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5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
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邮政编码：300192
电　　话：022-87894896
传　　真：022-87893237
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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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Student Welcome Letter

欢迎信

Dear Student,

You are starting a math program that will help you review fifth 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 sixth grade.

Sometimes students have trouble learning math. It can seem confusing. This program will help you practice math every day. You will review many things you learned in fourth grade. Some of those things include probability, 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 What is the written expression (书面表达) for 16,342 + 127?

Ⓐ sixteen thousand, four hundred sixty-nine

Ⓑ sixteen thousand, four hundred seventy-nine

Ⓒ fifteen thousand, five hundred sixty-nine

Ⓓ fourteen thousand, four hundred sixty-nine

2 Which of these answers shows how to break down (分解) 22 x 6 into math facts (数学式) you know?

Ⓕ (10 x 6) – (10 x 2)

Ⓖ (6 x 10) + (6 x 10)

Ⓗ (6 x 20) + (6 x 2)

Ⓙ (11 x 6) + (12 x 6)

3 Use any division method to find the quotient (商).

$$8\overline{)967}$$

Ⓐ 121 R7 (余7)

Ⓑ 120 R7

Ⓒ 140 R7

Ⓓ 121 R6

4 Irma bought a pair of tennis shoes (网球鞋) for $39.65 and a pair of boots (靴子) for $51.39. How much did she spend in all?

Ⓕ $91.04

Ⓖ $101.05

Ⓗ $92.05

Ⓙ $89.04

5 Which of the following has the least value?

Ⓐ 0.243

Ⓑ 0.21

Ⓒ 0.198

Ⓓ 0.3

6 Choose the correct answer.

$0.80 x 1,000 = _____

Ⓕ $8.00

Ⓖ $800

Ⓗ $80.00

Ⓙ $8,000

Diagnostic Test *(cont.)*

7 Which of these answers lists all of the factors of 8?

Ⓐ 2, 4, 8

Ⓑ 2, 4

Ⓒ 2, 4, 6, 8

Ⓓ 1, 2, 4, 8

8 Alex added two prime numbers（质数）. The sum（和） was an odd number（奇数）. Which of these numbers had to be one of the prime numbers?

Ⓕ 2

Ⓖ 3

Ⓗ 5

Ⓙ 7

9 Nihal and Monique went to Pizza Place. Nihal ate $\frac{4}{8}$ of the pizza. Monique ate $\frac{2}{8}$ of the pizza. How much pizza did they eat?

Ⓐ $\frac{2}{8}$

Ⓑ $\frac{1}{8}$

Ⓒ $\frac{6}{8}$

Ⓓ $\frac{7}{8}$

10 Simplify（约分） the fraction below:

$\frac{18}{81}$

Ⓕ $\frac{9}{40}$

Ⓖ $\frac{1}{4}$

Ⓗ $\frac{3}{13}$

Ⓙ $\frac{2}{9}$

11 Kevin walked $\frac{25}{8}$ miles（英里）. Simplify the improper fraction（可约分数）.

Ⓐ $\frac{12}{4}$ miles

Ⓑ 3 miles

Ⓒ $2\frac{10}{8}$ miles

Ⓓ $3\frac{1}{8}$ miles

*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。

12 Determine the next two numbers in this sequence.

4, 9, 15, 22, 30, _____, _____

Ⓕ 35, 41

Ⓖ 38, 46

Ⓗ 37, 45

Ⓙ 39, 49

Diagnostic Test *(cont.)*

13 The length of a poster（海报） is 3 feet. The area is 21 feet squared（平方英尺）. Which equation best represents the width（宽） of the poster?

Ⓐ $21 \cdot w = 3$

Ⓑ $3 \cdot w = 21$

Ⓒ $w \div 3 = 21$

Ⓓ $21 \cdot 3 = w$

14 Marco and his family drove 340 miles on their vacation（假期）. They stopped after 150 miles to see the Grand Canyon（科罗拉多大峡谷）. Which equation best represents the number of miles they traveled after that stop?

