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PEDAGOGIC GUIDE FOR MATHEMATICS

FOR FORM 1 and FORM 2

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INTRODUCTION

The Minister of Secondary Education has signed the Mathematics syllabus for form 1 and form 2, whereby, the Competency-Based-Approach (CBA) with life situations as gate way has been adopted and used in writing the syllabus. This therefore orientates the teaching method. CBA is adopted with the aim of producing an autonomous citizen who will be able to exercise his social roles competently and who will be self reliant.

This guide is written as a support document to the Mathematics syllabus of form 1 and form 2. It begins with the presentation of Mathematics content and goes ahead to give the contribution of this content to the overall curriculum of forms 1 and 2, contribution to domains of life, to the area of learning: Science and Technology and also to other areas of learning. The three fundamental competencies to be developed by learners are given and some transversal competencies are also listed. The methodology expected of the teacher is also suggested. CBA comes with some new words whose meaning as used in the syllabus, are found in the glossary.

I- GENERAL PRESENTATION OF MATHEMATICS SYLLABUS FOR FORMS 1 & 2

Mathematics activities in general 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. The Mathematics content to be learnt in forms 1 and 2 is to consolidate what was learned in the primary school, give a foundation for more rigorous Mathematics to be learned in higher forms, and Mathematical skills to solve some real life problems.

Mathematics being a science itself is a science at the service of other areas of sciences and also at the service of our daily activities. Being a science itself, it deals with some abstract notions (numbers, geometrical figures ...) to establish properties, methods, relations on the basis of hypothetical and deductive reasoning. In form 1 for instance, we study numbers in order to precise their nature, determine relationships between them and perform operations with them. In addition, Mathematics is used as a tool to other areas of science which facilitates better understanding and interpretation within these subjects.

Our daily activities such as financial transactions, daily movements, sporting activities, usage of physical objects, dosage of drugs to be taken etc, involve a lot of Mathematics. With knowledge and skills acquired in Mathematics, in forms 1 & 2, on numbers, for instance, we can carry out the above activities competently. We can also determine the mass of an object, environmental or body temperature, rate, duration spent in carrying out an activity etc using Mathematical skills and knowledge.

Present within the learners' environment are many exciting real life situations that necessitate the use of Mathematics making it a fundamental discipline at this level of learning.

II- RELATION BETWEEN THE SYLLABUS AND OTHER COMPONENTS OF THE CURRICULUM

A- Relationship of Mathematics with domains of life

The teaching and learning of Mathematics in forms 1 and 2 are constructed within five domains of life which are:

- ✓ Family and social life,
- ✓ Economic life;
- ✓ Environment, well- being and health;
- ✓ Citizenship ;
- ✓ Media and communication.

The content of what has to be taught in forms 1 and 2 are grouped into five families of situations within these domains of life. These families of situations will expose the learners to experience all possible daily life activities within these domains of life such as:

- **Representation, determination of quantities and identification of objects by numbers:** Buying and selling of goods, dividing objects or things equally or in given ratios, controlling bills and receipts, counting objects such as number of houses, cows, giving/receiving telephone numbers/car immatriculation or house number if applicable are all activities within the family and social life, economic life, Media and communication and within environment, well-being and health.
- **Organization of information and estimation of quantities in the consumption of goods and services:** Handling data provide opportunities to promote health and safety issues, environmental protection issues and making informed choices of goods and services;
- **Representations and transformations of plane shapes within the environment:** Demarcation of land, decorations, patterns, agriculture, designing etc.
- **Usage of technical objects in everyday life:** Producing cartoons for packaging, house construction and maintenance, digging wells, constructing water tanks, molding bricks etc are all within the different domains of life.
- **Description of patterns and relationships between quantities using symbols:** Gardening, games, planning expenditure, etc are all activities within the different domains of life.

