



LESSON ONE
BY WILL

GMAT QUANTITATIVE

CONTENTS

- ▶ About GMAT Quantitative
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 - ▶ Arithmetic
 - ▶ Algebra
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无手机课堂
备好笔记本和草稿纸

Classroom Rules

GMAT

- ▶ 考试流程
- ▶ 总分 200-800
- ▶ AWA(0-6) IR(1-8)
- ▶ Quantitative (0-60)
- ▶ Verbal (0-60)
- ▶ 成绩百分比显示
- ▶ Self-adaptive Test

GMAT Test Section	# of Questions	Question Types	Timing
Analytical Writing Assessment	1 Topic	Analysis of Argument	30 Minutes
Integrated Reasoning	12 Questions	Multi-Source Reasoning Graphics Interpretation Two-Part Analysis Table Analysis	30 Minutes
Quantitative	31 Questions	Data Sufficiency Problem Solving	62 Minutes
Verbal	36 Questions	Reading Comprehension Critical Reasoning Sentence Correction	65 Minutes
Total Exam Time, not including breaks or tutorials			3 hours, 7 minutes

Three options will be available for your exam's section order:

- Analytical Writing Assessment, Integrated Reasoning, Quantitative, Verbal (original order)
- Verbal, Quantitative, Integrated Reasoning, Analytical Writing Assessment
- Quantitative, Verbal, Integrated Reasoning, Analytical Writing Assessment

QUANTITATIVE

- ▶ 31 questions, 62 minutes
- ▶ 2 mins per question

目标: 49+

- ▶ 错2题以内——51分
- ▶ 错4题以内——50分
- ▶ 错6题以内——49分 (非官方)

GMAT数学资料

- ▶ OG (易)
- ▶ 陈向东 《GMAT数学高分快速突破》
- ▶ PREP模考软件 (破解4套) (难)
- ▶ Chasedream论坛 (机经)

常见问题

▶ 术语不熟悉——数学词汇背诵

exponent

radical sign

recurring decimal

reciprocal

factorization

octagon

常见问题

- ▶ 读题慢——词汇+阅读能力
- ▶ A certain club has 10 members, including Harry. One of the 10 members is to be chosen at random to be the president, one of the remaining 9 members is to be chosen at random to be the secretary, and one of the remaining 8 members is to be chosen at random to be the treasurer. What is the probability that Harry will be either the member chosen to be the secretary or the member chosen to be the treasurer?
- ▶ 1/5

PROBLEM SOLVING 题型 (5选1单选题)

- ▶ The average (arithmetic mean) of the integers from 200 to 400, inclusive, is how much greater than the average of the integers from 50 to 100, inclusive?

A. 150

B. 175

C. 200

D. 225

E. 300

DATA SUFFICIENCY 题型 (GMAT独有)

► What is the value of the integer p ? (问题)

(1) Each of the integers 2, 3, and 5 is a factor of p . (条件1)

(2) Each of the integers 2, 5, and 7 is a factor of p . (条件2)

A. Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.

B. Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.

C. BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.

D. EACH statement ALONE is sufficient.

E. Statements (1) and (2) TOGETHER are NOT sufficient.

思维陷阱

- ▶ Is m an even integer?
- ▶ (1) $m=3a$, for some integer a .
- ▶ (2) $m=2b+1$, for some integer b .

B

思维陷阱

- ▶ Is x equal to 1?
- ▶ (1) $x^2=1$
- ▶ (2) $x^2-x-2=0$

B

DATA SUFFICIENCY 数据充分性

- ▶ 每题选项一样
- ▶ 问句类型：
 - ▶ 数值计算——特殊疑问句（吃的啥——确定唯一实数解）
 - ▶ 判断是非——一般疑问句（吃了吗——能明确回答Yes或No）

DATA SUFFICIENCY

► What is the value of x ?

(1) $3x = 6$

(2) $x^2 = 4$

A

DATA SUFFICIENCY

- ▶ Tom and Jack are in a line to purchase tickets. (背景)
- ▶ How many people are in the line? (问题)

(1) There are 20 people behind Tom and 20 people in front of Jack. (条件1)

(2) There are 5 people between Tom and Jack. (条件2)

E

判断充分性

There are eight balls in the bag. (题干)

Question 1: Are all the balls in the bag red?

Question 2: Are there any red balls in the bag?

Statement 1: Three balls are removed; whose colors are brown, green, and red, respectively.

Statement 2: Three balls are removed; whose colors are brown, green, and yellow, respectively.

Statement 3: Three balls are removed; whose colors are red, red, and red, respectively.

DATA SUFFICIENCY 解题思路

▶ 单独判断

▶ (1)充分 (2)不充分 ----- 选A

▶ (2)充分 (1)不充分 ----- 选B

▶ (1), (2)都充分 ----- 选D (Each)

▶ 合并判断--只有在单独判断都不充分的情况下

▶ (1)+(2)充分 ----- 选C (Both)

▶ (1)+(2)也不充分 ----- 选E

DIAGNOSE QUESTION

- ▶ Each person on a committee with 40 members voted for exactly one of 3 candidates, F, G, or H.
- ▶ Did Candidate F receive the most votes from the 40 votes cast?

(1) Candidate F received 11 of the votes.

(2) Candidate H received 14 of the votes.

A

CURRICULUM

- ▶ Arithmetic 算术 (Lesson One)
- ▶ Algebra 代数 (Lesson One)
- ▶ Geometry 几何 (Lesson Two)
- ▶ Word Problem 文字问题 (Lesson Two)
- ▶ 数学词汇补充
- ▶ 考点归纳
- ▶ 技巧讲解
- ▶ 习题练习

ARITHMETIC 算术

ARITHMETIC

- ▶ 奇偶数
- ▶ 因数与质因数
- ▶ 最大公约数与最小公倍数
- ▶ 余数
- ▶ 小数, 分数与科学计算法
- ▶ 比率与比例

奇偶数 ODD AND EVEN INTEGERS

偶+偶=偶, 偶-偶=偶, 偶*偶=偶;

奇+奇=偶, 奇-奇=偶, 奇*奇=奇;

奇+偶=奇, 奇-偶=奇, 奇*偶=偶.

