

Level 8

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

8 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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# 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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# Diagnostic Test

## 摸底测试

- 1** What is 0.0000064 in scientific notation (科学记数法)?

(A)  $6.4 \times 10^6$   
 (B)  $0.64 \times 10^{-5}$   
 (C)  $6.4 \times 10^{-6}$   
 (D)  $0.64 \times 10^5$

- 4** Mindy purchased  $16\frac{1}{4}$  yards of fabric. If she needs  $1\frac{1}{2}$  yards to make a costume (服装), how many costumes can be made?

(F) 12 costumes  
 (G) 11 costumes  
 (H) 10 costumes  
 (J) 13 costumes

- 2** Order the numbers from least to greatest (从小到大).

$$3\frac{2}{3}, \frac{13}{3}, -2, -8, 1.000$$

(F)  $-2, -8, 1.000, 3\frac{2}{3}, \frac{13}{3}$   
 (G)  $\frac{13}{3}, 3\frac{2}{3}, 1.000, -2, -8$   
 (H)  $-8, -2, 1.000, \frac{13}{3}, 3\frac{2}{3}$   
 (J)  $-8, -2, 1.000, 3\frac{2}{3}, \frac{13}{3}$

- 5** Solve.

$$45.5\% \text{ of } 105 =$$

(A) 47.775  
 (B) 4,777.5  
 (C) 477.75  
 (D) 4.7775

- 3** Together Susan and Lisa purchased (买)  $10\frac{2}{3}$  yards (码) of fabric (织布). If Lisa purchased  $6\frac{1}{5}$  yards of fabric, how many yards did Susan purchase?

(A)  $16\frac{3}{8}$  yards  
 (B)  $4\frac{7}{15}$  yards  
 (C)  $4\frac{4}{8}$  yards  
 (D)  $16\frac{13}{15}$  yards

- 6** Simplify (简写).

$$-4(5x - 6y) - (4x - 9y)$$

(F)  $-24x + 33y$   
 (G)  $-24x - 33y$   
 (H)  $-24x + 15y$   
 (J)  $-24x - 15y$

# Diagnostic Test (cont.)

**7** Solve.

$$\frac{4}{5}x + 3 = -1$$

- (A) 5
- (B)  $-3\frac{1}{5}$
- (C)  $3\frac{1}{5}$
- (D) -5

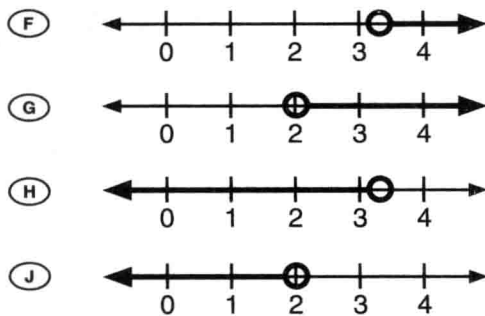
**10** Which equation can be used to calculate the 20th term? 哪个算式可以计算出第20个数字?

6, 9, 12, 15, ...

- (F)  $x + 3$
- (G)  $3x + 3$
- (H)  $3x$
- (J)  $2x + 6$

**8** Which graph represents the given inequality? 哪张图显示了下列不等式?

$$3x + 2 > 8$$



**11** Which describes the expression?

$$4x - 10$$

- (A) 4 times the number  $x$  less than 10
- (B) 4 times the number  $x$ , minus 10
- (C) 4 divided by the number  $x$ , minus 10
- (D) 4 divided by the number  $x$  less than 10

**9** Mrs. Petty has a rectangular garden with an area of  $24 \text{ ft.}^2$  and a perimeter (周长) of 20 ft. What are the dimensions (尺寸, 规格) of the garden?

- (A) 12 ft.  $\times$  2 ft.
- (B) 3 ft.  $\times$  8 ft.
- (C) 10 ft.  $\times$  2 ft.
- (D) 6 ft.  $\times$  4 ft.

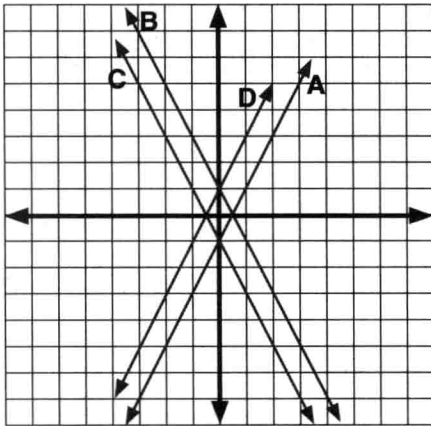
**12** Which equation describes the statement?

