

GRE 2200 高分系列丛书

GRE

数学 800 分

目标强化训练



张亚雷 于冀鲁 编

天津科技翻译出版公司

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张亚雷 于冀鲁 主编

天津科技翻译出版公司

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参加编写工作的主要成员：

王明甫	王少民	孔文铸	邓亚平	甘 纯
冯尔康	毕 生	李道修	李冬春	刘 仁
刘 杰	刘立军	刘 霞	刘 敏	庄文生
齐才东	许 霞	吴 军	吴春风	陈世奇
杨惠杰	张风云	林 光	金万民	范振朋
赵克强	钟秀文	秦 玉	陶小路	谭思水
潘金凤				

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序 言

GRE 是美国研究生入学标准考试的缩写词,其全称是 **Graduate Record Examinations**。它由 **Graduate Record Examinations** 委员会主办,由 **Educational Testing Service** (教育考试服务处,简称 ETS) 负责安排,每年在世界各地举办一定次数。

GRE 分为综合考试 (general) 和专项考试 (subject) 两种,一般情况下考生只须通过综合考试便可申请及获得录取,个别学校和某些专业还要求专项考试成绩,本套丛书只介绍 GRE 综合考试。

GRE 考试结果是美国大学研究生院决定申请者能否被录取,尤其是能否被给予奖学金的重要依据,因而 GRE 考试具有相当大的吸引力,高分通过成为许多考生孜孜以求的事情。中国学生若想获得奖学金到美国的大学或研究院深造,必须参加 GRE 考试,而且最好一次取得好成绩。这一点与 TOEFL 考试有所不同。TOEFL 考试考生可参加多次,ETS 只向考生申请的学校寄出最好的一次成绩;而对于 GRE 成绩,ETS 则毫不留情地把考生各次考试成绩一并寄给考生所联系的院校,这样,低分成绩和应试次数较多无疑会影响考生的录取和奖学金的获得。因此,GRE 应试之前务必作好充分准备,慎重从事,力争一次成功是很重要的。

根据以往的情况,许多中国考生由于对 GRE 考试缺乏认真细致的分析,往往认为 GRE 考试很难,因而复习准备的时间很长。这种“马拉松”式的复习使考生精神紧张,十分疲劳,严重地影响了正常的学习、工作和生活。如何解决这个问题呢?笔者认为在 GRE 应试之前,一定要对其考试的内容、结构和题型进行充分的分析比较,找出规律,然后制定有效的应试对策,各个击破。

对于中国考生来讲, GRE 考试并非很难。因为在 GRE 的三个组成部分中,即语言能力 (verbal ability) 部分、定量能力 (quantitative ability) 部分和分析能力 (analytical ability) 部分,定量部分较容易,它仅涉及初等代数和初等几何等知识,如果考生确有高中文化程度,那么准备这一部分只要“仔细认真”,经过一定的练习,考试会有好成绩的。因此,这一部分的复习无需化费过多时间。而分析部分的考题实际上多数是智力题,而且题型较为固定,所以考生只要多掌握一些题型,反复练习并举一反三也能取得较高的分数。语言部分对我国考生来说确实比较困难,问题的关键是掌握的词汇量不够和阅读速度上不去。语言部分包括完成句子,阅读理解,类比和反义词,其中后两项成绩基本上取决于词汇量的多少。这一部分的复习方法可采用高强度的“填鸭式”的记忆,通过熟记大量的单词,使词汇量在短时间内迅速扩展,从而在语言部分中取得理想的成绩。

通过上述分析可以得出下述结论:在 GRE 考试中,能够通过短期强化训练取得最佳效果。

本套丛书按照上述思路,科学地编排强化训练的具体内容,通过学习本套丛书,经过刻苦训练,考生的成绩定能达到 2200 分,具体的分数分布为:语言部分 600 分,定量部分 800 分,分析部分 800 分。

由于笔者水平有限,书中难免出现不妥之处,敬请读者批评指正。

笔 者

1996. 7. 10

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PRACTICE ONE

Time—30 minutes

30 Questions

Numbers : All numbers used are real numbers.

Figures : Position of points, angles, regions, etc. can be assumed to be in the order shown; and angle measures can be assumed to be positive.

Lines shown as straight can be assumed to be straight.

Figures can be assumed to lie in a plane unless otherwise indicated.

Figures that accompany questions are intended to provide information useful in answering the questions. However, unless a note states that a figure is drawn to scale, you should solve these problems NOT by estimating sizes by sight or by measurement, but by using your knowledge of mathematics (see Example 2 below).

Directions : Each of the Questions 1—15 consists of two questions, one in Column A and one in Column B. You are to compare the two quantities and choose.