多个整数之和为奇数 ----- 其中包含奇数个奇数

多个整数之和为偶数 ----- 其中包含偶数个奇数

多个整数之积为奇数 ----- 全部都是奇数

多个整数之积为偶数 ----- 至少包含有一个偶数

ARITHMETIC PRACTICE

If x and y are integers and xy^2 is a positive odd integer, which of the following must be true?

I. xy is positive.

II. xy is odd.

III. $x + y$ is even.

A. I only

B. II only

C. III only

D. I and II only

E. II and III only

ARITHMETIC PRACTICE

Is x an even integer?

(1) x is the square of an integer.

(2) x is the cube of an integer.

E

ARITHMETIC PRACTICE

If a and b are positive integers such that $a - b$ and a/b are both even integers, which of the following must be an odd integer?

A. $a/2$

B. $b/2$

C. $(a + b)/2$

D. $(a + 2)/2$

E. $(b + 2)/2$

ARITHMETIC PRACTICE

If $y = x + x^{n+1} + x^{n+2} + x^{n+3}$, and if $x = -1$, and n is the sum of the first 404 prime numbers, then $y =$

A. -2

B. -1

C. 0

D. 1

E. 2

质数与合数 PRIME AND COMPOSITE NUMBER

prime number 质数, composite 合数, prime factorization 质因数分解

核心考点：质数之积为合数，质数与奇偶性的关系

质数(prime number): 大于1 的整数, 除了1 和它本身外, 不能被其他正整数所整除的, 称为质数, 也叫素数; 除2以外所有质数都是奇数, 但不是所有奇数都是质数.

ARITHMETIC PRACTICE

If y is the smallest positive integer such that 3,150 multiplied by y is the square of an integer, then y must be

- A. 2
- B. 5
- C. 6
- D. 7
- E. 14

ARITHMETIC PRACTICE

If positive integer x is a multiple of 6 and positive integer y is a multiple of 14, is xy a multiple of 105 ?

(1) x is a multiple of 9.

(2) y is a multiple of 25.

B

ARITHMETIC PRACTICE

How many different prime numbers are factors of the positive integer n ?

- (1) Four different prime numbers are factors of $2n$.
- (2) Four different prime numbers are factors of n^2 .

B

ARITHMETIC PRACTICE

n is a factor of the product of all the odd integers from 99 to 199, inclusive. If $n=5^k$, then the greatest possible value of k is

A. 10

B. 12

C. 13

D. 15

E. 20

ARITHMETIC PRACTICE

How many factors does 360 have?

A. 24

B. 36

C. 48

D. 120

E. 360

ARITHMETIC PRACTICE

If n is a positive integer and the greatest common divisor of $(n-1)!$, $(n+1)!$, and $(n+3)!$ is 120, then $n =$

A. 2

B. 3

C. 4

D. 5

E. 6

因子与倍数 FACTORS AND MULTIPLE

factors (divisors) 因子, multiple 倍数, least common multiple 最小公倍数,
greatest common divisor 最大公约数

核心考点：因数分解，最大公约数，最小公倍数

- ▶ 两个数的最大公约数与最小公倍数：
 - ▶ 两个数分别分解质因数
 - ▶ 每一个质数, 取较小的指数, 相乘得到最大公约数;
 - ▶ 每一个质数, 取较大的指数, 相乘得到最小公倍数.

ARITHMETIC PRACTICE

If M is the least common multiple of 90, 196, and 300, which of the following is NOT a factor of M ?

A. 600

B. 700

C. 900

D. 2,100

E. 4,900

ARITHMETIC PRACTICE

The greatest common divisor of a and b is 21, and the least common multiple of a and b is 126, where a and b are positive integers, what is the sum of a and b ?

A. 105

B. 147

C. 150

D. 105 or 147

E. 105 or 150

ARITHMETIC PRACTICE

Three sorts of juices are served at a party. Every 2 guests share a bottle of apple juice, every 3 guests share a bottle of lemon juice, and every 4 guests share a bottle of orange juice. If 65 bottles of juices are drunk off finally, how many guests are at this party?

A. 12

B. 24

C. 36

D. 48

E. 60

商和余数 QUOTIENTS AND REMAINDERS

a divided by b is q remainder $r \Leftrightarrow a = bq + r$ where $(0 \leq r < b)$ a 除以 b 等于 q 余 r

quotient商; remainder余数

核心考点：求余数

被2整除的特征:

被3整除的特征:

被4整除的特征:

被5整除的特征:

ARITHMETIC PRACTICE

When 20 is divided by the positive integer k , the remainder is $k - 2$, which of the following is a possible value of k ?

- A. 8
- B. 9
- C. 10
- D. 11
- E. 12

ARITHMETIC PRACTICE

What is the sum of the remainders when the first 40 positive integers are divided by 6 ?

A. 96

B. 100

C. 120

D. 132

E. 136

ARITHMETIC PRACTICE

What is the remainder when the positive integer x is divided by 8 ?

(1) When x is divided by 12, the remainder is 5.

(2) When x is divided by 18, the remainder is 11.

E

ARITHMETIC PRACTICE

If n is a positive integer, what is the remainder when $3^{8n+3} + 2$ is divided by 5?

A. 0

B. 1

C. 2

D. 3

E. 4

分数 FRACTION

fraction 分数, rational numbers 有理数, irrational numbers 无理数, 分子 numerator; 分母 denominator, common denominator 通分, reciprocal 倒数

核心考点：分数的化简与通分

十进制数 DECIMALS

识别各位数字名称“7654.321”，其中：

-"7": thousands

-"6": hundreds

-"5": tens

-"4": units (or ones)

-"." : decimal point

-"3": tenths

-"2": hundredths

-"1": thousandths

ARITHMETIC PRACTICE

$$3.2\Box\triangle 6$$

If \Box and \triangle each represent single digits in the decimal above, what digit does \Box represent?

(1) When the decimal is rounded to the nearest tenth, 3.2 is the result.

(2) When the decimal is rounded to the nearest hundredth, 3.24 is the result.

