

Primary Years Programme



Everyday Math 4A

上海市世界外国语小学

Shanghai World Foreign Language Primary School

上海科学技术出版社
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内容提要

本书依据IB课程PYP项目要求并结合国内PYP学校教学实际,按照知识点分类,每章围绕一个知识点内容进行归纳总结,每节介绍主要数学概念,提供基础练习题、拓展练习题、挑战性题目等,并在每一章后附上一套本章复习题、研究性题目。结合小学生学习数学的特点,本书力求在保证知识性的前提下,突出趣味性和开放性,激发学生的发散性思维和创造力。

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Preface

How to avoid the mechanical practice of primary math, develop the students to be creative, solve the problems in real-life situation by applying math skills? It bothers the math teachers and editors all the time.

Everyday Math gives people a refreshment. It is different from the workbooks & exercise books. It gives people hope. Math is the language, way and method to solve the problem. Learning through application is the best way to master the skills and methods. The book sticks to the philosophy “Learning Through Application”. It guides the students to learn through thinking & application while solving the real-life problems. It not only provides the students with solid basic knowledge, but also enough space to create. Let the students face “Challenge” to “Explore” “Research” and “Create”. Through the process, the students gradually realize “What is real?” “What’s the meaning of being exist?” and “Where are we in the world?” Those are the questions related to the origin of the philosophy.

Everyday Math focuses on “Who We Are” “Where We Are in Place and Time” “How We Express Ourselves” “How the World Works” “How We Organize Ourselves” and “Sharing the Planet”. Especially from the current time and space, combine the five main parts “Data Handling” “Measurement” “Shapes and Space” “Function and Form” “Numbers” together. It uses the materials that the students are familiar with in real-life, guides the students to solve the problems in math method and encourages the students to raise questions and solve the questions. Here, math is no longer a closed system of rules and patterns, but a science about relations and methods, it’s an ongoing vivid science.

Everyday Math covers every grade. Each chapter starts with the basic knowledge, includes 4 levels, “Standard” “Advanced” “Challenge” and “Research”. They link with each other. The materials include words and pictures which are popular among the students. It inspires the students to try a math method to describe the relationship between the real problems and solve the problems. That’s the advantage of the book.

Einstein said, “Raising questions is more important than solving the problems. Imagination is more important than the knowledge.” But many people dare not implement it while editing the teaching materials and exercise books. Starting from the Grade One, *Everyday Math* has the “Challenge” and “Research” at the end of the chapter. “Challenge” means the students should jump to pick up the fruits. The students are required to collect and sort out the information, put forward questions, seek for the different solutions to solve the problems, and find the answers, even different answers. That’s the precious point of the book.

Therefore, the students are able to “Self-manage” “Self-organize” and “Sharing the Planet” in the information network. Isn’t *Everyday Math* a good example to avoid the “mechanical practice” and provide the way to develop the creative generations?

黄建弘
July 2015

序

如何走出小学数学教学机械式训练学生的死扣,培养学生具有创新能力,能应用数学知识解决周围的实际问题,这些一直是困扰数学教师和教材编写者的问题。

*Everyday Math*丛书有着使人眼前一亮的感觉,不同于市面上各类课外辅导习题集和练习,这套书让人看到了希望。数学是解决问题的方法和手段,而掌握方法和手段的最佳途径就是在实际应用的过程中学习。这套丛书正是采用了“做中学”这一理念,引导学生在实际问题中边做边思考边学习,既给了学生一个扎实的基础,又给了学生一个足够的创新空间,让学生在掌握与他们年龄层次相符的数学知识的基础上去迎接“挑战”,去“探索”,去“研究”,去“创新”。在经历这样的过程中,让学生逐步清楚“什么是真的”“存在的意义是什么”“我们在当今这个世界中处于什么位置”等这些哲学的起源中所提出的问题。

*Everyday Math*围绕“我们是谁”“我们处在什么时空”“我们如何自我表达”“世界是怎样运作的”“我们如何自我组织”“如何共享地球”等主题展开。特别是从我们当今所处的时空出发,将“数据处理”“测量”“图形与空间”“形式与功能”,以及“数”这五大块有机地结合起来,并以现实生活中学生喜闻乐见的形式和学生熟知的语境呈现给学生,引导学生自己提出问题,进而运用数学模式去解决问题。在这里,数学已不再是规则和公式的封闭体系,而是关乎关系和模式的科学,是一种不断发展的生机勃勃的科学。

