

**FIRST COURSE IN
ALGEBRA.
THEACHERS' EDITION**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649583430

First Course in Algebra. Teachers` Edition by Herbert E. Hawkes & William A. Luby & Frank C. Touton

Except for use in any review, the reproduction or utilisation of this work in whole or in part in any form by any electronic, mechanical or other means, now known or hereafter invented, including xerography, photocopying and recording, or in any information storage or retrieval system, is forbidden without the permission of the publisher, Trieste Publishing Pty Ltd, PO Box 1576 Collingwood, Victoria 3066 Australia.

All rights reserved.

Edited by Trieste Publishing Pty Ltd.
Cover @ 2017

This book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, re-sold, hired out, or otherwise circulated without the publisher's prior consent in any form or binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

www.triestepublishing.com

HERBERT E. HAWKES & WILLIAM A. LUBY & FRANK C. TOUTON

**FIRST COURSE IN
ALGEBRA.
THEACHERS' EDITION**

FIRST COURSE IN ALGEBRA

TEACHERS' EDITION

BY

HERBERT E. HAWKES, Ph.D.

PROFESSOR OF MATHEMATICS IN COLUMBIA UNIVERSITY

AND

WILLIAM A. LUBY, A.B.

AND

FRANK C. TOUTON, Ph.B.

INSTRUCTORS IN MATHEMATICS IN CENTRAL HIGH SCHOOL
KANSAS CITY, MISSOURI

GINN AND COMPANY

BOSTON · NEW YORK · CHICAGO · LONDON

Edue 7 12.9.10.1145



COPYRIGHT, 1910, BY
HERBERT E. HAWKES, WILLIAM A. LUBY, AND
FRANK C. TOULTON

ALL RIGHTS RESERVED

410.0

The Athenaeum Press
GINN AND COMPANY · PRO-
PRIETORS · BOSTON · U.S.A.

PREFACE

The busy teacher of high-school algebra often finds that limitations of time forbid the actual working out of all the exercises and problems in a text. This teachers' edition is designed to meet such a condition. In its plan it is brief and schematic rather than complete and detailed. Less time should be required to prepare a lesson from this outline than from a text giving the solutions in full.

For those exercises involving not more than one process in their solution the answers only are given. If two or more processes are required in a solution, an outline is given which covers each step of the work. Moreover, after each indicated step of the work, the result obtained by taking that step is set down. This scheme affords an easy method of tracing a solution.

In the solution of problems the meaning of each letter representing an unknown is clearly stated, the equations representing the conditions of the problems in terms of these letters are given, and the schematic solution of the equation or system always follows.

The authors and publishers desire the coöperation of teachers and school authorities in limiting the circulation of this book to actual teachers of algebra.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100

FIRST COURSE IN ALGEBRA

TEACHERS' EDITION

Page 1

1. $4h + 3m = 4(3600) + 3(60) = 14,580$ seconds.
2. $5y + 4f = 5(36) + 4(12) = 228$ inches.
3. $4q + 6d = 4(25) + 6(10) = 160$ cents.
4. $4t + 6h = 4(2000) + 6(100) = 8600$ pounds.
5. $3x + 5x = 8x$.
6. $4x + 5x = 9x$.
7. $2x + 3x + 6x = 11x$.
8. $2x + 2 + 3x + 4 = 5x + 6$.
9. $x + x + 2 + x + x + 2 = 4x + 4$.
10. $n + n + 1 + n + 2 = 3n + 3$.
11. $5a + 18 - 3a - 7 = 2a + 11$.
12. $8x - 3 + 18 - 5x = 3x + 15$.
13. $4w - 8 + 3w + 20 = 7w + 12$.
14. $y + 5m = 17m$.
15. $2y + 7f = 13f$.
16. $4q + 3n = 23n$.
17. $2d + 15h = 63h$.
18. $15h + 50m = 950m$.
19. Area, $5 \cdot 5 \cdot 1$ square inch = 25 square inches; perimeter, $4 \cdot 5$ inches = 20 inches.
20. Perimeter, $4s$ inches; area, $s \cdot s$ square inches.
21. Area, $12 \cdot 4 \cdot 1$ square foot = 48 square feet; perimeter, $2 \cdot 12$ feet + $2 \cdot 4$ feet = 32 feet.
22. Area, ab square feet; perimeter, $2a$ feet + $2b$ feet = $(2a + 2b)$ feet.
23. (a) $2x$ inches; (b) $2 \cdot x + 2 \cdot 2x = 6x$ inches; (c) $2x \cdot x$ square inches.
24. $3 \cdot y$ years.
25. $(30 + y)$ years.
26. Length, $(12 + w)$ feet; perimeter, $w + w + 12 + w + 12 + w = (24 + 4w)$ feet.
27. Length, $(18 + w)$ feet; perimeter, $w + w + 18 + w + 18 + w = (36 + 4w)$ feet.
28. Let w feet = the width.
Then $2w + 4$ feet = the length,
and the perimeter = $w + w + 2w + 4 + 2w + 4$,
= $(6w + 8)$ feet.