B- Relationship of Mathematics with other subjects within the Science and Technology learning area

Mathematics offers different models and structures that constitute the framework of service tools in the Science and Technology learning area. Mathematics in itself, contributes to the development of rigorous and logical reasoning, spirit of creativity and critical thinking, 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 working habits and communication. The Mathematics knowledge and skills learned at this level, serve as service tool for other subjects within this learning area. Basic operations and ratio are applied in Physics, Biology and in Chemistry. Approximation of results and writing of result in scientific notation are used in Physics and Chemistry, scale in Physics, symmetry in Biology, binary system in Physics and Computer sciences, etc.

C- Relationship between the syllabus and other learning areas.

Mathematics knowledge and skills acquired at this level are also very essential in the teaching and learning of subjects of other learning areas. In each of the learning areas below, Mathematics knowledge and skills acquired will be used in the areas indicated just to name a few.

Human Sciences: locations, scale, maps, weather forecast, time zone, dates and time.....

Language and Literature: Grammar (figures in words,)

Personal development: performances (spotting activities, ...)

Arts and Culture: Works of arts, days of the week, traditional games,

Industrial techniques: Measurements (lengths, volumes, areas ...), conversion, scale...

Commercial techniques: billing, currency exchange, fairs,

III. COMPETENCES.

A- Mathematics Competencies

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

- Problem solving skills in learners through activities: Solve a problem within a situation (solve problems encountered within real life situations) so as to fully and autonomously assume role as a citizen;
- Logical reasoning (show a coherent logical reasoning, spirit of curiosity, spirit of critical thinking and initiative);
- Communicate in Mathematical language (communicate in an intelligent, clear and concise language). Develop communication skills through discussions, presentation of results of an activity to the whole class, oral questioning and answers, written work etc.

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

B- Mathematics and transversal competencies

The above Mathematics competencies play an important role in the development of transversal competencies and the transversal competencies in turn, constitute an important resource for the development of the Mathematics competencies. We have Intellectual Competencies, Methodological Competencies, Personal and Social Competencies as well as Communicative competencies.

i) Intellectual Competencies

Learning Mathematics is solving problems. By so doing, the learner develops the ability to analyse, understand and establish relations existing within variables (objects). During the teaching learning process, intellectual competencies often make use of available information and develop rigour and critical thinking. In life, they normally manifest the autonomy in the management of difficulties encountered.

ii) **Methodological Competencies**

Mathematics is a subject full of methods and order. In order to solve a problem or deploy a logical thinking, the learner must structure his thoughts and organise his working faculties which he will apply in several real life situations and other learning areas. Learners can then manipulate and/or represent information orderly, in different forms such as on graphs, geometrical figures, symbols or in words.

iii) **Personal and Social competencies**

In the classroom, the teacher puts the learner in situations where he must discuss with his/her peers. Be it individual work or group work the learner shares his/her findings, convinces and explains his point of view. A mathematical lesson is a milieu where a learner learns to cooperate while working in groups. He also notices the importance of evolving along with other learners.

iv) **Communicative competencies**

It is not enough to understand a problem, a learner should be capable of solving a problem and communicating the solution to the teacher and other peers. He/she should communicate in good English or French. This ability to communicate using an appropriate language goes across all learning areas. In most situations, man is called upon to think, present a result, discuss with others, present a write up in English or in French or in other languages.

Intellectual Competencies (Conceptual skills)	Methodological Competencies (Process Skills)	Personal and Social Competencies (Affective skills)	Communicative competencies
-Carry out instructions accurately; -Remember and state facts and principles; -Analyse information; -Good sense of numbers; -Precision in calculation; -Exploit information	-Creativity; -Problem solving; -Ability to visualize; -Critical thinking; -Sense of appreciation; -Organization of work; -Logical reasoning; -Select and use information;	-Initiative and self reliance; -Interest, curiosity and eagerness to explore; -Ability to co-operate; -Orderliness; -Vigilance, patience, politeness, accurate -Spirit of enterprise	-Read written work; -Communicate orally or in written form; -Read and interpret symbols and signs; -Present solution of problem in the context of the original problem