*Everyday Math*在内容安排上科学合理,在各年级的每一章安排上,章前都是本章的基础知识,然后分“standard (达标)”“advanced (提高)”“challenge (挑战)”“research (研究)”四个层次展开,环环相扣,逐步提高。所用素材图文并茂,是小学生喜闻乐见的,且逐步具有挑战性的,引导学生在掌握基础的前提下,尝试找到一种用数学模式去描绘、表达所遇的实际问题的内在关系,并用数学方法去解决。这正是该书的优秀之处。

“提出问题比解决问题更重要,想象比知识重要”是爱因斯坦的名言,但不少人在具体编写教材、练习册时却不敢贯彻了。本套丛书从小学一年级开始,在每章都设立小学生能够跳一跳就把果子摘下来的“challenge”与“research”内容,并以此为每章的结束。这里要求学生自己收集和筛选信息,做出假设,提出不同的问题,寻求不同的解决问题方案,最终得出答案,甚至是不同的答案。这正是本套丛书的另一个宝贵之处。

这样培养出的学生,当然能在我们所处的信息网络时空中“自我运作、自我组织、共享地球”了。*Everyday Math*不正是为我们走出机械式训练的死扣,培养创新人才提供了一个良好的范例吗?

黄建弘

2015年7月5日

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Chapter

1

Numbers and quantity



1. **Whole number:** The set of familiar numbers (0, 1, 2, 3, 4, and so on) is sometimes called natural numbers or counting numbers.
2. **Number system:** In our number system, the value of a digit depends on its place, or position, in the number. Each place has a value of 10 times the place to its rights.
3. **Place value:** The value of where the digit is in the number. For example: In 352, the 5 is in the “tens” position, so it shows a value of 50.
4. **Series:** In our number system, three numbers form a series.
5. **Thousand:** A symbol for this number, as 1 000.
6. **Thousands:** The numbers between 1 000 and 999 999.
7. **Million:** A symbol for this number, as 1 000 000.
8. **Millions:** The numbers between 1 000 000 and 999 999 999.
9. **Billion:** A cardinal number represented by 1 followed by 9 zeros.

10. Number system chart:

Number System

Series	Billion	Million	Thousand	One
Place Value	Hundred Billions Ten Billions Billions	Hundred Millions Ten Millions Millions	Hundred Thousands Ten Thousands Thousands	Hundreds Tens Ones
Counting Unit	H T B b b	H T M m m	H T Th th th	H T O
Number	O O O	O O O	O O O	O O O

85 213

Ten thousands	Thousands	Hundreds	Tens	Ones
8	5	2	1	3

80 000 + 5 000 + 200 + 10 + 3

1–1 Large numbers



Standard

Daci and Elaine are reading the latest population boards.

1. What is the difference between the two boards?



2. (a) Which place has the largest population?

(b) Which place has the smallest population?

3. Which place has a population closest to:

(a) one million people? _____

(b) one hundred thousand people? _____

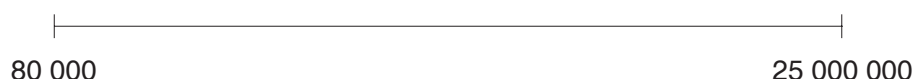
(c) half a million people? _____

(d) two million people? _____

(e) three million people? _____

(f) one billion people? _____

4. Place the cities on board B on this number line.



5. Write these populations in words.

(a) Kingston _____

(b) Mbabane _____

(c) Philippines _____

6. Write the cities on board B in descending order of population.

7. Give the value of the 3 in:

(a) Uzbekistan _____

(b) Kingston _____

(c) Dublin _____

8. Which city has:

(a) the second largest population?

(b) the second smallest population?



9. Match.

(a) $3\,000\,000 + 1\,000$

(b) $20\,000\,000 + 6\,000 + 1\,000\,000 + 10\,000 + 500\,000$

(c) $6\,000 + 1\,000\,000 + 20 + 700 + 30\,000$

(d) $50\,000 + 100\,000\,000$

A. Beijing

B. Philippines

C. Algiers

D. Dublin

10. Write the numbers in words.

- (a) 706 _____
- (b) 80 800 _____
- (c) 592 112 _____
- (d) 40 054 _____

11. Circle the right number.

(a) Circle the number which is **nearest in value** to 205 750.

