

**MINISTRE DES ENSEIGNEMENTS SECONDAIRES**  
*MINISTRY OF SECONDARY EDUCATION*

**INSPECTION GENERALE DES ENSEIGNEMENTS**  
*INSPECTORATE GENERAL OF EDUCATION*

**MATHEMATICS TEACHING SYLLABUS**

***FORM 1 and FORM 2***



*Observer son environnement pour mieux orienter ses choix de formation et réussir sa vie*

REPUBLIQUE DU CAMEROUN  
*Paix - Travail – Patrie*

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MINISTERE DES ENSEIGNEMENTS  
SECONDAIRES

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INSPECTION GENERALE DES  
ENSEIGNEMENTS

REPUBLIC OF CAMEROON  
*Peace -Work – Fatherland*

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MINISTRY OF SECONDARY EDUCATION

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INSPECTORATE GENERAL OF EDUCATION

Order N° 264/14 /MINESEC/ IGE ..... 13 AUG 2014

To outline the syllabuses for Form I and Form II of Secondary General Education.

**THE MINISTER OF SECONDARY EDUCATION,**

**Mindful of the Constitution;**

**Mindful of the Law N° 98/004 of 14 April 1998 to lay down Guidelines for Education in Cameroon;**

**Mindful of Decree N°2011/408 of 9 December 2011 to reorganise the Government;**

**Mindful of Decree N°2011/410 of 9 December 2011 to form the Government;**

**Mindful of Decree N°2012/267 of 11 June 2012 to organise the Ministry of Secondary Education;**

**HEREBY ORDERS AS FOLLOWS:**

**Article 1:** The syllabuses for Form I and Form II of Secondary General Education shall be outlined as follows:

## PREFACE

### SYLLABUSES FOR 21ST CENTURY CAMEROON

At the beginning of this millennium, as Cameroon chooses to become an emerging nation by the year 2035, its secondary education sector faces many challenges. It should:

- Offer quality training and education to most young Cameroonians within a context marked by large classes in primary education;
- Prepare them for smooth insertion into a more demanding job market worldwide, through a pertinent teaching /learning process.

In addition, training tools have significantly evolved in their conception and implementation. A school that was mostly based on contextualised knowledge acquisition has given room, all over the world, for a school that aims at empowering learners to help them cope with complex and diversified real life situations. Instead of a school cut off from society, we now have a school deeply rooted in a society that takes into account sustainable development, local knowledge and cultures.

The implementation of this new school ,prescribed by the Law to lay down guidelines for education in Cameroon, and the necessity for socio-professional insertion require the adoption of a pedagogic paradigm for the development of syllabuses relating to “**The competence based approach with an entry through real life situations**”.

In this perspective, new syllabuses for Secondary General Education, those of Teacher Education and Training Referentials for Technical Education are part of this great change for the re-dynamisation of our education system. They are in line with the implementation of the provisions of Growth and Employment Strategy Paper (DSCE) which, by the year 2020, specifies the minimum amount of knowledge which each Cameroonian is supposed to possess by the time they leave the first cycle of secondary education.

These syllabuses define essential competencies that should be acquired by learners within the first cycle of secondary education, in terms of knowledge, know how and attitudes. They equally define the framework that will enable teachers to organise their pedagogic activities.

While congratulating all those who designed these syllabuses, I hereby exhort all the members of the education family, notably teachers, to acquaint themselves with the new paradigm, to effectively implement it and make the Cameroon education system successful.

  
The Minister of Secondary Education  
*Louis Bahes Bahes*

## FIRST CYCLE SYLLABUS REVIEW

### A PARTICIPATORY AND INNOVATIVE APPROACH

The syllabuses that were drawn up by the Inspectorate General of Education in the Ministry of Secondary Education since 2012 are in accordance with the major guidelines for education in general and secondary education in particular as they are enshrined both in the 1998 law to lay down guidelines for education in Cameroon and in the 2009 Growth and Employment Strategy Paper(DSCE) .

These orientations could be summarised, amongst others, to train within the framework of an emerging Cameroon in the year 2035, citizens that will have a good mastery of the two official languages (English and French), deeply rooted in their cultures but open to a world in search for sustainable development and dominated by Information and Communication Technologies.

Conceived in the various Inspectorates of Pedagogy, and later introduced for trialling in secondary and high schools during the 2012/2013 school year, these syllabuses were developed with the contributions of classroom teachers and teacher trade unionists.

The new syllabuses had to undergo many changes:

- a shift from a skill based approach to a competence based approach through real life situations;
- a shift from a school cut off from society to one that prepares citizens for a smooth insertion into socio-cultural and economic activities ;
- a shift from an evaluation of knowledge to that of competences necessary to sustainable development.

When these new changes and orientations were taken into account, they naturally led to a shift of paradigm within the curriculum reform process. The option we have adopted is the competence based approach through real life situations.

The syllabuses of the first cycle of Secondary General Education are broken down into 5 areas of learning, each of them containing a given number of disciplines as shown in the table below.

Areas of learning	Disciplines
1- Languages and Literature	<ul style="list-style-type: none"> <li>- French</li> <li>- English</li> <li>- Living Languages II</li> <li>- Ancient Languages</li> <li>- Literature(in English and in French)</li> </ul>
2- Science and Technology	<ul style="list-style-type: none"> <li>- Mathematics</li> <li>- The Sciences( Physics, Chemistry, Technology, Life and Earth Sciences)</li> <li>- Computer Science</li> </ul>
3- Social Sciences/Humanities	<ul style="list-style-type: none"> <li>- History</li> <li>- Geography</li> <li>- Citizenship Education</li> </ul>
4- Personal Development	<ul style="list-style-type: none"> <li>- Sports and Physical Education</li> <li>- Manual Labour</li> </ul>
5- Arts and National Cultures	<ul style="list-style-type: none"> <li>- National Languages</li> <li>- National Cultures</li> <li>- Arts</li> </ul>

For 6e and 5e (Francophone sub -system of education ), the weekly workload and the quota as compared to the total number of hours on the time table (32 h) are displayed in the table below.

Domaines d'apprentissage	Volume horaire	Quota
Langues et Littératures	10 h	30%
Sciences et Technologies	08 h	25%
Sciences Humaines	06 h	20%
Arts et Cultures Nationales	04 h	15%
Développement Personnel	03 h	10%

One hour is allotted for preps.

For the Anglophone sub-system of education (Form I and Form II) the same information is summarised in the table below.

Areas of Learning	Weekly workload	Quota
Languages and Literature	10 h	30%
Science and Technology	08 h	25%
Social Sciences	06 h	20%
Arts and National Cultures	04 h	15%
Personal Development	03 h	10%



**The Inspector General of Education**

**Dr. Mrs Evelyne Mpoudi Ngolle**

3

## END - OF - FIRST CYCLE LEARNER'S EXIT PROFILE

The first cycle of Secondary General Education admits young graduates from primary schools aged between ten and fourteen. Its general objectives are not only to build intellectual, civic and moral skills in these children but also competences and fundamental knowledge which will either enable them to foster their education in the second cycle, or to prepare them for a smooth insertion into the job market after professional training.

Thus, within the framework of these new syllabuses, the learner is expected , after the first cycle of secondary education, to be able to use his/her competences to solve problems through family of situations relating to domains of life as indicated in the table below:

N°	Domains/Areas of life	Families of situations to be treated in the 1 <sup>st</sup> cycle
1	Family and social life	<ul style="list-style-type: none"> <li>• Participation in family life</li> <li>• Healthy professional relationships</li> <li>• Social integration</li> </ul>
2	Economic life	<ul style="list-style-type: none"> <li>• Discovery of income generating activities</li> <li>• Discovery of the job market, social roles, jobs and professions</li> <li>• Self confidence, aspirations, talents, self potential</li> <li>• Practising healthy eating habits</li> </ul>
3	Environment , health and well being	<ul style="list-style-type: none"> <li>• Preservation of the Environment</li> <li>• Quest for a healthy life style</li> <li>• Choosing and practising a healthy life style</li> </ul>
4	Citizenship	<ul style="list-style-type: none"> <li>• Mastery of rules and regulations governing the Cameroonian society</li> <li>• Discovery of cultural values and customs of the Cameroonian society</li> </ul>
5	Media and Communications	<ul style="list-style-type: none"> <li>• Discovery of the media world</li> <li>• Discovery of Information and Communication Technologies</li> </ul>

In order to achieve these objectives, the learner should be able to mobilise , within the various disciplines and constructive areas of learning of the syllabuses, all the pertinent resources in terms of knowledge, know how and attitudes.

The next table gives you a general overview of the afore-mentioned objectives, while the syllabus for each subject unfolds, in details, all the expected competences per level and at the end of the 1<sup>st</sup> cycle.