E

ARITHMETIC PRACTICE

If x is $0.abc$, where a , b , and c are the tenths, hundredths and thousandths digits of x , respectively, is x greater than $\frac{2}{3}$?

(1) $a+b > 14$.

(2) $a+c > 15$.

D

ARITHMETIC PRACTICE

Any decimal that has only a finite number of nonzero digits is a terminating decimal. For example, 24, 0.82, and 5.096 are three terminating decimals. If r and s are positive integers and the ratio is expressed as a decimal, is a terminating decimal?

(1) $90 < r < 100$

(2) $s = 4$

B

ARITHMETIC PRACTICE

Which of the following fractions has a decimal equivalent that is a terminating decimal?

A. $10/189$

B. $15/196$

C. $16/225$

D. $25/144$

E. $39/128$

ARITHMETIC PRACTICE

Of the following which best approximates

$(0.1667)(0.8333)(0.3333)$

$(0.2222)(0.6667)(0.125)$

A. 2.00

B. 2.40

C. 2.43

D. 2.50

E. 3.43

ARITHMETIC PRACTICE

What is the least number of digits (including repetitions) needed to express 10^{100} in decimal notation?

- A. 4
- B. 100
- C. 101
- D. 1,000
- E. 1,001

ARITHMETIC PRACTICE

If $10^{50} - 74$ is written as an integer in base decimal notation, what is the sum of the digits in that integer?

A. 424

B. 431

C. 440

D. 449

E. 456

比率与比例 RATIOS AND PROPORTIONS

the ratio of A to B 表示为 $A : B$.

There is twice as much A as B 表示为 $A = 2B$.

ARITHMETIC PRACTICE

A certain fraction is equivalent to $\frac{2}{5}$. If the numerator of the fraction is increased by 4 and the denominator is doubled, the new fraction is equivalent to $\frac{1}{3}$. What is the sum of the numerator and denominator of the original fraction?

A. 21

B. 26

C. 28

D. 35

E. 49

ARITHMETIC PRACTICE

If an automobile average 22.5 miles per gallon of gasoline, approximately how many kilometers per liter of gasoline did the automobile average? (1 mile = 1.6 kilometers and 1 gallon = 3.8 liters, both rounded to the nearest tenth.)

A. 3.7

B. 9.5

C. 31.4

D. 53.4

E. 136.8

ARITHMETIC PRACTICE

A merchant purchased a jacket for \$60 and then determined a selling price that equaled the purchase price of the jacket plus a markup that was 25 percent of the selling price. During a sale, the merchant discounted the selling price by 20 percent and sold the jacket. What was the merchant's gross profit on this sale?

A. \$0

B. \$3

C. \$4

D. \$12

E. \$15

ARITHMETIC PRACTICE

In a certain formula, p is directly proportional to s and inversely proportional to r . If $p = 1$ when $r = 0.5$ and $s = 2$, what is the value of p^2 in terms of r and s ?

A. s/r

B. $r/4s$

C. $s/4r$

D. r/s

E. $4r/s$

ARITHMETIC PRACTICE

A certain quantity is measured on two different scales, the R-scale and the S-scale, that are related linearly. Measurements on the R-scale of 6 and 24 correspond to measurements on the S-scale of 30 and 60, respectively. What measurement on the R-scale corresponds to a measurement of 100 on the S-scale?

- A. 20
- B. 36
- C. 48
- D. 60
- E. 84

ARITHMETIC

- ▶ 奇偶数
- ▶ 因数与质因数
- ▶ 最大公约数与最小公倍数
- ▶ 余数
- ▶ 小数, 分数与科学计算法
- ▶ 比率与比例

ALGEBRA 代数

ALGEBRA

- ▶ 指数运算
- ▶ 解方程
- ▶ 不等式
- ▶ 符号运算
- ▶ 数列

指数运算 RULES OF EXPONENTS

$$a^m * a^n = a^{m+n}$$

$$a^m / a^n = a^{m-n}$$

$$(a^m)^n = a^{mn}$$

$$a^m * b^m = (ab)^m$$

$$a^m / b^m = (a/b)^m$$

ALGEBRA PRACTICE

$$(8)^2(3)^3(2)^4/(96)^2 =$$

- A. 3
- B. 6
- C. 9
- D. 12
- E. 18

ALGEBRA PRACTICE

If $p = 2^{64}$ and $p^p = 2^k$, then $k =$

A. 70

B. 128

C. 256

D. 2^{64}

E. 2^{70}

ALGEBRA PRACTICE

The function f is defined for each positive three-digit integer n by $f(n) = 2^x 3^y 5^z$, where x , y and z are the hundreds, tens, and units digits of n , respectively. If m and v are three-digit positive integers such that $f(m) = 9f(v)$, then $m - v = ?$

- A. 8
- B. 9
- C. 18
- D. 20
- E. 80

解方程 EQUATIONS

一元二次方程 $ax^2 + bx + c = 0$

标准根的公式为：
$$x_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

ALGEBRA PRACTICE

A square playground has the same area as a rectangular playground that is 30 meters longer but 20 meters narrower. What is the length, in meters, of a side of the square playground?

A. $10\sqrt{5}$

B. $10\sqrt{6}$

C. 25

D. 50

E. 60

ALGEBRA PRACTICE

A certain theater has 100 balcony seats. For every \$2 increase in the price of a balcony seat above \$10, 5 fewer seats will be sold. If all the balcony seats are sold when the price of each seat is \$10, which of the following could be the price of a balcony seat if the revenue from the sale of balcony seats is \$1,360 ?

A. \$12

B. \$14

C. \$16

D. \$17

E. \$18

ALGEBRA PRACTICE

If the sum of two positive integers is 24 and the difference of their squares is 48, what is the product of the two integers?

A. 108

B. 119

C. 128

D. 135

E. 143

ALGEBRA PRACTICE

What is Steve's annual salary and Maria's annual salary?

(1) The combined total of the annual salaries of Steve and Maria is \$80,000.

(2) If Steve were to receive a 10 percent increase in annual salary and Maria an 10 percent increase, their combined annual salaries would be \$88,000.

