

Level 4

原版引进，英语能力自我挑战
快乐学数学，美式学习场景全体验
双语学习，更可助你迈出出国留学第一步

4 级

美国原版青少年核心能力拓展

好玩的数学

Targeted Mathematics Student Guided Practice Book

主 编：〔美〕莎拉·约翰逊



天津出版传媒集团

天津科技翻译出版有限公司

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图书在版编目(CIP)数据

美国原版青少年核心能力拓展:好玩的数学=Targeted mathematics: student guided practice book. 4级:英文/(美)约翰逊(Johnson, S.)主编. —天津:天津科技翻译出版有限公司, 2014.4

ISBN 978-7-5433-3347-5

I. ①美… II. ①约… III. ①数学—少儿读物 ②英语—口语—少儿读物
IV. ①O1-49 ②H319.9-49

中国版本图书馆CIP数据核字(2013)第321606号

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授权单位: Teacher Created Materials, Inc.

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网址: www.tsttpc.com

印刷: 唐山天意印刷有限责任公司

发行: 全国新华书店

版本记录: 880×1230 16开本 10.25印张 205千字

2014年4月第1版 2014年4月第1次印刷

定价: 25.00元

(如发现印装问题,可与出版社调换)

编者前言

《美国原版青少年核心能力拓展:好玩的数学》(学前阶段及1~8级)是从美国教师创新教材出版公司(Teacher Created Materials Inc.)引进的现行介入式数学指南,全面反映了美国学前班至八年级数学课的现行教学内容及教学要求,同时也为我们展示了美国青少年丰富多彩、生动活泼的学习场景。

阅读使用这套丛书会让你有一种犹如在美国上学、与美国的小朋友同步学习的亲身体验。从中不仅可以了解美国学生在数学课上学些什么,做些什么样的作业,考些什么样的数学题;还可以知道他们的老师在课堂上讲些什么,以及对学生的要求是什么。由此你会发现,他们的数学课与我们的有相同之处,但也并非完全相同。我们侧重于背公式,做习题,备考应试;而他们侧重于理解和掌握数学的基础知识,既讲述初等数学的内容,又介绍了一些高等数学、数论、概率论、统计学的知识,并与其他学科相互联系,从而了解数学在其他学科中的应用,而且在教学中注意联系实际,注重实践应用,因此上数学课不会让学生感到枯燥乏味,而是感觉生动有趣。二者有着不同的教学理念和方式,如果能通过这套丛书的学习将二者有机地结合起来,取长补短,优势互补,必能开阔你的眼界,提高你对数学概念的理解,提升你的应用能力(当然也包括应试能力)。

数学是世界各地通用的一门学科,有着共同的概念、公式、术语、习题、计算方法,因此在这套书中有着非常熟悉的学习内容和知识背景:学过的数学知识,做过的数学习题,考过的数学试题。特别之处在于这套丛书以英文原版形式体现,这就为你营造了一个在熟悉的背景下学习英语的环境,学会用地道的英语来表达学过的知识,表达真实的日常生活和学习活动,学会用英语和同学进行学习互动,从而大幅度提高你的英语水平。既学了数学又学了英语(而且是非常实用的英语),岂非两全其美的好事。

这套丛书适用于我国广大青少年读者,尤其是双语学校的学生以及打算到英语国家上高中、上大学的学生。学习这套丛书,就等于在国内体验了国外的学校生活,这对今后的深造无疑是大有裨益的。

打开书本,开启你在国内“留学”的全新生活吧!

英语就得天天练——阅读美国孩子的课余英文原版书

好玩的数学——体验美国青少年数学学习的乐趣

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附录A: 游戏指南

附录B: 数学用表

附录C: 词汇表

附录D: 参考答案

Student Welcome Letter

欢迎信

Dear Student,

You are starting a math program that will help you review fourth grade. Up to this point in school, you have learned many mathematical skills. This program will help you focus on what you already know how to do in math and what you need to learn. You will learn the important mathematical concepts, skills, and vocabulary so that you are ready for fifth grade.

Sometimes students have trouble learning math. It can seem confusing (令人困惑). This program will help you practice math every day. You will review many things you learned in fourth grade. Some of those things include division, fractions, and problem solving.

Please sign the bottom of this letter and keep it as a reminder of the skills you learned in this math program. Have fun!

Student Signature (学生签名)

Diagnostic Test

摸底测试

- 1 Round these numbers to the nearest 1,000 and estimate the difference.

$$22,951 - 8,221 = \underline{\hspace{2cm}}$$

- (A) 16,000
- (B) 13,000
- (C) 15,000
- (D) 31,000

- 4 Which of these expressions (算式) is true?