Areas of Learning	Disciplines	Expected outcomes at the end of the 1 <sup>st</sup> cycles
1-Languages and Literature	<b>Living languages:</b> English, French , German, Italian, Spanish, Chinese, Etc.	<b>French and English , L1</b> Receptive skills: reading and listening Read in an autonomous way, different types of texts related to areas of life as defined in the syllabus; Listen and understand various texts related to the above mentioned areas of life Productive skills: speaking and writing Produce various types of texts , of average length related to these areas of life; Language tools: appropriate use of various language tools in order to produce and read types of texts related to that level;
	English to Francophone learners  French to Anglophone learners	Communicate accurately and fluently using all four basic skills in language learning; Be able to transfer knowledge learnt in class to real life situations out of the classroom; Be able to cope and survive in problem solving situations;
		<b>Living languages II</b> Receptive skills: reading and listening Read and understand simple texts on social life, citizenship, the environment, well being and health, media etc.. Listen and get oral information in order to simply interact during communication situations related the various domains of life. Productive skills: speaking and writing Sing, recite, dramatise , orally answer questions related to the

		various domains of life as defined in the syllabus; Write short passages on various familiar topics.
	<b>Ancient languages:</b> Latin, Greek <b>National languages</b>  <b>Literature</b> Cameroon Literature; French Literature; Francophone Literature; Other literatures	Develop general knowledge through ancient languages and cultures; know the origins of the French language for linguistic mastery; Carry out elementary tasks in translation.
2-Science and Technology	Mathematics, The Sciences Computer Science	Use mathematic knowledge skills and values with confidence to solve real life problems within the different domains of life; Communicate concisely and unambiguously and develop power of mathematical reasoning (logical thinking, accuracy and spatial awareness).
		<b>The Sciences:</b> Acquire the fundamentals of sciences in order to understand the functioning of the human body, the living world, the earth and the environment; Acquire methods and knowledge to understand and master the functioning of technical objects made by man to satisfy his needs; Demonstrate attitudes to protect his/her health and environment.
		<b>Computer Science :</b> Master the basics of Information and Communication Technologies; Exploit and use ICTs to learn.
<b>3- Social Sciences /Humanities</b>	<b>History</b>	Possess cultural references to better locate events in time and space within a democratic system and become a responsible

	<b>Geography</b> <b>Citizenship Education</b>	citizen. <b>History:</b> Acquire a common culture ; be aware of heritage from the past and current challenges; <b>Geography :</b> Develop one’s curiosity and knowledge of the world; Get acquainted with landmarks to find your way and fit in the world. <b>Citizenship Education:</b> Possess essential knowledge in rights and duties in order to fulfil his/her citizenship.
4- Personal Development	<b>Moral Education;</b> <b>Home Economics;</b> <b>Sports and Physical Education</b> <b>Health Education</b>	Develop his / her physical abilities/skills ; Get ready for physical challenges , save and regain energy after physical efforts; Identify risk factors; possess basic knowledge and principles in hygiene and health education; Demonstrate a sense of self control and appreciate the effect of physical activities. Conceive and draw up sports and cultural animation projects; Acquire methods and develop a high sense of efforts; Conceive, draw up and implement projects that will enable one to project his/her image and feel the well being inspired by self-confidence.
5- Arts and National Cultures	<b>Arts/Artistic Education;</b> <b>National Cultures</b>	<b>Artistic Education:</b> Observe and appreciate works of art; Carry out an artistic activity; Gradually acquire the love for personal expression and creativity; Possess a mastery of creativity in music, plastic arts and the performing arts. Dramatise, recite texts (poems, tales, proverbs, etc.) relating to various areas of society; Practise the different dramatic genres: sketches, comedy, tragedy, drama, etc.  <b>National languages and Cultures</b> Demonstrate a mastery of Cameroon cultures;

		<p>Visit the various cultural areas of the country in order to discover their characteristics;</p> <p>Demonstrate a mastery of basic rules in writing Cameroonian languages as well as basic grammatical notions applied to these languages;</p> <p>Demonstrate a mastery of one of the national languages at 3 levels: morpho-syntax, reception and production of simple oral and written texts.</p>
<p>Even though the learners acquires skills in different disciplines, these competences are accompanied by other skills known as cross curricular competences related to intellectual, methodological, social and personal areas of learning.</p>		
<b>6- Cross curricular competences</b>	Intellectual and Methodological domains	<p>Solve Problem in a given situation;</p> <p>Use knowledge skills and values with confidence in order to solve real life problems within the different domains of life;</p> <p>With confidence, find useful information to solve problems he/she is faced with;</p> <p>Give his/her opinion ;</p> <p>Support his/her opinion with strong arguments ;</p> <p>Assess him/herself with a view to remediation;</p> <p>Demonstrate basic knowledge in note taking ;</p> <p>Conceive and realise individual projects;</p> <p>Analyse and summarise information, give feedback and report orally or in writing.</p> <p>Develop problem solving approaches;</p> <p>Exploit and use ICTs in his/her activities.</p>
	<b>Social and Personal Domains</b>	<p>Interact positively and assert his/her personality while respecting that of other people;</p> <p>Join team work, fit in a common initiative project /group;</p> <p>Demonstrate interest in cultural activities ;</p> <p>Develop a sense of effort, love for work, perseverance in tasks or activities carried out ;</p> <p>Understand and accept others in intercultural activities;</p>

The resources to be mobilised by the learner are found in many disciplines and areas of learning. So it is important to implement these syllabuses not in isolation but as interrelated subjects. These remarks hold both for subject and cross curricular competences. They are so called to show that they should be developed through teaching/learning activities of the different subjects. The development of subject and cross curricular competences concern the entire education family as they are capable of inspiring an educative project and the putting in place of extra curricular activities. The ultimate training goal of these syllabuses, at the end of the first cycle, is to enable the learner to be self reliant, to be able to keep on learning through out his/her life, to contribute to sustainable development and become a responsible citizen.

**MINISTRY OF SECONDARY EDUCATION**  
MINISTÈRE DES ENSEIGNEMENTS SECONDAIRES

**INSPECTORATE GENERAL OF EDUCATION**  
INSPECTION GÉNÉRALE DES ENSEIGNEMENTS

*Inspectorate of Pedagogy in charge of Sciences Education/Mathematics Department*

**MATHEMATICS TEACHING SYLLABUS**  
**FORM 1 and FORM 2**

**August 2014**

**REPUBLIC OF CAMEROON**

Peace – Work - Fatherland

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MINISTRY OF SECONDARY EDUCATION

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GENERAL SECRETARIAT

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INSPECTION DE PEDAGOGIE CHARGEE DES  
ENSEIGNEMENT DE SCIENCE

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CELLULE D' APPUI A L' ACTION PEDAGOGIE

**Order N° \_\_\_\_\_/MINESEC/GS/IGE/IP-SC/SM**  
**Defining the Mathematics Teaching Syllabus for form 1 and form 2**  
**of Secondary General Education, English speaking sub-system**

**THE MINISTER OF SECONDARY EDUCATION**

- Mindful of the Constitution of the Republic of Cameroon and its subsequent modifications;
- Mindful of Law N° 98/004 of 14 April 1998 to lay down guidelines for Education in Cameroon;
- Mindful of Decree N° 2011/408 of 09<sup>th</sup> December 2011 reorganizing the Government;
- Mindful of Decree N° 2011/410 of 09<sup>th</sup> December 2011 forming the Government;
- Mindful of Decree N° 2012/267 of 11<sup>th</sup> June 2012 to organize the Ministry of Secondary Education.

Hereby orders:

**Article 1:** The Mathematics Teaching Syllabus for Form 1 and Form 2 of Secondary General Education of the English speaking sub-system is defined as follows:

**LEARNING AREA:  
SCIENCE AND TECHNOLOGY**

**SUBJECT: MATHEMATICS**

**CLASSES: FORM 1 AND FORM 2**

**ANNUAL WORKLOAD: 100 hours**

**WEEKLY WORKLOAD: 4hrs (240 minutes)**

**COEFFICIENT: 4**

# TABLE OF CONTENTS

GENERAL PRESENTATION	4
PROFILE OF THE LEARNER AT THE END OF THE FIRST CYCLE	4 - 5
THE PLACE OF MATHEMATICS IN THE CURRICULUM	5
CONTRIBUTION OF MATHEMATICS TO THE LEARNING AREA	5
DOMAINS OF LIFE AND CONTRIBUTION OF SYLLABUS TO DOMAINS OF LIFE	6
FAMILIES OF SITUATIONS COVERED IN THIS PROGRAM OF STUDY	6
COMPREHENSIVE TABLE SHOWING THE DIFFERENT MODULES	7
PRESENTATION OF THE MODULE	7
PEDAGOGIC ORIENTATION	8 - 9
<b>FORM 1</b>	
<i>Module 1</i>	10 - 13
<i>Module 2</i>	14 - 19
<i>Module 3</i>	20 - 21
<i>Module 4</i>	22 - 23
<b>FORM 2</b>	
<i>Module 5</i>	24 - 27
<i>Module 6</i>	28 - 29
<i>Module 7</i>	30 - 31
<i>Module 8</i>	32 - 33
<i>Module 9</i>	34 - 35

## GENERAL PRESENTATION

Mathematics involves observing, representing and interpreting quantities, patterns, random phenomena, space and shape using its own specialized language (symbols, operations, patterns, graphs . . .), in describing numerical, geometrical and graphical relationships. It is one of the fundamental subjects taught in all the classes of Secondary Education because of its usefulness. Present within learners' environment are many exciting Mathematical situations for learners to explore. Learners also see, interaction of Mathematics contents and skills with other subjects within the Sciences Technology learning area as well as the challenge of globalization within the Science domain in general. Each person needs to possess a basic knowledge of Mathematics to function efficiently in life.