205 570 205 699

(b) Circle the number which is **nearest in value** to 2 005 750.

2 050 810 2 040 852



Advanced



1. Write the following numbers in standard form.

- (a) six hundred and four million, five hundred and eight thousand, eight hundred and seven

- (b) six hundred and forty-six million, five hundred and ninety-two thousand, one hundred and twelve



A number in standard form:
A number in standard form is separated into groups of three digits using spaces. For example: 10 000.

(c) seven hundred thousand five

(d) five hundred and twenty-eight
million, eighty thousand, eight
hundred

(e) seven million, seven hundred and seven

(f) ninety four million, eight hundred and sixty-two thousand, six hundred
and two

(g) eighty million, forty thousand, fifty-four


2. Writing big numbers in standard form.

(a) two billion, nine hundred and thirty-seven thousand, one hundred and one

(b) one billion, eight hundred and five million, seven hundred and six

(c) five billion, three hundred and ten thousand, nine hundred and nineteen

(d) three billion, six hundred and forty-six million, five hundred and
ninety-two thousand, one hundred



Zero

Remember: Natural numbers
start with zero.

(e) four billion, seven million, seven hundred and seven

(f) seventy eight billion, ninety four million, eight hundred and sixty-two thousand

3. Write these numbers in ascending order.

(a) 123 456 789 987 654 321 555 555 555

(b) 1 122 334 455 1 133 557 799 8 866 442 200

(c) 9 037 824 210 124 287 309 11 222 000 000

4. What is the smallest 9-digit number you can write? _____

5. What is the largest 9-digit number you can write? _____

6. Write the numbers in words.

(a) 7 000 707

(b) 528 080 800

(c) 646 592 112

(d) 80 040 054



1. Write three numbers between 54 000 000 000 and 55 000 000 000.

(a) _____ (b) _____ (c) _____

Order the three numbers from the largest to smallest.

2. What is the smallest 11-digit number you can write? _____

3. What is the largest 11-digit number you can write? _____

4. I have the digit 0, 3, 5, 7, 9 in my name. 3 is in tens place, 9 has the smallest value, and 5 has the second highest value. Who am I?

5. I have the digit 3, 5, 7, 9 and five 0 in my name. 3 is in tens place, 9 has the smallest value, and 5 has the second highest value. Who am I?

6. Write the numbers in words.

(a) 300 646 592 111

(b) 88 094 862 000

(c) 7 000 310 919

(d) 61 080 040 051

1-2 Number rounding



Standard

1. Round these cities to the nearest thousand.

A		B	
Population		Population	
Algeria	37 900 000	Algiers	3 001 000
Tanzania	44 900 000	Dodoma	324 300
Ireland	4 104 000	Dublin	1 036 720
Jamaica	2 651 000	Kingston	586 630
Uzbekistan	30 075 000	Tashkent	2 130 000
Philippines	100 050 000	Manila	11 860 000
Swaziland	1 174 000	Mbabane	81 310
China	1 368 000 000	Beijing	21 516 000

- (a) Algiers _____
- (b) Manila _____
- (c) Dodoma _____
- (d) Mbabane _____
- (e) Kingston _____

2. Round each country to the nearest hundred thousand.

- (a) Algeria _____
- (b) Swaziland _____
- (c) Ireland _____
- (d) Jamaica _____
- (e) Uzbekistan _____



Advanced



Answer each of the problems below by rounding the values to the correct place.

- (a) Round 259 669 118 to the nearest hundred thousand. _____
- (b) Round 6 837 591 to the nearest thousand. _____
- (c) Round 523 714 to the nearest thousand. _____
- (d) Round 70 051 831 to the nearest ten thousand. _____
- (e) Round 538 428 340 to the nearest hundred thousand. _____
- (f) Round 673 358 054 to the nearest million. _____
- (g) Round 894 636 765 to the nearest hundred thousand. _____
- (h) Round 419 248 to the nearest hundred. _____
- (i) Round 637 933 062 to the nearest hundred thousand. _____
- (j) Round 28 424 to the nearest ten. _____
- (k) Round 6 333 130 800 to the nearest million. _____
- (l) Round 3 261 768 to the nearest thousand. _____
- (m) Round 9 041 554 474 to the nearest million. _____
- (n) Round 382 604 to the nearest thousand. _____
- (o) Round 8 511 348 825 to the nearest million. _____