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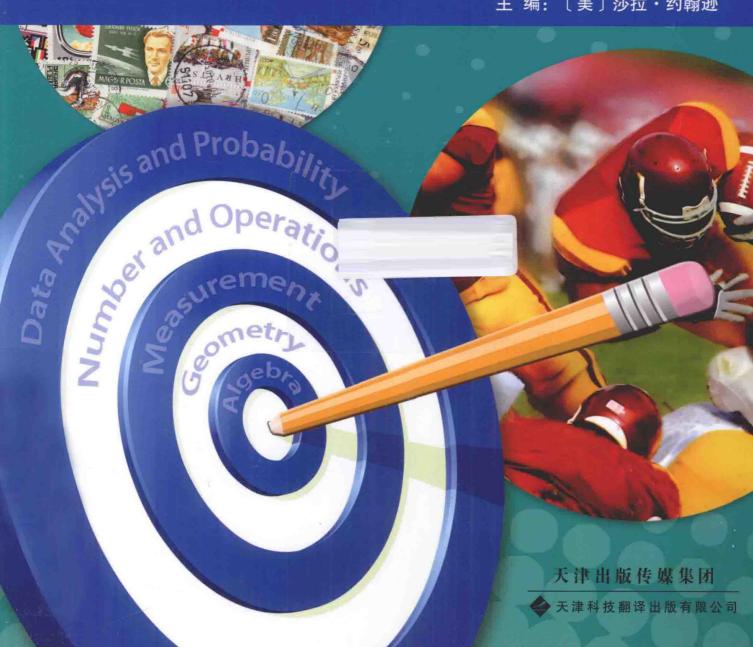
7级

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



7级

天津出版传媒集团

天津科技翻译出版有限公司

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

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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 program that will help you review math. 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 next year.

Sometimes students have difficulty learning math. It can seem confusing. This program will help you practice math every day. You will review many concepts you learned in previous grades. Some of those concepts include probability, measuring angles, and problem solving.

Please sign the bottom of this letter. Signing will show that you are ready to learn and have fun!

Student Signature (学生签名)

# Diagnostic Test

#### 模底测试

Venus (金星) has a diameter (直径) of just over 12,000 km. Imagine that a planet is discovered with a diameter 9 times (倍) the diameter of Venus. Which of the following shows the diameter of the newly discovered planet?

$$\bigcirc$$
 10.8 × 10<sup>3</sup> km

$$\bigcirc$$
 108  $\times$  10<sup>5</sup> km

© 
$$1.08 \times 10^3 \text{ km}$$

 $3-4\frac{5}{6}+4\frac{3}{4}=$ 

$$-7\frac{11}{12}$$

© 
$$2\frac{1}{12}$$

(H) 
$$2\frac{11}{12}$$

$$\bigcirc$$
  $-3\frac{1}{12}$ 

- Amber paints beads (珠子) to make necklaces. It takes 60 beads to make one necklace. If she paints 84 beads, she is able to assemble  $\frac{84}{60}$  necklaces so far. What is this number as both a mixed number (混合数) and a decimal (小数)?

  - (F)  $1\frac{2}{5}$ , 1.2 (H)  $1\frac{24}{60}$ , 1.7

  - (a)  $1\frac{2}{5}$ , 1.4 (d)  $1\frac{1}{15}$ , 1.4

Which of the following expressions is 6 equivalent to (等同于)  $-4\frac{1}{2} \div 3\frac{3}{4}$ ?

(A) 90% of 
$$\frac{-25}{27}$$

3 List the following temperatures in order from least to greatest (从小到大).

(A) 
$$-23\frac{3}{4}$$
°C,  $-23\frac{5}{8}$ °C,  $-23.2$ °C

**B** 
$$-23.2^{\circ}\text{C}, -23\frac{3}{4}^{\circ}\text{C}, -23\frac{5}{8}^{\circ}\text{C}$$

© 
$$-23\frac{5}{8}$$
°C,  $-23\frac{3}{4}$ °C,  $-23.2$ °C

① 
$$-23.2^{\circ}\text{C}, -23\frac{5}{8}^{\circ}\text{C}, -23\frac{3}{4}^{\circ}\text{C}$$

If a computer chip (芯片) has a 6 square base with an area of 0.09 cm<sup>2</sup>, then the side length of that computer chip has a length of  $\sqrt{0.09}$  cm. Identify another way to represent this length.

- Marisa has 120 marbles. She has a cube filled with some of her marbles. The cube (方盒子) has side lengths of 4 marbles each. She gives half of the marbles from the cube to her friend. If her remaining number of marbles can be represented by the expression 120 4³ ÷ 2, how many marbles does she have left?
  - A 88 marbles
  - **B** 28 marbles
  - © 54 marbles
  - 114 marbles

9 Patricia sells crafts (工艺品) at summer fairs (市集). She buys supplies at \$5.50 per craft and sells 25 crafts. At the end of the fair, she has a total of \$362.50.