7 more than a number  $x$  is equal to the difference between 25 and a number  $x$

- (F)  $7x = 25 - x$
- (G)  $7 + x = x - 25$
- (H)  $7 - x = 25 + x$
- (J)  $x + 7 = 25 - x$

# Diagnostic Test (cont.)

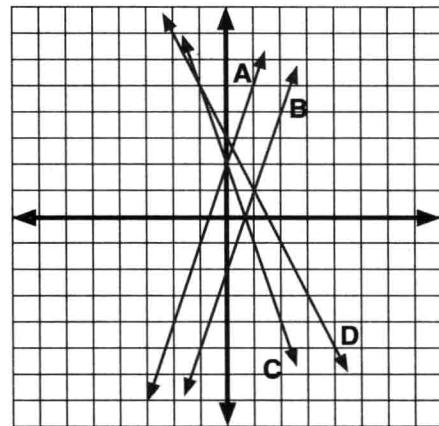
- 13** Which line shows the linear equation (线性方程),  $y = 2x + 1$ ?



- Ⓐ Line A      Ⓒ Line C  
Ⓑ Line B      Ⓓ Line D

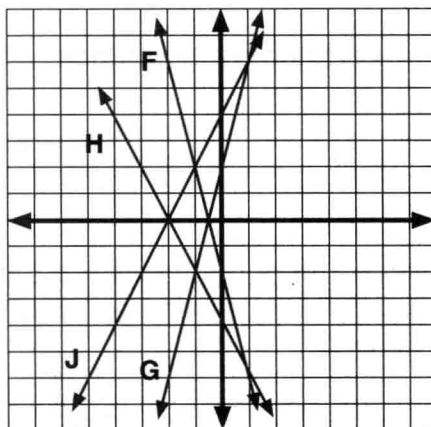
- 15** Which line is formed from the given points?

$(2, -4)$   $(-1, 5)$   $(0, 2)$



- Ⓐ Line A      Ⓒ Line C  
Ⓑ Line B      Ⓓ Line D

- 14** Which line shows a slope of  $-4$  and a y-intercept (y轴截距) of  $-2$ ?



- Ⓐ Line F      Ⓒ Line H  
Ⓑ Line G      Ⓓ Line J

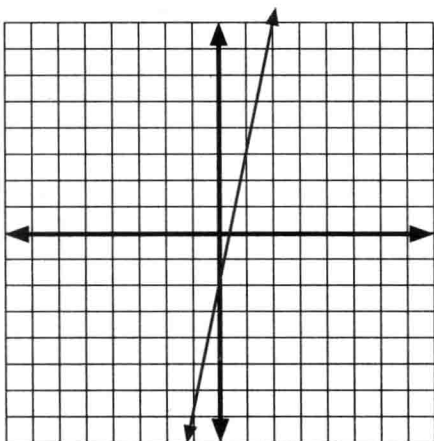
- 16** Find the slope.

$(4, 6)$   $(1, 0)$

- Ⓐ  $-2$   
Ⓑ  $3$   
Ⓒ  $2$   
Ⓓ  $-3$

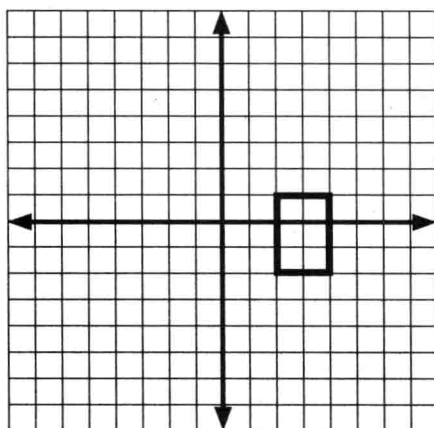
# Diagnostic Test *(cont.)*

- 17** What is the slope and y-intercept of this line?



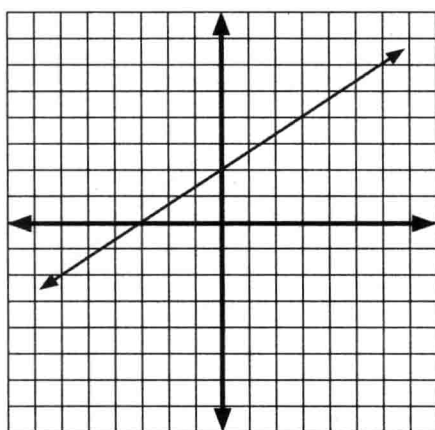
- (A) slope = 5; y-intercept = -2
- (B) slope = -5; y-intercept = -2
- (C) slope = -2; y-intercept = 5
- (D) slope = 2; y-intercept = -5

- 19** Which ordered pairs would translate the rectangle 2 units to the left and 3 units up?



