与麦加菲《美国语文》同步使用的美国经典数学课本

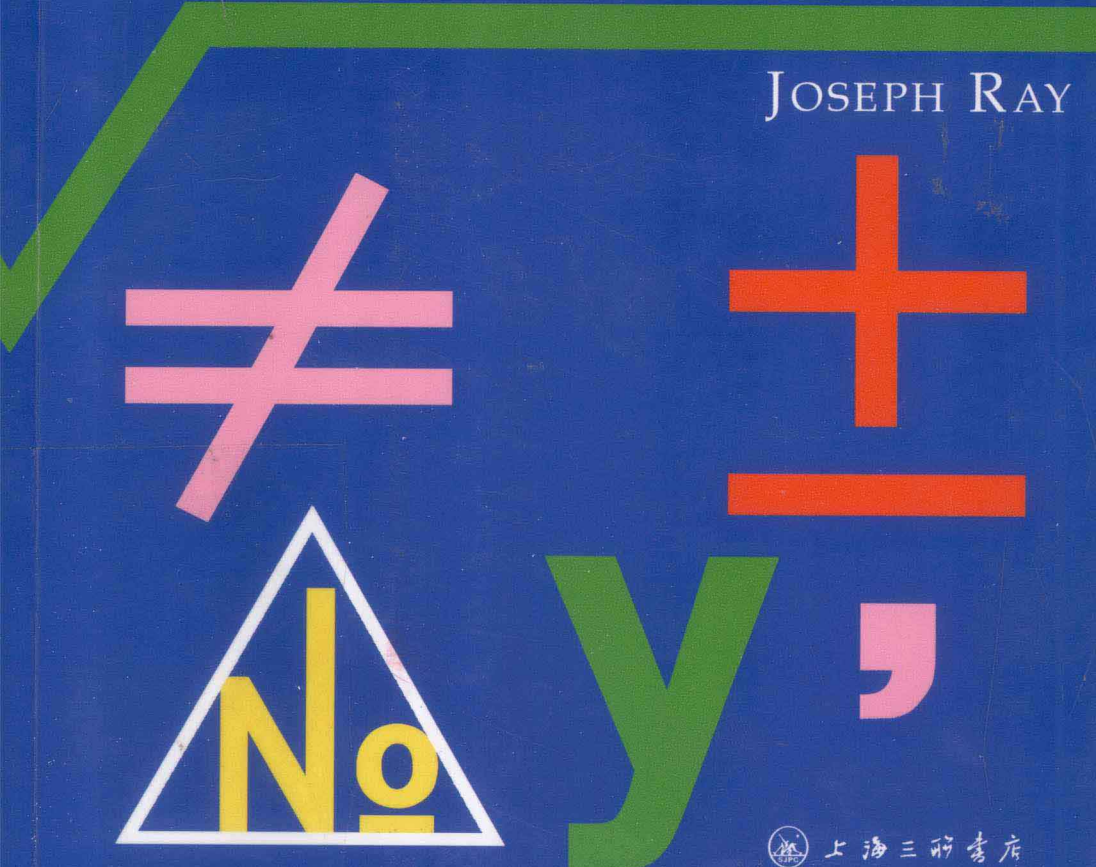
美国10000多所学校使用、销量超过1.22亿册

美国原版经典数学课本

RAY'S PRACTICAL ARITHMETIC

美国小学数学 3

JOSEPH RAY



上海三联书店

美国原版经典数学课本

RAY'S PRACTICAL ARITHMETIC

美国小学数学 3

JOSEPH RAY

上海三联书店

图书在版编目（CIP）数据

美国小学数学．3：英文版/（美）雷伊（Ray, J.）编．—上海：上海三联书店，2011.5

ISBN 978-7-5426-3517-4

Ⅰ．①美… Ⅱ．①雷… Ⅲ．①小学数学课—教材—英文 Ⅳ．① G624.501

中国版本图书馆 CIP 数据核字（2011）第 043226 号

美国小学数学（第3册）

编　　者/（美）约瑟夫·雷伊

责任编辑/ 黄　韬
装帧设计/ 子木工作室
监　　制/ 研　发

出版发行/ 上海三联书店
（200031）中国上海市乌鲁木齐南路 396 弄 10 号
http: // www.sanlianc. com
E-mail: shsanlian@yahoo. com.cn
印　　刷/ 北京领先印刷有限公司

