JUNIOR HIGH SCHOOL MATHEMATICS; BOOK III

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BOOK III

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TO THE TEACHER

In presenting the two earlier books of this series, the author in each of them offered the teacher some reasons for developing the subject of mathematics for the Junior High School as he had developed it. It seems to be in place here to repeat some of the considerations and conclusions there expressed.

Because inductive geometry together with its accompanying constructions has been found to be the most concrete of the mathematics work that should be given to pupils of the Junior High School, it was stressed as the most important feature of Book I, which is intended for use in the seventh year. In order to lead the pupils to greater generalization and to further the use of mathematics as an instrument, literal numbers and formulas, and the application of tables were made the main issues of Book II, which is intended for pupils in the eighth year. Business principles and problems appear throughout the books for these two years. The principles are quite elementary and the problems deal almost wholly with thrift and with child enterprises.

The general business problem is concrete to the average grown person but becomes less and less concrete the younger a person is. The pupils of the ninth year look at life more nearly from the standpoint of the adult, and therefore may be depended upon to give far greater weight to these business matters than they would have given during either of the previous two years. Hence, the general business applications of mathematics have been delayed until the ninth

year, and are therefore the substance of this, the third book of the series.

Placing the business applications in the third year of the . Junior High School course is logical both from the pupil's needs and from the nature of the service to which mathematics can be put. Opportunity for the application of the principles studied the first two years now arises naturally and the pupils find real use for their mathematics.

The work in Book I and in Book II provides ample suggestions for project problems commensurate with the abilities of the pupils of those two years. The pupils of the ninth year, however, are able to handle the larger and more complex project problems that arise on every hand in the business applications of mathematics. Such problems are met, for instance, in the study of savings-banks, of transportation, and of the items in the family budget which properly may be discussed.

The above-outlined plan of placing the great bulk of the business applications of mathematics in the last year of the Junior High School course has been submitted by the author to a great number of men in business and industry as well as to educators, and they have given the plan their universal approval.

The pupils of the Junior High School may be divided into two large groups: first, those who leave school at the end of this period and, second, those who enter Senior High School. The course in mathematics should be so arranged as to prepare properly each of these groups of students, the first to go out into life, the second to continue their studies advantageously. This the author has continually kept in mind in developing the series. In order best to help the first group, the Junior High School mathematics needs to *be a well-rounded* course complete in itself. A part of the

plan of making the series a complete unit, reaching its goal at the proper time, is to give the business applications of the mathematics in the year just before the pupils leave school to use their mathematics in actual life.

Much attention has been given of late by educators and by the public at large to the matter of economy of time in our schools, and the pupil who continues his education by entering the Senior High School must also be considered in formulating the Junior High School mathematics course. Hence, the work of the ninth year as well as that of the previous two years has been so developed that the pupil entering Senior High School will neither miss any necessary work nor will he be compelled to lose time by repetitions. In Book III the application of the work taken in the previous two years together with the cumulative reviews takes care of these matters.

After completing the three books of Junior High School Mathematics, the pupil entering Senior High School will be able to take up third-semester algebra, to complete plane and solid geometry in one year, to complete trigonometry in one-half year, and to complete college algebra in one-half year.

In the third book, as in the first two books, the author has stuck to the principle of selecting material which naturally appeals to all of the pupils of the Junior High School, and which can be made of value to them all. Each topic is taken up almost wholly from the standpoint of the one outside and not inside of the counter. For instance, we all make deposits and withdrawals at the bank, but few of us are ever employed in a bank. Again, every one is interested in the development of transportation facilities, in freight and passenger rates, and in a variety of associated problems, but only a few of us are ever employed by a transportation

company. Hence, the processes and principles that will come within the range of the pupils of the Junior High School in general are the ones here included. All specializations should be excluded for present purposes.

In order to make this book useful in the greatest possible degree, many of the topics have been treated in a somewhat different manner from that found in most texts. For instance, in place of giving several differing processes of computing interest, some space is devoted to a discussion of investments. A consideration of the historical and economic phases of various topics arouses interest and gives a breadth of view which cannot be obtained by a purely mathematical treatment. In the discussion of the subject of wages, a study is made of the value of an education. This particular question, being placed at about the time when each pupil will be debating the advisability of entering Senior High School, becomes a real personal problem.

In compliance with the advice of men in various lines of business and industry, numerical computations have been given a prominent part. This includes the most useful processes of short cuts, approximations, and checks. The number contests employed during the first two years may be continued at the discretion of the teacher.

The author takes pleasure in acknowledging the inspiration and suggestions gathered from his students, his fellow teachers, and men of business and industry. He feels especially indebted to Miss Lena B. Hansen, of the Enid, Oklahoma, High School, and to his two colleagues, Mr. W. H. Keller and Miss Inez Morris.

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