Guide Line to Adjust Mathematics Contents for Grade 9 -12

City Government of Addis Ababa Education Bureau

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Guide Line to Adjust Mathematics Contents for Grade 9 - 12

1. Introduction

The Ethiopia general education was fully interrupted because of Covid-19 pandemic since 15 February 2020. The Ministry of Education has decided students to pass freely to the next grade except for Grade 8 and 12 students who have to take regional and national examination respectively.

In line with the Ministry of Education, City Government of Addis Ababa Education Bureau will continue the teaching and learning process in 2020/21 if the Ministry of Health with the coordination of World Health Organization announces the issue of Covid-19 pandemic is resolved and the Ministry of Education can continue the teaching and learning process in schools.

Hence, City Government of Addis Ababa Education Bureau, together with the Ministry of Education is preparing to cover the uncover portions from Grade 1 to 12 through make up classes before starting the 2020/21 teaching and learning in the first 45 days of 2020/21 academic year. Because of this, the beginning of the 2020/21 academic year will be pushed by 45 days. City Government of Addis Ababa Education Bureau, together with the Ministry of Education, has planned to adjust contents from Grade 1 to 12.

For this end, City Government of Addis Ababa Education Bureau in line with, the Ministry of Education has prepared this Guide line to Adjust Mathematics Contents from Grade 1 to 12. This guide line comprises rational and objectives of the guide line and issues considered, content selection criteria, adjusted contents and the role of teachers and students for the implementation.

2. Rational

The rational for adjusting contents are to:

- identify the most crucial contents to be covered and
- provide similar contents throughout the country

3. Objectives

The objectives of the guide line are to:

- show the rational of adjusting contents
- show issues considered in selecting the Adjusted contents and
- identify Adjusted contents for each grade level

4. Issues Considered

The 2020/21 academic year will open in three phases across the country. In Addis Ababa education will be opened in two phases, the first phase on 30th November for private schools and the second phase on 7th December 2020 G.C.

City Government of Addis Ababa Education Bureau, according to the Ministry of Education, has decided to cover the uncovered second semester lessons in 45 days before starting the 2020/21 teaching and learning process. The 2020/21 academic year will start after the 45 days revision. These shows there should be content reduction for 45 days.

In the 45 days, there are 6 weeks/30 teaching and learning days. For Grade 1 to 4 each, there are 6 periods per week. Hence, we will have 36 make up periods for each of Grade 1 to 4 in 45 days. By the same assumption, for grade 5 to 12 each, there are 5 periods per week. Hence, we will have 30 make up periods for each of Grade 5 to 12 in 45 days.

Based on the above considerations, the number of periods for adjusted contents on grade 7 & 8 in each unit is allotted as follows.

5. Content Adjusting Criteria

Adjusted contents are identified if they are not basic for other subjects, not basic for further learning, not highly applicable for real life situations, not newly introduced concept, covered on the next grades, covered by the same depth and breadth in other subjects, unnecessary repeated contents, those easy contents that students can understand easily and application problems that can be used as an elaboration example under the main contents are Adjusted.

6. Adjusted Contents

Grade 9

Unit	Unit Title	Number of Period	Number of Period for Adjusted Contents
Unit 1	The number System	33	6
Unit 2	Solutions of Equations	22	3
Unit 3	Further on Sets	15	3
Unit 4	Relations and Functions	22	5
Unit 5	Geometry and measurement	36	6
Unit 6	Statistics and Probability	27	5
Unit 7	Vectors in two dimensions	12	2
Total		**167**	**30**

No	Unit	No of periods	Adjusted Sub-Unit	No of Adjusted periods
1	Unit 1: The number System	6	1.1 Revision on the set of rational Numbers	3
			1.2.6 Limits of accuracy	2
			1.2.9 Euclid's division algorithms.	1
2	Unit 2: Solutions of Equations	3	2.1 Equations involving exponents and radicals	3
3	Unit 3: Further on Sets	3	3.1 Ways to describe sets	2
			3.3.3 Problems involving sets	1
4	Unit 4: Relations and Functions	5	4.1.2 Graphs of Relation	5
5	Unit 5: Geometry and measurement	6	5.2.2 Definition of similar figures	2
			5.2.3 Theorems on similarity of triangles.	2
			5.2.4 Theorems on similar plane figures	2
6	Unit 6: Statistics and Probability	5	6.1.1 Collection and tabulation of statistical data	2
			6.2.1 Experimental Probability	3
7	Unit 7: Vectors in two dimensions	2	7.2 Representation of a vector.	2