A if the quantity in Column A is greater;

B if the quantity in Column B is greater;

C if the two quantities are equal;

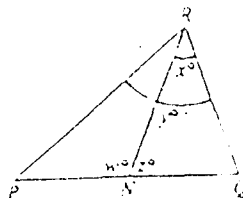
D if the relationship cannot be determined from the information given.

Common

Information: In a question, information concerning one or both of the quantities to be compared is centered above the two columns. A symbol that appears in both columns represents the same thing in Column A as it does in Column B.

	<u>Column A</u>	<u>Column B</u>	<u>Sample Answers</u>
Example 1:	2×6	$2 + 6$	☒ A ☐ B ☐ C ☐ D ☐ E

Example 2—4 refer to $\triangle PQR$



Example 2:

PN

NQ

(A) (B) (C) (D) (E)

(since equal measures cannot be assumed, even though PN and NQ appear equal)

Example 3:

x

y

(A) (B) (C) (D) (E)

(since N is between P and Q)

Example 4:

$w+z$

180

(A) (B) (C) (D) (E)

(since PQ is a straight line)

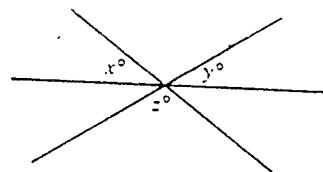
A if the quantity in Column A is greater;

B if the quantity in Column B is greater;

C if the two quantities are equal;

D if the relationship cannot be determined from the information given.

	Column A	Column B
1.	$5[(2+2)+5]$	50
	$j-k=2^x$ $k-6=4$	
2.	j	10
3.	Sandra's salary	Ted's salary
	Richard's salary, which is greater than \$10,000, is 75 percent of Sandra's salary. Ted's salary is 80 percent of Richard's salary.	
4.	$\frac{5}{3} \times 0.60$	1



5. $x+y$ $180-z$

On a trip, Marie drove 200 miles in 5 hours using gasoline that cost her \$1.49 per gallon.

6. Marie's average speed for the trip in miles per hour Marie's gas mileage for the trip in miles per gallon

7. $\sqrt{100+36}$ 16

The average (arithmetic mean) of 12 and 20 is equal to the average (arithmetic

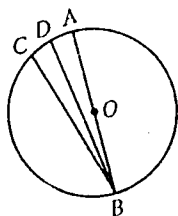
mean) of 15 and x .

8. x 16

The total surface area of cube C equals 150.

9. The length of one edge of cube C. 4.5

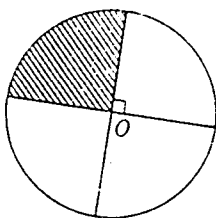
10. $x + 32y$ $32x + y$



O is the center of the circle

11. AB The average (arithmetic mean) of CB and DB

12. $(x-1)(x+1)$ x^2



The circle has center O and radius 1

13. The area of the shaded region $\frac{\pi}{2}$

The sum of the lengths of two sides of

isosceles triangle K is 7. K has a side of length 4.

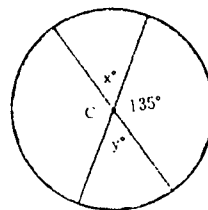
14. The perimeter of K 11

S is the set of all fractions of the form

$\frac{n}{n+1}$, where n is a positive integer less than 20.

15. The product of all the fractions that are in S $\frac{1}{20}$

Directions: Each of the Questions 16–30 has five answer choices. For each of these questions, select the best of the answer choices given.



16. If C is the center of the circle above, then $x + y =$

- A. 45
- B. 65
- C. 90
- D. 100
- E. 130

17. If $0.768 = \frac{x}{100}$, then x is closest to which of the following?

- A. 0.77
- B. 0.80
- C. 8
- D. 76
- E. 77

18. If $n - 1 = \frac{2}{3}$, then $n + 1 =$

- A. $\frac{4}{3}$
- B. $\frac{5}{3}$
- C. $\frac{7}{3}$
- D. $\frac{8}{3}$
- E. $\frac{11}{3}$

19. Karl's net income is always 80 percent of his gross income. What will be the increase in Karl's net income when his gross income increases from ¥20,000 to ¥25,000?

