore mathematics students book 4 pages 213 • KLB secondary mathematics book 4 page 212-216	
	7	integration	Definite integrals	By the end of the lesson, the leaner should be able to 1. Integrate a polynomial	• Sketching curves • Dering formulae • Discussions • Solving problems	• Square boards • Graph paper • Calculators • Mathematical tables • Multiplication tables	• Discovering secondary mathematics book 4 students book 4 pages 133-134 Teacher's book 4 pages, 21-22,100-101 • Longman explore mathematics	

							students book 4 pages 214-216 • KLB secondary mathematics book 4 page 212-216 • Golden tips mathematics 314-315	
7	**1-2**	Integration	Area under a curve	By the end of the lesson, the learner should be able to 1. Apply integration to find the area under a curve	• Sketching curves • Deriving formulae • Discussions • Solving problems	• Square boards • Deriving formulae • Discussions • Solving problems	• Discovering secondary mathematics book 4 students book 4 pages 134-137 Teacher's book 4 pages, 21-22,101-102 • Longman explore mathematics students book 4 pages 212-217 • KLB secondary mathematics book 4 page 217-2222 • Golden tips mathematics 318-321	
	3-4	Integration	Area under a curve	By the end of the lesson, the learner should be able to 1. Apply integration to	• Sketching curves • Deriving formulae	• Square boards • Graphs papers	• Discovering secondary mathematics	

				find the area under a curve	• Discussions • Solving problems	• Mathematical tables • Calculators • Multiplication tables	book 4 students book 4 pages 134-137 Teacher's book 4 pages, 21-22,101-102 • Longman explore mathematics students book 4 pages 212-217 • KLB secondary mathematics book 4 page 217-2222 • Golden tips mathematics 318-321	
	5-6	integration	Integration in kinematics	By the end of the lesson, the learner should be able to 1. Apply integration in kinematics	• Sketching curves • Deriving formulae • Discussions • Solving problems	• Square boards • Graph papers • Calculators • Mathematical tables • Multiplication tables	• Discovering secondary mathematics book 4 students book 4 pages 138-139 Teacher's book 4 pages, 21-22,101-102 • Longman explore mathematics students book 4 pages 210-212 • KLB secondary mathematics book 4 page 223-231 • Golden tips mathematics	

							315-316	
	7	integration	Integration in kinematics	By the end of the lesson, the learner should be able to 1. apply integration in kinematics	• Sketching curves • Deriving formulae • Discussions • Solving problems	• Square boards • Graph papers • Calculators • Mathematical tables • Multiplication tables	• Discovering secondary mathematics book 4 students book 4 pages 138-139 Teacher's book 4 pages, 21-22,101-102 • Longman explore mathematics students book 4 pages 210-212 • KLB secondary mathematics book 4 page 223-231 • Golden tips mathematics 315-316	
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