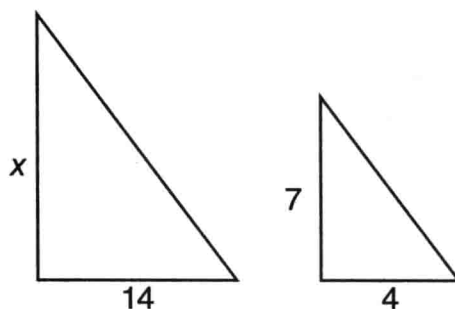
- (A)  $(-1, 2)$ ,  $(-4, 2)$ ,  $(-1, 0)$ ,  $(-4, 0)$
- (B)  $(1, 2)$ ,  $(4, 2)$ ,  $(1, 0)$ ,  $(4, 0)$
- (C)  $(-2, 1)$ ,  $(-2, 4)$ ,  $(0, -1)$ ,  $(0, -4)$
- (D)  $(2, 1)$ ,  $(2, 4)$ ,  $(0, 1)$ ,  $(0, 4)$

- 18** What are the x- and y-intercepts of this line?



- (F) x-intercept = 2; y-intercept = -3
- (G) x-intercept = -3; y-intercept = -2
- (H) x-intercept = -3; y-intercept = 2
- (J) x-intercept = -2; y-intercept = 3

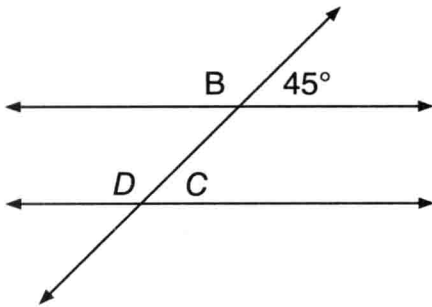
- 20** Solve for x.



- (F)  $x = 24.5$
- (G)  $x = 20$
- (H)  $x = 24$
- (J)  $x = 24.2$

# Diagnostic Test *(cont.)*

- 21** Find the value of angle  $D$ .



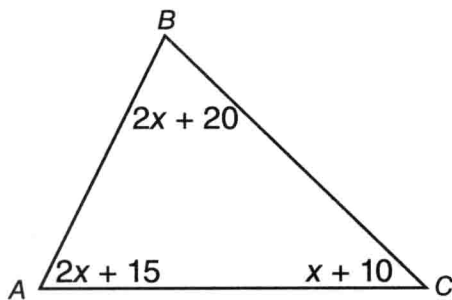
- (A)  $45^\circ$
- (B)  $315^\circ$
- (C)  $135^\circ$
- (D)  $225^\circ$

- 23** Solve for  $b$ .

$$6^2 + b^2 = 10^2$$

- (A) 7
- (B) 8
- (C) 9
- (D) 10

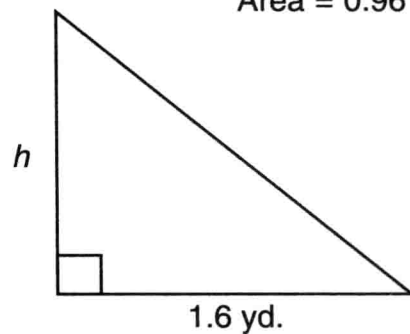
- 22** Find the value of angle  $B$ .



- (F)  $37^\circ$
- (G)  $27^\circ$
- (H)  $69^\circ$
- (J)  $74^\circ$

- 24** Find the height.

$$\text{Area} = 0.96 \text{ yd.}^2$$



- (F) 0.12 yd.
- (G) 1.2 yd.
- (H) 12 yd.
- (J) 0.012 yd.

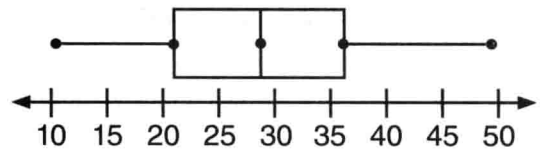
# Diagnostic Test (cont.)

- 25** Neva needs 3 feet\* of yarn for her art project, but the store only sells yarn by the inch. How many inches of yarn does Neva need to buy?

(A) 4 inches  
(B) 38 inches  
(C) 36 inches  
(D) 40 inches

\*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, 对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B: 数学用表。

- 27** Find the lower quartile (四分位数) of this data.



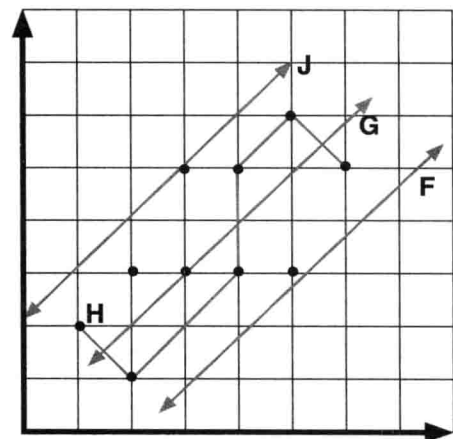
(A) 29  
(B) 18  
(C) 21  
(D) 36

- 26** Find the mean of the given data.

