MINISTRY OF GENERAL EDUCATION

DEPARTMENT OF MATHEMATICS AND COMPUTER STUDIES

WESTERN PROVINCE GRADE TEN COMMON SCHEME OF WORK FOR 2018 ENTRANTS.

TERM ONE						
WK	**TOPIC**	**SUBTOPICS**	**SPECIFIC OUTCOMES**	**CONTENT**		**REFERENCES**
				KNOWLEDGE	**SKILLS**	
1	**Sets**	Set Operations	Carry out operations on sets.	Operations on sets. Numerical problems involving sets	***Identification*** of operations on sets ***Comparing*** numerical problems involving sets ***Computations*** involving sets.	***Progress in mathematics 10*** ***Secondary school mathematics 10-12*** ***Mathematics 10***
2	**Sets**	Set Operations	Apply higher operations on sets	Applying higher operations on sets (numerical problems involving sets)	***Identification*** of operations on sets ***Comparing*** numerical problems involving sets ***Computations*** involving sets.	***Progress in mathematics 10*** ***Secondary school mathematics 10-12*** ***Mathematics 10***
3	**Travel Graphs**	Distance time graphs	Compute average speed, distance and time Draw travel graphs	Scalar and vector quantities Average speed Distance/displacement Drawing travel graphs	***Identification*** of Scalar and vector quantities ***Computation*** of average speed, distance and time using travel graphs.	***Progress in mathematics 10*** ***Secondary school mathematics 10-12*** ***Mathematics 10***
4	**Travel Graphs**	Distance time graphs Velocity Time graphs	Draw travel graphs Determine acceleration and retardation/deceleration	Drawing travel graphs Acceleration and deceleration/retardation	***Computation*** of average speed, distance and time using travel graphs. ***Relation*** between area under the graph to distance travelled.	***Progress in mathematics 10*** ***Secondary school mathematics 10-12*** ***Mathematics 10***
5	**Travel Graphs**	Velocity Time graphs	Calculate the distance under a velocity time graph Relate area under the graph to distance travelled	Distance/area under a velocity time graph Concept of similarity Explaining why the area under the graph represents distance travelled	***Computation*** of average speed, distance and time using travel graphs. ***Relation*** between areaunder the graph to distance travelled.	***Progress in mathematics 10*** ***Secondary school mathematics 10-12*** ***Mathematics 10***
6	**Index Notation**	Indices	Apply laws of indices Simplify positive, negative and zero indices	Laws of indices Double indices Multiplicative inverse	***Identification*** of indices with same base. ***Simplification*** using indices. ***Application*** of indices to simplify multiplication and division.	***Progress in mathematics 10*** ***Secondary school mathematics 10-12*** ***Mathematics 10***
7	***Midterm tests***					

TERM ONE						
WK	**TOPIC**	**SUBTOPICS**	**SPECIFIC OUTCOMES**	**CONTENT**		**REFERENCES**
				KNOWLEDGE	**SKILLS**	
8	**Index Notation**	Indices	Simplify fractional indices Solve equations involving indices	Fractions with negative indices Equations involving indices Problems involving application of indices	***Application*** of indices to simplify multiplication and division.	***Progress in mathematics 10*** ***Secondary school mathematics 10-12*** ***Mathematics 10***
9	**Algebra**	Basic Processes	Expand and simplify expressions Factorize algebraic expressions	Expansion and simplification of expressions Factorization by using common factors, grouping terms.	***Simplification*** of expressions ***Identification*** of common factors	***Progress in mathematics 10*** ***Secondary school mathematics 10-12*** ***Mathematics 10***
10	**Algebra**	Basic Processes	Factorize algebraic expressions	Expansion and simplification of expressions Factorization by using factors of quadratic expressions and difference of two square	***Identification*** of factors of quadratic expressions and difference of two square .	***Progress in mathematics 10*** ***Secondary school mathematics 10-12*** ***Mathematics 10***
11	**Algebra**	Basic Processes	Simplify Algebraic fractions	Addition , subtraction , multiplication and division of algebraic fractions Lowest common multiple	***Computation*** of algebraic fractions applying the four rules.	***Progress in mathematics 10*** ***Secondary school mathematics 10-12*** ***Mathematics 10***
12	***Revision/ end of term tests***					
13	***End of term tests***					

TERM TWO						
WK	**TOPIC**	**SUBTOPICS**	**SPECIFIC OUTCOMES**	**CONTENT**		**REFERENCES**
				KNOWLEDGE	**SKILLS**	
1	**Matrices**	Types of matrices e.g the null (zero) and identity matrices Carry out basic matrix operations e.g. addition and subtraction	Add and subtract matrices(up to 3x3 matrices)	Add and subtract matrices (up to 3x3 matrices) The null (zero) and identity matrices	***Comparison*** of matrices. ***Computation*** of matrices .	***Progress in mathematics 10*** ***Secondary school mathematics 10-12*** ***Mathematics 10***

