

# 3. Mathematical Teaching in Elementary Schools.

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mathematical Association of Japan for Secondary Education was inaugurated in the capital in 1919, which has since been rendering great services for the development of mathematical teaching in the Empire.

By virtue of the Higher School Law enacted in 1918, and the revised regulations relative to the enforcement of the Middle School Law and the administration of Normal Schools promulgated in 1931, considerable changes have been made in the program of mathematical teaching in the respective schools in accordance with the spirit of the reformist movement with the result that the mathematical teaching in the country has come into line with the general tendencies in the world.

An epoch-making adventure was initiated by the Japanese educational authorities last year in revising the state text-books for arithmetical teaching in Elementary Schools.

## 2. EXISTING SCHOOL SYSTEM IN JAPAN.

In order to facilitate the reader's understanding of the conditions of mathematical teaching in various sorts of schools in Japan, a table of Japanese School System will be given.

The establishment in 1929 of Bunrika Daigaku (Universities of Literature and Science) in Tokyo and Hiroshima, capital of Hiroshima Prefecture, is also a recent educational installation in Japan, while the latest event was witnessed last year when the Law governing the establishment of Youths' School (Training Schools for Young Men and Women) was promulgated.

The Higher School course extends over seven years, of which the ordinary course is set for four years and the higher course for three years.

The Middle School course extends over five years, and those who have finished the fourth-year course are permitted to apply for admission to the higher course of the Higher School.

A school-calendar illustrating the outline of the school system in Japan is shown on the previous page.

## 3. MATHEMATICAL TEACHING IN ELEMENTARY SCHOOLS.

The subject for mathematical teaching in the elementary school is arithmetic.

Lesson-hours per week for arithmetical teaching in the elementary school are at present fixed as follows, one lesson-hour lasting for 45 minutes.

## Ordinary Elementary School

	School year					
	I	II	III	IV	V	VI
Number of lesson hours per Week	5	5	6	6	4	4

## Higher Elementary School

	School year		
	I	II	III
Number of lesson hours per Week	4	4	4

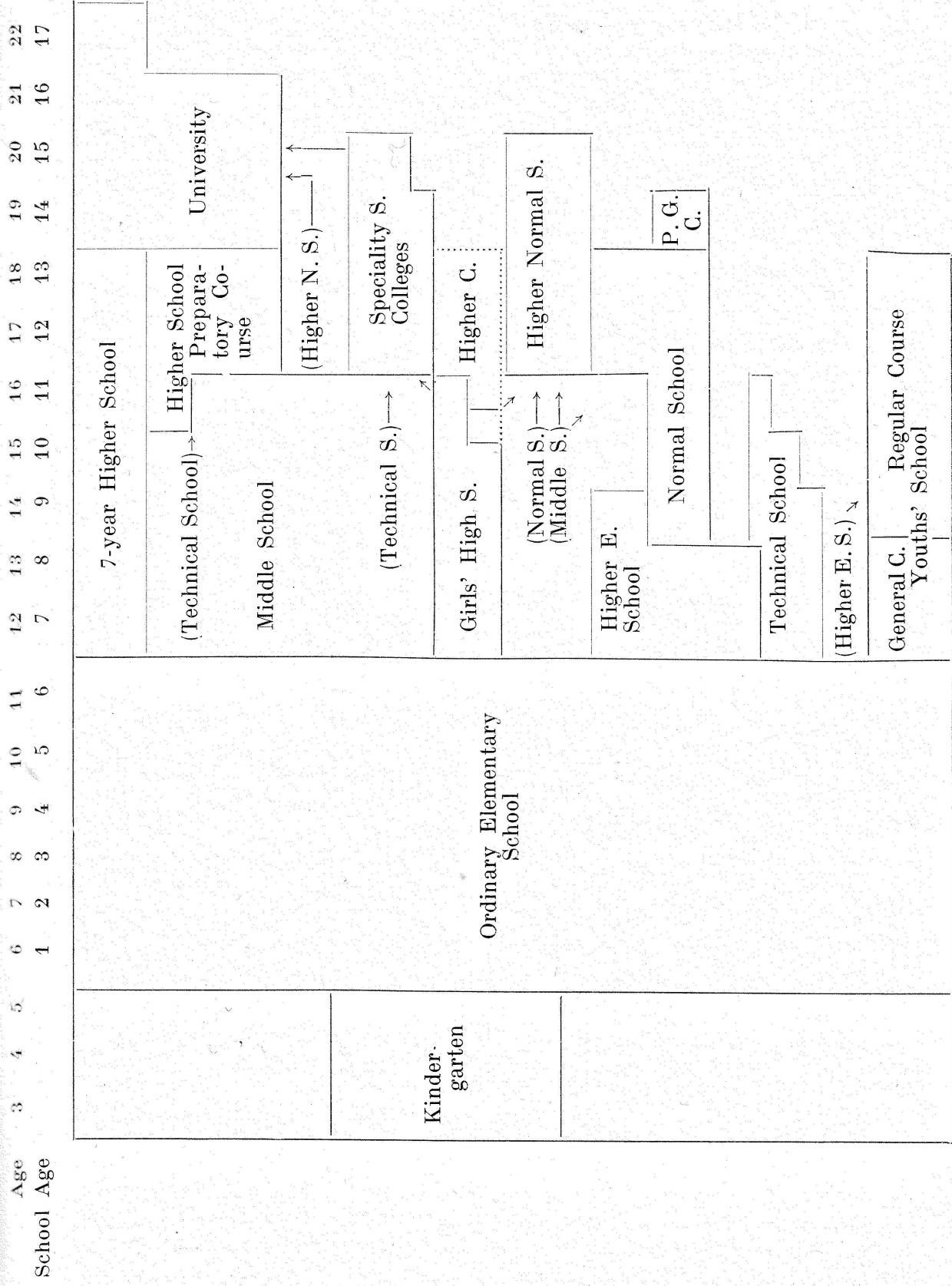
As has already been related in the Reports of 1912, it was in 1905 that State text-books for the mathematical teaching in elementary schools had been published for the first time in the educational history of the country. These text-books had been used without undergoing any substantial change for nearly 30 years.

