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Ray's New Primary Arithmetic

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RAY'S

NEW PRIMARY

ARITHMETIC

FOR

YOUNG LEARNERS.
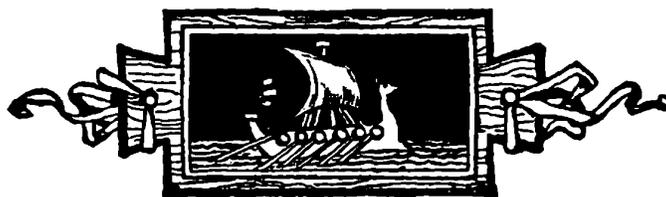
RAY'S MATHEMATICAL SERIES.

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TWO-BOOK SERIES IN ARITHMETIC.

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PREFACE.

THE remarkable and long continued popularity of *Ray's Arithmetics* has induced the publishers to present them to the public in a revised form, as *Ray's New Arithmetics.*

The objects of the revision have been:

(1.) To present the books in improved type, with better arrangement, and in a more pleasing outward dress.

(2.) To introduce such new features as will adapt the series more perfectly to the present methods of instruction.

The friends of the series can best judge what success in attaining these objects has been made.

The publishers hereby express their gratitude to many prominent educators who have contributed to this revision, and only regret that their number prevents the mention of names.

CINCINNATI, *April,* 1877.

SUGGESTIONS TO TEACHERS.

In beginning the study of Arithmetic, the first step for pupils to learn is to count readily. This is not mastered without much practice in counting *objects*. Movable objects are better for exercises in counting than pictures. Some objects of this kind should always be kept in the school-room,—such as marbles, beans, kernels of corn, or pebbles.

The second step is to combine numbers. To master the different combinations to 20, the pupils should first be taught to write the tables corresponding with those in the book, either upon their slates or on the blackboard, during the recitation. This will prevent counting upon the fingers, a habit difficult to overcome when once acquired.

As the abstract exercises in this book, up to 20, are exhaustive in Addition and Subtraction, and as complete in Multiplication and Division as possible in order to secure variety, it would be well to prepare additional concrete examples from day to day to correspond with the very full abstract exercises. An excellent practice is to require each pupil to bring two or more concrete examples of his own to each recitation.

Teach one thing at a time, and teach it thoroughly.

(4)

PRIMARY ARITHMETIC

NUMBERS AND FIGURES.

LESSON I.

NOTE.—This lesson is intended to suggest how to teach the child to count objects and to express their number by figures. It comprises the first ten numbers. The pupil points to each ball and says, *one; one, two; one, two, three,* etc. Then the teacher directs him to write the figure for *one,* for *two,* etc.

one, .	1,	*1.*
two, .	2,	*2.*
three, .	3,	*3.*
four, .	4,	*4.*
five, .	5,	*5.*
six, .	6,	*6.*
seven, .	7,	*7.*
eight, .	8,	*8.*
nine, .	9,	*9.*
ten, .	10,	*10.*

LESSON II.

NOTE.—In this lesson the numbering of objects is extended to 40. A single column or less may constitute one exercise, as may seem best to the teacher.

Eleven . . . 11	Twenty-one . 21	Thirty-one . . 31
Twelve . . . 12	Twenty-two . 22	Thirty-two . . 32
Thirteen . . 13	Twenty-three . 23	Thirty-three . 33
Fourteen . . 14	Twenty-four . 24	Thirty-four . 34
Fifteen . . . 15	Twenty-five . 25	Thirty-five . . 35
Sixteen . . . 16	Twenty-six . 26	Thirty-six . . 36
Seventeen . . 17	Twenty-seven . 27	Thirty-seven . 37
Eighteen . . 18	Twenty-eight . 28	Thirty-eight . 38
Nineteen . . 19	Twenty-nine . 29	Thirty-nine . 39
TWENTY . . . 20	THIRTY . . . 30	FORTY . . . 40

LESSON III.

NOTE.—In this lesson the numbering of objects is extended to 70. Each exercise should include a review of the preceding ones.