TERM ONE						
WK	TOPIC	SUBTOPICS	SPECIFIC OUTCOMES	CONTENT		REFERENCES
				KNOWLEDGE	SKILLS	
2	**Matrices**	Carry out basic matrix operations e.g. multiplication	multiply matrices(up to 3x3 matrices)	Multiplying matrices (up to 3x3 matrices)	***Computation*** of matrices	***Progress in mathematics 10 Secondary school mathematics 10-12 Mathematics 10***
3	**Matrices**	Transpose of a matrix Inverse of a matrix	Find a Transpose of a matrix Calculate the determinant of a 2 by 2 matrix Find the inverse of a 2 by 2 matrix	Transpose of a matrix Determinant and Inverse of a 2x2 matrix Singular matrices	***Interpretation*** of transpose of a matrix. ***Computation*** of matrices.	***Progress in mathematics 10 Secondary school mathematics 10-12 Mathematics 10***
4	**Matrices**	Transpose of a matrix Inverse of a matrix	Solve systems of linear equations in two variables Apply matrices to solve real life problems	Solving systems of linear equation in two variables using matrices Cramer's Rule Applying matrices to solve real life problems	***Comparison*** of matrices. ***Application*** of matrices in solving linear equations.	***Progress in mathematics 10 Secondary school mathematics 10-12 Mathematics 10***
5	**Similarity and Congruency**	Application of Ratio and Proportion	Calculate the scale on a map Calculate length and area using a given scale and vice versa	Representative Fraction (Scale) Calculating length and area using a given scale and vice versa	***Computation*** of representative fractions (RFs). ***Representation*** of measurements on the map.	***Progress in mathematics 10 Secondary school mathematics 10-12 Mathematics 10***
6	**Similarity and Congruency**	Areas and Volumes of Similar figures	Calculate areas and volumes of similar figures Apply ratio, proportion, to solve problems on similarity and congruence	Calculating areas and volumes of similar figures Applying ratio, proportion, similarity and congruence in solving real life problems	***Application*** of ratio, proportion, similarity and congruence in solving real life problems	***Progress in mathematics 10 Secondary school mathematics 10-12 Mathematics 10***
			Mid term			
8	**Social and Commercial Arithmetic**	Investments	Carry out calculations that involve Shares and dividends	Shares and dividends	***Interpretation*** of Shares and dividends ***Calculations*** involving Shares and dividends.	***Progress in mathematics 10 Secondary school mathematics 10-12 Mathematics 10***
9	**Social and Commercial Arithmetic**	Investments	Carry out calculations that involve investment Bonds	Investment Bonds	***Interpretation*** of investment Bonds. ***Calculations*** involving Investment Bonds.	***Progress in mathematics 10 Secondary school mathematics 10-12 Mathematics 10***
10	**Bearings**	Bearings and Scale Drawing	Draw/sketch diagrams to represent position and direction	Scale drawing Three figure bearings	***Communication*** through diagrams to represent position and direction ***Computation*** involving bearing and scale drawing.	***Progress in mathematics 10 Secondary school mathematics 10-12 Mathematics 10***
11	**Bearings**	Bearings and Scale Drawing	Use bearing and scale drawing in real life	Solving problems involving bearing and scale drawing from real life problems Angles Measuring instruments	***Computation*** involving bearing and scale drawing. ***Application*** of bearing and scale drawing from real life problems.	***Progress in mathematics 10 Secondary school mathematics 10-12 Mathematics 10***
12	***Revision/ end of term tests/Mock***					

TERM ONE						
WK	TOPIC	SUBTOPICS	SPECIFIC OUTCOMES	CONTENT		REFERENCES
				KNOWLEDGE	SKILLS	
13	***End of term tests/Mock***					

TERM THREE						
WK	TOPIC	SUBTOPICS	SPECIFIC OUTCOMES	CONTENT		REFERENCES
				KNOWLEDGE	SKILLS	
1	**Symmetry**	Symmetry of solids	Determine order of rotational symmetry	Point, Rotational and Plane Symmetry Centre of rotation	***Identification*** of symmetry of solids.	***Progress in mathematics 10*** ***Secondary school mathematics 10-12*** ***Mathematics 10***
2	**Symmetry**	Symmetry of solids	Determine symmetry of solids	Order of symmetry in three dimension Plane and axis of symmetry	***Identification*** of symmetry of solids. ***Determination*** of plane symmetry	***Progress in mathematics 10*** ***Secondary school mathematics 10-12*** ***Mathematics 10***
3	**Symmetry**	Symmetry of solids	Determine plane symmetry	Plane and axis of symmetry	***Determination*** of plane symmetry	***Progress in mathematics 10*** ***Secondary school mathematics 10-12*** ***Mathematics 10***
4	**Computer and Calculator**	Functions on a Calculator. Basic components of a computer	Demonstrate the use of different functions on a calculator Describe components of a computer	Using different functions on a calculator Describing Components of a computer (i.e. Input, Process and Output Parts/devices)	***Identification*** of basic components of a computer. ***Interpretation*** of functions on a calculator	***Progress in mathematics 10*** ***Longman mathematics 8/10*** ***Excel and advance in mathematics 9/10***
5	**Computer and Calculator**	Algorithms	Describe various methods of implementing an algorithm	Definition of an algorithm Algorithm (sequence , decision loops) Methods of implementing an algorithm (flow charts and pseudo codes)	***Modelling*** of simple algorithms ***Implementation*** of algorithms in programming. ***Coding*** simple computer programs.	***Progress in mathematics 10*** ***Longman mathematics 8/10*** ***Excel and advance in mathematics 9/10***
6	**Computer and Calculator**	Methods of implementing an algorithm	Describe various methods of implementing an algorithm Outline problem solving stages	Methods of implementing an algorithm (flow charts and pseudo codes) Stages of problem solving (define a problem , analysis method of solution, write a computer program, document the program)	***Modelling*** of simple algorithms ***Implementation*** of algorithms in programming. ***Coding*** simple computer programs.	***Progress in mathematics 10*** ***Longman mathematics 8/10*** ***Excel and advance in mathematics 9/10***