E

不等式 INEQUALITY

- ▶ 对已有不等式的两边取倒数或负数, 不等号通常要改变方向

- ▶ 对 $\sqrt[4]{x}, \sqrt[3]{x}, \sqrt{x}, x, x^2, x^3, x^4$ 等函数的性质有一定的认识.

在 x, x^2, x^3 几个函数的比较大小中, 对 x 的取值范围要有清醒的分段意识:

$$x < -1, \quad -1 < x < 0, \quad 0 < x < 1, \quad x > 1$$

绝对值: $|x|$ 恒非负

ALGEBRA PRACTICE

If $x > 0.9$, which of the following could be the value of x ?

A. $\sqrt{0.81}$

B. $\sqrt{0.9}$

C. (0.9)

D. $(0.9)(0.9)$

E. $1 - \sqrt{0.01}$

ALGEBRA PRACTICE

If $x \neq 0$, is $|x| < 1$?

(1) $x^2 < 1$

(2) $|x| < 1/x$

D

ALGEBRA PRACTICE

Which of the following inequalities has a solution set that, when graphed in the number line, is a single line segment of finite length?

A. $x^4 \geq 16$

B. $x^3 \leq 27$

C. $x^2 \geq 16$

D. $2 \leq |x| \leq 5$

E. $2 \leq 3x + 4 \leq 6$

ALGEBRA PRACTICE (符号运算)

For all real numbers v , the operation v^* is defined by the equation $v^* = v - v/3$. If $(v^*)^* = 8$, then $v =$

A. 15

B. 18

C. 21

D. 24

E. 27

ALGEBRA PRACTICE (符号运算)

If the operation \odot is defined for all integers a and b by $a \odot b = a + b - ab$, which of the following statements must be true for all integers a , b , and c ?

I. $a \odot b = b \odot a$

II. $a \odot 0 = a$

III. $(a \odot b) \odot c = a \odot (b \odot c)$

A. I only

B. II only

C. I and II only

D. I and III only

E. I, II and III

ALGEBRA PRACTICE (符号运算)

If \odot denotes one of two arithmetic operations, addition or multiplication, and if k is an integer, what is the value of $3 \odot k$?

(1) $2 \odot k = 3$

(2) $1 \odot 0 = k$

A

数列 SEQUENCE

- ▶ 等差数列 arithmetic sequence
 - ▶ 等差数列之和 $=$ (首项+尾项) \times 项数 $/2$
- ▶ 等比数列 geometric sequence

ALGEBRA PRACTICE

How many integers between 234 and 567, inclusive, are the multiples of 5 ?

A. 62

B. 65

C. 67

D. 69

E. 71

ALGEBRA PRACTICE

If the sum of 7 consecutive integers is 434, then the greatest of the 7 integers is

A. 65

B. 66

C. 67

D. 68

E. 69

ALGEBRA PRACTICE

In the sequence $1, 2, 4, 8, 16, 32, \dots$, each term after the first is twice the previous term. What is the sum of the 16th, 17th, and 18th terms in the sequence?

A. 2^{18}

B. $3(2^{17})$

C. $7(2^{16})$

D. $3(2^{16})$

E. $7(2^{15})$

ALGEBRA PRACTICE

In a certain sequence, the first term is 1, and each successive term is 1 more than the reciprocal of the term that immediately precedes it. What is the fifth term of the sequence?

A. $\frac{3}{5}$

B. $\frac{5}{8}$

C. $\frac{8}{5}$

D. $\frac{5}{3}$

E. $\frac{9}{2}$

ALGEBRA PRACTICE

The sequence $a_1, a_2, \dots, a_n, \dots$ is such that $a_n = a_{n-1} - a_{n-2}$ for all positive integers $n > 2$. If $a_1 = -1$ and $a_2 = 1$, what is the sum of the first 1000 terms in the sequence?

A. 0

B. 3

C. 750

D. 1000

E. 3000

ALGEBRA

- ▶ 指数运算
- ▶ 解方程
- ▶ 不等式
- ▶ 符号运算
- ▶ 数列

-
1. MATH VOCABULARY
 2. GMAT OG2017 PS+DS

Homework

A high-angle, black and white photograph of a massive concrete dam. The dam's surface is composed of large, rectangular blocks with visible vertical joints. A single person stands on the top edge of the dam, providing a sense of scale to the enormous structure. The sky is a uniform, dark grey.

LESSON TWO
BY WILL

GMAT QUANTITATIVE

CONTENTS

- ▶ Lesson Two
 - ▶ Geometry
 - ▶ Word Problem
- ▶ Integrated Practice

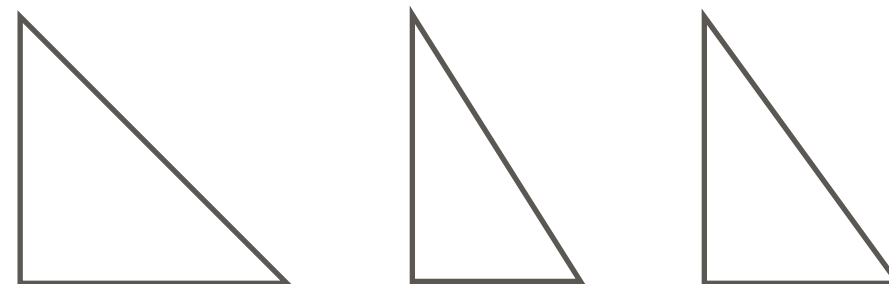
GEOMETRY 几何

GEOMETRY 几何

- ▶ 三角形与四边形
- ▶ 平行线
- ▶ 圆
- ▶ 立体几何
- ▶ 直角坐标系

三角形与四边形 TRIANGLES AND QUADRILATERALS

- ▶ 三角形的某些性质：
 - ▶ 三角形内角和为 180°
 - ▶ 三角形两边之和大于第三边，两边之差小于第三边.
 - ▶ 三角形中，较大角的对边也较大.
- ▶ 勾股定理： $a^2 + b^2 = c^2$ (直角边 a , 直角边 b , 斜边 c)
- ▶ 要对几种形状的直角三角形要特别熟悉：
- ▶ 三角形: 面积 = $\frac{1}{2} * \text{底} * \text{高}$
- ▶ 矩形 (Rectangles) : 面积 = 长* 宽; 周长 = $2 * (\text{长} + \text{宽})$
 - ▶ 正方形 (Squares) : 面积 = 边长²; 周长 = $4 * \text{边长}$



三角形与四边形 TRIANGLES AND QUADRILATERALS

等边 equilateral

等腰 isosceles

四边形 quadrilateral

四倍 quadruple

菱形 diamond rhombus

梯形 trapezoid

直角 right angle

锐角 acute angle

钝角 obtuse angle

短边 arm

长边 leg

斜边 hypotenuse

多边形 POLYGONS

五边形 pentagon

六边形 hexagon

七边形 heptagon

八边形 octagon

九边形 nonagon

十边形 decagon

正...regular

内角和 = $(N-2)*180$ 度

GEOMETRY PRACTICE

In the figure above, square CDEF has area 4. What is the area of $\triangle ABF$?