Forty-one . . 41	Fifty-one . . 51	Sixty-one . . 61
Forty-two . . 42	Fifty-two . . 52	Sixty-two . . 62
Forty-three . 43	Fifty-three . . 53	Sixty-three . 63
Forty-four . . 44	Fifty-four . . 54	Sixty-four . . 64
Forty-five . . 45	Fifty-five . . 55	Sixty-five . . 65
Forty-six . . 46	Fifty-six . . 56	Sixty-six . . 66
Forty-seven . 47	Fifty-seven . 57	Sixty-seven . 67
Forty-eight . 48	Fifty-eight . . 58	Sixty-eight . . 68
Forty-nine . . 49	Fifty-nine . . 59	Sixty-nine . . 69
FIFTY . . . 50	SIXTY . . . 60	SEVENTY . . 70

LESSON IV.

Seventy-one	. 71	Eighty-one.	. 81	Ninety-one	. 91
Seventy-two	. 72	Eighty-two	. 82	Ninety-two	. 92
Seventy-three	. 73	Eighty-three	. 83	Ninety-three	. 93
Seventy-four	. 74	Eighty-four	. 84	Ninety-four	. 94
Seventy-five	. 75	Eighty-five	. 85	Ninety-five	. 95
Seventy-six	. 76	Eighty-six .	. 86	Ninety-six .	. 96
Seventy-seven	77	Eighty-seven	. 87	Ninety-seven	. 97
Seventy-eight	. 78	Eighty-eight	. 88	Ninety-eight	. 98
Seventy-nine	. 79	Eighty-nine	. 89	Ninety-nine	. 99
EIGHTY . .	. 80	NINETY . .	. 90	ONE HUNDRED	100

LESSON V.

NOTE.—Pupils should be taught to *read* figures readily from 1 to 100. The figures should be copied on the blackboard.

NUMBERS TO BE READ.

0	23	50	61	71	80	78	59
1	32	15	26	27	18	87	95
10	33	51	62	72	81	88	69
11	4	25	36	37	28	9	96
2	40	52	63	73	82	90	79
20	14	35	46	47	38	19	97
12	41	53	64	74	83	91	89
21	24	45	56	57	48	29	98
22	42	54	65	75	84	92	99
3	34	55	66	67	58	39	100
30	43	6	7	76	85	93	
13	44	60	70	77	68	49	
31	5	16	17	8	86	94	

LESSON VI.

NOTE.—The pupils must be thoroughly exercised in *writing* numbers. One or more pupils at a time may be sent to the blackboard, or the work may be done at their seats with pencil and slate.

NUMBERS TO BE WRITTEN.

1. Naught; one, ten; two, twenty; three, thirty; four, forty; five, fifty; six, sixty; seven, seventy; eight, eighty; nine, ninety.

2. Eleven; twelve, twenty-one; thirteen, thirty-one; fourteen, forty-one; fifteen, fifty-one; sixteen, sixty-one; seventeen, seventy-one; eighteen, eighty-one; nineteen, ninety-one.

3. Twenty-two; twenty-three, thirty-two; twenty-four, forty-two; twenty-five, fifty-two; twenty-six, sixty-two; twenty-seven, seventy-two; twenty-eight, eighty-two; twenty-nine, ninety-two.

4. Thirty-three; thirty-four, forty-three; thirty-five, fifty-three; thirty-six, sixty-three; thirty-seven, seventy-three; thirty-eight, eighty-three; thirty-nine, ninety-three.