The price, x, of each craft she sells may be found using the equation 25(x - 5.50) = 362.50. Simplify this equation.

$$\bigcirc$$
 25 - x - 137.50 = 362.50

$$\bigcirc$$
 25 +  $x$  - 5.50 = 362.50

© 
$$25x + 362.50 = -137.50$$

$$\bigcirc$$
 25x - 137.5 = 362.50

8 Mrs. Morrison owes \$4.65 for lunch for each student that she is taking on a field trip. She owes a total of \$65.10. The equation 4.65x = 65.10 may be used to find x, the number of students on the field trip. Which choice below shows how to solve for x?

$$x = -65.10 + 4.65$$

**3** 
$$x = -4.65 \div -65.10$$

$$\mathbf{H}$$
  $x = 65.10 - 4.65$ 

$$3 x = 65.10 \div 4.65$$

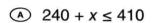
Mimo purchases some shrimp for \$21.95 and some sausage (腊肠) for \$24.41. He also purchases some chicken. He only has \$75 total to spend. Which inequality below can be used to find x, the cost, of chicken that Kimo can purchase?

$$\bigcirc$$
 21.95 + 24.41 $x \ge 75$ 

$$\oplus$$
 21.95 + 24.41 $x \le 75$ 

① 
$$21.95 + 24.41 + x \ge 75$$

Akil purchases \$240 worth of supplies for his pet-grooming (宠物美容) business. He also needs to buy food for a special lunch for his employees. If the most (最多) he wants to spend is \$410, which inequality could be used to find x, the amount that can be spent on the employee lunch?



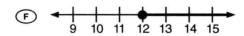
© 
$$240 + x > 410$$

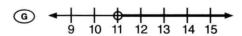
① 
$$240 + x \ge 410$$

Calvin's parents pay an annual fee for tutoring (家教) as well as an hourly fee. The table below shows the total fee paid based on the number of hours of tutoring. What is the total fee paid after 30 hours of tutoring?

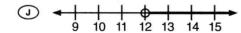
Hours of tutoring	1	2	3	4	5
Total fee	\$58	\$66	\$74	\$82	\$90

- \$540
- ® \$495
- © \$290
- \$240
- Carrie babysits for \$8 per hour. She spent \$4 on games at a thrift store (闰货店) to play with the children she babysits. If she hopes for a profit of more than \$92, which graph shows how many hours she must babysit to meet her goal?

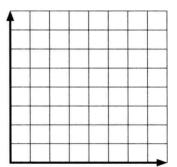






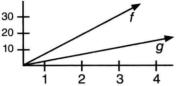


What is the perimeter (周长) of a rectangle with endpoints located at (2, 1), (2, 3), (8, 3), and (8, 1)?



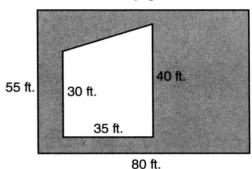
- F 16 units
- (H) 11 units
- 22 units
  - 3 units

Dani plants a square garden. The perimeter of her garden is y = 4x, where x = the length of one side and y = the perimeter of the garden. She also has a garden at her grandma's house in which each side is twice as long as each side of her garden at home. Which statement is true?

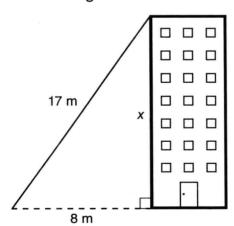


- A Line *f* represents the home garden.
- lacksquare In line g, when x = 10, y = 3.
- © The *x*–axis represents the side lengths.
- D Lines f and g increase at the same rate.

An employee of Grass 'n More will spread grass seed (撒草种) for the lawn shown below. He will charge based on the area (面积) of the lawn to be covered. Find the area of the shaded region to find the area that will be covered by grass seed.

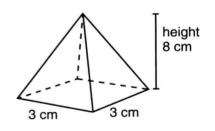


- A 3,000 ft.² ★ © 4,400 ft.²
- B 3,350 ft.<sup>2</sup>
  D 3,175 ft.<sup>2</sup>
- A wire is run from the top of a building to the ground as shown. How tall is the building?



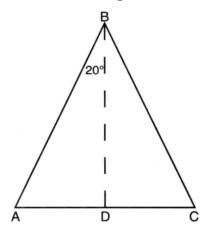
- ₱ 9 m
- ⊕ 18 m
- @ 15 m
- ① 20 m

Maria has a set of five marble pyramids like the one shown below. What is the total volume of all five statues?



- F 120 cm<sup>3</sup>
- ⊕ 216 cm³
- © 72 cm<sup>3</sup>
- 24 cm<sup>3</sup>
- \*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注解或换算。书中涉及的计量单位换算参见附录C:数学用表。

19 Isosceles triangle (等腰三角形) ABC is split into two right triangles, triangle ABD and triangle CBD. If the measure of angle ABD is 20°, what is the measure of angle BCD?

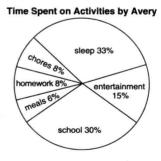


- A 80°
- © 70°
- B 40°
- ② 20°

- The gas mileage (里程数) was determined for 11 cars. The results, in miles per gallon, were: 26, 23, 35, 37, 23, 20, 24, 35, 23, 28, 34. Which statement is true based on this data?
  - A The range of this data is 34.
  - B The mean of this data is 28.
  - © The mode of this data is 28.
  - D The median of this data is 20.

