

**Commission on Post-War Plans**  
**National Council of Teachers of Mathematics**  
**First, Second, and Guidance Reports**  
**1944–1947**

## **Why?**

During World War II, the need for a good mathematics education for those serving in the armed forces and those helping the war effort in the United States became glaringly obvious. The war had legitimized the need for mathematics knowledge as it revealed deficiencies particularly in male inductees, many of whom were unable to pass eligibility tests required for the armed services. In many cases, the armed forces needed to educate servicemen to meet the requirements of their jobs. The report from the Progressive Education Association Commission and Joint Commission both suggested more mathematics in the curriculum. With the mounting world crisis, the pre-war reports were brushed aside, hence, the problems in the nation's schools continued to persist. The mathematical needs of an increasingly diverse group of students were not being met, and many teachers and mathematics educators felt discouraged about the state of the teaching of mathematics. The National Council of Teachers of Mathematics (NCTM) sought to restore the status of mathematics in the educational system and developed plans to address the concerns of the education and social communities.

## **What?**

As World War II came to an end, the Board of Directors of the NCTM created a commission to plan mathematics programs in the post-war period. The commission published three reports: The First Report of the Commission on Post-War Plans (*The Mathematics Teacher*, May, 1944), The Second Report of the Commission on Post-War Plans (*The Mathematics Teacher*, May, 1945), and The Guidance Report of the Commission on Post-War Plans (*The Mathematics Teacher*, November 1947).

## **Who?**

### **First Report:**

#### *Committee Chair*

Raleigh Schorling, University of Michigan

#### *Committee Members*

William Betz, Public Schools, Rochester, New York  
Eugenie C. Hausle, Public Schools, New York City  
Rolland R. Smith, Public School, Springfield, Massachusetts  
F. Lynwood Wren, George Peabody College For Teachers  
James Monroe, Bronx High School, New York

**Second Report:**

*Committee Chair*

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*Committee Members*

William Betz, Public Schools, Rochester, New York  
William A. Brownell, Duke University  
Eugenie C. Hausle, Public Schools, New York City  
Virgil S. Mallory, Montclair Teachers College  
Mary Potter, Public Schools, Racine, Wisconsin  
William L. Schaaf, Brooklyn College  
Rolland R. Smith, Public School, Springfield, Massachusetts  
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**Guidance Report:**

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Walter J. Greenleaf, writer of guidance leaflets for the U.S. Office of Education, organized the submitted materials, created the leaflet format, and wrote the first draft.

## What was produced?

### First Report:

From the outset, the committee made it clear they wanted input from all educational arenas. Responses to early stages of the report were invited. They also encouraged representation on subcommittees from the mathematical community at large with a specific invitation to “the two city clubs in Chicago and the California Mathematics Council.” The request for financial support from local and state councils of mathematics was enlisted by asking for contributions of \$25 to \$100.

The first report offered general recommendations aimed at improving secondary school mathematics. The committee published five tentative proposals regarding mathematics courses:

1. The school should insure mathematical literacy for all students capable of achieving it;
2. Differentiated programs should exist based on the mathematical needs and goals of students without stigmatizing any group;
3. New approaches to the teaching of the slow learner should be developed and implemented;
4. The teaching of arithmetic should be improved by including more time spent on arithmetic in early grades with better-trained teachers and continued attention to arithmetic in later grades;
5. The traditional sequential coursework should be improved by providing more qualified teachers, updated materials including a wide variety of applications, and appropriately placement for students.

(Commission on Post-War Plans, 1944).

The Commission felt that mathematical literacy was as important as communication, and thus mathematics should have equal status with equal time devoted to its study as did reading and writing. The commission report spoke of a need to be aware of each individual pupil's needs, and thus a series of courses called sequential mathematics, related mathematics, and social mathematics must be provided to meet such diverse needs of learners. The recommendations also called for the use of the laboratory setting for instruction of these courses offering a different kind of curriculum with different instructional strategies. The report called for better education of teachers, including professional courses to improve arithmetic instruction and the teaching of the high school sequential courses. The report recommended that the undergraduate pre-service program for teachers should include at least a one-year course correlating industrial arts, a practical kind of physical science and the related mathematics. The commission envisioned the mathematics teacher of the future having to know more about the technical world, and recognized that the gap between pure and applied mathematics in the present program needed to be closed.