48, 55, 63, 33, 55, 64

(F) 55  
(G) 52  
(H) 53  
(J) 54

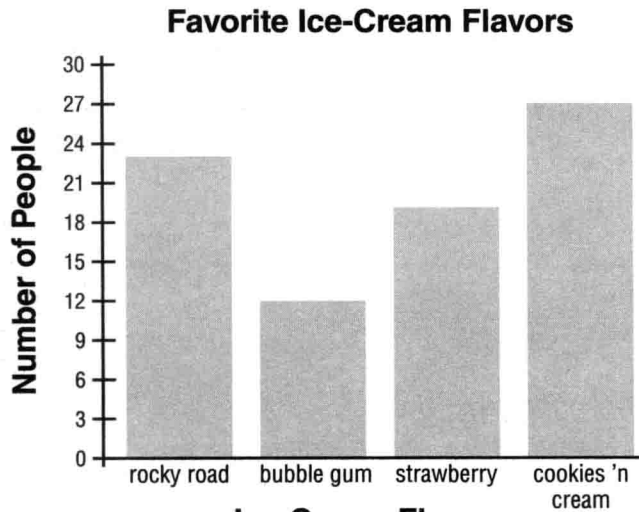
- 28** Which line is the line of best fit for these points?



(F) Line F  
(G) Line G  
(H) Line H  
(J) Line J

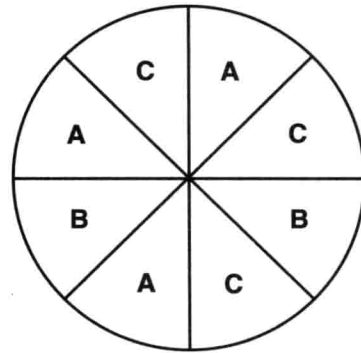
# Diagnostic Test *(cont.)*

- 29** How many people like rocky road and cookies 'n cream?



- (A)** 55 people      **(C)** 31 people  
**(B)** 50 people      **(D)** 39 people

- 30** What is the probability of spinning an A?



**(F)**  $\frac{2}{8}$

**(H)**  $\frac{5}{8}$

**(G)**  $\frac{2}{4}$

**(J)**  $\frac{3}{8}$

# Exploring Exponents and Scientific Notation

## 指数和科学记数法

**Directions:** Write each expression in exponent form.

1.  $4 \cdot 4 \cdot 4 \cdot 4 \cdot 4$  \_\_\_\_\_
2.  $11 \cdot 11 \cdot 11$  \_\_\_\_\_
3.  $7 \cdot 7 \cdot 7 \cdot 7$  \_\_\_\_\_
4.  $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$  \_\_\_\_\_

**Directions:** Complete the chart to write each number in scientific notation.

| Whole Number    | Show Multiplication | Show Multiplying by 10s                   | Scientific Notation |
|-----------------|---------------------|-------------------------------------------|---------------------|
| example: 16,000 | $1.6 \cdot 10,000$  | $1.6 \cdot 10 \cdot 10 \cdot 10 \cdot 10$ | $1.6 \cdot 10^4$    |
| 5. 50,000       |                     |                                           |                     |
| 6. 130,000      |                     |                                           |                     |
| 7. 25,000,000   |                     |                                           |                     |

**Directions:** Write each number in scientific notation.

8.  $70,000 =$  \_\_\_\_\_
9.  $104,000 =$  \_\_\_\_\_
10.  $335,000,000 =$  \_\_\_\_\_

**Directions:** Solve.

11.  $3^{-2} =$  \_\_\_\_\_
12.  $4^{-3} =$  \_\_\_\_\_
13.  $5^{-2} =$  \_\_\_\_\_
14.  $2^{-4} =$  \_\_\_\_\_

# Exploring Exponents and Scientific Notation *(cont.)*

**Directions:** Complete the chart.

| Decimal         | Show Division      | Show Division by Tens                     | Scientific Notation |
|-----------------|--------------------|-------------------------------------------|---------------------|
| example 0.0008  | $\frac{8}{10,000}$ | $\frac{8}{10 \cdot 10 \cdot 10 \cdot 10}$ | $8 \cdot 10^{-4}$   |
| example 0.034   | $\frac{3.4}{100}$  | $\frac{3.4}{10 \cdot 10}$                 | $3.4 \cdot 10^{-2}$ |
| 15. 0.000006    |                    |                                           |                     |
| 16. 0.00057     |                    |                                           |                     |
| 17. 0.000000044 |                    |                                           |                     |

**Directions:** Write each in scientific notation.

18. 0.0000056 = \_\_\_\_\_

19. 0.00103 = \_\_\_\_\_

20. 0.00009 = \_\_\_\_\_