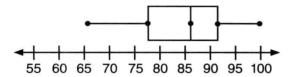
- 10 Isako is cutting a piece of glass in the shape of a rhombus (菱形). Which statement must be true about this piece of glass?
  - F If two angles each have a measure of 60°, then a third angle also has a measure of 60°.
  - ⑤ No two sides can be congruent (全等的).
  - (H) If one angle measures 40°, then there must be an angle with a measure of 140°.
  - ① There must be at least one right angle (直角).

Identify the statement not supported by the graph.



- $\bigcirc$  Avery sleeps for  $\frac{1}{8}$  of her day.
- Avery spends 37% of her day on activities other than sleeping and school.
- (H) Avery spends over 3 hours of her day on entertainment (娱乐).
- The time Avery spends sleeping is more than twice the time she spends on entertainment.

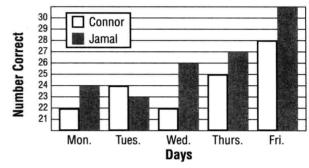
The grades of a math test are used to create a box-and-whiskers graph (箱 形图). Which statement is true based on the results shown by the graph?



- All grades were 78 or above.
- B Most people earned a 78 on the test.
- Most scores are between 78 and 92.
- Only one person made above a 92 on the test.

Connor and Jamal are taking timed (计时的) math quizzes each day for a week. They use a graph to compare their work. Which day is the difference (差距) between Connor and Jamal's score the greatest?





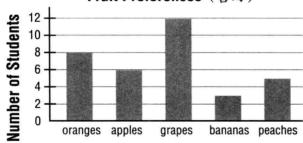
- A Tuesday
- Thursday
- B Wednesday
- Friday

24 Students in Mr. Davidson's class voted for their favorite fruits. The results are shown in the bar graph below. How many students preferred apples or bananas?



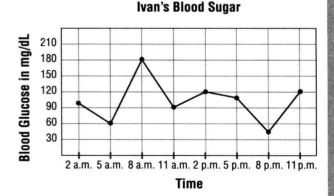
Because Ivan has diabetes (糖尿病), he monitors his blood sugar. He creates the line graph shown below. During which three-hour period did his blood sugar drop the most?

#### Fruit Preferences (喜好)



Types of Fruit

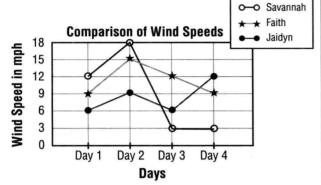
- F 9 students
- (H) 6 students
- 13 students
- 14 students



- ₱ 2 p.m. to 5 p.m. ⊕ 8 a.m. to 11 a.m.
- ⑤ 5 a.m. to 8 a.m.
  J 5 p.m. to 8 p.m.



Jaidyn, Faith, and Savannah live in different towns. As part of a weather experiment (实验), they each noted the wind speed at the same time each day. Who noted the greatest average wind speed?



- A Jaidyn
- © Savannah
- B Faith
- Not enough information to determine (信息不足, 无法确定)



Your younger brother is ordering (点 菜) from a child's menu. He has three entrée (主菜) choices: chicken, spaghetti (意大利面), or a hamburger. He has three fruit choices: applesauce, strawberries, or a banana. He has two drink choices: milk or soda. What is the probability that his meal will include both spaghetti and milk?

- ① 1/9



Ashlyn has packed a variety of yogurts (酸奶) for her friends to enjoy after a presentation at the library. She packed 2 cherries (樱桃), 1 blueberry, 3 mixed berries (各式 浆果), and 4 orange creams. What is the probability that the first yogurt chosen will NOT be mixed berry?

30

What is the probability of dealing one of the 4 queens in a standard deck of 52 playing cards?

#### Scientific Notation ←→ Standard Form

#### 科学记数法与标准记数法的转换

Directions: Complete each chart.

Table 1: From Scientific Notation to Standard Form

Scientific Notation	Without the Exponent(指数)	After Multiplying (乘) the Tens	Standard Form
$1 \times 10^{3}$	1 × 10 × 10 × 10	1 × 1,000	1,000
$2 \times 10^{5}$			
$7.05 \times 10^{3}$			
5 × 10 <sup>4</sup>			
5.2 × 10 <sup>4</sup>			
7 × 10 <sup>8</sup>			
7.03 × 10 <sup>8</sup>			
4.7 × 10 <sup>2</sup>			
3 × 10 <sup>2</sup>			300
3.1 × 10 <sup>2</sup>			
4.7 × 10 <sup>5</sup>			
2.04 × 10 <sup>8</sup>			

**Table 2: From Standard Form to Scientific Notation** 

Standard Form	Show Multiplication	Show Multiplying by Tens	Scientific Notation
300	3 × 100	3 × 10 × 10	3 × 10 <sup>2</sup>
52,000	5.2 × 10,000	$5.2 \times 10 \times 10 \times 10 \times 10$	5.2 × 10⁴
4,000			
4,200			
310			
60,000	2		
63,000			
630,000			
502,000			
70,000			7 × 10⁴
730			
92,000			
40,300,000			