This present Mathematics syllabus is elaborated using the Competency – Based – Approach from a situated perspective (through real life situations). Masciotra asserts that, it is only in a situation that a person develops his/her competence and therefore the situation is the source of competence. He further says, it is only by dealing effectively with this situation that a person can be declared competent. This approach makes functional within the situations, Mathematical knowledge and skills learned in the classroom. These knowledge and skills act as tools for the students to solve problems in real life situations. This orientation is to meet up with the evolution in pedagogy or change of paradigm and it is aimed at producing a citizen who is autonomous in exercising his/her role in the society and who is self reliant (law of Orientation 1998, article 4)

The law to lay down guidelines for education in Cameroon provides among others as general objectives of education to:

- Train citizens who are firmly rooted in their cultures **but open to the world...**);
- Develop **creativity, sense of initiative and the spirit of enterprise**;
- Cultivate the **love of effort and work well done, the quest for excellence and team spirit**;
- Ensure the constant adaptation of the educational system to **national economic and socio-cultural realities**, and also to **international environment**, especially through the **promotion of teaching of sciences and technology.**)

In this regard, teaching Mathematics has a double goal.

- The first goal is the intellectual training of the learner where he progressively develops abilities for experimentation, creativity and critical analysis so that he is capable to take up fully, his role as a citizen.
- The second goal is utilitarian; here it envisages the adaptation of scientific knowledge to international economic and environmental context.

## PROFILES OF THE LEARNER

At the end of the first cycle, the learner should be able to use Mathematical knowledge, skills and values with confidence to solve real life problems within the different domains of life, communicate concisely and unambiguously and develop power of mathematical reasoning (logical thinking, accuracy and spatial awareness). To be more specific they have to:

- Apply Mathematics in a variety of contexts and describe suitable situations using Mathematical notations and language;
- Extract, translate and use Mathematical information from tables, charts, graphs, diagrams, coded figures, or from any document and from the environment;
- Recognize, identify, describe and make geometrical shapes /forms, develop skills and accuracy as well as have confidence in the use of instruments for measuring and drawing and ability to visualize 3-dimensional figures;
- Display mental, algorithmic confidence and accuracy in working with numbers, data, shape and space, investigating patterns and relationships and in problem solving;
- Transfer Mathematical knowledge and skills between different learning areas and within Mathematics topics.

The Mathematics teaching syllabus for forms 1 and 2 is designed so that teaching/learning at this level will handle these two goals and will develop in learners three fundamental competences which are:

- Solve a problem within a situation (solve problems encountered within real life situations) so as to fully and autonomously assume role as a citizen);
- Display a logical reasoning (show a coherent logical reasoning, spirit of curiosity, spirit of critical thinking and initiative);
- Communicate using Mathematical language (communicate in an intelligent, clear and concise language).

These three competencies are developed progressively at all stages of secondary education through some real life activities.

## **I – THE LEARNING AREA AND THE SUBJECTS WITHIN THIS LEARNING AREA.**

A curriculum defines the broad orientations that guide an educational system. A program of study is a component of a curriculum and specifies learning content in a particular domain. In any educational system, there can be as many programs of study as there are subject areas. Each program of study offers a ‘menu’ for learning in the form of organized body of school subject matter, techniques and methods.

The curriculum of the Ministry of Secondary Education has grouped programs of study in six learning areas which are: Language and literature; Human Sciences; Science and Technology; Personal development, Arts and Culture; Industrial and commercial techniques. Mathematics belongs to the ‘Sciences and Technology learning area. The subjects for this learning area are: Biology, Chemistry, Mathematics, Physics and Computer Science.

## **II- CONTRIBUTION OF THIS SYLLABUS TO THE LEARNING AREA SCIENCE AND TECHNOLOGY**

Mathematics, offers different models and structures that constitute the framework of service tools in the Sciences and Technology learning area as well as in other learning areas through its own language. Mathematics in itself, contributes to the development of rigorous and logical reasoning, spirit of creativity and critical thinking. All these contribute to create, manage and exploit learning situations which help us to understand and master nature and laws of nature. Mathematics is at the root of all technological evolution of today’s world as such, it

contributes significantly towards the modification of our environment, our life style and our thinking process. Mathematical concepts form the bases of the evolution of the computer that has improved considerably our work habits and communication.

### **III- DOMAINS OF LIFE AND CONTRIBUTION OF SYLLABUS TO DOMAIN OF LIFE:**

The teaching/learning are constructed within five domains of life which are: Family and social life, Economic life; the environment, well- being and health; Media and communication, Citizenship. Mathematical skills help in developing competencies in commercial transactions, games, planning expenditure, energy consumption, decision making, environmental protection, health, politics etc. As earlier mentioned, Mathematics is at the root of all technological evolution of today's world as it contributes significantly towards the modification of our environment, our life style and our thinking process. Some application of Mathematics can be seen in physical sciences, business, trades etc. Thus, be it in the domain of family and social life, economic life, the environment, well-being and health, media and communication and even citizenship, Mathematics plays a significant role.

### **IV- FAMILIES OF SITUATIONS COVERED IN THIS PROGRAM OF STUDY**

A life situation can be considered as a circumstance or action and/or reflection, for which a learner can construct, transform or apply the knowledge and competencies associated with the content learned. A family of situations refers to a group of life situations that share at least a common property.

For these first two years of secondary education five families of situations have been identified which are:

- Representation, determination of quantities and identification of objects by numbers;
- Organization of information and estimation of quantities in the consumption of goods and services;
- Representations and transformations of plane shapes within the environment;
- Usage of technical objects in everyday life;
- Description of patterns and relationships between quantities using symbols.

These five families of situations expose the learners to experience all possible daily life activities at this level such as Commercial transactions, games, planning expenditure, energy consumption, just to name a few. These are the areas to develop the envisaged competencies. The adopted paradigm requires that the syllabus be written in models. As such the syllabus for form 1 and form 2 is divided into nine (9) modules.

**a- COMPREHENSIVE TABLE SHOWING THE DIFFERENT MODULES FOR THIS LEVEL**

<b>classes</b>	<b>Title of module</b>	<b>Family of situations</b>	<b>Duration</b>
Form 1	Numbers, Fundamental operations and relationships in the sets of numbers	Representation, determination of quantities and identification of objects by numbers	30hrs
	Introduction to Plane Geometry	Representations and transformations of plane shapes within the environment	45hrs
	Solid figures	Usage of technical objects in everyday life	15hrs
	Elementary statistics and probability	Organization of information and estimation of quantities in the consumption of goods and services	10hrs
Form 2	Numbers, Fundamental operations and relationships in the sets of numbers	Representation, determination of quantities and identification of objects by numbers	30hrs
	Introducing Plane Geometry	Representations and transformations of plane shapes within the environment	40hrs
	Solid figures	Usage of technical objects in everyday life	15hrs
	Elementary statistics and Probability	Organization of information and estimation of quantities in the consumption of goods and services	10hrs
	Basic Algebra	Description of patterns and relationships between quantities using symbols	5hrs

**b- PRESENTATION OF MODULES**

Each module has two main parts: the introduction of the module and the table.

The introduction has the presentation of the module; the contribution of the module to outcome and curriculum goals, contribution of module to learning area and contribution of module to areas of living.

The table on the other hand, is made up of seven columns:

- The contextual framework embodies the families of situations and some examples of real life situations where the knowledge and skills (competencies) can be applied. Teachers are expected to come out with more real life situations within their environment.
- The competent actions made up of categories of actions and examples of actions: These are groups of some actions which are related to the mastery of the competencies expected for the module.

- The Resources have the essential or core knowledge which gives all the set of cognitive and affective resources which the learner needs to mobilize to successfully treat a family of situations. It is divided into four components: the mathematical notions, the skills or know-how, attitudes to be disposed or to be acquired as well as other resources (material) necessary for the acquisition of these competencies.

## **V- PEDAGOGIC ORIENTATIONS.**

### **a- Recommended Methodology:**

The Competency - Based – Approach is based on the Socio-Constructivist view of learning which postulates that learners actively construct new learning onto old learning through an action in a given situation. In this light, the Mathematics lesson should have teaching/ learning activities and the teaching method being centered on the learner. Each teaching/learning sequence or lesson should include:

- An introduction that will captivate and sustain the interest of the learners ;
- One or two learning activities that will facilitate the acquisition of new knowledge and new skills. An activity that will consolidate old knowledge with new knowledge;
- The essential knowledge is given as notion or methods;
- Application exercises;
- Activities for integration whenever it is possible, which should be well planned so that it should force students to mobilize many skills learned to solve a real life problem. These activities for integration are aimed at making the students to employ and use the learned mathematical skills necessary to competently handle life situations related to the family of situations for the module. These activities should not center on a particular concept, rather it should provide the learner with opportunity to explore, apply or relate several different Mathematical concepts at the same time.

### **b- Evaluation.**

In order to determine the learner's progress in the learning process, the teacher must regularly carry out assessment of learning. Each assessment instrument should assess the Mathematical concepts, skills and attitudes (competencies) acquired.