## Second Report:

The second report focused on the improvement of mathematics from elementary school to the junior college. The 27-page document, published one year after the first report of the commission, consisted of a series of theses offering recommendations for the different levels of mathematics education.

General recommendations:

- Arithmetic in the elementary grades must be improved;
- The high school must provide quality mathematics education for those with ability and insure mathematical competency for the rest;
- The time is right for reform – the climate is respectful of mathematics and the educational community should capitalize on the opportunity.

Thirty-four theses were offered as “tentative guides” that the commission hoped to revise into a series of principles in a later report (p. 195). The first thesis of the commission was an overarching statement for teachers at all grade levels. It stated that “the school should guarantee functional competence in mathematics to all who can possibly achieve it” by outlining “the mathematics of the core curriculum” (p. 196-197). The commission listed 28 different mathematical topics describing “the essentials for functional competence in mathematics” (p. 197), including topics from number and operation, algebra, geometry, and business mathematics.

The next seven theses proposed changes for the elementary grades. The commission felt that arithmetic should not be seen as a tool subject but that arithmetic has “both a mathematical aim and a social aim” (p. 200). Students must be able to see the applicability and utility of arithmetic and have the opportunity to develop meaning and understanding of arithmetic algorithms. The committee’s theses also projected the need for proper instruction and better techniques to evaluate a student’s progress. Students were not to be taught arithmetic ideas based on their age (“There is no magic in birthdays” (p. 202)) but rather based on their past learning experiences. The report also urged teachers to make wiser use of drill exercises, stating that “drill...cannot develop understanding” (p. 203).

Three theses covered the recommendations for mathematics teaching in grades 7-8. The commission felt that “the mathematical programs of grades 7 and 8 should be essentially the same for all normal pupils” and that these grades were not a place to “begin differentiated courses” (p. 204). Mathematics at this level should continue the work students have completed in previous grades and establish a firm foundation for future work. The curriculum should be built around a few broad concepts: number and computation, geometry, graphical representation, and elementary algebra in order to develop the students’ mathematical skills.

The next two theses covered suggestions for grade 9 mathematics. The commission felt that large high schools should offer two different tracks in mathematics—one in algebra and one in general mathematics. Students should take the appropriate pathway based on their ability and their long-term goals. The commission urged that care be taken to protect against stigmatizing

students in the general mathematics course as less able or the course as less worthy of study than algebra.

For grades 10-12, the commission offered seven suggestions concerning the traditionally sequenced courses. They felt that the courses at this level “should be reserved for those pupils who ... desire or need such work” (p. 208). Teaching suggestions were also offered, as the commission implored teachers to “emphasize functional competence in mathematics” and “develop mathematical power” in students (p. 209). The report suggested building a year’s instruction around a few large units filled with key principles and concepts in order to help students see the applications and connections among them. For those students not taking the sequential course pathway, the commission recommended the construction of new courses to meet their needs. The report also offered suggestions for small high schools (including one room school houses), such as providing correspondence courses and offering two courses in the same class period at the same time.

The commission’s recommendations did not end with secondary mathematics. The report gave three theses for junior college mathematics programs based on the 1940 report of the Joint Commission of the NCTM and MAA. Junior colleges should provide pre-vocational courses in mathematics as well as make accommodations for students with an interest in pursuing careers in mathematics and related fields.

The final set of theses provided suggestions for the education of mathematics teachers. The commission felt that programs geared toward educating future teachers of Grades 1-8 should ensure that students “demonstrate competence over the whole range of subject matter which may be taught in these grades” by gaining “a satisfactory score on an acceptable examination” (p. 215). The report also urged special course work for teachers regarding mathematical content and pedagogy. For grades 9-12, the commission recommended an even greater level of mathematical knowledge and understanding for future teachers, urging a strong background in the subject as well as strategies for instruction. The report also stated that teachers should “acquire a background of experience in practical fields where mathematics is used” (i.e., the general shop, the machine shop, surveying, etc.) (p. 219) and attain at least a college minor in mathematics. Provisions should also be made for the continuous education of teachers in service including training with technology and multi-sensory aids available for classroom use.