IV- 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. Mathematics is essentially a holistic subject and, as such, should be taught in that way with connections being made between the modules on numbers and fundamental operations with numbers, geometry (plane and solid), algebra and organisation of data.

b- Role of the teacher

The teacher here is a facilitator of learning and has a supervisory role. He/she guides the students to construct their knowledge. He helps the learners to acquire knowledge, skills and attitude that they will mobilise later to develop competencies. As such, he is expected to:

- Give an introduction that will captivate and sustain the interest of the learners by using contexts that are familiar to learners and relevant to their environment;
- Give one or two well designed learning activities that will facilitate the acquisition of new knowledge and new skills (using raw data and primary sources of information, physical material). This activity should be such that it consolidates old knowledge with new knowledge, encourages learners to work alone and/or in groups at their pace but without slowing down the rate of work coverage,
- Bridge/link the activity carried out to concepts in order to reinforce concept formation, ask questions and allow students to ask questions, discuss and correct students' misconceptions, insists on clear expressions from learners;
- Be attentive to the needs of students, enjoy the teaching, be sympathetic to the needs and problems of learners, exercise patience with learners;
- Link mathematics to other subjects and to the learners' environment (learners' environment includes the learning environment);
- Encourage and accept students autonomy and initiatives ;
- Give the essential knowledge as notions or methods;
- Give exercises for application of knowledge and skills acquired;
- Give activities for integration whenever it is possible. These activities should be well planned so as to expose 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 knowledge and 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.

c- Role of the learner

- Carry out activity alone or in groups;
- Report on the result of the activity carried out;
- Ask (what if) questions to teacher and peers, answer questions from teacher or peers;
- Discuss with peers and teacher.

d- Evaluation

Evaluation is an integral part of the teaching/learning process. It assesses the knowledge and skills acquired, gives feedback on the success of the teaching approaches or methods used. It also enables the teacher to grade, rank, select or promote learners on the basis of performance. There are varying types of evaluations and different ways of evaluating.

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

Oral questioning of students is highly encouraged at the start of the lesson and in the course of the lesson, students should be encouraged to also ask questions on the content and the

method. Application exercises are given at the end of each learning activity, some done in the classroom, some as take home assignments and some as activity for integration.

At the end of form 2, it is expected that learners should have mastered the content for forms 1 and 2. The last sequence evaluation at the end of form 2 should be constructed with this in mind.

e- How to read and interpret the tables

Horizontally: it goes from contextual framework, through competent action to resources.

Vertically: each column gives the reader the content of each rubric (heading).

The families of situations and categories of actions are not to be changed, they are prescribed. Teachers are free to look for other examples of life situations as well as other examples of actions. However, the contextualisation of teaching compels the teacher to give preference to life situations and actions in the immediate environment of the learners.

f- How to use the table

After deciding on the Mathematical topic to be taught, the teacher then consults the contextual framework and identifies the family (group) of situations, he/she then identifies or looks for some life situations (context – of – use for that lesson) of his/her immediate environment. Otherwise he/she can take the situations and actions listed in the table. He/she then prepares his/her lesson but making sure that the teaching learning activities are in line with the families of situations and the categories of actions. He prepares an activity within that life situation such as to bring out the new knowledge and skills to be taught.

While in the classroom, he presents his lesson bringing out the new knowledge and skills (resources). During this teaching/learning process the teacher is more a facilitator while students are actors in acquiring their knowledge. Examples used should give real and realistic solutions or answers. Let students be able to attach real meaning to Mathematical concepts taught.

V- LESSON PREPARATION

The following are suggested to be considered and included when preparing a lesson.

Class :...Sequence..... Date.....DurationTitle of module:

Title of lesson : Rationale (Motivation): Objectives:- Didactic materials :

Stages /Duration	Teaching/learning activities	Learning points
Introduction		Captivate and sustain the interest of learners Control pre-requisite knowledge
Learning activities		Discover, reinforce, identify or show
Summary		Give essential knowledge as notion or methods
Exercises for application		Control acquisition of new learning, correct learners misunderstanding, self-evaluation on teaching etc .
Conclusion		Recall learning points, give home work, plan next lesson.