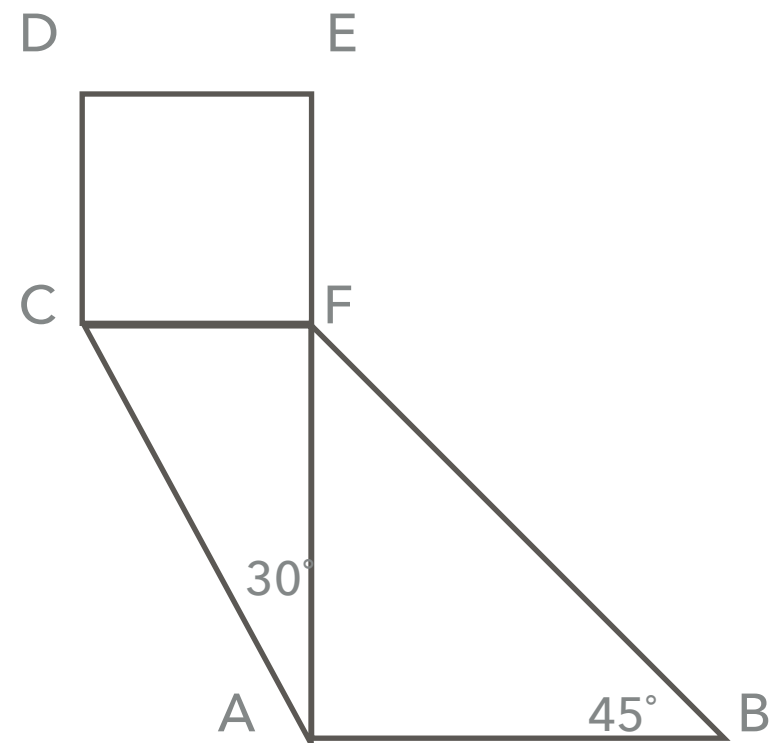
A. $2\sqrt{2}$

B. $2\sqrt{2}$

C. 4

D. $3\sqrt{3}$

E. 6



GEOMETRY PRACTICE

If each side of $\triangle ACD$ above has length 3 and if AB has length 1, what is the area of region $BCDE$?

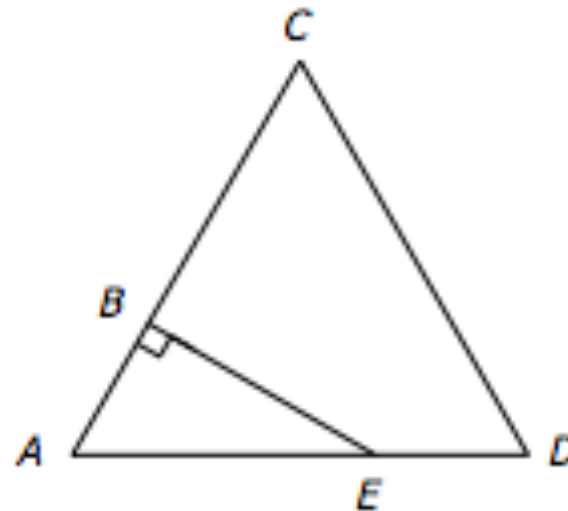
A. $9/4$

B. $(7/4)\sqrt{3}$

C. $(9/4)\sqrt{3}$

D. $(7/2)\sqrt{3}$

E. $6 + \sqrt{3}$



GEOMETRY PRACTICE

A ladder 25 feet long is leaning against a wall that is perpendicular to level ground. The bottom of the ladder is 7 feet from the base of the wall. If the top of the ladder slips down 4 feet, how many feet will the bottom of the ladder slip?

- A. 4
- B. 5
- C. 8
- D. 9
- E. 15

GEOMETRY PRACTICE

Is quadrilateral Q a square?

(1) The sides of Q have the same length.

(2) The diagonals of Q have the same length.