- (F) $44 \times 12 = 33 \times 22$
- (G) $18 \times 96 = 96 \div 18$
- (H) $96 \times 16 = 16 \times 96$
- (J) $95 \times 14 = 14 + 95$

- 2 Professor Jones had 2,349 ladybug beetles (瓢虫) and 4,999 stag beetles (鹿角虫) in his collection. How many beetles did he have in all?

- (F) 8,348 beetles
- (G) 7,448 beetles
- (H) 7,358 beetles
- (J) 7,348 beetles

- 5 Beverly had 478 pennies (便士) which she divided into stacks (堆) of 5. How many stacks did she have?

- (A) 90 R3
- (B) 96 R3
- (C) 94 R8
- (D) 95 R3

- 3 Joseph had 569 marbles (弹珠). He lost 276 marbles. How many does he have left?

- (A) 293 marbles
- (B) 283 marbles
- (C) 393 marbles
- (D) 239 marbles

- 6 Which of these answers shows how to break down (分解) 8×19 into math facts (数学算式) you know?

- (F) $(8 \times 10) - (8 \times 9)$
- (G) $(8 \times 12) + (8 \times 9)$
- (H) $(8 \times 10) + (8 \times 8)$
- (J) $(8 \times 10) + (8 \times 9)$

Diagnostic Test (cont.)

- 7 Which of the following answers is equal (等于) to $\frac{1}{10}$?

(A) $\frac{7}{100}$
 (B) $\frac{1}{5}$
 (C) $\frac{11}{100}$
 (D) $\frac{10}{100}$

- 10 What decimal represents (十进制表示) one hundred twenty-three and nine hundredths?

(F) 12.390
 (G) 123.900
 (H) 123.09
 (J) 123.9

- 8 Riley has two pet mice (宠物鼠). One mouse weighs $\frac{5}{8}$ oz (盎司). The other weighs $\frac{7}{8}$ oz. How much do they weigh together?

(F) $\frac{12}{8}$ oz. (H) $\frac{12}{16}$ oz.
 (G) $\frac{35}{64}$ oz. (J) $\frac{2}{8}$ oz.

*为体现原版书的特色，书中出现的计量单位在不影响解题思路的情况下均保持原貌，个别在我国不常用的计量单位已做换算标注。计量单位换算可参见附录B：数学用表。

- 11 Determine the next number in the series.

1, 4, 9, 16, _____

(A) 24
 (B) 25
 (C) 30
 (D) 36

- 9 One silkworm larva (蚕的幼虫) measures 4.76 cm. Another silkworm larva measures 5.87 cm. How long would they stretch (伸展) if lined up end-to-end?

(A) 11.63 cm
 (B) 10.53 cm
 (C) 12.63 cm
 (D) 10.63 cm

- 12 Determine the next number in the series.

5, 7, 10, 14, _____

(F) 18
 (G) 19
 (H) 16
 (J) 24

Diagnostic Test (cont.)

- 13** What is the 12th shape in this pattern?



- (A)
- (B)
- (C)
- (D)

- 16** How many feet (英尺) are equal to 327 yards (码)?

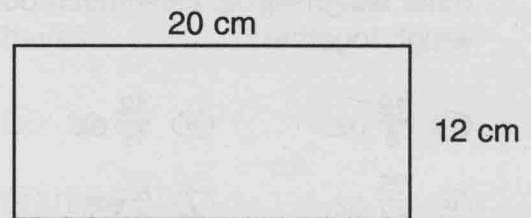
- (F) 991 ft.
- (G) 881 ft.
- (H) 1,081 ft.
- (J) 981 ft.

*本题单位换算参见附录B：数学用表。

- 14** At the mall, you buy 3 more shirts than pairs of pants. Let p represent the number of pairs of pants you bought. Which expression best represents how many shirts you bought?

- (F) $p \times 3$
- (G) $p + 3$
- (H) $p - 3$
- (J) $3 - p$

- 17** What is the area of the rectangle (矩形) shown here?



- (A) 240 cm^2 (C) 32 cm^2
- (B) 220 cm^2 (D) 64 cm^2

- 15** Your class gathered cans for a food drive. There are 9 cans of peas (豌豆罐头) and 3 cans of beans (大豆罐头). There is an equal number of cans of corn (玉米罐头) as peas and beans combined. Let c represent the number of cans of corn. Which inequality best represents the number of cans of corn?