Oral questioning of students during lessons is highly encouraged. It permits the teacher to assess the skill of communicating mathematically which is one of the fundamental competences. It is also a source of motivation for students. Questions directed to students should be well framed such as to give realistic answers. Testing whether written or oral should be a means of providing information which can form the basis for the teacher's next action.

**c- Notations and symbols**

Teachers are expected to teach for accuracy and should at each time ensure that students use notations and symbols encountered at this level, accurately. No misuse of words, notations and symbols by learners should be tolerated.

The cognitive levels for junior secondary should not be above the first three levels of Bloom's taxonomy (Knowledge or remember, Comprehension or Understanding and simple cases of Application).

**d- Set language**

The teacher introduces progressively and whenever necessary the corresponding symbol for each set of numbers such as  $\mathbb{R}$ ,  $\mathbb{N}$ ,  $\mathbb{Z}$ ,  $\mathbb{Q}$ .

**e- Calculators**

A calculator is a tool that is now very common among students. It fascinates and exercises an attraction that no other instruments seem to have had. Students use it even for the simplest operations. It is only a tool, and, is no substitute for the knowledge of its user. It is for the teacher to take note of this and encourages or discourages its use, as the case may be.

**f- Geometry**

The modules on geometry should not be left to be treated at the end of the academic year. The lessons on these modules will require a lot of well prepared students' activities. Accurate drawing using geometrical instrument is highly recommended. Correct use of notations and geometrical properties should be emphasized.

**g- Management of modules**

Each module is considered as a whole for that level. Teachers are advised to alternate numerical activities with geometrical activities.

# SYLLABUS FOR FORM 1

## MODULE N° 1

### NUMBERS, FUNDAMENTAL OPERATIONS AND RELATIONSHIPS IN THE SETS OF NUMBERS.

CREDIT: 30 hours / 4 teaching hours a week

#### PRESENTATION OF MODULE

This module is aimed at making the learner competent within the families of situations '**Representation, determination of quantities and identification of objects by numbers**'. It has the following as categories of action: Determination of a number, reading and writing information using numbers, verbal interaction on information containing numbers and estimation and treatment of quantities.

This module will permit the learner to recognize, describe and represent numbers and their relationships, carry out fundamental operations with numbers, count and estimate, calculate and check with competence and confidence results of problems. In so doing they will be able to:

- ✓ Solve problems related to life situations such as: buying and selling of consumable goods, division of objects, verification of bills, and comparison of prices of the same article. ...
- ✓ Communicate information containing numbers or digits ( telephone numbers, registration numbers, car matriculation numbers etc );

This module is introduced by numbers and numerals through some ancient systems of numeration, some sets of numbers ( $\mathbb{N}$ ,  $\mathbb{Z}$ ,  $\mathbb{Q}$ ) and the basic operations in these sets. It extends to fractions and decimals while Arithmetic Processes brings out some relationships between numbers and their various interpretations. In this module learners get to discover very exciting number patterns and properties. The cognitive levels for this module are knowledge and comprehension.

### **CONTRIBUTION OF MODULE TO OUTCOME AND CURRICULUM GOALS**

This module contributes to a good mental structure that will permit the learner to react competently in different life situations as well as be able to communicate concisely and precisely using numbers.

### **CONTRIBUTION OF MODULE TO LEARNING AREA**

The mastery of this module equips the learner with basic knowledge and skills (know -how) on which further learning in Mathematics and other school subjects especially in the sciences will be based. Decimal numbers are used in the sciences for measuring, weighing and also for the evaluation of quantities.

### **CONTRIBUTION OF MODULE TO AREAS OF LIVING**

This module provides the opportunities for the learners to engage with the historical development of numerical counting and writing system. Mastery of the concepts of equality, inequality, the basic operations (+, -,  $\times$ ,  $\div$ ) and their effects on numbers, percentages and situations of proportionality are fundamental tools a learner will need in real life and throughout life. These skills will contribute in the management of family finances; implication in different monetary transactions, etc justifies its importance in consumption and production of goods and services, social, economic and environmental issues, welfare and health, citizenship, media and communication.

**TABLE 1: NUMBERS, FUNDAMENTAL OPERATIONS AND RELATIONSHIP IN THE SET OF NUMBERS.**

**FORM 1**

Contextual framework		Competencies		Resource			
Family of situations	Examples of situations	Categories of actions	Examples of actions	Core knowledge	Skills (Aptitudes)	Attitudes	other resources
Representation, determination of quantities and identification of objects by numbers.	-Buying and selling of goods;	Determination of a number	-Count number of points in sporting activity; -Determine the amount at stake for a transaction;	<b>Numbers &amp; Numerals</b> -Egyptian, Roman and Hindu-Arabic numerals; -Place value; <b>The set <math>\mathbb{N}</math> of Natural Numbers</b> -Elements of $\mathbb{N}$ ; and of $\mathbb{N}^*$ ; -Ordering in $\mathbb{N}$ ; -Whole number powers <b>The set <math>\mathbb{Z}</math> of integers</b> -positive and negative numbers of the number line -Elements of $\mathbb{Z}$ -Operations ( +, -, $\times$ , ) in $\mathbb{Z}$ -The integral number line <b>Time</b> -Historical time; 12 hours and 24 hours system , The time zones in the world; -Units of measuring time, -Temperature, Units of measuring temperature.	-Count and write numbers in base 10 and other bases; -Read and write whole numbers; -Compare natural numbers using < or >; -Add and multiply in the set $\mathbb{N}$ ; -Order of operation $\mathbb{N}$ ; -Properties of + and of $\times$ ; -Ordering in $\mathbb{Z}$ ; -Order of operations in $\mathbb{Z}$ -Integral number line; -Read, write and narrate historical event using AD and BC -Describe time of the day using a.m and p.m -Order events that occurred in sequence	-Accurate;  -Good sense of numbers;  -Confident;  -Good sense of estimation and approximation  -Good sense of orderliness	Documentation  Calculator  Material for low scale activity  Thermometer
	-Daily movements;	Reading and writing information using numbers	-Find number of bags of farm products  -Read results (election, examination etc)				
	-Planning a meal;	Verbal interaction on information containing numbers	-Read addresses, telephone numbers, car number plates) -Read consumption of electricity and water -Give date of birth -Give the telephone number. -Relate time to historical event -Situate an event using time				
	-Use of public and private services;	Estimation and treatment of quantities					
	-Communication using numbers (tel numbers, car number plates)						

**TABLE 1: NUMBERS, FUNDAMENTAL OPERATIONS AND RELATIONSHIPS IN THE SETS OF NUMBERS FORM 1**

Contextual framework		Competencies		Resource			
Family of situations	Examples of situations	Categories of actions	Examples of Actions	Core knowledge	Skills (Aptitudes)	Attitudes	Other resources
Representation, determination of quantities and identification of objects by numbers.	-Buying and selling of goods;	Determination of a number	-Count number of points in sporting activity; -Determine the amount at stake for a transaction;	<b>Number Patterns</b> -Dot representation of numbers; -Factors and multiples -Prime and composite numbers -Even and odd numbers <b>The set <math>\mathbb{Q}</math></b> Introduce Rational numbers <b>Fractions</b> -Vulgar fractions -Proper, improper and mixed fractions <b>Decimal</b> -Decimal fractions, -Fractions as decimals -Recurring and non-recurring decimals -Decimal places, -Standard form <b>Arithmetic processes</b> -Ratio, percentages and proportions, -Coefficient of proportionality.	-List factors or multiples of a number -Prime factorization -Find HCF or LCM -Square roots and cube roots using prime factorization -Divisibility by 2, 3, 4, 5, 6, 10, 12, 25, 50, 100 -Division of integers -Addition and subtraction of fractions; -Equivalent fractions -Order fractions, -Compare fractions -Operations ( +, -, $\times$ , $\div$ ) with decimals -Express whole numbers and decimals in Standard form -Write ratios using ':' -Simplify ratios -Represent and interpret proportional parts	-Accurate;  -Good sense of numbers;  -Confident;  -Good sense of estimation and approximation  -Good sense of orderliness	Documentation  Calculator  Material for low scale activity  Thermometer
	-Daily movements;	Reading and writing information using numbers	-Find number of bags of farm products -Read results (election, examination etc) -Read addresses, telephone numbers, car number plates)				
	-Planning a meal;	Verbal interaction on information containing numbers	-Read consumption of electricity and water -Give date of birth -Give the telephone number. -Relate time to historical event -Situate an event using time;				
	-Use of public and private services;	Estimation and treatment of quantities					
	Communication using numbers (tel numbers, car number plate . . .)						

## MODULE N° 2

### INTRODUCTION TO PLANE GEOMETRY.

CREDIT: 45 hours / 4 teaching hours a week

#### GENERAL PRESENTATION

This module begins with description, recognition, representation and identification of plane figures. It extends to measuring and calculating lengths and areas of these common plane figures as well as measuring and drawing angles. The basic notion of symmetry and coordinate geometry are also introduced. This module is within the families of situations: **Representations and transformation of plane shapes within the environment.** Three categories of actions are involved namely: Perception of the physical environment, production of plane shapes and transformation of the physical environment and determination of measures.