5. Forty-four; forty-five, fifty-four; forty-six, sixty-four; forty-seven, seventy-four; forty-eight, eighty-four; forty-nine, ninety-four.
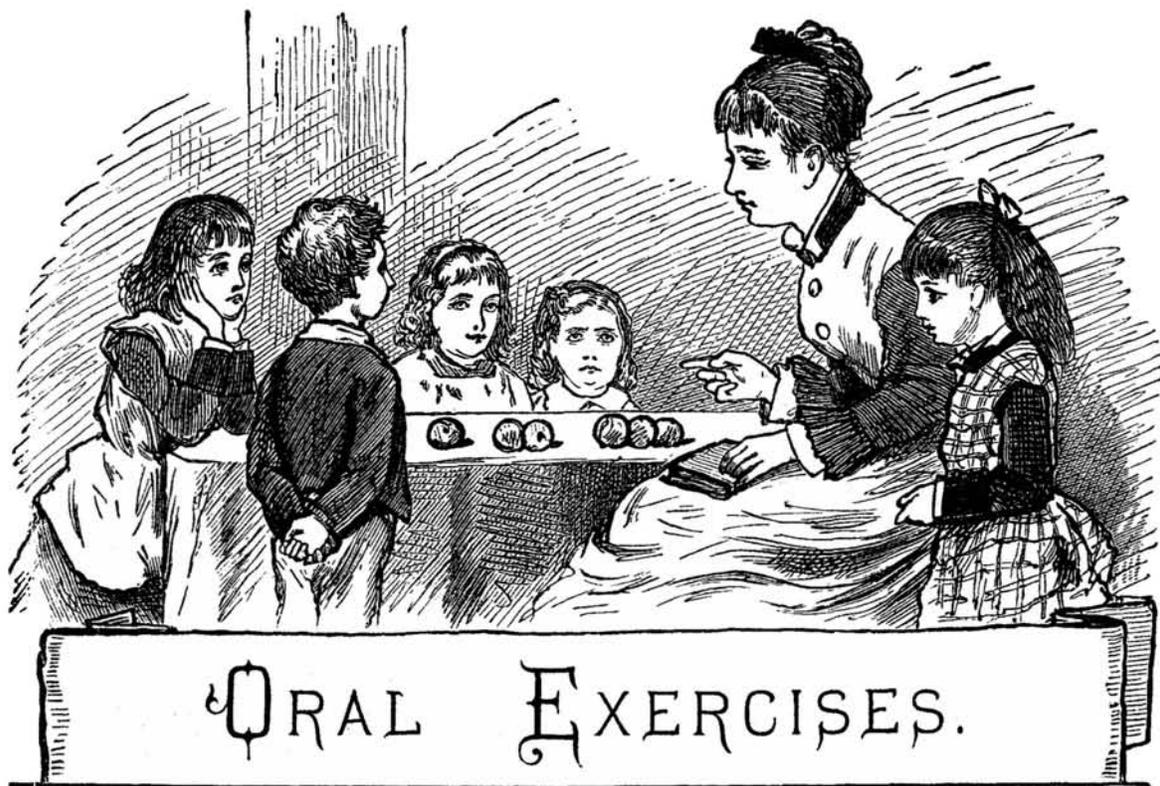
6. Fifty-five; fifty-six, sixty-five; fifty-seven, seventy-five; fifty-eight, eighty-five; fifty-nine, ninety-five.

7. Sixty-six; sixty-seven, seventy-six; sixty-eight, eighty-six; sixty-nine, ninety-six.

8. Seventy-seven; seventy-eight, eighty-seven; seventy-nine, ninety-seven.

9. Eighty-eight; eighty-nine, ninety-eight.

10. Ninety-nine. One hundred.

ORAL EXERCISES.

LESSON VII.

NOTE.—These exercises are intended for use with the Numeral Frame or with counters of some kind,—marbles, pebbles, kernels of corn, beans, or bits of pasteboard. The objects should be arranged in distinct groups, to represent each number indicated.

1. How many counters have we here? (/)

2. How many are 1 and 1? One taken away from 2 leaves how many? How many ones in 2? How many are two times 1?

3. How many are 2 and 1? How many are 1 and 1 and 1? How many are three times 1?

4. One taken away from 3 leaves how many? Two taken away from 3 leaves how many? How many ones in 3?

5. How many are 3 and 1? How many are 2 and 2? How many are 1 and 1 and 1 and 1? How many are four times 1? How many are two times 2?