- (A) $c < 9 + 3$ (C) $c > 9 + 3$
- (B) $c \geq 9 + 3$ (D) $c = 9 + 3$

- 18** One pound is equal to 16 ounces (盎司). How many ounces equal 22 pounds (磅)?

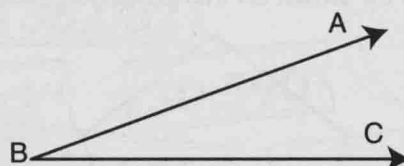
- (F) 342 oz.
- (G) 252 oz.
- (H) 362 oz.
- (J) 352 oz.

Diagnostic Test (cont.)

- 19** A bus leaves Oakton (奥克顿) at 12:30 p.m. and arrives at Rockville (罗克维尔市) at 4:18 p.m. How long is the trip?

(A) 3 hr. 38 min.
(B) 4 hr. 48 min.
(C) 3 hr. 48 min.
(D) 3 hr. 58 min.

- 22** Identify angle (角) ABC.



(F) obtuse (钝角) (H) right (直角)
(G) acute (锐角) (J) none (无)

- 20** A tug-of-war rope (拔河比赛绳) is 98 inches (英寸) long. Which of the following is the closest measurement?

(F) 6 ft. 2 in.
(G) 8 ft. 2 in.
(H) 12 ft.
(J) 10 ft.

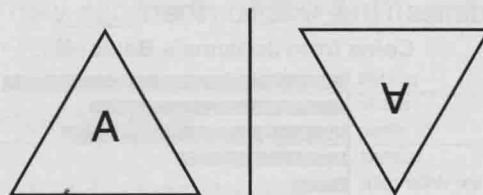
- 23** Which letter of the alphabet (字母) illustrates perpendicular (垂直) lines?

(A) J
(B) S
(C) T
(D) K

- 21** What is the name for any four-sided (四边形) figure?

(A) octahedron (八面体)
(B) square (正方形)
(C) quadrilateral (四边形)
(D) rectangle (矩形)

- 24** How many degrees (度数) has this triangle been rotated?

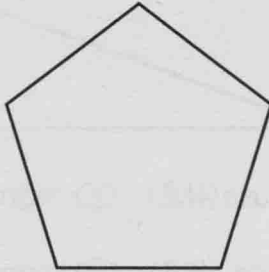


(F) 90° (H) 180°
(G) 45° (J) 360°

Diagnostic Test (cont.)

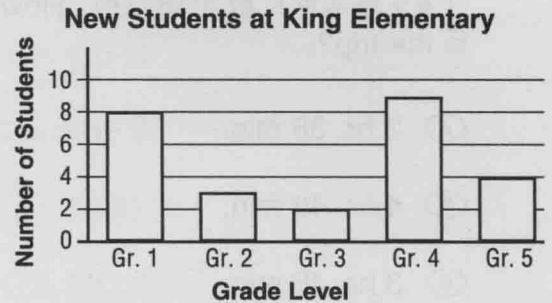
摸底测试

- 25** How many lines of symmetry (对称) can be drawn on this pentagon (五边形)?



- (A) 1 (C) 3
(B) 2 (D) 5









- 28** How many new students are at King Elementary?




- (F) 24 students (H) 14 students
(G) 28 students (J) 26 students

- 26** How many more shirts (衬衣) than sweaters (运动衣) does Ralph have?

Ralph's Clothes












Pants	 
Shirts	  
Sweaters	 
Jackets	


Key
 = 8 Items

- (F) 12 (H) 6
(G) 10 (J) 2

- 29** How many students did not chose orange as their favorite color?

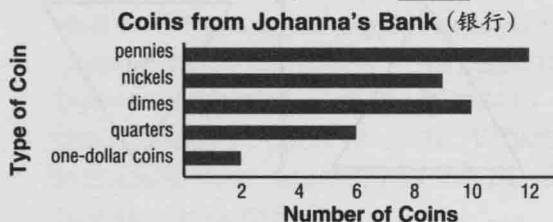
3rd Graders' Favorite Colors

Blue	  
Green	 
Orange	
Yellow	   
Red	

Key
 = 20 Students

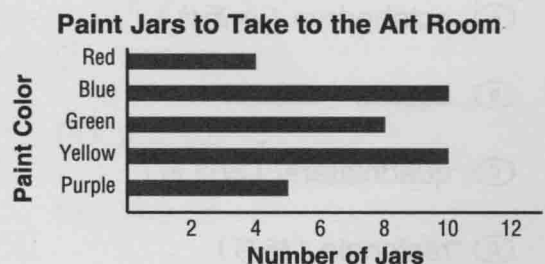
- (A) 200 students (C) 190 students
(B) 10 students (D) 20 students

- 27** Use the graph (图表) below to finish the statement. Johanna has fewer dimes (10美分硬币) than ____.



