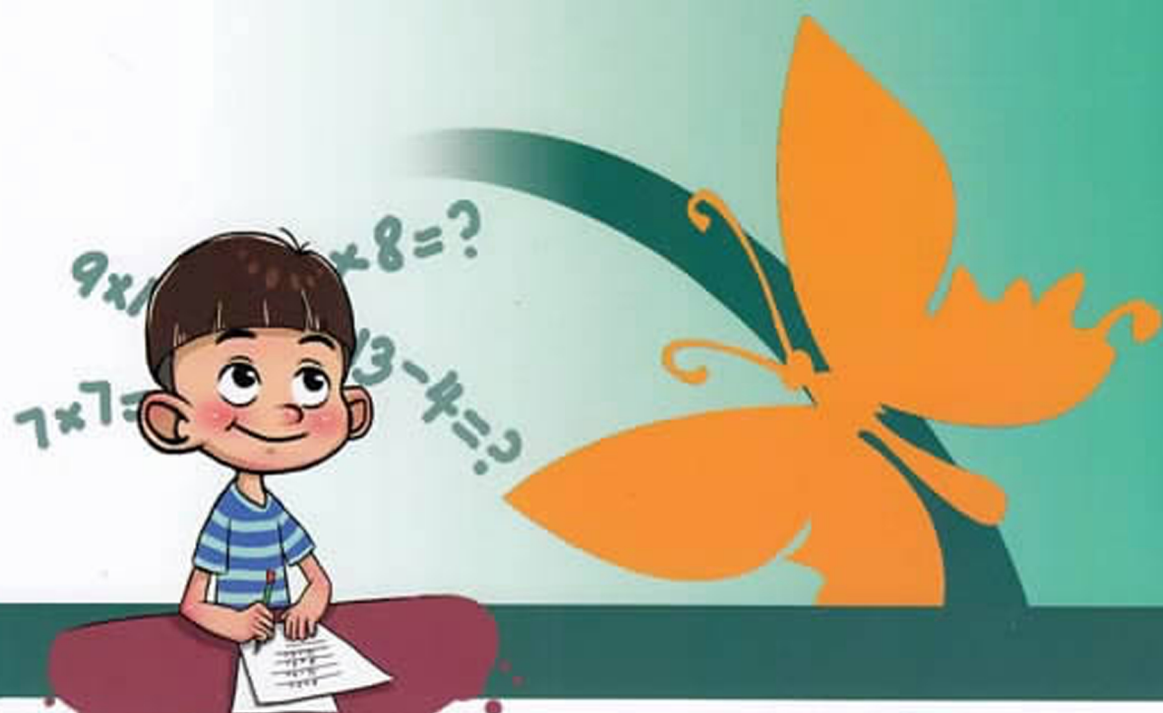


# Primary Years Programme



# Everyday Math 5A

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  
Shanghai Scientific & Technical Publishers

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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?

黃建弘  
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,引导学生在解决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

# Decimal multiplication and division



## Vocabulary

1. **Decimal** A number that has a decimal point followed by digits that show a value smaller than one.

$$\begin{array}{c} 45.6 \\ \text{Decimal Number} \end{array} = 40 + 5 + \frac{6}{10}$$

Examples:

0.01 (point zero one) which is also equal to  $\frac{1}{100}$ ,

45.6 (forty-five point six) is a decimal number.

2. **Integer** A number with no fractional part.





Includes:

- the counting numbers  $\{1, 2, 3, \dots\}$ ,
- zero  $\{0\}$ ,
- and the negative of the counting numbers  $\{-1, -2, -3, \dots\}$ .

We can write them all down like this:  $\{\dots, -3, -2, -1, 0, 1, 2, 3, \dots\}$ .

