WENTWORTH & HILL'S EXAMINATION MANUALS. NO. I. ARITHMETIC

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G. A. WENTWORTH & G. A. HILL

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Trieste

MATHEMATICAL TEXT-BOOKS

By G. A. WENTWORTH, A.M.

Mental Arithmetic.
Elementary Arithmetic.
Practical Arithmetic.
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High School Arithmetic (Abridged).
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Geometrical Exercises.
Plane and Solid Geometry and Plane Trigonometry.
New Plane Trigonometry.
New Plane Trigonometry, with Tables.
New Plane and Spherical Trigonometry.
New Plane and Spherical Trig., with Tables.
New Plane and Spherical Trig., Surv., and Nav.
New Plane Trig. and Surv., with Tables.
New Plane and Spherical Trig., Surv., with Tables.
Analytic Geometry.

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EXAMINATION MANUALS.

No. I.

ARITHMETIC.

BOSTON, U.S.A.:
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1897.

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PREFACE.

THIS Manual consists of two parts: The first part contains one hundred and fifty examination papers, the questions for which have been selected mainly from the English, French, and German collections of problems. These papers may be divided into three groups. The first fifty papers are confined to the Simple Rules, Fractions, and Weights and Measures; the next fifty papers cover all the subjects treated in ordinary text-books except the Metric System; the last fifty also include the Metric System.

In each group the earlier papers will be found somewhat easier than the later ones. The papers are intended to be *hour* papers, but if any of them are thought to be too long for one hour, the time may be increased, or the length of the paper reduced by omitting one or more questions.

The second part of the Manual is a collection of recent examination papers actually set in various American and English institutions of learning.

The Manual may be used in two ways.

First: To *test* the learner's knowledge in the usual way by means of an examination. For this purpose the class will come to the recitation-room provided with the Manual and blank books, and the teacher will simply designate by number the paper to be worked.

Secondly: To *review* the subject-matter of Arithmetic. This may be done by assigning problems to be worked in the class-room,

or by assigning to each pupil a paper with directions to hand in the solutions, neatly worked out, at a subsequent recitation.

The Manual will be found especially useful in preparing for written examinations.

Answers to the problems in the first one hundred and fifty papers, bound separately in paper covers, can be had by teachers *only*, on application to the publishers.

G. A. WENTWORTH.
G. A. HILL.

SPECIMEN PAPER WORKED OUT.

1. In 674,381 inches how many miles, furlongs, rods, etc.?

12)674381 in.
3)56198 ft. 5 in.
18732 yds. 2 ft.
2
11)37464 half-yds.
40)3405 rds. 4½ yds.
8)85 fur. 5 rds.
10 mi. 5 fur.

10 mi. 5 fur. 5 rds. 4½ yds. 2 ft. 5 in.

Ans. 10 mi. 5 fur. 5 rds. 5 yds. 0 ft. 11 in.

2. Find the G.C.M. of 269,178 and 352,002.

6)269178 352002
44863)58667(1
44863
4)13804
3451)44863(13
3451
10353
10353

Ans. $6 \times 3451 = 20,706$.

The common factor 6 is first taken out from both numbers. From the remainder 13,804, the factor 4, which is prime to 44,863, is ejected. The resulting number 3451 is contained 13 times in 44,863, and therefore the greatest common measure is $6 \times 3451 = 20,706$.

3. Simplify $\dfrac{\frac{1}{3}+\frac{2}{11}+\frac{7}{24}-\frac{1}{3}\text{ of }\frac{2}{11}\text{ of }\frac{7}{24}}{1-\frac{1}{3}\text{ of }\frac{2}{11}-\frac{2}{11}\text{ of }\frac{7}{24}-\frac{7}{24}\text{ of }\frac{1}{3}}$.

$\frac{1}{3}$ of $\frac{2}{11}$ of $\frac{7}{24} = \frac{7}{396}$;

$\frac{1}{3}+\frac{2}{11}+\frac{7}{24}-\frac{7}{396} = \frac{264+144+231-14}{792} = \frac{625}{792}$;

$\frac{1}{3}$ of $\frac{2}{11} = \frac{2}{33}$; $\frac{2}{11}$ of $\frac{7}{24} = \frac{7}{132}$; $\frac{7}{24}$ of $\frac{1}{3} = \frac{7}{72}$;

$1-\frac{2}{33}-\frac{7}{132}-\frac{7}{72} = \frac{792-48-42-77}{792} = \frac{625}{792}$;

$\frac{625}{792}+\frac{625}{792} = 1$. *Ans.* 1.

4. Divide 0.025 by 500, and 0.08625 by 0.29.

$500\overline{)0.025\,00}$ $\quad 0.00005$

$29\overline{)8.625}$ $\quad 0.125$

29
72
58
145
145

0.00005
0.125
Ans.

5. Make out the following bill:

3½ pounds of tea at 64 cents per pound;
1½ pounds of coffee at 40 cents per pound;
6½ pounds of loaf sugar at 10 cents per pound;
1½ pounds of butter at 34 cents per pound.

How much change out of $5 should Mr. Smith receive?

Mr. JOHN SMITH,

Dr. to JAMES HORN.

1883.			
Aug. 17.	3½ lbs. of tea	@ 64 cts. . . .	$2.08
	1½ lbs. of coffee	@ 40 cts. . . .	.60
	6½ lbs. of sugar	@ 10 cts. . . .	.65
	1½ lbs. of butter	@ 34 cts. . . .	.51
			$3.84

Received payment,

JAMES HORN.

Ans. $5.00 − $3.84 = $1.16.