- (A) nickels (5美分硬币)
(B) quarters (25美分硬币)
(C) pennies (1美分硬币)
(D) one-dollar coins (1美元硬币)

- 30** How many jars (罐) of purple paint (紫色染料) need to be taken to the art room (美术教室)?



- (F) 4 jars (H) 6 jars
(G) 5 jars (J) 7 jars

Raffle Tickets

彩 券



Directions: Place the raffle tickets in ascending order and write the numbers below. Write each of the ticket numbers in written form next to the number. The first one is done for you.
(游戏说明: 请将彩券按升序排列, 并将数字填入下方表格中。将每张彩券上的数字以书面语形式填入旁边的表格中。举例见第一行。)

Number (数字)	Number Written in Words (书面语形式)
1. 6,942	six thousand (千), nine hundred (百) forty-two
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

Directions: Add 159 to each number below. Write the new number in digits (数字) and then in words. The first one has been done for you.

Number	+ 159	New Number
11. 6,035	+ 159	6,194 = six thousand, one hundred ninety-four
12. 7,293	+ 159	
13. 16,432	+ 159	
14. 84,735	+ 159	

Acting It Out or Using Concrete Materials

演示或用小玩具解题

Using objects, such as counters (柜台) or blocks, to represent people, places, or things in a problem often helps you find the answer. These objects can be moved through the steps of the problem. This helps you keep track (记录) of what is happening as you solve the problem. Making a model can also help you solve a problem. It can also be valuable to act out the roles of the different people or objects in the problem.

Using Concrete Materials

Some problems use numbers that can be represented with objects. Many problems are best understood by using actual objects that represent the things in the problem.

Problem: Homework Help!

(家庭作业辅导)

The Problem

Tom has three square blocks. One is yellow, one is blue, and the other is green. For homework, he has to find out how many different color combinations (组合) are possible.

Understanding the Problem (理解问题)

- *What do we know?*

There are three square blocks. Each one is a different color.

- *What do we need to find out?*

How many different color combinations are possible?

Planning and Communicating a Solution

(计划与交流解决方法)

This problem is best solved by using three square blocks or pieces of paper that represent the three different colored blocks.

Use the materials to see how many different color combinations you can make. For each possibility, draw the color pattern answer and then try a new one.

GBY GYB BYG BGY YGB YBG

- *Do you see the answer?*

There are six different color combinations possible.

Act It Out!

When a problem has things being moved around, acting out the problem can make it easier to find the solution.

Problem: Bunny Hops (兔子跳)

The Problem

A bunny sat on a rock. First, he hopped ahead three hops. Then the bunny hopped backward two hops. Finally, the bunny hopped forward four hops. How many hops away from the rock is the bunny in the end?

Understanding the Problem

- *What do we know?*

The bunny is hopping forward and backward from a rock.

- *What do we need to find out?*

How many hops away from the rock is the bunny?

Planning and Communicating a Solution

To solve this problem, act like the bunny and hop forward and backward. Follow the problem step by step. Have a peer keep track of how many hops away from the rock you are at the end. You could also use a small bunny figure and act it out on a piece of paper.

- *Do you see the answer?*

The bunny is five hops away from the rock.

Standardized Test Preparation 1

标准考前测试 1

1 Which letter shows the numbers in order from least to greatest?

- (A) 5,608 5,422 5,943 5,680
- (B) 5,943 5,680 5,608 5,422
- (C) 5,422 5,680 5,608 5,943
- (D) 5,422 5,608 5,680 5,943

4 Find the sum (求和).

$$\begin{array}{r} 484 \\ +273 \\ \hline \end{array}$$

- (F) 756
- (G) 757
- (H) 697
- (J) 767

2 Nori had 783 marbles (弹珠) in his collection. He lost 297 marbles. How many does he have left?

- (F) 486 marbles
- (G) 514 marbles
- (H) 586 marbles
- (J) 416 marbles

5 Find the difference (求差数):

$$13,287 - 12,596 = \underline{\hspace{2cm}}$$

- (A) 591
- (B) 581
- (C) 691
- (D) 681

3 What is the value of 6 in 906,415?

- (A) 6 ten thousands
- (B) 6 millions
- (C) 6 thousands
- (D) 6 hundreds

6 Pick one question from this test. Explain how and why you chose your answer.