VI- SOME SAMPLE LESSONS

Sample lesson 1

CLASS: Form 1;

DURATION: 45 mins ;

MODULE: INTRODUCING GEOMETRY.

FAMILY OF SITUATIONS: Representations and transformation of plane shapes within the environment.

LESSON: Length of a line segment and length of a distance.

COMPETENCIES

- Make sensible estimate of lengths and distances in real life ;
- Measure plots and distances accurately in real life etc ;

Objectives:

- Measure length of a given line segment or a given distance ;
- Draw lines of given lengths;
- Give good estimates for lengths or distances;
- Choose and use appropriate measuring instrument and appropriate units of measurement.

Teaching.learning Resources: Rulers for the exercise book and ruler for the board, tape measures, Square line exercise books, the learning environment;

Rationale: Measurement of lengths and distances are used in real life in many aspects such as in building, woodwork, tailoring, surveying etc. As such accurate measurement is necessary because the least error made can cause a big problem.

STAGES	TEACHING / LEARNING ACTIVITIES	LEARNING POINTS	REMARKS
Introduction 5mins	Review relevant previous content: -Draw line segment [AB] -draw the integral number line -Identify life situations where measurements are applied.	-Draw line segments -List of some life situations such as building, tailoring, sports etc.	Get students to name the life situations
Lesson development 10 mins	Activity 1 Group work according to sitting position -Use your rulers to measure the dimensions of your Mathematics exercise books. -Are students with the same type of exercise books having different dimensions? -What can be the cause of differences between these measures of the same type of exercise books? Activity 2 -Draw a line segment [EF] across six squares of your exercise book.	-Measure the line segment drawn above ; -The most common exercise book is of length 22.2cm -Placing of the ruler well starting from the zero mark and read the value at the point the line ends. -Measure length for any given line segment or distance. -Draw line segment of any given length, -Choose the appropriate	-Explain how they can use a broken ruler or a tape measure without the zero mark -assist the students to place instrument correctly because

	<p>-Measure the length of this line segment and write it by the line,</p> <p>-Pick up your ruler and draw line segments of lengths 5cm, 8cm).</p> <p>We have in front of the class a ruler of length 100cm, a tape measure used by tailors, another tape measure used by carpenters.</p> <p>-Why can the tailor not use the ruler to take measurements?</p>	measuring instrument for any given length or distance	when placed wrongly gives a wrong value.
Bridging 15 mins	<p>-A student should come up, pick one of these measuring instruments and tell us the units on it.</p> <p>-Two students should come up, decide on which instrument that is good to measure the board and then use it to measure the length of the board.</p> <p>-Two other should measure the distance from the front of the class to the back of the class.</p> <p>-Give an estimate in metres for the straight horizontal distance from the door to the other side of the class.</p> <p>-Also estimate the height of the door of your classroom and the length of the window. Give each of these measures in cm and in m.</p> <p>-Convert from cm to m and to km and do the reverse.</p>	<p>-The different units of measuring lengths are mm, cm, m, km.</p> <p>-For very short lengths the mm is used as the unit while the shorter ruler can be used for measuring, for lengths longer than 30cm the 1m or 100cm ruler is used, for longer lengths or distances the tape measures are used. Tape measures are also used for round shapes so that it can go round. The unit to measure very long distances is the km. In measuring distances or lengths the ruler or tape measure is placed so that the 0 mark is at the starting point.</p>	<p>-Conversion from one unit to the other should be revised in the lesson.</p> <p>-Students should use good judgment to estimate lengths and distances having a mental picture of 30cm, 100cm or 1m etc.</p>
Evaluation 5 mins	<p>-Estimate the height of the person sitting with you. Use a tape to actually measure it. Estimate your height and write your estimate down. Ask your friend to measure your height and compare it with your estimate.</p> <p>-As you go home measure the length and inner width of your bed.</p>	<p>Homework</p> <p>Compare the lengths 1.6m and 150cm.</p> <p>-Use a ruler and draw lines of lengths 4.2cm, 25cm, 0.2m.</p> <p>Your father wants to go and pay for a plot. What are the advices you can give him so that he pays for the correct dimension of land?</p>	-He should make sure the tape has a zero mark and that it has not been cut and joined, He should make sure the tape is well placed