Examples of integers:

$-16, -3, 0, 1, 198.$

3. **Recurring decimal** A decimal number that has digits that repeat forever.

$$\frac{1}{3} = 0.333\dots = 0.\dot{3} = 0.\overline{3}$$

Fraction      Ways to show recurring decimal

Examples:

$1/3=0.333\dots$  (the 3 repeats forever),

$1/7=0.142\ 857\ 142\ 857\dots$  (the “142 857” repeats forever),

$77/600=0.128\ 333\dots$  (the 3 repeats forever).

The part that repeats is usually shown by placing dots over the first and last digits of the repeating pattern, or sometimes a line over the pattern.

Also called a “**Repeating Decimal**”.

4. **Repetend** The digit or series of digits in a recurring decimal that repeats itself.

# 1-1 Decimal multiplication



## Standard



Multiply the tenths first.

$$\begin{array}{r} 3.6 \\ \times 4 \\ \hline 14.4 \end{array}$$



Then multiply the ones.

1. (a) 
$$\begin{array}{r} 4.5 \\ \times 4 \\ \hline \end{array}$$
- (b) 
$$\begin{array}{r} 2.8 \\ \times 7 \\ \hline \end{array}$$
- (c) 
$$\begin{array}{r} 6.9 \\ \times 1 \\ \hline \end{array}$$
- (d) 
$$\begin{array}{r} 3.7 \\ \times 9 \\ \hline \end{array}$$
- (e) 
$$\begin{array}{r} 7.4 \\ \times 6 \\ \hline \end{array}$$
- (f) 
$$\begin{array}{r} 0.6 \\ \times 5 \\ \hline \end{array}$$
- (g) 
$$\begin{array}{r} 8.8 \\ \times 0 \\ \hline \end{array}$$
- (h) 
$$\begin{array}{r} 2.6 \\ \times 8 \\ \hline \end{array}$$

2. (a)

IN	OUT
3.6	
4.5	
5.9	
7.2	
9.3	
Rule: Multiply by 6	

(b)


IN	4.52	5.48	6.26	7.13	8.51
OUT					
Rule: Multiply by 7					

(c)