版　　次/ 2011 年 5 月第 1 版
印　　次/ 2011 年 5 月第 1 次印刷
开　　本/ 640 × 960 毫米　1/16
字　　数/ 350千字
印　　张/ 32

ISBN 978-7-5426-3517-4

定价：36.00 元（含答案）

呈现于您面前的这套美国数学课本，是一套在西方流行了近半个世纪、至今仍在使用的经典教材。编者约瑟夫·雷伊教授，1807年出生于美国弗吉尼亚俄亥俄县，从小在当地学校接受教育，成绩优秀。16岁时开始其教师职业生涯。18岁，雷伊来到富兰克林学院跟随乔尔·马丁教授学习医学，此后又进入俄亥俄医学院学习。大学毕业后，他在辛辛那提伍德沃德中学任教，讲授数学。1836年，伍德沃德中学由高中升格为辛辛那提伍德学院，雷伊成为该学院教授。1851年，该校又变为一所公立高中，雷伊一直在此担任校长，直至去世。雷伊一生杰出的成就是他倾心编写的系列数学教材，并以此闻名。这套数学课本与他在伍德学院的同事威廉·麦加菲编写的《美国语文读本》，同时被美国近万所学校作为教材，累计销量均超过1.22亿册，对几代美国人的教育产生了很大影响。直至今日，这两套书仍被当作美国家庭教育(Homeschooling)的推荐教材，也是美国学生准备SAT考试的参考用书。

与其他数学书相比，雷伊数学教材至少有以下几个明显特点：

第一，强调在“学”中掌握“数”。例如，《小学数学》不完全按难度分册，而是根据其实际应用范围分为四册：初级算术、智力算术、实用算术与高级算术。让学生从对数的认知、运算法则的掌握，延伸到数学在实际生活中的广泛应用，如购物、记账、存款、利息等，并向更高的学术层次过渡。

第二，将数学问题融于文字题（Word Problem）之中。即便最简单的加减运算，它也通过讲故事的方式呈现出来。这样孩子们在学习数学时，不仅可以训练其数学思维，语言能力也可以同步提高。

第三，将抽象思维具体化。书中的数学题大都结合现实事物表述出来，让孩子们理解他们所学的数学在现实生活中是如何加以应用的。这对低年级学生来说，尤其帮助很大，他们能更快更清楚地理解那些对其年龄来讲过于抽象的数学概念。

第四，将不同学科知识融入数学问题中。这种编写方法能让学生从数学应用的不同领域来掌握数学科学，帮助学生从低年级数学步入更复杂的数学应用领域，如几何学与会计学等。孩子们在学习数学的同时，又能接受其他学科知识。如书中有这样一道题："华盛顿将军出生于公元1732年，他活了67岁，那么他是于哪一年去世？"这么一道简单的计算题，便将历史知识与数学结合起来，一举多得。

对于中国孩子来讲，这套数学课本不仅能教孩子学习数学，更是学习英语的很好途径，让他们换个思维学英语。与阅读文学读本相比，这是另一种不同的感觉，或许更能激发孩子学习英语的兴趣。数学的词汇含义固定，也易于理解记忆，孩子在解题的同时也能提高英语水平，可谓一举多得。对于那些将来准备参加出国英语考试的学生来讲，这套书意义更大，对他们将来的求学之路应该大有帮助。

最后，我们需向读者特别说明一点，由于这套书涉及数字与数学符号偏多，考虑到重新录入排版会出现一些难免的错误，给读者学习带来极大不便。于是我们采用了原版影印的办法，以保证内容的高度准确性，但文字清晰度与重新录入相比略有缺陷，敬请读者谅解。

衷心祝愿天下孩子们快乐成长，并期待您的宝贵意见与建议。

出版者

2011年春

Article 1. 1. A **Unit** is a single thing of any kind; as, one, one apple, one dollar, one pound.