6. One taken from 4 leaves how many? Two from 4

leaves how many? Three from 4 leaves how many? How many ones in 4? How many twos in 4?

7. How many are 4 and 1? How many are 3 and 2? How many are 1 and 1 and 1 and 1 and 1? How many are five times 1?

8. One from 5 leaves how many? Two from 5 leaves how many? Three from 5 leaves how many? Four from 5 leaves how many? How many ones in 5?

LESSON VIII.

1. How many are 5 and 1? How many are 4 and 2? How many are 3 and 3? How many are six times 1? How many are three times 2? How many are two times 3?

2. One from 6 leaves how many? Two from 6? Three from 6? Four from 6? Five from 6? How many ones in 6? How many twos in 6? How many threes in 6?

3. How many are 6 and 1? How many are 5 and 2? How many are 4 and 3? How many are 3 and 4? How many are seven times 1?

4. One from 7 leaves how many? Two from 7? Three from 7? Four from 7? Five from 7? Six from 7? How many ones in 7?

5. How many are 7 and 1? How many are 6 and 2? How many are 5 and 3? How many are 4 and 4? How many are 3 and 5? How many are 2 and 6?

6. How many are eight times 1? How many are four times 2? How many are two times 4?

7. One from 8 leaves how many? Two from 8? Three from 8? Four from 8? Five from 8? Six from 8? Seven from 8?

8. How many ones in 8? How many twos in 8? How many fours in 8?

LESSON IX.

1. How many are 8 and 1? How many are 7 and 2? How many are 6 and 3? How many are 5 and 4? How many are 4 and 5? How many are 3 and 6? How many are 2 and 7?

2. How many are nine times 1? How many are three times 3?

3. One from 9 leaves how many? Two from 9? Three from 9? Four from 9? Five from 9? Six from 9? Seven from 9? Eight from 9?

4. How many ones in 9? How many threes in 9?

5. How many are 9 and 1? How many are 8 and 2? How many are 7 and 3? How many are 6 and 4? How many are 5 and 5?

6. How many are 2 and 8? How many are 3 and 7? How many are 4 and 6?

7. How many are ten times 1? How many are five times 2? How many are two times 5?

8. One from 10 leaves how many? Two from 10? Three from 10? Four from 10? Five from 10? Six from 10? Seven from 10? Eight from 10? Nine from 10?

9. How many ones in 10? How many twos in 10? How many fives in 10?

ADDITION.

J.P.DAVIS=Sc

LESSON X.

In the picture how many birds are sitting on the bush? How many in the flock that seems to be lighting? There are two distant flocks flying: how many birds in each flock?

1. How many birds are two birds and five birds? How many birds are seven birds and four birds?

2. How many are 2 and 5? 7 and 4?

3. How many birds are two birds and four birds? How many are five birds and seven birds?

4. How many are 2 and 4? 5 and 7?

5. There are three flowers on one branch and three on another: how many flowers on both branches?

LESSON XI.

1 and 1 are 2	6 and 1 are 7
2 and 1 are 3	1 and 6 are 7
1 and 2 are 3	7 and 1 are 8
3 and 1 are 4	1 and 7 are 8
1 and 3 are 4	8 and 1 are 9
4 and 1 are 5	1 and 8 are 9
1 and 4 are 5	9 and 1 are 10
5 and 1 are 6	1 and 9 are 10
1 and 5 are 6	10 and 1 are 11

1 and 10 are 11.

1. Francis had 2 cents, and his mother gave him 1 cent more: how many had he then?

SOLUTION.—Francis had then 2 cents and 1 cent, which are 3 cents.

2. John had 1 raisin, and his sister gave him 3 raisins more: how many had he then?

3. Mary had 4 pears, and her mother gave her 1 pear more: how many had she then?

4. Jane had 1 cherry, and her brother gave her 5 cherries more: how many did she then have?

5. George has 6 cents, and John has 1 cent: how many cents have both?

6. William had 1 plum, and his cousin gave him 7 plums more: how many had he then?

7. There were 8 oranges on a dish, and 1 more orange was placed on it: how many were then on the dish?

8. Henry had 1 peach, and his mother gave him 9 more: how many had he then?

9. How many are 10 cents and 1 cent?

LESSON XII.