C

平行线 PARALLEL LINES

- ▶ 两线平行:
 - ▶ 同位角相等/内错角相等
 - ▶ 同旁内角互补

GEOMETRY PRACTICE

In the figure above, if $AB \parallel CE$, $CE = DE$, and $y = 45$, then $x =$

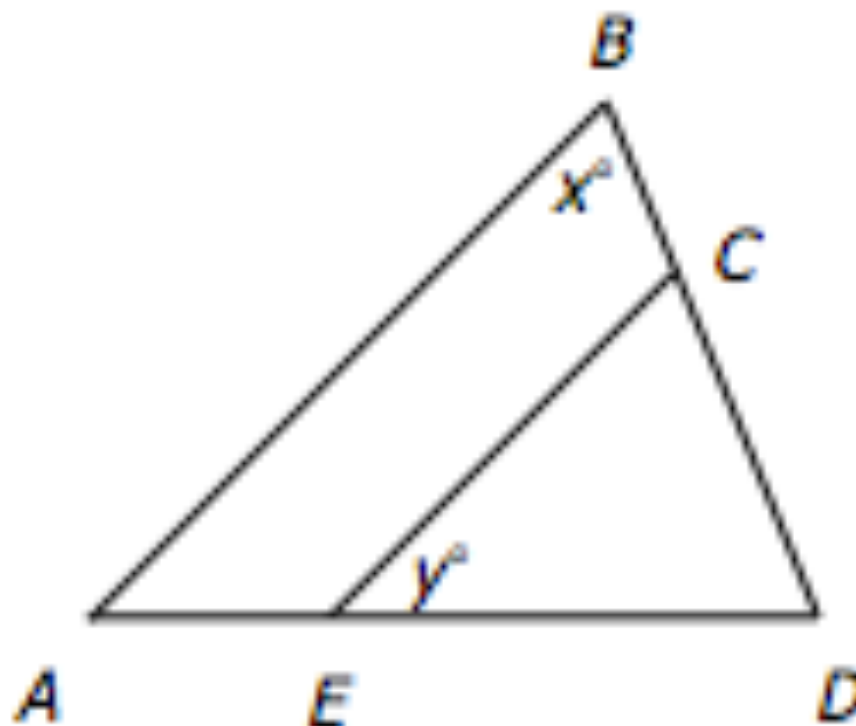
A. 45

B. 60

C. 67.5

D. 112.5

E. 135

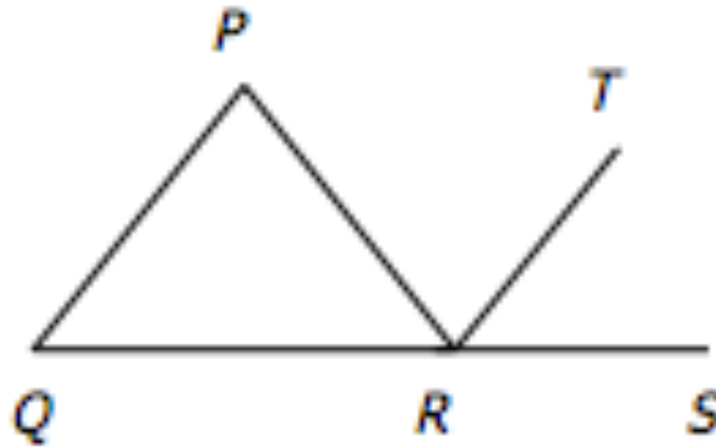


GEOMETRY PRACTICE

In the figure above, QRS is a straight line and line TR bisects $\angle PRS$. Is it true that lines TR and PQ are parallel?

(1) $PQ = PR$

(2) $QR = PR$



B

圆 CIRCLE

半径为 r 的圆： 面积 $= \pi r^2$

周长 $= 2\pi r$

角度为 x° 的圆弧： 弧长 $\text{arc} = 2\pi r * (x/360)$

角度为 x° 的扇形面积： 扇形 $\text{sector} = \pi r^2 * (x/360)$

同一段圆弧： 圆心角 $= 2 * \text{圆周角}$

GEOMETRY PRACTICE

In the circle above, PQ is parallel to diameter OR , and OR has length 18. What is the length of minor arc PQ ?

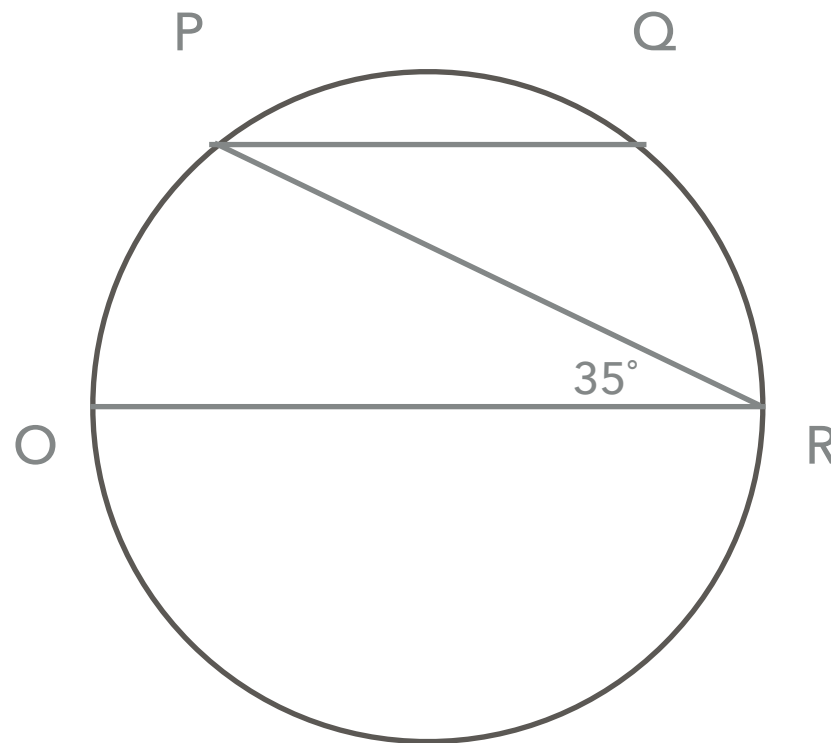
A. 2π

B. $(9/4)\pi$

C. $(7/2)\pi$

D. $(9/2)\pi$

E. 3π



GEOMETRY PRACTICE

In the figure above, A is the point of tangency for two circles and also the center of the third circle. If the radii of three circles are 1, what is the external perimeter of the figure?