2. A **Number** consists of one or more units; as, one, five, seven cents, nine men.

3. **Arithmetic** treats of numbers, and is the art of computing by them.

4. Numbers are expressed in two ways; first, by *words;* second, by *characters.*

5. A **System of Notation** is a method of expressing numbers by characters.

6. Two systems of Notation are in use, the *Arabic* and the *Roman.* The Arabic system is used in all our arithmetical calculations.

THE ARABIC SYSTEM OF NOTATION.

2. 1. To express numbers, the Arabic Notation employs ten characters, called *figures*; namely, 1, 2, 3, 4, 5, 6, 7, 8, 9, 0.

REMARK 1.—The Arabic System of Notation is so called because its characters appear to have been introduced into Europe by the

Arabians; but it is now generally acknowledged that they originated in India.

REM. 2.—The Arabic Notation is also called the *Decimal System* and the *Common System.*

2. The **Order** of a figure is the place it occupies in a number.

UNITS OF THE FIRST ORDER, OR UNITS.

3. 1. A unit or single thing is *one*, written 1.
One unit and one more are *two*, " 2.
Two units and one more are *three*, " 3.
Three units and one more are *four*, " 4.
Four units and one more are *five*, " 5.
Five units and one more are *six*, " 6.
Six units and one more are *seven*, " 7.
Seven units and one more are *eight*, " 8.
Eight units and one more are *nine*, " 9.

2. These nine characters are called *significant* figures, because they denote something.

3. The character 0, called *naught*, stands for *nothing;* its use is to fill vacant orders. The 0 is also called *cipher* and *zero.*

4. When a figure stands alone or in the first place at the right of a number, it represents one or more *units of the first order.*

5. Units of the first order are called simply *units;* and the place they occupy is called the *units' place.*

UNITS OF THE SECOND ORDER, OR TENS.

4. 1. Nine units and one more are called *ten;* it also is represented by the figure 1; but the one is

made to occupy the second place from the right by writing a 0 in the units' place.

2. One ten is written thus . . . . . 10.
Two tens are *twenty*, written . . . . . 20.
Three tens are *thirty*, " . . . . . 30.
Four tens are *forty*, " . . . . . 40.
Five tens are *fifty*, " . . . . . 50.
Six tens are *sixty*, " . . . . . 60.
Seven tens are *seventy*, " . . . . . 70.
Eight tens are *eighty*, " . . . . . 80.
Nine tens are *ninety*, " . . . . . 90.

3. When a figure in a number stands in the second place from the right, it represents one or more *units of the second order.*

4. Units of the second order are called *tens;* and the place they occupy is called the *tens' place.*

TENS AND UNITS.

5. 1. The numbers between 10 and 20, 20 and 30, etc., are expressed by representing the tens and units of which they are composed.

2. One ten and one unit are *eleven*, written 11.
One ten and two units are *twelve*, " 12.
One ten and three units are *thirteen*, " 13.
One ten and four units are *fourteen*, " 14.
One ten and five units are *fifteen*, " 15.
One ten and six units are *sixteen*, " 16.
One ten and seven units are *seventeen*, " 17.
One ten and eight units are *eighteen*, " 18.
One ten and nine units are *nineteen*, " 19.
Two tens and one unit are *twenty-one*, " 21.
Two tens and two units are *twenty-two*, " 22.

NUMBERS TO BE WRITTEN.

1. Twenty-three; twenty-four; twenty-five; twenty-six; twenty-seven; twenty-eight; twenty-nine.

2. Thirty-seven; forty-two; fifty-six; sixty-nine; seventy-three; eighty-seven; ninety-four.

3. Eighty-three; forty-five; ninety-nine; fifty-one; thirty-six: seventy-eight; sixty-two.

4. Fifty-five; ninety-three; eighty-one; sixty-seven; forty-nine; seventy-four; thirty-eight.

5. Seventy-six; forty-four; eighty-two; fifty-seven; thirty-five; ninety-one; sixty-three.

NUMBERS TO BE READ.