In view of the recent tendencies, at once abroad and at home, of educational development, a substantial revision of arithmetical text-books has been attempted by the authorities of the Education Ministry in the hope to keep these books in line with the general developments made in the national life. It is pointed out that as a sequel to extensive enquiries conducted in various directions, a fundamental policy on which the projected revision should be carried out, has been established by the authorities of the Education Ministry.

It has been in pursuance of this policy that the first part of the arithmetical text-books for the use of the first year course of the ordinary elementary school was published in February, 1935, which was followed before long by the publication of the second part of the first-year text-book and the first part of the second year book.

The fundamental policy governing the present revision of the arithmetical text-books is reported to be along the following lines:

1. The main object in view is to cultivate children's thinking on the basis of mathematical principles.
2. The contents and their arrangement in the text-books should be made more suitable to the development of children.
3. The contents and their treatment should be kept in line with practical life.
4. The contents are expected to be imparted to the pupils as much through their personal experiences as possible.



5. The text-book should be provided with greater flexibility in consideration of various circumstances prevailing in different parts of the country.

6. Text-books should be provided with greater facilities for actual instruction in class-rooms.

7. In text-books for children's use, facilities should be cultivated for the study of the pupils.

8. Text-books should be made more appellatant to the interests of children.

In connection with the extent to which teaching materials should be provided in the text-books, the following points are taken into considerations:

1. Matters necessary for the fostering of mathematical ideas.
2. Matters administering to the development of children's minds and abilities.
3. The basic and common of matters applicable to practical life.
4. Matters necessary for civil education.

With regard to the arrangement of teaching materials in text-books specific considerations are paid on the following points:

1. Mathematical principles, which will form the underlying bases of the present revision, should be adjusted to the different stages of the mental development of children, to which will be added matters designed to meet systematically the progress of the pupils' minds.
2. To begin with concrete matters, which will be developed into general matters.
3. Teaching materials are expected to be developed along genetic principles as much as possible.
4. The initiation of new materials should start from such matters as would require solution by children themselves.
5. Considerations should be paid to the affecting of a smooth coordination between the old and the new materials.
6. Teaching materials should be classified into comparatively large categories.

As compared with the earlier ones, the revised text-books of arithmetic have undergone substantial changes in many points.

With due consideration being made for their practical application by individual teachers as well as for local circumstances and for the different abilities of children in regard to details of the methods, major principles concerning the methodical definition may be summed up as follows:

1. Such actual facts as would interest children and make them feel the need of these facts, or are likely to interest them and make them feel the need of these facts when they will meet with such

matters, should be presented inasmuch as these practical matters will provide motives for the development of mathematical ideas on the part of the children and, by encouraging voluntary learning activities, lead them to achieving the creation of personal experiences conforming to their respective abilities.

2. By means of analysis and synthesis of these personal experiences on the part of the pupils, general mathematical ideas should be developed systematically.

3. What has thus been acquired by the children of mathematical thought should be consolidated by repeated practices.

4. In addition, by making these acquirements applied to the settlement and disposal of actual questions facing the children, they should be developed into active faculties to meet practical life, which would constitute important factors in laying the foundation for the children to enter upon useful activities in the years to come both as an individual and as a citizen.

#### 4. MATHEMATICAL TEACHING IN MIDDLE SCHOOLS.

With the Outlined Program remaining intact for nearly 20 years, the initiative was taken in 1917 by those directly connected with mathematical education in the country in launching active movements for reforming mathematical teaching. The first definite indication of the reform move was seen towards the end of 1918 when a Conference of All Japan Mathematical Teachers was convened in Tokyo, which was followed shortly afterwards by the inauguration of the first annual general session of the Mathematical Association of Japan for Secondary Education.

The educational system for middle schools in Japan was revised in 1931 when the course of the middle school was divided into two categories, the First Kind of the Curriculum aiming at certain instruction of business subject and the Second Kind of the Curriculum being arranged mainly for the benefit of those who wish to prepare themselves for admission to higher-grade schools. The choice between the two categories is permitted to be made in accordance with the pupils' abilities, dispositions and wishes as well as local circumstances.

Main features of the new program are, among others, the division of the curriculum into the regular and the complementary studies, the adoption of unionist principle in construction, the importance attached to practical application in arranging the contents of each curriculum, and the preference given to intuitionism in designing teaching methods. Various pending issues have thus been settled on this field of the secondary education and a new phase has been developed in the mathematical teaching in the country.