Grade 10

Unit	Unit Title	Number of Period	Number of Period for Adjusted Contents
Unit 1	Polynomial function	20	4
Unit 2	Exponential and logarithmic functions	30	5
Unit 3	Solving inequalities	20	4
Unit 4	Coordinate geometry	15	3
Unit 5	Trigonometric functions	30	5
Unit 6	Plane geometry	22	4
Unit 7	Measurement	25	5
Total		**162**	**30**

No	Unit	No of periods	Adjusted Sub-Unit	No of Adjusted periods
1	Unit 1: Polynomial function	4	1.1.1Definition of Polynomial function	2
			1.4 Graphs of polynomial functions.	2
2	Unit 2: Exponential and logarithmic functions	5	2.1.1 Exponents	2
			2.5 Application of Exponential and Logarithmic functions	3
3	Unit 3: Solving inequalities	4	3.3 Quadratic Inequalities	4
4	Unit 4: Coordinate geometry	3	4.3 Equation of a line	3
5	Unit 5: Trigonometric functions	5	5.4 Real life application problems.	5
6	Unit 6: Plane geometry	4	6.2 Special quadrilateral	4
7	Unit 7: Measurement	5	7.1 Revision on surface area and volume of prisms and cylinders.	3
			7.4 Surface areas and volumes of composed solids	2

Grade 11:- Natural Science Stream

Unit	Unit Title	Number of Period	Number of Period for Adjusted Contents
Unit 1	Further on Relation and Function	15	3
Unit 2	Rational Expressions and Rational	12	2

	Functions		
Unit 3	Coordinate Geometry	21	4
Unit 4	Mathematical Reasoning	16	3
Unit 5	Statistics and Probability	31	5
Unit 6	Matrices and Determinants	31	5
Unit 7	The Set of Complex Numbers	13	2
Unit 8	Vectors and Transformation of the Plane	20	3
Unit 9	Further on Trigonometric Functions	20	3
Total		**179**	**30**

No	Unit	No of Adjusted periods	Adjusted Sub-Unit	No of Adjusted periods
1	Unit 1: Further on Relation and Function	3	1.1 Revision on Relations	3
2	Unit 2: Rational Expressions and Rational Functions	2	2.1.1 Rational Expression	2
3	Unit 3: Coordinate Geometry	4	3.1 Straight line	4
4	Unit 4: Mathematical Reasoning	3	4.1 Logic	2
5	Unit 5: Statistics and Probability	5	5.1.1 Types of data	2
			5.2 Probability	3
6	Unit 6: Matrices and Determinants	5	6.3 Inverse of a square matrix	5
7	Unit 7: The Set of Complex Numbers	2	7.2 Operations on Complex Numbers	1
			7.4 Simplification of Complex Numbers	1
8	Unit 8: Vectors and Transformation of the Plane	3	8.1 Revision on vectors and scalars	3
9	Unit 9: Further on Trigonometric Functions	3	9.4 Application of trigonometric functions	3

Grade 11:- Social Science Stream

Unit	Unit Title	Number of	Number of Period

		Period	for Adjusted Contents
Unit 1	Further on Relation and Function	15	3
Unit 2	Rational Expressions and Rational Functions	12	2
Unit 3	Coordinate Geometry	21	4
Unit 4	Mathematical Reasoning	16	3
Unit 5	Statistics and Probability	31	5
Unit 6	Matrices and Determinants	31	5
Unit 7	The Set of Complex Numbers	13	2
Unit 10	Introduction to Linear Programming	15	3
Unit 11	Mathematical Applications in Business	18	3
Total		**172**	**30**

No	Unit	No of Adjusted periods	Adjusted Sub-Unit	No of Adjusted periods
1	Unit 1: Further on Relation and Function	3	1.1 Revision on Relations	3
2	Unit 2: Rational Expressions and Rational Functions	2	2.1.1 Rational Expression	2
3	Unit 3: Coordinate Geometry	4	3.1 Straight line	4
4	Unit 4: Mathematical Reasoning	3	4.1 Logic	3
5	Unit 5: Statistics and Probability	5	5.1.1 Types of data	2
			5.2 Probability	3
6	Unit 6: Matrices and Determinants	5	6.3 Inverse of a square matrix	5
7	Unit 7: The Set of Complex Numbers	2	7.2 Operations on Complex Numbers	1
			7.4 Simplification of Complex Numbers	1
8	Unit 10: Introduction to Linear Programming	3	10.1 Revision on Linear Graphs	3
9	Unit 11: Mathematical Applications in	3	11.1 Basic Mathematical Concepts in Business	1