Sample lesson 2

Class:Form 1:**Sequence**..... **Date**.....**Duration:**55 mn

Title of module: Solid figures

Title of chapter: Cubiods (Cube)

Lesson: Nets of cubiods

Motivation: Some of the things around us are in the form of a cubiod such as sun dried bricks, cartoons used in packaging, etc.

Competence to be developed: Recognise or build up the net of a cubiod; build up a cubiod given its net.

Material resources: Empty packet of sugar, empty box of chalk, scissors, cellotape, at least six different colour pencil, dice (teacher asks students to bring empty cartoons of sugar etc).

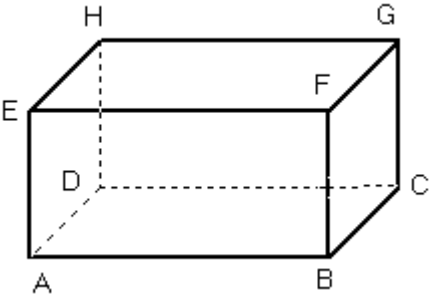
Pre-requisite knowledge: Learners can measure lengths, identify faces, edges and vertices of a solid figure as well as draw parallel lines.

Introduction

Recall of learning points in the last lesson (faces, edges, vertices, units of measurement).
Take a die to class

- ✓ ask students to count and say how many faces, edges or vertices, there are on a die.
- ✓ Which face is opposite the face with 2, 3, etc.

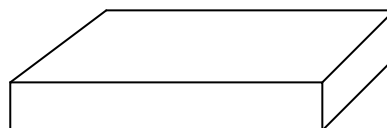
Assessment of pre-requisite knowledge

<p>Consider the cuboid by the side:</p> <p>Using the letters, name :</p> <ul style="list-style-type: none">i) all the verticesii) facesiii) parallel edgesiv) opposite faces	
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Activity

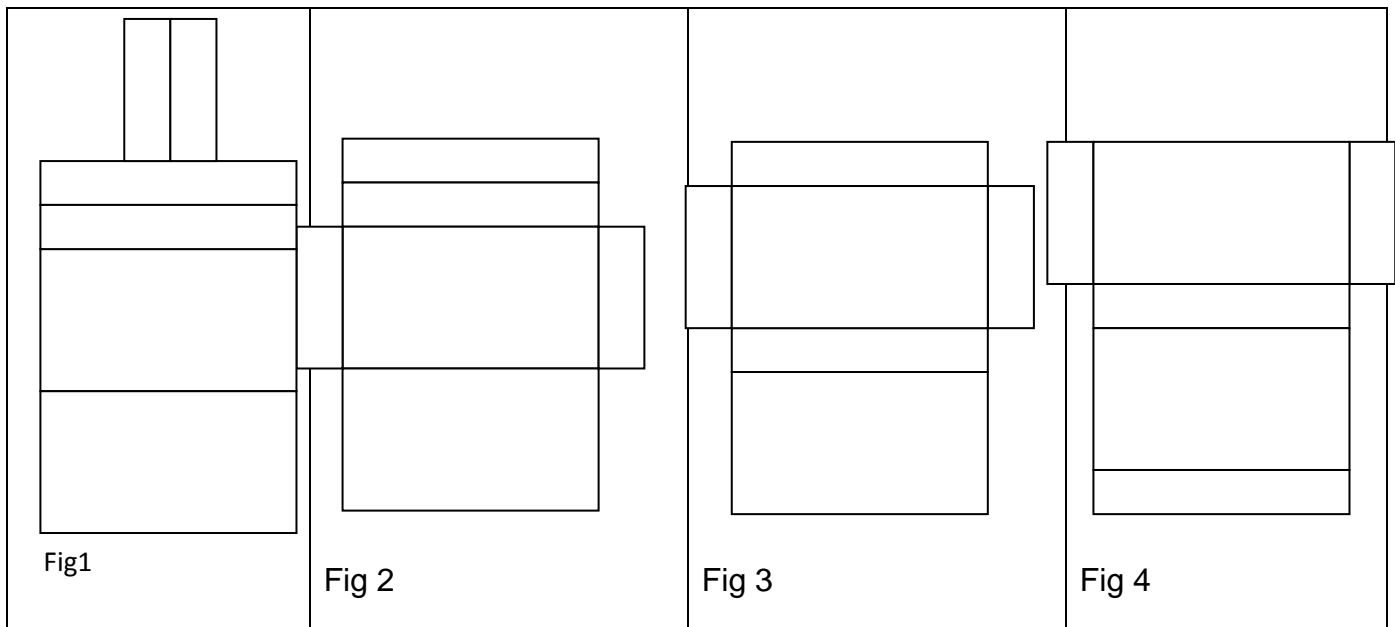
Materials: an empty packet of sugar, cellotape