2 and 1 are 3	2 and 6 are 8
1 and 2 are 3	6 and 2 are 8
2 and 2 are 4	2 and 7 are 9
2 and 3 are 5	7 and 2 are 9
3 and 2 are 5	2 and 8 are 10
2 and 4 are 6	8 and 2 are 10
4 and 2 are 6	2 and 9 are 11
2 and 5 are 7	9 and 2 are 11
5 and 2 are 7	2 and 10 are 12

10 and 2 are 12.

1. Mary had two birds, and a friend gave her 2 more: how many birds had she then?

SOLUTION.—Mary had then 2 birds and 2 birds, which are 4 birds.

2. Daniel has 3 tops, and Francis has 2: how many tops have they both?

3. John had 2 chestnuts, and found 4 more: how many did he then have?

4. Helen had 5 apples, and her brother gave her 2 more: how many had she then?

5. Ellen had 2 chickens, and her cousin gave her 6 more: how many had she then?

6. John had 2 cakes, and his mother gave him 7 more: how many did he then have?

7. Frank had 8 marbles, and found 2 more: how many did he then have?

8. Harry caught 2 fishes, and Edward caught 9: how many did both catch?

9. How many are 10 cents and 2 cents?

LESSON XIII.

3 and 1 are 4	3 and 6 are 9
1 and 3 are 4	6 and 3 are 9
3 and 2 are 5	3 and 7 are 10
2 and 3 are 5	7 and 3 are 10
3 and 3 are 6	3 and 8 are 11
3 and 4 are 7	8 and 3 are 11
4 and 3 are 7	3 and 9 are 12
3 and 5 are 8	9 and 3 are 12
5 and 3 are 8	3 and 10 are 13

10 and 3 are 13.

1. Julius had 3 cents, and he found 2 more: how many cents had he then?

SOLUTION.—Julius had then 3 cents and 2 cents, which are 5 cents.

2. Francis has 3 dimes in his hand, and 3 in his pocket: how many dimes has he?

3. Emma has 4 apples: if her mother give her 3 more, how many apples will she have?

4. There are 3 pears on one limb, and 5 on another: how many pears on both limbs?

5. Mary has 6 pens, and Belle has 3: how many pens have both?

6. Henry has 3 books, and Oliver has 7: how many books have both?

7. Charles caught 8 rabbits, and Samuel caught 3: how many did both catch?

8. How many are 3 cents and 9 cents?

9. My pencil cost 10 cents, and my pen 3 cents; how much did both cost?

LESSON XIV.

4 and 1 are 5	4 and 6 are 10
1 and 4 are 5	6 and 4 are 10
4 and 2 are 6	4 and 7 are 11
2 and 4 are 6	7 and 4 are 11
4 and 3 are 7	4 and 8 are 12
3 and 4 are 7	8 and 4 are 12
4 and 4 are 8	4 and 9 are 13
4 and 5 are 9	9 and 4 are 13
5 and 4 are 9	4 and 10 are 14

10 and 4 are 14.

1. James had 4 pens, and he found 2 more: how many had he then?

SOLUTION.—James had then 4 pens and 2 pens, which are 6 pens.

2. Mary has 3 pins in one hand, and 4 in the other: how many pins has she in both?

3. Francis has 4 chestnuts in his hand, and 4 in his pocket: how many has he in all?

4. There are 5 horses in 1 field, and 4 in another: how many are there in both fields?

5. Cora spent 4 cents for tape, and 6 cents for ribbon: how many cents did she spend?

6. I had 7 apples, and bought 4 more: how many did I then have?

7. If a lemon cost 4 cents, and an orange 8 cents, how much will both cost?

8. I sold a calf for 9 dollars, and a sheep for 4 dollars: how much did I get for both?

9. How many are 4 cents and 10 cents?

LESSON XV.