- A. ¥5,000

B. ¥4,000

C. ¥3,000

D. ¥2,000

E. ¥1,000

20. If a circular region has radius r and area

k , then $\frac{k}{r}$ is equal to

A. π

B. 2π

C. $\frac{\pi}{r}$

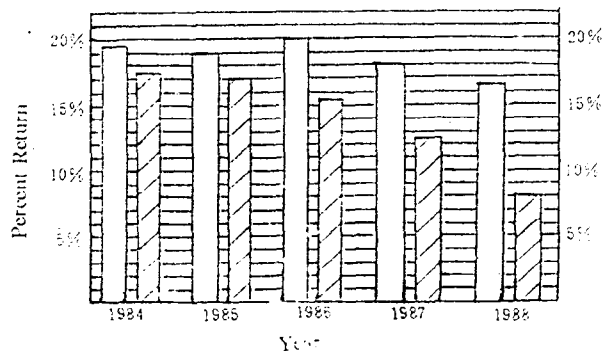
D. $\frac{r}{\pi}$

E. $r\pi$

Questions 21—25 refer to the following graph.

**PERCENT RETURN ON SHAREHOLDERS' EQUITY
MANUFACTURER X VERSUS ALL UNITED STATES MANUFACTURERS**

□ Manufacturer X ■ All United States Manufacturers



Note: Graph drawn to scale

21. If shareholders in Manufacturer X had ¥100 million in equity in 1987, then the

dollar amount of the shareholders return on this equity was

- A. \$ 82.0 million
- B. \$ 18.0 million
- C. \$ 15.5 million
- D. \$ 12.5 million
- E. \$ 1.85 million

22. In 1986 Manufacturer X's return per dollar of shareholders' equity was approximately how much greater than that of all United States manufacturers?

- A. \$ 0.01
- B. \$ 0.02
- C. \$ 0.025
- D. \$ 0.035
- E. \$ 0.045

23. The decrease in percent return on shareholders' equity for all United States manufacturers from 1987 to 1988 was approximately how many times the decrease in percent return on shareholders' equity for all United States manufacturers from 1985 to 1986?

- A. 9
- B. 6
- C. 4.5
- D. 3
- E. 1.5

24. For the year shown, other than 1987, in which the percent return on shareholders' equity for Manufacturer X was most nearly equal to that for 1987, what was the percent return for all United States manufacturers?

- A. 8%
- B. 12.5%
- C. 15.5%
- D. 17%
- E. 17.5%

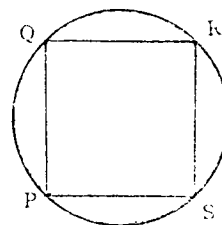
25. Which of the following statements can be supported by the data in the graph?

I. The percent return on shareholders' equity for all United States manufacturers decreased from 1984 to 1988 by less than 10 percentage points.

II. A return on shareholders' equity of more than 7 percent was achieved by each United States manufacturer in 1988.

III. The shareholders' equity for Manufacturer X was greater in 1987 than 1988.

- A. I only
- B. III only
- C. I and II only
- D. II and III only
- E. I, II and III



26. In the figure above, rectangle PQRS is inscribed in the circle and $PQ = 6$. If the area of rectangular region PQRS is 48, what is the area of the circular region?

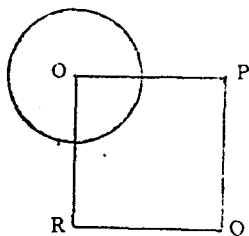
- A. 10π
- B. 25π
- C. 36π
- D. 48π
- E. 100π

27. The expression $\frac{\frac{1}{n}}{1 - \frac{1}{n}}$, where n is not equal to 0 or 1, is equivalent to which of the following?

- A. $\frac{1}{n-1}$
- B. $\frac{1}{1-n}$
- C. $n-1$
- D. $\frac{n}{n-1}$
- E. $\frac{n}{1-n}$

28. If y is the average (arithmetic mean) of n consecutive positive integers, $n > 1$, what is the sum of the greater and least of these integers?

- A. $2y$
- B. ny
- C. $\frac{y}{2}$
- D. $\frac{y}{n}$
- E. $\frac{2n}{y}$



29. In the figure above, the circle has center O and radius r , and square $OPQR$ has sides of length $2r$. What is the area of the shaded region in terms of r ?

- A. $\pi r^2 + 3r^2$
- B. $\pi r^2 + 4r^2$
- C. $\frac{3}{4}(\pi r^2 + 4r^2)$
- D. $\frac{3\pi r^2 + 4r^2}{4}$
- E. $\frac{3\pi r^2 + 16r^2}{4}$

30. The product of two consecutive positive integers CANNOT be

- A. a prime number
- B. divisible by 11
- C. a multiple of 13
- D. an even number less than 10
- E. a number having 4 as its units digit

Answers to Practice One

- | | | | | |
|------|-------|-------|-------|-------|
| 1. B | 7. B | 13. B | 19. B | 25. A |
| 2. A | 8. A | 14. D | 20. E | 26. B |
| 3. A | 9. A | 15. C | 21. B | 27. A |
| 4. C | 10. D | 16. C | 22. E | 28. A |
| 5. C | 11. A | 17. E | 23. D | 29. E |
| 6. D | 12. B | 18. D | 24. D | 30. E |

PRACTICE TWO

Time— 30 minutes

30 Questions

Numbers : All numbers used are real numbers.