Using the cartoon you have in your hand



- a) Use the same colour to shade opposite faces;
- b) Cut out the faces of the cuboid;
- c) Display the faces on the table « edge to edge » to form a plane figure with the coloured faces up;
- d) Cellotape the edges that touch.

The students will have various shapes like in the figures below. The teacher puts some of the forms obtained by the students on the board.



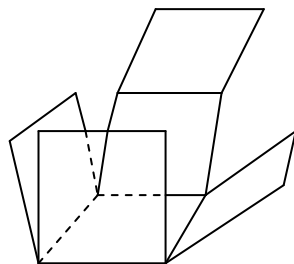
- Refold the faces to verify if you can obtain the original cuboid. (*teacher identifies and validates shapes that fold up to form the original cuboid*).
- Is there any other form that can be refolded to have the original shape?
- Was it necessary to detach all the faces in order to come out with the plane figure?

Learning points

From the figures above, fig1 and fig2 cannot be folded to get the original figure while fig3 and fig4 can be folded to get the original cuboid. Each of fig3 and fig4 is called the net of the cuboid.

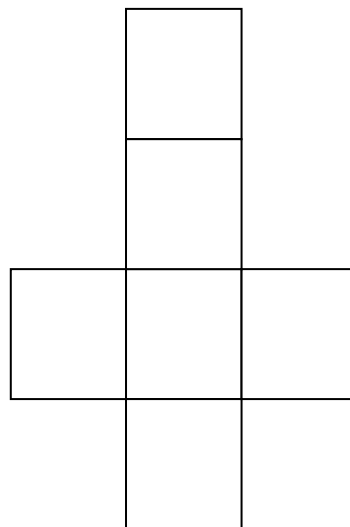
- The net of a cuboid is a plane figure made up of faces that can be folded back to obtain the original cuboid.
- A cuboid can have more than one net.

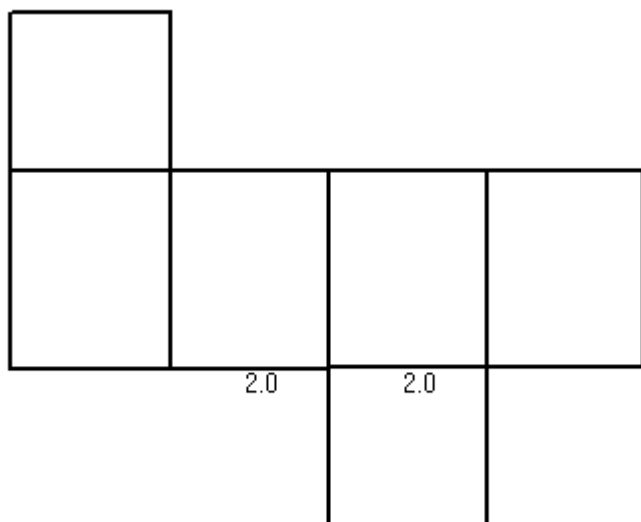
Example:



Exercises of application:

- 1 – Draw the net of a cube of side 5 cm.
- 2 – Draw a cuboid whose net is given below.