#### CONTRIBUTION OF MODULE TO OUTCOME AND CURRICULUM GOALS

This module will develop in learners the sense of order, rigour in working, sense of precision and initiation to scientific method in handling life situations. Learners will also develop the ability to measure, represent, describe distances and plane figures in the environment and also make estimates and approximations of distances and areas. The ability to construct will help learners to be able to represent and interpret the physical environment and also be able to investigate and model situations in the environment. As a result, they will be able to make sensible estimates, verify results, measure accurately, locate positions in real life as well as be alert to the reasonableness of measurements and calculation results.

Critical thinking, creativity and sense of initiative that learners will also develop are attitudes that will contribute to make a citizen autonomous and responsible in carrying out his social roles.

#### CONTRIBUTION OF MODULE TO LEARNING AREA

Plane geometry is one of the main parts of the Mathematics syllabus due to the expected learning outcome. Measuring in general relates directly to the scientific, technological and economic world of the learner. Accurate measuring and calculations involving lengths, distances and areas, representations and descriptions are an integral part of chemistry, Biology, Physics and other parts

of Mathematics. Situations of symmetry are seen in Biology, Chemistry and also in the cultural environment of the learners. The third category of actions shows interaction between numerical activities and geometrical activities.

### **CONTRIBUTION OF MODULE TO AREAS OF LIVING**

The areas of living for which knowledge and skills from this module are directly applied are: Family and social life, Economic life, Environment, welfare and health, citizenship, media and communication. The learner each uses or comes across objects from which geometrical shapes can be identified. The outline of figures which are the lines, angles, planes and their intersections are what constitute the physical environment for they are the bases for which real life subjects are constructed.

The study of size, distances, and position of objects in the environment is important since it will provide a language for describing and representing the physical environment and methods for analyzing and drawing conclusions about real life phenomena.

Symmetry contributes in the study of the rules and principles of art and the appreciation of the beauty and taste.

TABLE 2: INTRODUCTION TO PLANE GEOMETRY. FORM 1

Contextual framework		Competencies		Resource			
Family of situations	Examples of situations	Categories of actions	Examples of Actions	Core knowledge	Skills (Aptitudes)	Attitudes	Other resources
Representations and transformation of plane shapes within the environment	-Travelling	Recognition of plane shapes and transformation within the environment	-Detect the pattern on a painting or on a wall or on a piece of cloth;	<b>Plane Figures</b> <b>Points and lines</b> -Points and lines -Notations of lines (AB), line segment [AB], half lines (AB) and [AB) -Points on the same line; <b>Line segment</b> -Length of a line segment, units of measuring length and distance -Midpoint of a line segment, -Perpendicular bisector The property: if $M \in [AB]$ such that $MA + MB = AB$ then M is the midpoint of [AB]; if M is midpoint of [AB], then $MA = MB = AB/2$ -Parallel lines, perpendicular lines, orthogonal lines -Notations and properties.	-Construct a bisector of a line, line passing through two given points; a line passing through a point and parallel to a given line, a line passing through a point and perpendicular to a given line. -Construct a given segment, -Construct the midpoint of a line segment -Construct a perpendicular bisector to a given line segment -Convert from one unit to the other -Establish the property and its converse	-Sense of order  -Precision in calculation  -Critical thinking  -Scientific method  -Ability to visualize  -Ability to reason and justify  -Sense of appreciation	-Metre rule  -Tape measures of different lengths  -Geometrical instrument  -Set square
	-Demarcation of land boundaries		-Identify objects using shape and size				
	-Putting a ceiling		-Draw a motive for decoration				
	-Art or design	-Draw the plan for a house					
	-Designing a dress	-Locate one self in an area					
	-Mapping a town	-Follow up a plan for the construction of a house;					
	-Building	-Associate figures and measures to objects;					
	-Surveying	-Design a dress					
	-Pegging out a piece of land						
	-weaving Cloth -Clock						

TABLE 2 (CONT.): INTRODUCTION TO PLANE GEOMETRY . FORM 1

Contextual framework		Competencies		Resources					
Family of situations	Examples of situations	Categories of actions	Examples of Actions	Core knowledge	Skills (Aptitudes)	Attitudes	Other resources		
Representations and transformation of plane shapes within the environment	-Travelling	Recognition of plane shapes and transformation within the environment	-Detect the pattern on a painting or on a wall or on a piece of cloth;	<b>Circle</b> -Vocabularies: Centre, disk, radius, diameter, sector, segment, circumference, chord, arc of a circle, secant	-Draw a circle of a given radius, calculate circumference and area of a circle, -Discuss relative position of two circles	-Sense of order	-Metre rule  -Tape measures of different lengths  -Geometrical instrument  -Set square		
	-Demarcation of land boundaries		-Identify objects using shape and size					-Name angles	-Precision in calculation
	-Putting a ceiling		-Draw a motive for decoration						
	-Art or design	Production of plane shapes	-Draw the plan for a house	-Measure angles (clockwise and anti-clockwise)	-Scientific method				
	-Designing a dress		-Locate one self in an area			-Construct bisector of an angle			
	-Mapping a town	Determination of measures and position	-Follow up a plan for the construction of house;	-Angles at a point and angles on a straight line (adjacent angles, opposite angles)	-Ability to visualize				
	-Building		-Associate figures and measures to objects;			-Ability to reason and justify			
	-Surveying		-Design a dress					-Sense of appreciation	
	-Pegging out a piece of land								
	-weaving Cloth								
-Clock									

TABLE 2 (CONT.): INTRODUCTION TO PLANE GEOMETRY. FORM 1

Contextual framework		Competencies		Resources			
Family of situations	Examples of situations	Categories of actions	Examples of Actions	Core knowledge	Skills (Aptitudes)	Attitudes	Other resources
Representations and transformation of plane shapes within the environment	-Travelling	Recognition of plane shapes and transformation within the environment	-Detect the pattern on a painting or on a wall or on a piece of cloth;	<b>Triangles</b> -Naming of triangles -Some particular types triangles (right, isosceles, equilateral) -Angle property of a triangle, Height, median of a triangle, perpendicular bisector of a side of a triangle; <b>Quadrilaterals</b> Parallelograms (properties) Special parallelograms (square, rectangle, rhombus, trapezium, kite)	-Construct triangle of given sides and angles; -Draw and notate each type of a triangle; -Construct height, median, orthocenter of a triangle and perpendicular bisector of a side -List properties of each type -Calculate perimeter and area of some triangles -Calculate Perimeter and area of a square, rectangle, rhombus, trapezium. -Construct some quadrilaterals.	-Sense of order  -Precision in calculation  -Critical thinking  -Scientific method  -Ability to visualize  -Ability to reason and justify  -Sense of appreciation	-Metre rule  -Tape measures of different lengths  -Geometrical instrument  -Set square
	-Demarcation of land boundaries		-Identify objects using shape and size				
	-Putting a ceiling		-Draw a motive for decoration				
	-Art or design		-Draw the plan for a house				
	-Designing a dress	-Locate one self in an area					
	-Mapping a town	-Follow up a plan for the construction of house;					
	-Building	-Associate figures and measures to objects;					
	-Surveying	-Design a dress					
	-Pegging out a piece of land						
	-weaving Cloth						
-Clock							

**TABLE 2 (CONT): INTRODUCTION TO PLANE GEOMETRY. FORM 1**

Contextual framework		Competencies		Resources			
Family of situations	Examples of situations	Categories of actions	Examples of Actions	Core knowledge	Skills (Aptitudes)	Attitudes	Other resources
Representations and transformation of plane shapes within the environment	-Travelling	Recognition of plane shapes and transformation within the environment	-Detect the repetition of a pattern on a painting or on a wall or on a piece of cloth;	<b>Symmetry</b> -Point symmetry(central): -Properties of point symmetry; - image of an object by a point symmetry -Line symmetry: -Line of symmetry -properties of line symmetry; - image of an object by line symmetry; -Shapes that have both line and point symmetries	-Produce the image of an object by central or line symmetry  -Identify cases of point or line symmetry in nature  -Draw and label Cartesian plane  -Choose and use appropriate scale  -Plot points on the Cartesian plane	-Sense of order  -Precision in calculation  -Critical thinking  -Scientific method  -Ability to visualize  -Ability to reason and justify  -Sense of appreciation	-Metre rule  -Tape measures of different lengths  -Geometrical instrument  -Set square
	-Demarcation of land boundaries		-Identify objects using shape and size				
	-Putting a ceiling		-Draw a motive for decoration				
	-Art or design		-Draw the plan for a house				
	-Designing a dress	Production of plane shapes	-Locate one self in an area	<b>Co-ordinate geometry</b> -Cartesian plane (origin, x-y plane) -Cartesian coordinate (abscissa, ordinate), points in the plane			
	-Mapping a town		-Follow up a plan for the construction of house;				
	-Building		-Associate figures and measures to objects;				
	-Surveying		-Design a dress				
	-Pegging out a piece of land		Determination of measures and position				
	-weaving cloth						
-Clock							

## MODULE N° 3

### SOLID FIGURES.

CREDIT: 15 hours / 4 teaching hours a week

#### GENERAL PRESENTATION

This module deals with description, recognition, identification and representation of some common solids (cubes, cuboids, cones and cylinders) which are found within the learners' environment. This module is within the family of situations: **Usage of technical objects in every day life**. The categories of actions identified for this module are: Recognition of objects; production of objects; determination of measures. In school, at home and in the market place or on a journey, students encounter different shapes, as such the description and representation of these shapes throughout the module are expected to be treated in context.