Page 5

1. Greater number + less number = 160.

If we represent the less by l , then $4l$ must represent the greater, and the above statement becomes

$$4l + l = 160.$$

Whence $l = 32$,

and $4l = 128$.

Therefore the greater number is 128 and the less is 32.

2. The number + five times the number = 216.

If we represent the number by n , the above statement becomes

$$n + 5n = 216,$$

or $6n = 216$.

Whence $n = 36$.

3. Greater number + less number = 72.

If we represent the less by l , then $7l$ must represent the greater, and the above statement becomes

$$7l + l = 72.$$

Whence $l = 9$,

and $7l = 63$.

4. 1st number + 2d number + 3d number = 106.

If we let t represent the 3d number, $2t$ must represent the 1st number and $4t$ the 2d. Then the above statement becomes

$$2t + 4t + t = 106.$$

Whence $t = 15$,

$$2t = 30,$$

and $4t = 60$.

5. 1st number + 2d number + 3d number = 117.

If we represent the 1st number by n , $2n$ must represent the 2d number and $6n$ the 3d. Then the above statement becomes

$$n + 2n + 6n = 117.$$

Whence $n = 13$,

$$2n = 26,$$

and $6n = 78$.

6. 1st number + 2d number + 3d number = 192.

If we represent the 2d number by n , $2n$ must represent the 1st number and $3n$ the 3d. Then the above statement becomes

$$2n + n + 3n = 192.$$

Whence $n = 32$,

$$2n = 64,$$

and $3n = 96$.

7. 1st number + 2d number + 3d number = 324.

If we represent the 1st number by n , $5n$ must represent the 2d number and $30n$ the 3d. Then the above statement becomes

$$n + 5n + 30n = 324.$$

Whence $n = 9$,

$$5n = 45,$$

and $30n = 270.$

8. 1st number + 2d number + 3d number = 104.

If we represent the 1st number by n , $3n$ must represent the 2d number and $4n$ the 3d. Then the above statement becomes

$$n + 3n + 4n = 104.$$

Whence $n = 18$,

$$3n = 39,$$

and $4n = 52.$

10. From arithmetic, principal + interest = amount.

$$\text{Principal} + .06 \text{ principal} = \$265.$$

If p represents the principal, this last statement becomes

$$p + .06p = 265.$$

Whence $p = 250.$

Therefore the sum is \$250.

11. Principal + .12 principal = \$700.

If p represents the principal, the above statement becomes

$$p + .12p = 700.$$

Whence $p = 625.$

Therefore the required sum is \$625.

12. $225 \times .06 \cdot (\text{number of years}) = 27.$

If we represent the number of years by n , this statement becomes

$$225 \times .06 \cdot n = 27,$$

or $13.5n = 27.$

Whence $n = 2.$

13. $520 \times .065 \cdot (\text{number of years}) = 169.$

If n represents the number of years, this statement becomes

$$520 \times .065 \cdot n = 169,$$

or $33.8n = 169.$

Whence $n = 5.$

15. Let $x =$ the rate of interest.

Then $\$825x =$ the interest for one year,

and $\$3300x =$ the interest for four years.