5 and 1 are 6	5 and 6 are 11
1 and 5 are 6	6 and 5 are 11
5 and 2 are 7	5 and 7 are 12
2 and 5 are 7	7 and 5 are 12
5 and 3 are 8	5 and 8 are 13
3 and 5 are 8	8 and 5 are 13
5 and 4 are 9	5 and 9 are 14
4 and 5 are 9	9 and 5 are 14
5 and 5 are 10	5 and 10 are 15

10 and 5 are 15.

1. A hen has 5 black chickens and 2 white ones: how many chickens has she?

SOLUTION.—She has 5 chickens and 2 chickens, which are 7 chickens.

2. How many are 3 square blocks and 5 square blocks?

3. I gave 5 cents for a whistle, and 4 cents for a top: how much did I give for both?

4. Emma had 5 cakes, and her mother gave her 5 more: how many had she then?

5. There are 6 chairs in one room, and 5 in another: how many chairs in both rooms?

6. There are 5 boys in one class, and 7 in another: how many are there in both classes?

7. If a lemon cost 8 cents, and an orange 5 cents, how much will both cost?

8. There are 5 letters in my name, and 9 in yours: how many letters in both names?

9. If you put 10 balls by the side of 5 balls, how many balls will there be?

Pri. 2.

LESSON XVI.

6 and 1 are 7	5 and 6 are 11
1 and 6 are 7	6 and 6 are 12
6 and 2 are 8	6 and 7 are 13
2 and 6 are 8	7 and 6 are 13
6 and 3 are 9	6 and 8 are 14
3 and 6 are 9	8 and 6 are 14
6 and 4 are 10	6 and 9 are 15
4 and 6 are 10	9 and 6 are 15
6 and 5 are 11	6 and 10 are 16

10 and 6 are 16.

1. A farmer has 6 cows in one field, and 2 in another: how many cows in both fields?

SOLUTION.—The farmer has 6 cows and 2 cows, which are 8 cows.

2. James has 3 marbles in one pocket, and 6 in another: how many has he in both?

3. Francis had 6 cents, and Mary, 4 cents: how many cents had both?

4. There are 5 pigs in one pen, and 6 in another: how many pigs in both pens?

5. If you have 6 plums in each hand, how many plums will you have in both hands?

6. Lucy gave 7 cents to one poor man, and 6 cents to another: how many cents did she give to both?

7. A man had 6 horses, and bought 8 more: how many horses did he then have?

8. A lady traveled 9 miles by water, and 6 miles by land: how far did she travel?

9. How many are 10 days and 6 days:

LESSON XVII.

7 and 1 are 8		5 and 7 are 12
1 and 7 are 8		7 and 6 are 13
7 and 2 are 9		6 and 7 are 13
2 and 7 are 9		7 and 7 are 14
7 and 3 are 10		7 and 8 are 15
3 and 7 are 10		8 and 7 are 15
7 and 4 are 11		7 and 9 are 16
4 and 7 are 11		9 and 7 are 16
7 and 5 are 12		7 and 10 are 17

10 and 7 are 17.

1. If you place 7 marbles by the side of 2 marbles, how many will there be altogether?

SOLUTION.—There will be 7 marbles and 2 marbles, which are 9 marbles.

2. There are 3 sheep in one field, and 7 in another: how many sheep in both fields?

3. There are 7 boys on one bench, and 4 on another: how many are there on both benches?

4. There are 5 chairs in one room, and 7 in another: how many chairs in both rooms?

5. Thomas had 7 apples, and his mother gave him 6 more: how many had he then?

6. I bought a melon for 7 cents, and a squash for 7 cents: how much did both cost?

7. I paid 8 cents for a slate, and 7 cents for some pencils: how many cents did I spend?

8. Fanny had 7 roses, and she plucked 9 more: how many had she then?

9. How many are 10 dollars and 7 dollars?