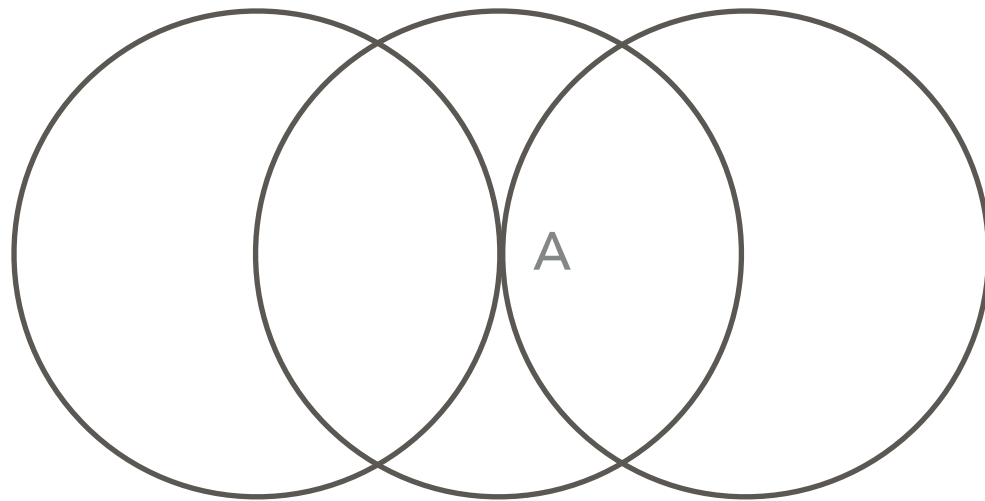
A. $(7/3)\pi$

B. $(10/3)\pi$

C. 4π

D. $(14/3)\pi$

E. 6π



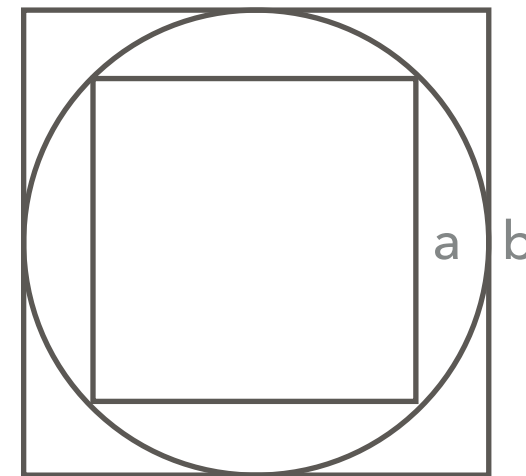
GEOMETRY PRACTICE

In the figure above, a circle is inscribed in a square with side b and a square with side a is inscribed in the circle. What is the area of the square with side b ?

(1) $a = 4$.

(2) The radius of the circle is $2\sqrt{2}$.

D



长方体 正方体 圆柱 RECTANGULAR SOLIDS CUBES CYLINDERS

长方体体积: 长 * 宽 * 高

正方体体积: 边长³

圆柱的体积: π * 底面半径² * 高

GEOMETRY PRACTICE

What is the volume of a certain rectangular solid?

(1) Two adjacent faces of the solid have areas 15 and 24, respectively.

(2) Each of two opposite faces of the solid has area 40.

C

GEOMETRY PRACTICE

A grocer is storing small cereal boxes in large cartons that measure 25 inches by 42 inches by 60 inches. If the measurement of each small cereal box is 7 inches by 6 inches by 5 inches, then what is the maximum number of small cereal boxes that can be placed in each large carton?

- A. 25
- B. 210
- C. 252
- D. 300
- E. 420

GEOMETRY PRACTICE

The inside dimensions of a rectangular wooden box are 6 inches 8 inches by 10 inches. A cylindrical canister is to be placed inside the box so that it stands upright when the closed box rests on one of its six faces. Of all such canisters that could be used, what is the radius, in inches, of the one that has maximum volume?

- A. 3
- B. 4
- C. 5
- D. 6
- E. 8

平面直角坐标几何 PLANE RECTANGULAR COORDINATE GEOMETRY

平面直角坐标上两点间距离为: $\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$

斜截式: $y = kx + b$ 其中, k 为斜率 (Slope)

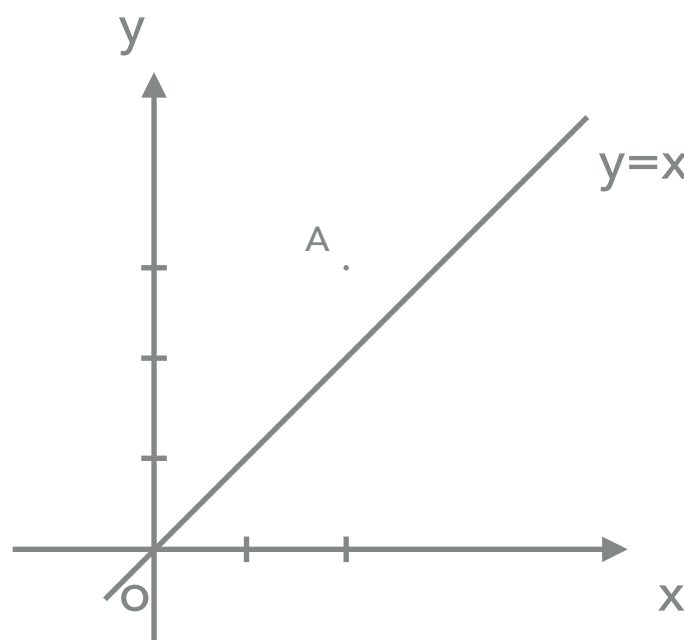
b 为 y 轴截距 (Intercept)

$$k = \frac{y_2 - y_1}{x_2 - x_1}$$

若两直线垂直, 其斜率乘积为 -1

GEOMETRY PRACTICE

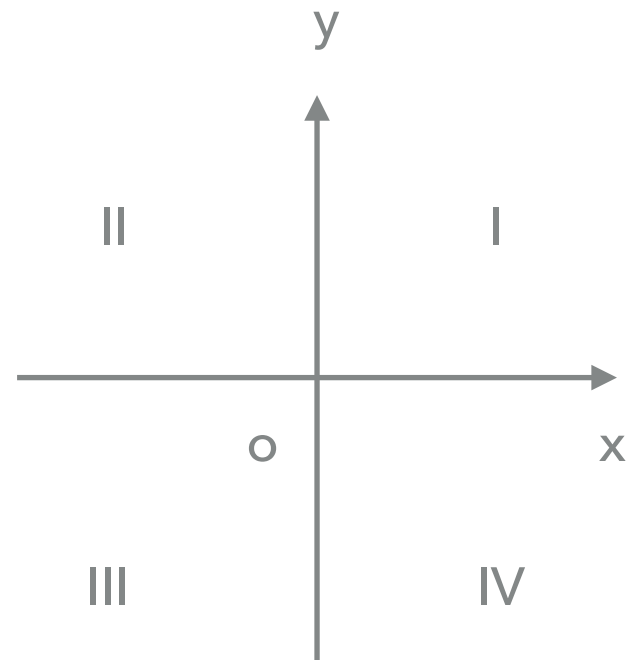
In the rectangular coordinate system above, the line is perpendicular bisector of segment AB (not shown), and the x -axis is the perpendicular bisector of segment BC (not shown). If the coordinates of point A are $(2, 3)$, what are the coordinates of point C ?