1.	71;	32;	53;	84;	65;	46;	97.
2.	58;	34;	79;	66;	41;	85;	92.
3.	75;	43;	88;	61;	59;	33;	95.
4.	39;	72;	54;	86;	47;	98;	64.
5.	68;	77;	31;	89;	52;	96;	48.

UNITS OF THE THIRD ORDER, OR HUNDREDS.

6. 1. Ten tens are *one hundred;* it is represented by the figure 1 written in the third order, the orders of tens and units being each filled with a cipher.

One	hundred	is	written	thus,	100.
Two	hundred	"	"	"	200.
Three	hundred	"	"	"	300.
Four	hundred	"	"	"	400.
Five	hundred	"	"	"	500.
Six	hundred	"	"	"	600.
Seven	hundred	"	"	"	700.
Eight	hundred	"	"	"	800.
Nine	hundred	"	"	"	900.

2. Units of the third order are called *hundreds;* and the place they occupy is called the *hundreds' place.*

HUNDREDS, TENS, AND UNITS.

7. 1. The numbers between 100 and 200, 200 and 300, etc., are expressed by representing the hundreds, tens, and units of which they are composed.

2. One hundred and one unit are *one hundred and one,* written 101.

One hundred and one ten are *one hundred and ten,* written 110.

One hundred and one ten and one unit are *one hundred and eleven,* written 111.

One hundred and two tens are *one hundred and twenty,* written 120.

One hundred, two tens, and five units are *one hundred and twenty-five,* written 125.

NUMBERS TO BE WRITTEN.

1. One hundred and thirty; one hundred and forty; one hundred and fifty; one hundred and sixty; one hundred and seventy; one hundred and eighty.

2. One hundred and twenty-three; four hundred and fifty-six; seven hundred and eighty-nine; one hundred and forty-seven; two hundred and fifty-eight; three hundred and sixty-nine.

3. One hundred and two; three hundred and forty-five; six hundred and seventy-eight; two hundred and thirty-four; five hundred and sixty-seven; eight hundred and ninety.

4. Four hundred and fifty-three; seven hundred and eighty-six; nine hundred and twelve; two hundred and thirty; four hundred and fifty; six hundred and seventy.

5. One hundred and fifty-three; four hundred and eighty-six; seven hundred and twenty-nine; one hundred and three; four hundred and six; seven hundred and nine.

NUMBERS TO BE READ.

1.	210;	320;	430;	540;	650;	760.
2.	213;	546;	879;	417;	528;	639.
3.	201;	435;	768;	324;	657;	980.
4.	543;	876;	192;	329;	548;	765.
5.	513;	846;	279;	301;	604;	907.

UNITS OF HIGHER ORDERS.

8. 1. Ten hundreds are *one thousand;* it is represented by 1 in the fourth order; thus, 1000.

2. Ten thousands form a unit of the fifth order; thus, 10000; one hundred thousands, a unit of the sixth order; thus, 100000, etc.

3. Invariably, *ten units of any order make a unit of the next higher order.*

4. The names of the first nine orders may be learned from the following

TABLE OF ORDERS.

9th.	8th.	7th.	6th.	5th.	4th.	3d.	2d.	1st.
Hundred millions	Ten millions	Millions	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Units

9. 1. The first nine numbers are represented by the nine figures,—1, 2, 3, 4, 5, 6, 7, 8, 9.

2. All other numbers are represented by combinations of two or more of the ten figures,—1, 2, 3, 4, 5, 6, 7, 8, 9, 0.

3. The numbers that end with 2, 4, 6, 8, or 0 are called *even* numbers.

4. The numbers that end with 1, 3, 5, 7, or 9 are called *odd* numbers.

5. The *value* of a figure is the number of units it expresses.

6. The value of a figure is always *local;* that is, it depends upon the place it occupies in a number.

REM.—The principle of *local value* is what peculiarly distinguishes the Arabic System of Notation from all other systems that have existed.