Example of activity for integration

Tiku wants to build up a wooden saving box to regularly save money for his next birthday party. This box will be in the form of a cuboid and will measure 260 mm by 340 mm by 260 mm. The box will have a rectangular opening that measures 5 mm by 125 mm on the upper face through which he will drop his savings.

- Taking 1cm for 5cm, draw the cuboid representing the box, hence, draw a net of the box.
- Calculate the total surface area of wood necessary for making this box, given that the box is made before the opening is cut out.
- Calculate the volume of the box.

VII- SUGGESTED ORGANISATION OF WORK FOR THE YEAR.

Forms	Sequence	Module	Duration
Form 1	1, 2, 3, 4,	Module 1 & module 2	75h
	5	module 3 & module 4	25h
Form 2	1, 2, 3, 4,	Module 5 & module 6	70 h
	5	module 7, module 8 & module 9	30 h

NB: 4 hours of Mathematics a week means 240mins. If your school has 50mins a period, Mathematics should be given 5 periods in that case. Ensure that the 240mins is given to ensure syllabus coverage.

VIII- OUTCOME OF THE LEARNER AT THE END OF FORM 2

It is expected that at the end of form 2, the learner would have acquired competencies that will enable him/her to be capable of:

- Pursing further studies in higher classes of first cycle and possibly beyond;
- Working effectively with others as members of a team, group, organisation and community through the sharing of ideas and experiences, respecting the opinions of others and learning from one another;

- Communicating ideas concisely, clearly and precisely using appropriate words, symbols, signs and body language;
- Identifying and solving real life problems (such as poverty, basic social, health, cultural, political and technological needs, commerce, agriculture, etc), using critical, and creative thinking skills ;
- Organising and managing self, activities and resources responsibly;
- Cultivating the love for effort, hard work, perseverance, the quest for excellence and team spirit;
- Respecting the universal ethical values of dignity, honour, honesty and integrity as well as discipline in their activities and in their interaction with others.

Exit Profiles related to Mathematics.

Some exit profiles are more within a given discipline and depends on the module in questions for example for Modules 1 and 5 namely: Numbers, fundamental operations and relationships in the sets of numbers, we can have the following.

Family of situations	Example of situations	Categories of actions	Exit profiles
Representation, determination of quantities and identification of objects by numbers	Buying and Selling of goods, division of goods, verification of bills and comparing prizes	Determine a number	Student calculate, use formula to obtain a value, Student identifies numerical values, compares values
		Follow a protocole	Student follows a simple protocole, can use a calculator
		Formulate and solve a problem	Student formulates a simple problem from given information or given method; he/she puts in order and structures a solution, a conclusion or a result. He reports on the method used.
	Reading and writing information containing numbers	Read and write the cost of an article, read and note the recipe for a dish	Student extracts and use information from document
	Communication on information having numbers or Monetary transactions	Give telephone numbers, give date of birth, be informed of price reduction	Student sort out information, translate these information if coded and identifies its numerical value and quantity

IX- MEANING OF WORDS USED IN THE SYLLABUS

Here are some of the words used in the syllabus and their meaning in context.

Curriculum: All the courses of study offered by an educational system or a group of related courses, often in a special field of study. It includes a statement that regroups the aims, the activities and the steps needed in training and teaching, the didactic material, the modes and means of assessment as well as the human resources and time frame.

Program of study: A program of study is a component of a curriculum and specifies learning content in a particular domain. There can be as many programs of study as there are subject

areas. Each program of study offers the content for learning in the form of organized body of school subject matter.

Curriculum Aim: Stated principle that orients a curriculum.

