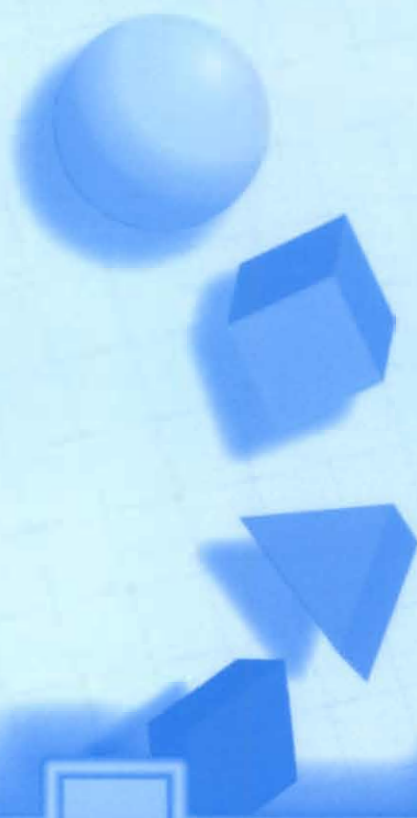


BUILDING UP MATHEMATICS

Teacher's Guide

7th Grade

Basic Education



Republic of Lebanon

Ministry of Education and Higher Education

BUILDING UP MATHEMATICS Teacher's Guide

Basic Education
Grade Seven

Center for Educational Research and Development



National
Textbook

New Curricula

General Coordinator
Victor Melhem

Statistical Consultant
Michel Sadaka

Pedagogical Consultant
Leila Abi Saleh Nasr

Translation to English
George M. Eid

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Walid Naji (Coordinator)

Elie Aoun

Hatem Chalak

Ahmad Dankar

Talal Nader

Center for Educational Research and Development

Technical Preparation: Technical Team ■ CERD
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Together We Build Through Education!

The Center for Educational Research and Development (CERD) has embarked on an extensive workshop for assessing and developing the educational framework and curricula which have been placed into effect more than three years ago. With full realization of the fact that the educational cycle must continue normally through its components, and until the development process attains its aspired objectives, we are placing in the hands of students, teachers and directors of public schools, this corrected version of textbooks issued by CERD as part of the National Textbook Series.

This version is an interim stage incorporating the corrected typographical and linguistic errors discovered by CERD specialists as well as teachers and students through their daily dealings with the books. The process of assessment and development of the framework and curricula will take into consideration all the comments that have been made, or will be made, in this regard.

It is expected that once the curricula are developed and aligned with the general and specific objectives set for them, the textbooks will be realigned with the new curricular and framework requirements, including tying the content of a course to the number of teaching hours set for it during the school year, taking into consideration vertical alignment within the same course as well as the horizontal alignment with the rest of the courses.

I take this opportunity to invite all school administrators, teachers and students and all officials concerned in public and private schools alike, to promptly send their comments on these curricula and books as their contribution to enrichment of this momentous national process.

This workshop, which was launched under the kind sponsorship of His Excellency the Minister of Education and Higher Education in implementation of Decree No. 10227 embodying the educational curricula and their objectives, fits in with CERD's proclaimed new motto "Together We Build Through Education"

It is our earnest desire to see this national, all-inclusive workshop attracting the greatest amount of interest and participation to define the safest and soundest educational options that directly affect our children, as we vow to continually modernize education and develop its ways and means to keep abreast of modern developments and progress in science and technology.

Dr. Leila MALEEHA
President CERD

Preface

From now on the intermediate cycle consists of three classes:

- the seventh year;
- the eighth year;
- the ninth year.

For the Mathematics, the book "of the student" of the seventh year was designed to answer to the objectives defined by the new programs and aims to develop the students' following abilities:

- produce different forms of the same fraction;
- operate on the signed numbers;
- solve problems of the first degree by an algorithmic or algebraic procedure;
- locate a point in the plane, given sufficient information;
- draw a (or the) geometrical figure associated with the given information;
- demonstrate simple geometrical results;
- analyze a geometrical figure or graphical representation of the given information;
- practice strategies for calculations of angles in triangles, for orthogonality and for parallelism.

These abilities are "the indicators" of the following "capacities":

- TO COMPREHEND.
- TO MANAGE INFORMATION.
- TO COMMUNICATE.
- TO PROVE.

To attain these objectives, and to develop these capacities and abilities, every chapter of the book of the student is organized according to the following sections:

■ Introduction

This section serves to inform the student of the subject approached in the chapter, to indicate what are the acquired knowledge indispensable for approaching this subject and to inform him of the objectives to be attained at the end of the chapter.

■Activities

This section often contains recall activities and always contains preparatory activities.

The recall activities are present every time we judged it was necessary to ensure the acquired knowledge.

The preparatory activities are often devised as "problem situations", and it is essential that the students accomplish them on their own, without any interference on the behalf of the teacher.

The aim of the preparatory activities, as their name indicates, is to prepare the students to assimilate the notions studied in the chapter. It must never, in any case, be expected that all the students arrive to "solve" these activities: this is not our aim; we only want them to be conscious of the situations and present the results which will be presented in the explanation.

The necessary time must be given to the students for them to be able to work, discuss, conjecture, criticize, evaluate. The role of the teacher during these activities is to manage the class and to give a small hint to the students facing some difficulty.

We must make sure that the students do not solve these activities to "please" the teacher, but they should be involved in them and that these activities never become problems to which we must obtain "an answer".

■Explanations

After the activities, the teacher steps in: this is the phase "of institutionalization" (the only one where the teacher interferes in the "magisterial" fashion).

■Results

This section constitutes a summary of the explanations and the methods which we must master from now on.

■Exercises

This section often includes recall exercises, and we leave it to the teacher to judge whether to do these exercises or not, whether to solve them before or after approaching the preparatory activities.

The practice exercises are designed to consolidate the notions acquired in the lecture and understand them better.

■Self-Evaluation

The exercises given in this section are designed for the student to solve on his own, for him to be able to criticize himself and understand if he has well assimilated the lesson. They must be solved by the student, at home.

■Problems

In this section, we find synthetic problems, which aim to find a field of application for the results of the explanation in different domains, whenever this is possible.

■Problems Just For Fun

Problems Just For Fun is a section designed for animation sessions. It offers a large set of "open problems", of "problem situations", of problems of "practice", etc. The aim is to make the students work on situations where they must reinvest their knowledge and acquisitions in an intelligent manner. These problems are often characterized by a short statement, a situation which suggests to the students that they are capable of answering the questions and that the solution necessitates different abilities which are not necessarily in direct connection with the explanation.

We think that this kind of work offers the students with a good occasion to confront themselves with surmountable difficulties and to manage their knowledge in a useful manner. The aim is never to solve the problem, but to **think** and to **seek** to solve; the large interest resides in the time spent to find the solution, and not in the solution itself.

History offers us many examples where problems (such as the theorem of Fermat) played a essential role in Mathematics, and that was well before they were solved: a solved problem is no more a problem!