7. The number a figure expresses when it stands in units' place is called its *simple* value.

8. The value of a figure is increased *tenfold* by removing it one place to the left.

9. The value of a figure is decreased *tenfold* by removing it one place to the right.

GROUPING OF ORDERS INTO PERIODS.

10. 1. For convenience in writing and reading numbers, the different orders are grouped into *periods* of three orders each.

REM.—A number is *pointed off* into periods of three figures each by commas.

2. The first three orders—units, tens, hundreds—constitute the first, or *unit* period.

3. The second group of three orders—thousands, ten thousands, hundred thousands—constitutes the second, or *thousand* period.

4. The third group of three orders constitutes the third, or *million* period.

5. The periods from the first to the twelfth inclusive may be learned from the following

TABLE OF PERIODS.

No.	NAME.	No.	NAME.
First	Unit.	Seventh	Quintillion.
Second	Thousand.	Eighth	Sextillion.
Third	Million.	Ninth	Septillion.
Fourth	Billion.	Tenth	Octillion.
Fifth	Trillion.	Eleventh	Nonillion.
Sixth	Quadrillion.	Twelfth	Decillion.

6. The grouping of the orders into periods is shown in the following

TABLE.

5. Trillion.	4. Billion.	3. Million.	2. Thousand.	1. Unit.
Hundred trillions	Hundred billions	Hundred millions	Hundred thousands	Hundreds
Ten trillions	Ten billions	Ten millions	Ten thousands	Tens
Trillions	Billions	Millions	Thousands	Units

7. It is plain that *each period is composed of units, tens, and hundreds of that period.*

To Write Numbers in the Arabic System.

11. 1. Write six hundred and fifty-four *trillion* three hundred and twenty-one *billion* nine hundred and eighty-seven *million* six hundred and fifty-four *thousand* three hundred and twenty-one.

Trillion.			Billion.			Million.			Thousand.			Unit.		
6	5	4,	3	2	1,	9	8	7,	6	5	4,	3	2	1.
Hundreds			Hundreds			Hundreds			Hundreds			Hundreds		
Tens			Tens			Tens			Tens			Tens		
Units			Units			Units			Units			Units		

Rule.—*Begin at the left, and write each period as a number composed of hundreds, tens, and units—filling the vacant orders with ciphers.*

REM.—In the left hand period, however, when the hundreds or the hundreds and tens are wanting, the vacant orders are not filled with ciphers.

NUMBERS TO BE WRITTEN.

2. Two thousand; thirty thousand; four hundred thousand.

3. Five million; sixty million; seven hundred million.

4. Eight billion; ninety billion; one hundred billion.

5. One thousand two hundred; two thousand one hundred.

6. Three thousand four hundred and fifty; six thousand seven hundred and eighty-nine.

7. Twelve thousand three hundred and forty-five.

8. Six hundred and seventy-eight thousand nine hundred and twelve.

9. One million three hundred and fifty-seven thousand nine hundred and twenty-four.

10. Sixty-eight million one hundred and forty-three thousand seven hundred and ninety-two.

11. One thousand and one; one thousand and ten; one thousand one hundred.

12. One thousand one hundred and one; one thousand one hundred and ten; one thousand one hundred and eleven.

13. Two thousand and three; four thousand and fifty.

14. Forty-five thousand and twenty-six.

15. Eighty thousand two hundred and one.

16. Ninety thousand and one.

17. Four hundred and ten thousand two hundred and five.

18. One hundred thousand and ten.

19. Three million seventy thousand five hundred and nine.

20. Forty-five million eighty-three thousand and twenty-six.

21. Nine hundred and nine million ninety thousand.

22. Seven hundred million ten thousand and two.

23. Forty billion two hundred thousand and five.

24. Seven hundred and twenty-six billion fifty million one thousand two hundred and forty-three.

25. Eighty billion seven hundred and three million five hundred and four.