No	Unit	No of Adjusted periods	Adjusted Sub-Unit	No of Adjusted periods
	Business			
			11.3 Saving, Investing and Borrowing Money	2

Grade 12:- Natural Science Stream

Unit	Unit Title	Number of Period	Number of Period for Adjusted Contents
Unit 1	Sequences and Series	18	3
Unit 2	Introduction to Limits and Continuity	28	5
Unit 3	Introduction to Differential Calculus	27	5
Unit 4	Application of Differential Calculus	25	5
Unit 5	Introduction to Integral Calculus	30	6
Unit 6	Three Dimensional Geometry and Vectors in Space	17	3
Unit 7	Mathematical Proofs	15	3
Total		**160**	**30**

No	Unit	No of Adjusted periods	Adjusted Sub-Unit	No of Adjusted periods
1	Unit 1: Sequences and Series	3	1.1.1 Revision on Sets and Functions	1
			1.3 The Sigma Notation and Partial Sums	1
			1.4 The notion "Infinite series"	1
2	Unit 2: Introduction to Limits and Continuity	5	2.1. Limits of sequence of numbers	2
			2.4. Exercises on Application of Limits	3
3	Unit 3: Introduction to Differential Calculus	5	3.1 Introduction to Derivatives	2
			3.3 Derivatives of combinations and compositions of functions	3
4	Unit 4: Application of Differential Calculus	5	4.1. Extreme values of a function	3
			4.2 Minimization and maximization problems	2
5	Unit 5: Introduction to Integral Calculus	6	5.2 Techniques of integration	3
			5.3 Definite integrals, area and fundamental theorem of calculus	2
			5.4 Application of integral calculus	1
6	Unit 6: Three	3	6.6 Vectors In space	3

No	Unit	No of Adjusted periods	Adjusted Sub-Unit	No of Adjusted periods
	Dimensional Geometry and Vectors in Space			
7	Unit 7: Mathematical Proofs	3	7.1 Revision on Logic	3

Grade 12:- Social Science Stream

Unit	Unit Title	Number of Period	Number of Period for Adjusted Contents
Unit 1	Sequences and Series	18	3
Unit 2	Introduction to Limits and Continuity	28	5
Unit 3	Introduction to Differential Calculus	27	5
Unit 4	Application of Differential Calculus	25	5
Unit 5	Introduction to Integral Calculus	30	6
Unit 8	Further on Statistics	22	3
Unit 9	Mathematical Applications for Business and Consumers	15	3
Total		**165**	**30**

No	Unit	No of Adjusted periods	Adjusted Sub-Unit	No of Adjusted periods
1	Unit 1: Sequences and Series	3	1.1.1 Revision on Sets and Functions	1
			1.3 The Sigma Notation and Partial Sums	1
			1.4 The notion "Infinite series"	1
2	Unit 2: Introduction to Limits and Continuity	5	2.1. Limits of sequence of numbers	2
			2.4. Exercises on Application of Limits	3
3	Unit 3: Introduction to Differential Calculus	5	3.1 Introduction to Derivatives	2
			3.3 Derivatives of combinations and compositions of functions	3
4	Unit 4: Application of Differential	5	4.1. Extreme values of a function	3
			4.2 Minimization and maximization problems	2

No	Unit	No of Adjusted periods	Adjusted Sub-Unit	No of Adjusted periods
	Calculus			
5	Unit 5: Introduction to Integral Calculus	6	5.2 Techniques of integration	3
			5.3 Definite integrals, area and fundamental theorem of calculus	2
			5.4 Application of integral calculus	1
6	Unit 8: Further on Statistics	3	8.1 Sampling Techniques	1
			8.3 Construction of graphs and interpretation	2
7	Unit 9: Mathematical Applications for Business and Consumers	3	9.1 Applications to purchasing	1
			9.3 Real estate expenses	1
			9.4 Wages	1

7. The role of the teacher and student

Teachers are highly expected to use the remaining periods effectively to cover contents on the remaining time.

Students have to follow the classes attentively, study the whole portions and work exercise questions found on the textbook and ready for the next grade.