#### CONTRIBUTION OF MODULE TO OUTCOME AND CURRICULUM GOAL

The study of geometry and 3-dimensional geometry in particular helps in the construction of reasoning, description and calculation techniques. The study of these solids will enable the learner to develop the ability to visualize, interpret, justify, classify, appreciate and describe the world through 3-dimensional objects. They will also develop the spirit of initiative, creativity and enterprise as well as the development of arts such as painting and drawing as well as the development of aesthetic values. All these competences contribute in becoming autonomous and independent in carrying out different activities in the environment which is full of manmade and natural objects.

#### CONTRIBUTION OF MODULE TO LEARNING AREA

Measuring in general is used greatly in the sciences, the technological and economic world of the learner. Accurate measuring and calculations involving volume or quantity in general, are part of real life. The competences developed by learners here are fundamental to the mastery of other science subjects such as Biology, Physics, Chemistry and other parts of Mathematics.

#### CONTRIBUTION OF MODULE TO AREAS OF LIVING

The different areas of living for which we see direct application of the competences from this module are: Family and social life, Economic life, Environment, welfare and health as well as Media and communication. The study of this module also provides a language for describing the physical world and gives the methods for analyzing and drawing conclusions about real world phenomena which subsequently go to improve understanding of the patterns, precision, achievement and beauty in natural and cultural forms.

TABLE 3: SOLID FIGURES. FORM 1

Contextual framework		Competencies		Resources			
Family of situations	Examples of situations	Categories of actions	Examples of Actions	Core knowledge	Skills (Aptitudes)	Attitudes	Other resources
Usage of technical objects in every day life.	-Box of chalk or matches	<b>Recognition of objects</b>	-Describe solids in the environment	<b>Cubes, cuboids and cone</b> -Vocabularies (faces, edges, vertices, height, slant height) -Properties of each solid -Nets of each -Unit of measuring volume -Capacity in real life, units (litres, n° of places or seats in a hall, bus, etc) -Relationship between volume and capacity  <b>Right circular cylinders</b> -Vocabularies (base, curve surface, height, axis) -Net of a right circular cylinder	-Describe each solid -Recognise and identify each solid -Sketch each solid -Make models from nets and use the various parts to re-establish the original figure -Calculate total surface area and volume  -Observe and describe a cylinder -Recognize and identify a right cylinder -Sketch a right cylinder -Make models from nets -Calculate total surface area $A = 2\pi rh + 2\pi r^2$ and volume $V = \pi r^2 h$	-Sense of organization  -Sense of initiative  -Precision in calculation  -Ability to visualize  -Sense of appreciation  -Creativity  -Spirit of enterprise	-Calculator  -measuring instrument  -concrete objects  -Models of the different shapes  -Cardboard  -Containers  -Geometrical instrument
	-Tablet of soap		-Identify objects described by somebody				
	-Packet of sugar		-Make a box of match or a box to contain chalk				
	-Trunk	<b>Productions of objects</b>	-Produce cartoons for packaging or baking tins				
	-Works of arts		-Make postal boxes, make drums, cakes, cut logs of wood. ...				
	-Plumbing		-Determine the number of pieces of soap in a cartoon				
	-Cartoons	<b>Determination of measure</b>	-Determine the volume of water in a tank can contain				
	-Form for moulding						
	-Baking dishes						
	-Digging a well						
-Movable TV stand							

## MODULE N° 4

### ELEMENTARY STATISTICS.

**CREDIT: 10 hours** / 4 teaching hours a week

#### GENERAL PRESENTATION

This module deals with collection of simple data from real life situations such as students' ages, shoe sizes, heights of students, weights, scores etc, then organizing and presenting or displaying these data in different forms (frequency table, pictogram, bar chart, pie chart). As such, with the study of data handling, the learners will develop the skills to collect, organize and display information. This model is within the family of situations '**Organization of information and estimation of quantities**' and has as categories of actions: Collection, organization and exploitation of information; Interpretation of results.

#### CONTRIBUTION OF MODULE TO OUTCOME AND CURRICULUM GOALS

This module will develop in learners the sense of organization, precision and good judgment. These attitudes will help the learner to be able to take up duties as a member of the family, make informed decisions, and develop autonomy in the production and consumption of goods and services.

#### CONTRIBUTION OF MODULE TO LEARNING AREA.

Great deal of research work in science and technology (health and technological products etc) and other learning areas such as Economics and Geography are represented in statistical form.

#### CONTRIBUTION OF MODULE TO AREA OF LIVING

Information in statements, tables and charts are presented to us daily through television, radio, news papers or any other form of communication. Applications of competences within this module are found in the areas of living: Family and social life, Economic life, citizenship, media and communication. Within these areas, collection, organization and displaying of simple data by the learners are essential skills that will help them to assume their positions as responsible members of a family, make good choices on what to consume (information, goods, services), participate meaningfully in basic economic activities, be able to show high level of responsibility towards the environment and health of others, be able to provide solutions that can sustain or destroy the environment, promote or harm the health of others, and will be able to judge economic trends and patterns.

TABLE 4: ELEMENTARY STATISTICS. FORM 1

Contextual framework		Competencies		Resources				
Family of situations	Examples of situations	Categories of actions	Examples of Actions	Core knowledge	Skills (Aptitudes)	Attitudes	Other resources	
<b>Organization of information and estimation of quantities in the consumption of goods and services</b>	-Census of a population by sex, age group, profession, religion	<b>Collection, organization and exploitation of information</b>	-Record yearly rainfall	<b>Collection of simple data</b> -Different ways of data collection -Types of data (discrete and continuous)	-Collect data within the environment -Choose best method for the collection of a given data	-Sense of organization;  -Precision	-Calculator  -Graph board	
	-Demographic growth		-Record production of crude oil by some countries					-Compile results
	-Classification of football teams	<b>Interpretation of results</b>	-Forecast weather or election result	<b>Representation of data</b> Pictograph Frequency table Bar charts Pie charts	-Display collected data using different representations;	-Sense of good judgment  -Critical thinking	-Data from environment  -Charts illustrating various data	
	-Opinion polls on a new product or new policy		-Choose a brand of car					-Choose a career,
	-Evolution of the budget of a country due to economic growth		-Draw up a budget					-Vigilant
					-Patient	-News paper		
					-Politeness	-Computer		
						-National department of statistics		
						-Students		

## SYLLABUS FOR FORM 2

### MODULE N° 5

#### NUMBERS, FUNDAMENTAL OPERATIONS AND RELATIONS IN THE SETS OF NUMBERS.

CREDIT: 30 hours / 4 teaching hours a week

##### GENERAL PRESENTATION

This module is an extension of what was done in module 1. It is extended to the set  $\mathbb{R}$  of real numbers, properties of numbers and of operations within each set of numbers. Calculation of simple and compound interest and currency exchange is done here.

It is within the families of situations '**Representation, determination of quantities and identification of objects by numbers**' and has the following as categories of action: Determination of a number, reading and writing information using numbers, verbal interaction on information containing numbers and estimation and treatment of quantities.

##### CONTRIBUTION OF MODULE TO OUTCOME AND CURRICULUM GOALS

This module contributes to the acquisition of a good mental structure that will permit the learner to react competently in an autonomous manner under different life situations that require the use of numbers as well as be able to communicate concisely and precisely in symbolic form. Learners will acquire the ability to recognize, describe and represent numbers and their relationships, count, estimate, calculate with accuracy and confidence, have a good sense of estimation and approximation as well as sense of order in representing results.

##### CONTRIBUTION OF MODULE TO LEARNING AREA

The mastery of this module equips the learner with the basic knowledge and skills on which further learning in Mathematics and other science subjects will be based, such as measuring and comparing in Natural sciences and in technology.

### **CONTRIBUTION OF MODULE TO AREAS OF LIVING**

The areas of living that knowledge, skills and attitudes acquired here, are immediately employed are: Family and social life, Economic life, Environment, Welfare and health, Citizenship, Media and Communication.

Mastery of concepts of equality and inequality, the basic operations  $+$ ,  $-$ ,  $\times$  and  $\div$  and their effects on numbers, percentages and situations of proportionality are fundamental tools a learner will need in real life. Managing the family finances, implication in different monetary transactions, justifies its importance in consumption and production of goods and services. With globalization of trade, knowledge of currency exchange is very fundamental. Learners will solve problems in context including context that may be used to build awareness of other learning areas, as well as human rights, social, economic and environmental issues such as financial (including buying and selling, simple budget), measuring in Natural sciences and in technology.

