ASSIGNMENT MANUAL OF ALGEBRA

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This Assignment Manual can be used only in conjunction with ELEMENTARY ALGEBRA (FIRST COURSE) by Stone and Millis which is published by BENJ. H. SANBORN & Co.

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This Assignment Manual had its origin because of the apparent need for such a text in connection with the supervised study of algebra as conducted at the Huntington School.

It should be suited to any algebra class where the Stone and Millis Elementary Algebra (First Course) has been adopted.

PREFACE

The difficulties generally encountered by algebra students seem to be principally due to study without *real* supervision. Few students of the age of those pursuing algebra know how to study or just what to study in the lesson assigned. The object of this manual is to remedy that condition.

To use this text effectively, the period should be divided into two parts—laboratory and recitation. The assignments of this manual should be studied and discussed during the laboratory period. This prepares for the recitation period to follow, during which problems of a similar nature should be solved without reference to any text. In brief, the idea is to prepare properly during the study or laboratory period for the actual work to be accomplished during the recitation. The process may be reversed (recitation first and laboratory second) if the subject or conditions favor such an arrangement.

If the manual is used in evening classes, each assignment outlines as much work as the evening student can generally do for a lesson outside of class. He has a definite assignment and comes to recitation prepared to ask questions more intelligently than would otherwise be the case.

Another advantage obtained by using this text is that both teacher and student know at all times what the work for each day is to be. A rule should be made at the start that the assignment for a certain day must be covered on that day. If this is adhered to there will be no doubt at any time as to whether or not the course is to be properly covered during the year. The objectionable features of hurrying at the end

are eliminated. The end of the year finds the work accomplished without haste, or waste of time and effort.

The number of assignments (150) has been selected because the author feels that it is not necessary to devote more than thirty full weeks of the year to advanced work. This leaves ample margin for frequent tests and review and any irregularities that may occur.

The number of problems given represents a minimum rather than a maximum. Problems whose solution is not required may be solved during the recitation period or assigned for work outside of class.

The study problem is a real problem which must be solved if the boys and girls in our schools are to secure the best results from the work pursued. Does this manual help in any way to solve that problem as far as the study of elementary algebra is concerned? Comments, suggestions and criticisms are desired.

CHARLES H. SAMPSON.

September, 1917.

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(The chapter numbers are those of the Stone-Millis Elementary Algebra, First Course.)

CHAPTER I

THE FORMULA: GENERAL NUMBER

ASSIGNMENT 1

Come to class prepared to answer the following arithmetical questions:

1. What are the signs of addition, subtraction, multiplication and division? Explain their meaning.

2. In what different ways may the process of multiplication be indicated?

3. In what different ways may the process of division be indicated?

4. When we write $2b$, a process of multiplication is indicated. When we write 24, does this mean that 2 is multiplied by 4? What is the difference?

For this assignment solve the following problems on pages 3 and 4:

1, 6, 10, 12, 14, 17, 20, 24, 26, 27, 30, and 37.

Most of these problems require the application of the process of **substitution**. This means that something is put in place of (substituted for) something else. If $w = ab$ and $a = 2$ and $b = 3$, the value of w would be 2 times 3, because in place of a and b their numerical values have been substituted.

Bear in mind at all times that a strong similarity exists between the fundamental rules of algebra and arithmetic.

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ASSIGNMENT 2

Study carefully §5 on page 5 and apply the principles learned to problems 1, 2, 4, and 6 on the same page.

Study sections 6 and 7 and apply the principles to problems 7, 9, 11, 13, and 19 on page 7.

Problem 8 is worked here to illustrate the general process. Find the value of $(g + 10) \div (5 - g)$ when $g = 3$.

In place of g, put 3.

We then have, $(3 + 10) \div (5 - 3)$.

This equals $13 \div 2$, the result being $6\frac{1}{2}$.

In the formula $\sqrt{z^2 - y^2}$ if z equalled 50 and y, 30,

$\sqrt{z^2 - y^2}$ would be expressed $\sqrt{(50)^2 - (30)^2}$.

$\sqrt{(50)^2 - (30)^2} = \sqrt{2500 - 900} = \sqrt{1600} = 40.$

Problems 18 to 23 inclusive are solved in this manner.

ASSIGNMENT 3

Study sections 8, 9 and 10 on page 8 and 11 on page 9. Go carefully through exercises 1—20 beginning on page 8 and express mentally the answers to the questions indicated. Solve exercises 1, 3 and 6 on page 9, and exercises 8, 15, and 22 on page 10.

The method of solution here is similar to that of the preceding exercise but somewhat more difficult. Exercise 12 is here solved. Study the solution.

$$v = \tfrac{1}{3}h \, (b + B + \sqrt{bB}).$$

If $h = 6$ inches, $b = 16$ square inches, and $B = 49$ square inches, what is the value of v?

Substituting these values in the formula, we have

$$V = \tfrac{6}{3} \, (16 + 49 + \sqrt{16 \times 49}).$$
$$V = 2 \, (16 + 49 + (4 \times 7)).$$
$$V = 2 \, (16 + 49 + 28).$$
$$V = 186.$$