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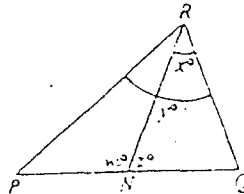
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Example 3:

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180

(A) (B) (C) (D) (E)

(since PQ is a straight line)

A if the quantity in Column A is greater;

B if the quantity in Column B is greater;

C if the two quantities are equal;

D if the relationship cannot be determined from the information given.

Column A

Column B

$$\frac{a}{b} = \frac{3}{4}$$

1. $\frac{b}{a}$ 1

$$x^2 + x - 12 = 0$$

2. x 6

3. The area of rectangular region with shorter sides of length 5 The area of a rectangular region with shorter sides of length 4

$$3 - x = 7$$

$$3 + y = 7$$

4. x y

8

5. $(\sqrt{3})(2\sqrt{2})(\sqrt{6})$ $6\sqrt{6}$

The product of two integers is 24.

6. The sum of the two integers 12

$$R = 5 + \frac{1}{2} - \frac{1}{3} + \frac{1}{4} - \frac{1}{5}$$

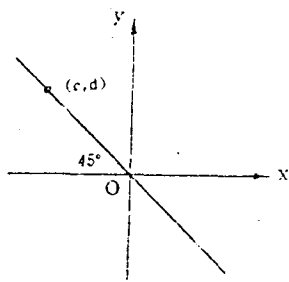
$$P = 8 + \frac{1}{2} - \frac{1}{3} + \frac{1}{4} - \frac{1}{5} + \frac{1}{6} - \frac{1}{7}$$

7. The amount by which P exceeds R 3



8. x y

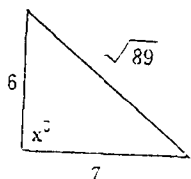
9. $a + \frac{b-a}{2}$ $\frac{a+b}{2}$



10. $c+d$ 0

Tickets regularly cost \$ 1.00 each

11. The amount saved per ticket if 5 tickets are purchased for the regular price of 4 tickets. $\$ 0.25$



12. x 90

The charge to transport a van consists of a \$ 23 fixed charge and \$ 2 for each foot of the van's length in excess of 18 feet. The length of Pat's van is n feet, where n is an integer greater than 18.

13. The number of dollars charged to transport Pat's van $2n-13$

4 is x percent of $5k$

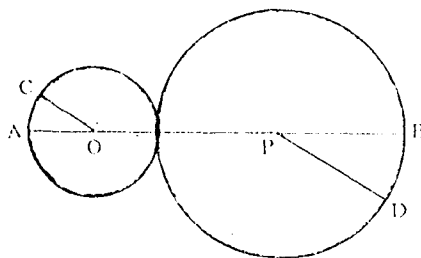
14. x $\frac{80}{k}$

Part of a circular table top is a square inlaid chess-board of maximum area

15. The area of the chess-board as a fraction of the area of the tabletop $\frac{2}{3}$

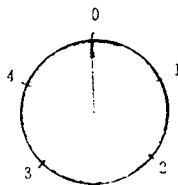
Directions: Each of the Questions 16—30 has five answer choices. For each of these questions, select the best of the answer choices given.

16. When a company's payroll was reduced from \$ 35,000 per week to \$ 29,500 per week, how much less per week was the company's 4 percent payroll tax?
- A. \$ 22
B. \$ 40
C. \$ 180
D. \$ 220
E. \$ 1,180



17. In the figure above, the circles with centers O and P are tangent. $OC=3$, and $PD=6$. What is the length of AB?
- A. 6
B. 9
C. 12
D. 15

E. 18

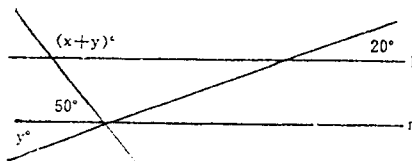


18. The circle above is subdivided into 5 sections. To what number would the arrow be pointing if it started at 0, as shown, and rotated through 159 consecutive sections in a clockwise direction?

- A. 0
- B. 1
- C. 2
- D. 3
- E. 4

19. If $x - 3y = 15$, then $6y - 2x =$

- A. -30
- B. -15
- C. $-7\frac{1}{2}$
- D. 15
- E. 30



20. In the figure above, if lines l and m are parallel, then $x =$

- A. 20
- B. 30
- C. 70
- D. 110
- E. 130

Questions 21–25 refer to the following graphs.

INCOME OF ORGANIZATION X IN 1990, BY SOURCE
(total income = \$ 43,000,000)