TABLE 5: NUMBERS, FUNDAMENTAL OPERATIONS AND RELATIONS IN THE SETS OF NUMBERS. FORM 2

Contextual framework		Competencies		Resources			
Family of situations	Examples of situations	Categories of actions	Examples of Actions	Core knowledge	Skills (Aptitudes)	Attitudes	Other resources
<b>Representation, determination of quantities and identification of objects by numbers</b>	-Census of a population by sex, age group, profession, religion	<b>Determination of a number</b>	-Estimate the cost of an activity -Determine monthly expenditure on tobacco -Verify amount reduced after a transaction	<b>The set <math>\mathbb{Z}</math> of integers</b> -Whole number powers -Negative powers -Laws of indices	- Determine the value of a number expressed using powers; -Find square root of perfect squares;  -Find out if a set of numbers form a sequence;  -Approximate to a given number of decimal places, -Round-up to nearest: whole number, ten, hundred, thousand or round-down to least whole number, tenth, -Write a number to a given number of significant figures  -Apply the knowledge of fractions and decimals to real life.	-Good sense of numbers;  -Confident  -Good sense of estimation and approximation  -Accurate  -Sense of orderliness	-Documents  -Calculator  -Graph board  -chalk board  -Material for experimentation  - Thermometer
	-Demographic growth		-Divide the refund of a debt in installments				
	-Classification of football teams	<b>Reading and writing information using numbers</b>	-Read the entry fee for a concert -Give an estimate of the total cost of an activity -Write down amount received from each income generating activity	<b>Fractions and decimals</b> -Estimation and approximations -Significant figures			
	-Opinion polls on a new product or new policy		<b>Verbal interaction on information containing numbers</b>	- Be informed on the salary for a job proposal -Negotiate the terms of payment of an item, -Draw up a budget			
-Evolution of the budget of a country due to economic growth							

TABLE 5 (CONT): NUMBERS, FUNDAMENTAL OPERATIONS AND RELATIONS IN THE SETS OF NUMBERS. FORM 2

Contextual framework		Competencies		Resources			
Family of situations	Examples of situations	Categories of actions	Examples of Actions	Core knowledge	Skills (Aptitudes)	Attitudes	Other resources
<b>Representation, determination of quantities and identification of objects by numbers</b>	-Census of a population by sex, age group, profession, religion	<b>Determination of a number</b>	-Estimate the cost of an activity -Determine monthly expenditure on tobacco -Verify amount reduced after a transaction -Divide the refund of a debt in installments	<b>Arithmetic Processes Proportions</b> -Direct and inverse proportions -Profit and loss -Simple interest, Compound interest -Currency exchange  <b>Real numbers</b> -The set $\mathbb{R}$ of real numbers -Radicals -Irrational numbers -The real number line - finite and infinite intervals, closed intervals, open intervals, half Intervals	-Solve problems involving direct and inverse proportions in real life situations -Calculate profit or loss after selling an article -Calculate the amount in CFA francs for some common currencies such as Dollars, pound sterling, Euro, Naira etc  -Define and represent the set of real number -Carry out operations in $\mathbb{R}$ -Compare real numbers using $<$ and $>$ -Represent numbers on the real number line -Represent intervals	-Good sense of numbers;  -Confident  -Good sense of estimation and approximation  -Accurate  -Sense of orderliness	-Documents  -Calculator  -Graph board  -chalk board  -Material for experimentation  Thermometer
	-Demographic growth		<b>Reading and writing information using numbers</b>				
	-Classification of football teams	<b>Verbal interaction on information containing numbers</b>					
	-Opinion polls on a new product or new policy						
	-Evolution of the budget of a country due to economic growth						

## MODULE N° 6

### INTRODUCTION TO PLANE FIGURES.

**CREDIT: 40 hours** / 4 teaching hours a week

#### GENERAL PRESENTATION

This module uses notions and skills acquired in module 2 as the starting point. It then extends to angle properties in a triangle, advanced notions of angles, congruency of triangles, Pythagoras theorem, circumscribed and inscribed circle, scale and similarity. This module is made up of the families of situations: **Representations and transformation of plane shapes within the environment**, with three categories of action namely: Recognition of plane shapes within the physical environment; Production of plane shapes and transformation of the physical environment and determination of measures and position within the physical environment.

#### CONTRIBUTION OF MODULE TO OUTCOME AND CURRICULUM GOALS

This module will help Learners to develop the ability to measure appropriately, represent and describe plane figures in the environment, make estimates and approximations of distances and areas, represent and interpret the physical environment, investigate and compare properties and locate positions in real life. Learners will develop the spirit of critical thinking, creativity and sense of initiative that will all contribute in making a citizen autonomous and responsible in carrying out his social roles.

#### CONTRIBUTION OF MODULE TO LEARNING AREA

Measuring relates to all scientific, technological and economic world of the learner. Accurate measuring and calculations involving lengths, distances and areas, representations and descriptions are an integral part of Chemistry, Biology, Physics and other parts of Mathematics. Scaling and similarity can be seen in Biology, Chemistry and the cultural environment of the learner.

#### CONTRIBUTION OF MODULE TO AREAS OF LIVING

The areas of living that knowledge, skills and attitudes acquired here, are employed are: Family and social life, Economic life, Environment, Welfare and health, Citizenship, Media and Communication.

The concepts of parallelism, perpendicularity, similarity, measurements of lengths and areas, the study of size, distance, position of objects in the real world provides a language for describing and representing the learner's environment. Scale and similarities contribute in the study of the rules and principles of art and the appreciation of beauty and taste.

TABLE 6: INTRODUCTION TO PLANE FIGURES. FORM 2

Contextual		Competencies		Resources			
Family of situations	Examples of situations	Categories of actions	Examples of Actions	Core knowledge	Skills (Aptitudes)	Attitudes	Other resources
<b>Representations and transformation of plane shapes within the environment,</b>	-Demarcation of land boundaries,	<b>Recognition of plane shapes within the physical environment</b>	-Identify an object describe by some one	<b>Distances</b> -Mediator - horizontal or vertical distance between two points <b>Angles</b> -Angles in intersecting lines -Angles formed by two lines and a transversal -Angles formed by parallel lines and a transversal	<b>Skills (Aptitudes)</b> -Construct the mediator of a line segment -Determine the distance between two points on the number line. -Determine vertically opposite angles, corresponding angles, alternate angles, co-interior angles  -Determine the properties of alternate angles; -Solve a right angle triangle using Pythagorean triples. Determine the sum of the interior angles in a triangle	-Sense of order;  -Being concise  -Precision in calculation  -Critical thinking  -Scientific method  -Ability to visualize  -Ability to reason and justify  -Sense of appreciation	-Documents  -Calculator  -Graph board  -Measuring instrument  -Material for experimentation  -Metre rule
	-Design of clothing		-Estimate the length of an object				
	-Building		<b>Production of plane shapes and transformation of the physical environment</b>				
	-Drafting	<b>Determination of measures and position within the physical environment</b>	-Find the perimeter of a piece of land to be enclosed	-Interior angle sum -Exterior angle and corresponding opposite interior angles -Congruent triangles -Pythagoras theorem and its converse			
	-Tilling		-Estimate the length of an object				
	-Designing a parking						
	-Drawing up the plan of a house to be constructed						
-Make an object of art or the pattern of a dress.							

## MODULE N° 7

### SOLID FIGURES.

**CREDIT: 15 hours** / 4 teaching hours a week

#### GENERAL PRESENTATION

This module deals with description, recognition, identification and representation of prisms and pyramids. The study of these solids extends to measuring and calculating their sides, surface areas and volumes. It is within the family of situations: **Usage of technical objects in every day life**. The categories of actions that are within this module are: Production of commodities or provisions for daily consumption, production of parts for industrial use, production of materials for work of art and construction.

#### CONTRIBUTION OF MODULE TO OUTCOME AND CURRICULUM GOALS

The study of these solids enable the learner to develop the ability to visualize, interpret, justify, classify, appreciate and describe the world around him, through three-dimensional objects, their location and relationships and develop the spirit of initiative, critical thinking, creativity and enterprise and be precise in calculations. All these competences contribute in making a learner to become autonomous and independent in carrying out different activities in the environment full of manmade and natural objects of different shapes.

#### CONTRIBUTION OF MODULE TO LEARNING AREA

The competences developed here are fundamental in the mastery of other science subjects such as Biology, Chemistry, Physics etc as well as the other parts of Mathematics. It contributes highly to the development of arts such as painting and architecture as well as the development of aesthetic values. Accurate measuring and calculations involving volume or quantity in general, are an integral part of scientific, technological and economic world of the learner.

#### CONTRIBUTION OF MODULE TO AREAS OF LIVING

The areas of living that knowledge, skills and attitudes acquired here, are immediately employed are: Family and social life, Economic life, Environment, Welfare and health.

In addition to the importance of this module to technological development, it also provides a language for describing the physical world and methods of analyzing and drawing conclusions about real world phenomena which subsequently goes to improve understanding and appreciation of the pattern, precision, achievement and beauty in natural and cultural forms.