Ⓕ $150 \times m = 340$

Ⓖ $340 \div m = 150$

Ⓗ $m - 150 = 340$

Ⓙ $150 + m = 340$

15 What is the perimeter（周长） of a figure with these 4 sides: 3 cm, 5 cm, 7 cm, 4 cm?

Ⓐ 23 cm

Ⓑ 15 cm

Ⓒ 19 cm

Ⓓ 16 cm

16 What is the best estimate for the length of a crayon（蜡笔）?

Ⓕ 3 inches

Ⓖ 3 centimeters

Ⓗ 3 millimeters

Ⓙ 3 feet

*本题单位换算参见附录B：数学用表。

17 What is the perimeter of a square eraser（橡皮） that is 5.6 cm long on each side?

Ⓐ 22.2 cm

Ⓑ 20.24 cm

Ⓒ 22.4 cm

Ⓓ 11.2 cm

18 Compute the area of a desk that is 12 ft. long and 13 ft. wide.

Ⓕ 154 $ft.^2$

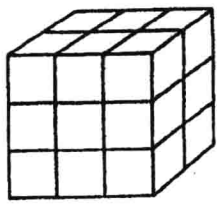
Ⓖ 25 $ft.^2$

Ⓗ 50 $ft.^2$

Ⓙ 156 $ft.^2$

Diagnostic Test *(cont.)*

19 What is the volume（体积） of the shape?



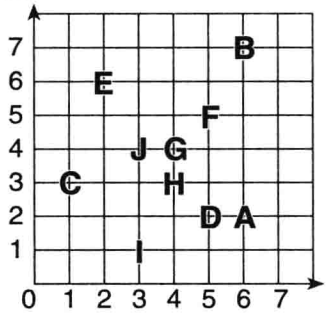
Ⓐ 18 units squared （正方形）

Ⓑ 16 units cubed （正方体）

Ⓒ 18 units cubed

Ⓓ 16 units squared

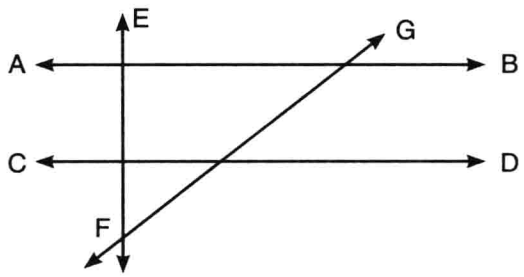
20 What are the coordinates（坐标） for point B?



Ⓕ (7, 6)　　Ⓖ (6, 7)

Ⓗ (6, 6)　　Ⓙ (7, 5)

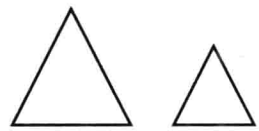
21 Which two lines are parallel（平行）?



Ⓐ $\overleftrightarrow{AB}$ and $\overleftrightarrow{EF}$　　Ⓑ $\overleftrightarrow{EF}$ and $\overleftrightarrow{CD}$

Ⓒ $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$　　Ⓓ None

22 These shapes are _____ .



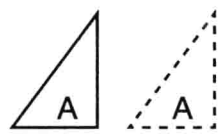
Ⓕ right triangle（直角三角形）

Ⓖ congruent（全等三角形）

Ⓗ similar（相似三角形）

Ⓙ quadrilaterals（四边形）

23 This shows an example of a _____ .



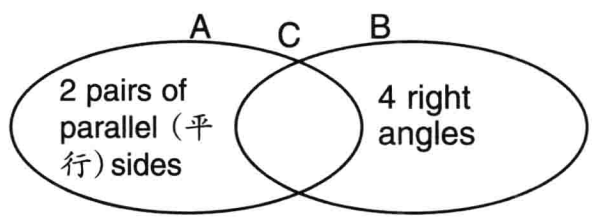
Ⓐ reflection（反射）

Ⓑ flip（翻转）

Ⓒ rotation（旋转）

Ⓓ translation（平移）

24 Which shape fits in（适应） area C of the Venn diagram（维恩图）?



Ⓕ rectangle（矩形）

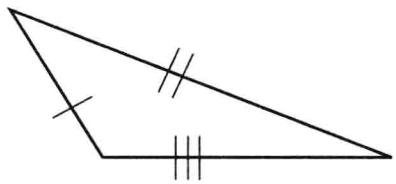
Ⓗ triangle（三角形）

Ⓖ rhombus（菱形）

Ⓙ trapezoid（梯形）

Diagnostic Test *(cont.)*

25 What type of triangle is this?



Ⓐ equilateral（等边）

Ⓑ acute（锐角）

Ⓒ right（直角）

Ⓓ scalene（不等边）

26 Mike recorded these heights in inches for 10 of his classmates: 60, 45, 52, 54, 53, 60, 57, 56, 57, 60. Which is the mode（众数）?

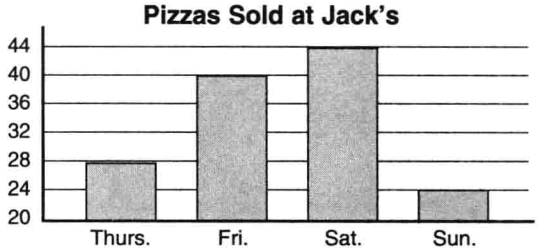
Ⓕ 60

Ⓖ 57

Ⓗ 56

Ⓙ 45

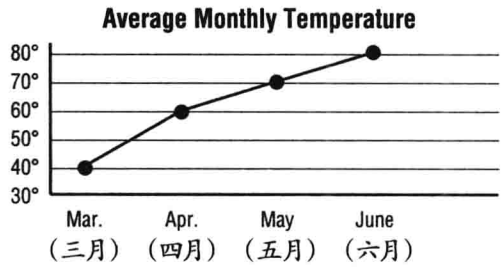
27 How many pizzas did Jack's sell on Friday?



