KEY TO DODD'S ALGEBRA: CONTAINING ALL THE PROBLEMS, AND THE MORE DIFFICULT EQUATIONS, IN THAT WORK

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JAMES WILLIAM DODD

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KEY

TO

DODD'S ALGEBRA:

CONTAINING

ALL THE PROBLEMS, AND THE MORE DIFFICULT EQUATIONS, IN THAT WORK,

WITH THEIR SOLUTIONS:

DESIGNED TO FACILITATE THE LABOR OF TEACHERS.

BY JAMES WILLIAM DODD, A. B.,

PRINCIPAL OF BETHEL ACADEMY.

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KEY TO DODD'S ALGEBRA.

PROBLEMS

In Simple Equations of one Unknown Quantity.

1. What number is that to the double of which if 13 be added, the sum will be 75?

Let x represent the number; then
$2x$ represents *double* the number;
and by the conditions of the problem, the Equation will be

$$2x+13=75.$$

This Equation will give $x=31$.

2. Find a number such that if it be multiplied by 5, and 24 be subtracted from the product, the remainder will be 36.

Let x represent the number; then
$5x$ represents 5 times the number;
and by the conditions of the problem, the Equation will be

$$5x-24=36;$$

which will give $x=12$.

3. What number is that to $\frac{1}{3}$ of which if 25 be added, the sum obtained will be equal to the number itself *minus* 39?

Let x represent the number; then

$\frac{x}{3}$ represents *one third* of the number;

and the Equation will be

$$\frac{x}{3} + 25 = x - 39;$$

from which we shall find $x = 96$.

4. Find a number such that if $\frac{1}{4}$ of it be subtracted from three times the number, the remainder will be 77.

Let x represent the number; then

$\frac{x}{4}$ represents *one* fourth of the number; and

$3x$ represents *three times* the number.

We shall then have the Equation

$$3x - \frac{x}{4} = 77;$$

from which the value of x will be found equal to 28.

5. Find what number added to the sum of one half, one third, and one fourth of itself will be equal to 4 added to twice the number.

Let x represent the number; then

$\frac{x}{2}$ represents *one half* of the number;

$\frac{x}{3}$ represents *one third* of the number; and

$\frac{x}{4}$ represents *one fourth* of the number;

and, by the conditions of the problem, the Equation will be

$$\frac{x}{2} + \frac{x}{3} + \frac{x}{4} + x = 2x + 4;$$

from which we shall find $x = 48$.

6. Divide the number 165 into two such parts, that the less may be equal to $\frac{1}{10}$ of the greater.

Let x represent the *less* part; then

$165 - x$ represents the *greater*;

and the Equation will be

$$x = \frac{165-x}{10}.$$

This Equation will give $x=15$, the *less* part; hence $165-15=150$ is the *greater*.

7. Divide the number 100 into two such parts that six times the less may be equal to twice the greater.

Let x represent the *less* part; then
$100-x$ represents the greater;
$6x$ represents 6 times the less; and
$200-2x$ represents *twice* the greater.
We shall then have the Equation

$$6x=200-2x;$$

which will give $x=25$, the less part; hence $100-25=75$ is the *greater*.

8. It is required to divide 75 into two such parts that 3 times the greater may exceed 7 times the less by 15.

Let x represent the *less* part; then
$75-x$ represents the *greater*;
$225-3x$ represents 3 times the greater; and
$7x$ represents 7 times the less.
The Equation will then be

$$225-3x=7x+15.$$

This Equation will give $x=21$, the *less* part; hence $75-21=54$ is the *greater*.

9. What sum of money is that to which if \$100 be added, $\frac{2}{3}$ of the amount will be \$400?

Let x represent the sum; then
$\frac{2}{3}(x+100)$, or $\frac{2x+200}{3}$, represents $\frac{2}{3}$ of the *amount* obtained after adding \$100.
The Equation will then be

$$\frac{2x+200}{3}=400;$$

which will give $x=\$500$.