TABLE 7: SOLID FIGURES. FORM 2

Contextual framework		Competencies		Resources					
Family of situations	Examples of situations	Categories of actions	Examples of Actions	Core knowledge	Skills (Aptitudes)	Attitudes	Other resources		
<b>Usage of technical objects in every day life</b>	-Roofing a house,	<b>Production of commodities or provisions for daily consumption:</b>	-Make baking dishes of different shapes,	<b>PRISMS</b> <b>Right prisms</b> -Observation and description of solid -Vocabularies (apex, lateral surface, lateral edge, altitude) -Recognition and identification of right prisms -Net of a right prism	-Make sketches of right prism -Make models from net -Use the various parts of the net to re-establish the original figure -Calculate total surface area and volume of a right prism	-Sense of initiative;	-Documents		
	-Well, water tank		-Produce casing for storage					-Critical thinking	-Calculator
	-Building Bridges		-Produce mechanical parts,					-Precision in calculation	-Graph board
	-Tent	<b>Production of parts for industrial use</b>	-Make objects for decoration,	<b>REGULAR PYRAMID</b> -Observation and description -Vocabularies (apex, lateral surface, lateral edge, altitude) -Properties -Regular tetrahedron as a special pyramid	-Make sketches and nets of a regular pyramid -Make models from net - use the various parts of the net to re-establish the original figure -Calculate total surface area and volume of a pyramid	-Creative	-Measuring instrument		
	-Ladder		-Mould blocks -Make burnt bricks -Construct temples and mosque; -Putting the roof of a house					-Ability to visualize	-Concrete objects
	-Slice of cheese	<b>Production of materials for work of art and construction work:</b>				-Develop spirit of enterprise	-Metre rule		
	-Artistic work							-Card board	
-Electricity stabiliser					-Sense of appreciation	-Containers	-Geometrical instruments		

## MODULE N° 8

### ELEMENTARY STATISTICS AND PROBABILITY.

**CREDIT: 10 hours** / 4 teaching hours a week

#### GENERAL PRESENTATION

This module revises notions and skills of data collection and representation treated in module 4. It extends to determination of measures of central tendency (mode, mean and median). Some very basic interpretation of data is handled here. The module ends with basic probability. This module is within the family of situations: **Organization of information and estimation of quantities**. It is made up of the following categories of action: Collection and organization of data; Interpretation of information; Prediction and making informed decisions.

#### CONTRIBUTION OF MODULE TO OUTCOME AND CURRICULUM GOALS

The knowledge, skills learned here will develop in learners the sense of organization, precision, good judgment, critical and logical thinking, vigilance and patience. The learner will also be able to predict the likelihood of an event taking place based on previous information and their interpretation. Learners will be able to take up duties as a member of the family, make informed decisions, develops autonomy in the production and consumption of goods and services.

#### CONTRIBUTION OF MODULE TO LEARNING AREA

A familiarity with statistical methods is a very valuable tool when dealing with other school subjects as there is an increase in emphasis on work of an investigative nature or research. Most research work in science and technology (health and technological products) and other learning areas such as Economics and Geography are represented in statistical form while Probability is used in Science and eventually in sociology and economics.

#### CONTRIBUTION OF MODULE TO AREAS OF LIVING

The areas of living that knowledge, skills and attitudes acquired here, are employed are: Family and social life, Economic life, Environment, Welfare and health, Citizenship, Media and Communication. The ability to calculate the measures of position and interpret results are essential to assume position as a responsible member of a family, make good choices on what to consume (information, goods, services), participate meaningfully in basic economic activities, be able to show a high level of responsibility towards the environment and health of others, be able to provide solutions that can sustain or destroy the environment, promote or harm the health of others and will be able to judge economic trends and patterns. Through the study of probability, the learners will develop skills and techniques for making informed choices or worthwhile decisions and predictions on related aspects of real life situations.

TABLE 8: ELEMENTARY STATISTICS AND PROBABILITY. FORM 2

Contextual framework		Competencies		Resources			
Family of situations	Examples of situations	Categories of actions	Examples of Actions	Core knowledge	Skills (Aptitudes)	Attitudes	Other resources
<b>Organisation of information and estimation of quantities</b>	-Analysis of school performance	<b>Collection and representation of data:</b>	-Reporting on number of road accidents	<b>REPRESENTATION OF DISCRETE DATA</b> -Frequency distribution table -Bar charts, pie chart, line graphs and histogram	-Represent ungrouped data using any of the above representation	-Sense of organization;	-Documents
	-Report on birth and death rates		-Sampling opinion on the effect of a new product				
	-Economic growth	<b>Interpretation of information, Prediction and making informed decisions</b>	-Classifying football teams	<b>MEASURES OF CENTRAL TENDENCY</b> Mode, mean and median for ungrouped data	-Interpret information and make predictions	-Good judgment	-Graph board
	-The effectiveness of a new drug		-Analyze sequence result				
	-Horse racing	-Report on birth and death rate	-Probability scale	-List all possible outcomes or sample space	-Vigilance	-Charts illustrating various presentation of data	
	-Fluctuation in prices of goods and services	-Choosing a brand of car					-Calculate simple probability for an event.
	-Natural resources	-Choosing a career	-National department for statistics	-Patience	-News paper		
	-Gambling	-Choosing a sample for trial				-Sense of appreciation	
	-Scientific research	-Predicting the result of a match or a competition					

## MODULE N° 9

### BASIC ALGEBRA.

CREDIT: 5hours / 4 teaching hours a week

#### GENERAL PRESENTATION

This module introduces the learner to the use of letters or symbols to represent objects in the first place and secondly to represent numbers. It extends to symbolic expressions of real life situations. It is made up of the families of situations: **Describing patterns and relationships between quantities using symbols**. There are three categories of action namely: Interpretation of algebraic models; determination of quantities from algebraic models; representation of quantities and relationships.

#### CONTRIBUTION OF MODULE TO OUTCOME AND CURRICULUM GOALS

The mastery of this module will help the learner to solve problems using algebraic language and skills and also to examine and study relationships between real life situations. Through the use of symbolic expressions, graphs and tables, learners will be able to describe patterns and relationships.

#### CONTRIBUTION OF MODULE TO LEARNING AREA

Algebra is the language for investigating and communicating most of Mathematics, sciences and technological work. Formulae are highly used in natural sciences (calculating air pressure, resistance, voltage), and in economic growth such as calculating pension for those on retirement etc. A thorough understanding of the basic notions here is essential for understanding any field of elementary mathematics and many technical areas where mathematics may be applied. This module is a foundation for more advanced mathematics, science and technology in general.

#### CONTRIBUTION OF MODULE TO AREAS OF LIVING

The areas of living where this module is employed are: Family and Social life, Economic life, Environment, Welfare and health; Citizenship, Media and Communication. Learners develop the competences of using algebraic language and skills to describe patterns and relationships in a way that builds awareness of other learning areas as well as issues related to human rights, social economic life, political and environmental life. In other subject areas, as well as in real life, connections are made between algebraic representations and the problem situations so as to provide better understanding about Mathematical concepts and the different problem situations. Business, industry, engineers and all sorts of workers use algebra to solve many problems.

TABLE 9: BASIC ALGEBRA. FORM 2

Contextual framework		Competencies		Resources			
Family of situations	Examples of situations	Categories of actions	Examples of Actions	Core knowledge	Skills (Aptitudes)	Attitudes	Other resources
<b>Describing patterns and relationships between quantities using symbols.</b>	-Travelling	<b>Interpretation of algebraic models</b> <b>Predict the next electricity bill;</b>	-Make a choice -Determine the relationship the area of a rectangular garden and its sides	<b>ALGEBRAIC EXPRESSIONS</b> -Symbolic expressions -Vocabularies: Algebraic terms, constant, coefficients, variables, like terms and unlike terms	-Simplify algebraic expressions -Find the value of an expression by substituting numerical values -Bring like terms together -Expand expressions with brackets -Factorize simple expressions	-Awareness;  -Sense of generalisation  -Ability to infer	-Documents  -Calculator  -overhead projector
	-Marketing	<b>Determination of quantities from algebraic models</b>	-Calculate salary for workers -Find profit on a given sale -Find income for a given business enterprise				
	-Construction		-Determine the number of article bought from the total cost; -Determine the number of teaching weeks for a given year				
	-Hiring						
	-Currency exchange			<b>EQUATIONS</b> -Simple linear equations -Inequalities -Inequalities on the number line	-Solve simple linear equations in one unknown  -Solve linear inequality in one unknown  -Solve real life problems that lead to linear equations  -Represent linear equations on a straight line	-Ability to justify  -Logical reasoning  -Creativity	-flash cards  -micro computer
	-Planning a meal		-Express the cost of renting a car in terms of number of hours or days and caution; -Write total amount spent in terms of unit cost and number of articles; -Indicate the distance covered by a car in terms of speed and time.				
	-Agriculture	<b>Representing quantities and relationships</b>					
	-Politics						

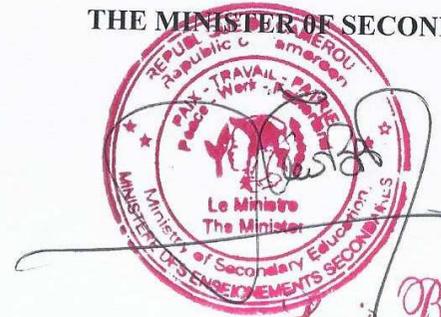
**Article 2:** The syllabus presented in article one here above shall be implemented as from the beginning of the 2014-2015 school year;

**Article 3:** All previous provisions repugnant hereto are hereby repealed;

**Article 4:** Inspectors Coordinator General, the Director of General Secondary Education, the Director of Examinations and Certification, Regional Delegates of Secondary Education, Divisional Delegates of Secondary Education, Education Secretaries of various Private Educations Agencies, Principals of public and private schools, each in their own sphere shall be charged with the strict implementation of this order which shall be inserted and published in the Official Gazette in English and French.

Yaoundé, 13 AUG 2014

THE MINISTER OF SECONDARY EDUCATION



*Louis Babes Babes*

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