Ⓐ 28 pizzas Ⓒ 24 pizzas

Ⓑ 40 pizzas Ⓓ 44 pizzas

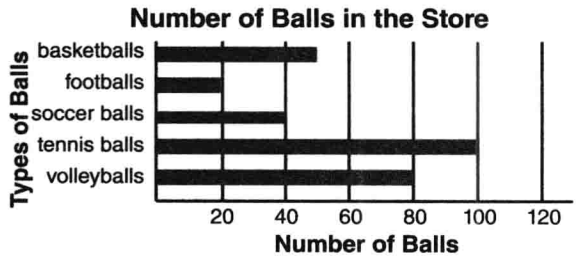
28 What was the average（平均） monthly temperature for March shown on the line graph?



Ⓕ 30° Ⓗ 40°

Ⓖ 35° Ⓙ 45°

29 There are more soccer balls（足球） than _____.



Ⓐ footballs（橄榄球） Ⓒ basketballs（篮球）

Ⓑ volleyballs（排球） Ⓓ tennis balls（网球）

30 Choose the best category（范畴） for this statement: *You will breathe air in the next five minutes.*

Ⓕ Impossible（不可能）

Ⓖ Unlikely（不太可能）

Ⓗ Likely（很可能）

Ⓙ Certain（必然）

Place Value Grid
位值表格

Directions: Write numbers in the grid（格子） below. Place the digits（数字） in the correct columns（列） and then identify what each digit represents. For example: 2,653 = 2 thousands, 6 hundreds, 5 tens, and 3 ones.

	Ten Thousands (万)	Thousands (千)	Hundreds (百)	Tens (十)	Ones (一)
1.					
2.					
3.					
4.					
5.					
6.					

Directions: On the lines below, write each of the above numbers in words. (For example: 2,653 = two thousand, six hundred fifty-three.)

1. _____

_____

2. _____

_____

3. _____

_____

4. _____

_____

5. _____

_____

6. _____

_____

Guessing and Checking

估算与验算

Guessing and checking can be used to solve a variety of problems. Begin with an educated（有根据的） guess, a guess based on information you already know, or ideas that make sense. Don't make a wild guess. Always base your first guess on important facts.

Check your guess against the facts and information in the problem. If your guess is wrong, change it according to whether it is too small or too large. Check your answer again. Repeat these steps until you find the solution.

Learning how to make reasonable guesses takes practice. Creating a table will help you keep track of your guesses and results until you find the correct solution.

Noting the Important Facts

Begin by looking for the important facts in the problem and determining what you need to solve.

Problem: Sticker Fun!（贴纸游戏）

The Problem

Mr. Collins handed out（分发） 45 reward（奖励） stickers to his class over a five-day period. Each day, he handed out three more stickers than the day before.

How many stickers did Mr. Collins give to his students each day?

Understanding the Problem

- *What do we know?*

  The total number of stickers is 45.

  The stickers were handed out over a five-day period. Each day, more stickers are handed out.

- *What do we need to find out?*

  How many stickers did Mr. Collins hand out each day?

Planning and Communicating a Solution（计划和沟通解决方案）

To make an educated guess, you need a starting point（起始点）. For example, it might be useful to start with five stickers. In your table, keep track of the total stickers so that you know when the total of 45 stickers is reached. Create a table with three rows and six columns.

Guess 1

Day	1	2	3	4	5
Number of Stickers	5	8	11	14	17
Total	5	13	24	38	55

This first guess is too high because there are 55 total after 5 days. Start with a lower number of stickers for the next guess.

Guess 2

Day	1	2	3	4	5
Number of Stickers	2	5	8	11	14
Total	2	7	15	26	40

The total is too low. For guess 3, start with a number between 2 and 5.

Guess 3

Day	1	2	3	4	5
Number of Stickers	3	6	9	12	15
Total	3	9	18	30	45

- *Do you see the answer?*

  Guess 3 is correct. Mr. Collins handed out 3 stickers the first day, 6 on the second day, 9 on the third day, 12 on the fourth day, and 15 on the fifth day.

Reflecting and Generalizing（指导和概括）

Could the problem have been solved any other way?

Extension

If Mr. Collins continued this pattern the next week, how many stickers did he give out by the ninth day?

Standardized Test Preparation 1

标准考前测试 1

1 Which number means eight ten thousands, seven thousands, five hundreds, six tens, and nine ones?

Ⓐ 8,756

Ⓑ 87,659

Ⓒ 875,609

Ⓓ 87,569

2 Which of these answers shows how to break down（分解） 8 x 19 into math facts you know?

Ⓕ (8 x 10) – (8 x 9)

Ⓖ (8 x 12) + (8 x 9)

Ⓗ (8 x 10) + (8 x 8)

Ⓙ (8 x 10) + (8 x 9)

3 Compute to find the quotient（商）.

287 ÷ 9 = ___

Ⓐ 33 R7

Ⓑ 31 R7

Ⓒ 32 R1

Ⓓ 31 R8

4 Christina rode the Whirly Bird Twister, which cost $3.75, and the Screamin' Coaster, which cost $2.65. How much did she spend?

Ⓕ $6.20

Ⓖ $6.40

Ⓗ $6.85

Ⓙ $5.40

5 Which of the decimals（小数） listed has the greatest value?

Ⓐ 0.55

Ⓑ 0.49

Ⓒ 0.2

Ⓓ 0.381

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