IN	1.37	3.91	5.23	6.72	7.33
OUT					
Rule: Multiply by 2					

3. Vertical calculation.

(a)  $1.05 \times 20 =$  \_\_\_\_\_



Multiplication

$$\begin{array}{r} 3.52 \\ \times \quad 3 \\ \hline 10.56 \end{array}$$

two decimal places

two decimal places

(b)  $78 \times 2.04 =$  \_\_\_\_\_

(c)  $135 \times 0.003 =$  \_\_\_\_\_



Advanced



1. Vertical calculation.

(a)  $1.6 \times 3.5 =$  \_\_\_\_\_

(b)  $45.6 \times 0.015 =$  \_\_\_\_\_

(c)  $0.29 \times 1.2 =$  \_\_\_\_\_

(d)  $0.073 \times 4.5 =$  \_\_\_\_\_

(e)  $0.85 \times 0.22 =$  \_\_\_\_\_

(f)  $6.05 \times 2.4 =$  \_\_\_\_\_

(g)  $10.8 \times 8.75 =$  \_\_\_\_\_

(h)  $92.4 \times 1.35 =$  \_\_\_\_\_

2. Fill in the circle with “>” “<” or “=”.

(a)  $3.55 \times 0.9$  ○  $3.55$

(b)  $1.03 \times 3.1$  ○  $1.03$

(c)  $0.78 \times 1$  ○  $0.78$

(d)  $48.2$  ○  $48.2 \times 48.2$

3. According to the result of this number sentence:  $47 \times 56 = 2\,632$ , write the proper number in the brackets.

(a)  $4.7 \times 56 = ( \quad )$

(b)  $0.047 \times 5.6 = ( \quad )$

(c)  $47 \times 0.056 = ( \quad )$

(d)  $0.47 \times 0.56 = ( \quad )$

(e)  $4.7 \times ( \quad ) = 2.632$

(f)  $( \quad ) \times 56 = 26.32$

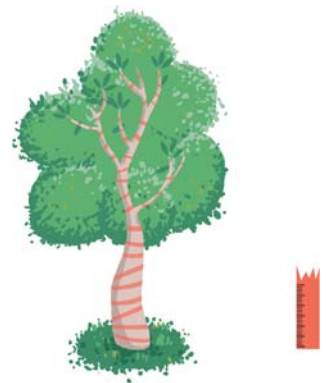


4. Problem solving.

(a) A motorcycle travels at a speed of 30 km/h from School A to School B to deliver a package. After 1.5 h, the motorcycle needs to travel 18 km to reach the halfway point of the journey. How long will it take the motorcycle to reach School B at the same speed?

(b) Hamlet ordered 9 pizzas. Each pizza costs \$13.95. How much does he need to pay?

(c) A broken scale is used to measure the height of the plant. The length of the broken scale is 12 cm. The height of the plant is 14.15 times greater than the broken scale. What is the height of the plant?



(d) David and Dora are close friends studying in the same school. David's home is 6.87 miles away from school. Dora's home is

7 times as far as David's home from school. Find the distance between Dora's school and her home.



Here is a pure decimal:  $0.12345678910111213...979899$   
the number of its 100<sup>th</sup> decimal value is \_\_\_\_\_.

## 1-2 Decimal division



- Find the quotient of the following decimals. All of the problems should have a remainder of zero.

(a)  $2 \overline{) 6.6}$

(b)  $5 \overline{) 10.5}$

Division

Decimal point on decimal point.

$$\begin{array}{r} 3.2 \\ 2 \overline{) 6.4} \end{array}$$

(c)  $8 \overline{) 32.8}$

(d)  $3 \overline{) 21.3}$

2. (a)

IN	OUT
20.79	
41.04	
55.26	
74.61	
84.78	
Rule: Divide by 9	

(b)

IN	OUT
5.6	
6.4	
11.8	
15.0	
16.6	
Rule: Divide by 2	

(c)

IN	2.8	11.9	16.8	25.2	31.5	43.4	53.2	55.3
OUT								
Rule: Divide by 7								

3. Calculate vertically and check your answer.

(a)  $12.5 \div 5 =$  \_\_\_\_\_

(b)  $90.72 \div 12 =$  \_\_\_\_\_

(c)  $60.6 \div 12 =$  \_\_\_\_\_

Hint: Sometimes we need to add extra zeros to the number we are dividing into.

(d)  $462 \div 12 =$  \_\_\_\_\_

When left with a remainder add a decimal point and two zeros and keep dividing.

eg  $37 \div 4$

$$\begin{array}{r} 9.25 \\ 4 \overline{) 37.00} \end{array}$$



## Advanced



1. (a)  $2.4 \overline{) 15.12}$

(b)  $1.5 \overline{) 18.45}$

(c)  $1.8 \overline{) 8.82}$



(d)  $3.6 \overline{) 75.96}$

(e)  $4.3 \overline{) 56.33}$

(f)  $8.1 \overline{) 283.5}$

2. Fill “>” “<” or “=” in the brackets.

(a)  $2.24 \div 0.8$  (     )  $2.24$

(b)  $2.24 \times 0.8$  (     )  $2.24$

(c)  $65 \div 0.5$  (     )  $6.5$

(d)  $65 \div 0.5$  (     )  $6.5 \times 0.5$

(e)  $90 \div 4.5$  (     )  $90 \times 4.5$

(f)  $61 \div 0.9$  (     )  $61 \div 10$

3. Calculate vertically. (“\*” Check the answer)

\* (a)  $3.22 \div 0.14 =$  \_\_\_\_\_

(b)  $11.04 \div 18 =$  \_\_\_\_\_

(c)  $1.43 \div 0.37 =$  \_\_\_\_\_

(d)  $1.028 \div 0.47 =$  \_\_\_\_\_

(Calculate to tenth,  
write the remainder)

(Calculate to hundredth,  
write the remainder)