Curriculum Goals: General objectives of the curriculum.

Module: A unit of education or instruction, in which a single topic or two topics of the same nature is studied for a given period of time. This is based on the resources and directs the development of particular competencies.

Chapter: A group of related topics.

Lesson: A period of instruction; all teaching-learning activities covering a portion of the syllabus carried out during a defined period of teaching. A well determined period during which a portion of the syllabus is covered through the teaching-learning activities.

Notion/Concept: this is a word or expression that enables the understanding of the lesson or word or expression that underlines a lesson or which covers a major aspect of the lesson. Each notion or concept has sub concepts linked to it and to one another. Notions are therefore the references for the preparation of a lesson.

Area of Living/Area of Life: An aspect of the life of a community (society) to which is attributed a social role such as family life, health and wellbeing etc.

Social role: This is a function that an individual accomplishes in a community. For example a person is the citizen of Cameroon and the world, a person is a producer of goods and services etc.

Life situations: The total of all circumstances that confronts a person. For example conflict resolution, planning a mean, pollution, environmental projection etc.

Family of situations: All life situations sharing at least a common characteristic (property). For example, environmental protection and management of natural resources.

Contextual framework: Made up of i) Families of situations which is a group of life situations sharing at least a common property where the syllabus intends to train the learner in. For a module, the family of situations is the grouping of real life situations (context –of- use) of the module. ii) examples of situations are simply examples of some real life situations that knowledge and skills acquired in the module will serve as tools.

Action: This is what makes an individual competent in handling a life situation successfully. It is an action made by a person to demonstrate competency (e.g. buying of articles).

Category of Actions : These are all actions that have at least a common characteristic. Categories of actions characterize competent actions within a given family of situations.

Competent Action (Competencies) : Competent action tries to answer the question: **What will a person do to act competently in a given situation?** So it is all actions deployed by an individual in order to improve on a situation.

Resources : All the means used (needed) by an individual to solve a situation. There are internal resources (cognitive: knowledge and skills; Conative (behavioral/value, body resources) and external resources (Material and human resources).

Essential knowledge: Knowledge from the subject.

Skills: Know-how to be developed within a discipline/competencies to be developed from a discipline, for handling life situations.

Attitudes/Values: Behavior expected from a learner in the face of a situation.

Method: A manner of doing something or reacting/technique used by a teacher (instruction) to conduct appropriately teaching/learning activities

Practical work: An exercise that permits the learner to plough back in a concrete and active manner the theoretical knowledge from the lesson.

Guided (Directed) work: All exercises prepared, followed up and supervised by the teacher intended to reinforce skills, methods and knowledge of the discipline in the learner.

Competence: The capacity to react with efficiency in any given situation/capacity to mobilize relevant resources to resolve problems in a given situation.

Syllabus (program of study): A subject or discipline (Mathematics, Biology, chemistry etc) organized in modules.

Broad areas of Learning (broad learning areas): Syllabuses of all subject areas with some links e.g. Mathematics, Science and technology having the subjects Mathematics, Biology, Chemistry, Physics and Information Technology.

Teaching/Learning activity: An activity conceived by a teacher that will enable a learner to acquire the necessary resources for the development of competencies.

Activity for integration: An activity for integration is a didactic activity whose principal aim is to enable the learner to mobilize acquired knowledge and skills learned during different stages of the teaching/learning. The objective is to enable the learner to integrate the different acquired knowledge and know-how, and give **Meaning** to them.

An **Activity for integration** is given at the end of a module or a number of modules where students work in groups; they are allowed to discuss, brainstorm and later present their solution to the whole class and at each stage indicating what resources were mobilized. During this activity the learner puts in use, all the acquired knowledge to solve problems involved in the integration activity.

An activity for integration is:

- an activity where the learner is the **actor**;
- an activity which provokes the learner to mobilize the necessary resources;
- an activity geared towards a competence or towards the final objective of integration;
- an activity with significant character;
- an activity which articulates around a new situation.