### **Guidance Report:**

The final report of the commission spoke to an audience of high school pupils, guidance counselors, parents and school administrators. This 25-page report was published in November 1947 with a pamphlet for students and those who might guide their mathematics choices in school and career as a major piece of the report. The guidance pamphlet described occupations in which mathematics is important and informed students of both the kind of mathematics used in several careers and the required study of mathematics to prepare for such a career. This report discussed the mathematics courses students should take in aiming to answer the question “Why should I study mathematics?” (p. 315). The report was organized into the following sections:

### ***Mathematics for Personal Use***

In this section, the report described the different personal uses for mathematics in everyday life. Mathematics in the home: tasks such as managing a household budget, determining the “best buy” for products, and calculating accounts and mortgages, and uses of mathematics in cooking; mathematics for citizenship: jobs such as buying insurance, paying taxes and discussing public statistics; mathematics as consumer: reading of newspapers, magazines and bulletins, and processing information presented in mathematical situations. For everyday occupations, workers such as farmers, businessmen, and craftsmen and the mathematical skills required to perform their lines of work were included.

This section concluded with a checklist of 29 questions to determine how much mathematics is a “must” for each citizen (p. 318). This checklist covered questions from different areas of mathematics that illustrated the need for mathematical knowledge. Example of the kinds of questions asked in the checklist follow:

“*Computation.* Can you add, subtract, multiply, and divide effectively with whole numbers, common fractions, and decimals?;

*Practical formulas.* Do you know from memory certain widely used formulas relating to areas, volumes, and interest, and to distance, rate, and time?;

*Stretching the dollar.* Do you have a basis for dealing intelligently with the main problems of the consumer; e.g., the cost of borrowing money, insurance to secure adequate protection against the numerous hazards of life, the wise management of money, and buying with a given income so as to get good values as regards both quantity and quality?” (pp. 318-319).

### ***Mathematics Used by Trained Workers***

This section described the mathematics used by five specific occupations. A bookkeeper must be able to “figure accurately, rapidly, and with confidence” (p. 320) the numbers with which he is working. For clerical workers, knowledge of computing and business topics is essential for success. Craftsmen must possess computational knowledge, the ability to convert between units, and use skills from elementary trigonometry for their occupations. Farmers must have a strong knowledge of business arithmetic and the ability to deal with topics such as area, perimeter, and volume. Finally, nurses must have proficiency and speed in dealing with computations to solve problems especially those involving ratio.

### ***Mathematics for College Preparation***

This section speaks to what mathematics students should take in order to enroll in college. The report listed two questions that students and guidance counselors must answer:

- (1) What particular college will you attend?
- (2) What are you planning to do in life? (p. 323)

Once these questions have been answered, this section of the report provided guidance for coursework as well as further recommendations of where the student might seek help.

### ***Mathematics for Professional Workers***

The report addressed the mathematical expertise required of two kinds of mathematicians: pure and applied. The occupations that these mathematicians might be engaged in include teachers of mathematics, statisticians, engineers, surveyors, accountants, actuaries, medical and other health services workers, and scientific researchers and their assistants. For each occupation, the report described the diverse and deep levels of mathematics that each profession requires for success.

### ***Women in Mathematics***

The report described the new demand for women in all areas of mathematics due to the war and urged young women to make informed decisions about their career choices. Speaking directly to women, the commission stated, “There is a big field for teaching mathematics in high school and colleges. The competent woman is sought (also) for computational and statistical work with insurance and business firms, government agencies...and industrial concerns” (p. 335). The report urged women with an interest in mathematics to pursue jobs in these areas.

### ***Mathematics Used by Civil Service Workers***

The final section discussed jobs provided by the federal government demanding the use of mathematics. The report discussed the process of how someone with the proper training might obtain a job with the government. Positions such as mathematicians, accountants, and statisticians were discussed, as well as salaries for each occupation (e.g., mathematicians could earn \$7,102 to \$9,975 a year).

## **Significance of the Reports**

The commission provided the first major response to progressivism outlining new goals for mathematics education.

The recommendations provided were the result of data collected from the high school graduates enlisting in the armed services. The report provided a plan to remedy such mathematical inadequacies in the future.

The report provided a broad scope of the usefulness of mathematics at specific levels and for specific occupations.

The report attempted to define a core curriculum for all students of mathematics.

The report led to the establishment of high school general mathematics courses characterized by practical content, such as buying insurance and paying taxes.

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