A. $(-3, -2)$ B. $(-3, 2)$ C. $(2, -3)$ D. $(3, -2)$ E. $(2, 3)$ 

GEOMETRY PRACTICE

In the rectangular coordinate system shown above, does the line k (not shown) intersect quadrant I?

- (1) The x -intercept of k is negative.
- (2) The slope of k is positive.



B

GEOMETRY PRACTICE

In the xy -plane, does the point $(4, 12)$ lie on line k ?

(1) The point $(1, 7)$ lies on line k .

(2) The point $(-2, 2)$ lies on line k .

C

GEOMETRY PRACTICE

In the rectangular coordinate system above, both of two tangent circles are tangent to the x axis. If the radius of the two circles are 4 and 6, respectively, what is the slope of the line on which two centers lie?

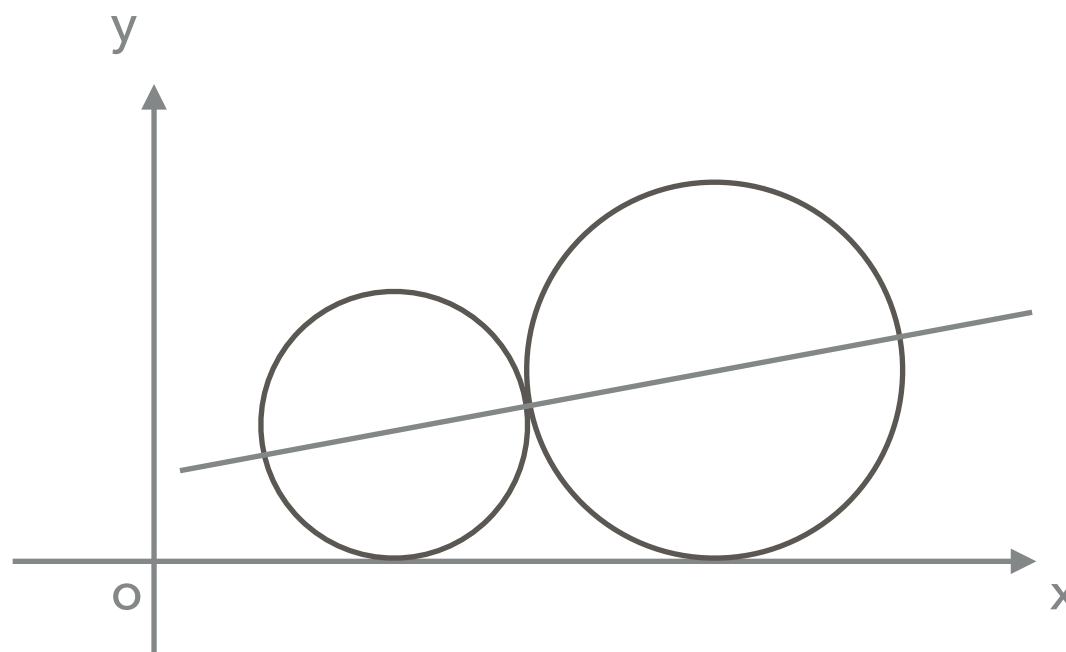
A. $\frac{1}{(2\sqrt{6})}$

B. $\frac{1}{(3\sqrt{2})}$

C. $\frac{1}{3}$

D. $\frac{1}{\sqrt{5}}$

E. $\frac{1}{2}$



GEOMETRY PRACTICE

An isosceles triangle lies on the rectangular coordinate plane, the coordinates of point A are $(0,0)$, and the coordinates of point B are $(3, 1)$, point C could lie at one of 6 positions such that $(1, 3)$, $(-1, 3)$, $(-3, 1)$, $(-1, -3)$, $(1, -3)$, $(3, -1)$. How many lengths of side BC are possible?

A. 2

B. 3

C. 4

D. 5

E. 6

GEOMETRY 几何

- ▶ 三角形与四边形
- ▶ 平行线
- ▶ 圆
- ▶ 立体几何
- ▶ 直角坐标系

WORD PROBLEM

WORD PROBLEM 文字问题

- ▶ 工作问题
- ▶ 利息问题
- ▶ 集合问题（文氏图）
- ▶ 集合问题（表格法）
- ▶ 排列组合问题
- ▶ 概率问题
- ▶ 描述统计学

为什么要变放水边排水!!!

工作问题

WORD PROBLEM PRACTICE

A small water pump would take 3 hours to fill an empty tank. A larger pump would take 2 hours to fill the same tank. How many hours would it take both pumps, working at their respective constant rates, to fill the empty tank if they began pumping at the same time?

A. 1

B. 1.2

C. 1.5

D. 1.8

E. 2

WORD PROBLEM PRACTICE

Six machines, each working at the same constant rate, together can complete a certain job in 12 days. How many additional machines, each working at the same constant rate, will be needed to complete the job in 8 days?

A. 3

B. 4

C. 6

D. 8

E. 9

单利 VS. 复利

利息问题

WORD PROBLEM PRACTICE

Mary invested \$14,000 for 3 years in a certificate of deposit paying 9.25% simple annual interest. How many more interest would Mary have received if the interest rate on this certificate had been 9.75% simple annual interest?

A. \$21

B. \$210

C. \$420

D. \$2,100

E. \$4,200

WORD PROBLEM PRACTICE

A 2-year certificate of deposit is purchased for k dollars. If the certificate earns interest at an annual rate of 6 percent compounded quarterly, which of the following represents the value, in dollars, of the certificate at the end of the 2 years?

A. 1.06^2k

B. 1.06^8k

C. 1.015^2k

D. 1.015^8k

E. 1.03^4k

文氏图

集合问题

WORD PROBLEM PRACTICE

All trainees in a certain aviator training program must take both a written test and a flight test. If 70 percent of the trainees passed the written test, and 80 percent of the trainees passed the flight test, what percent of the trainees passed both tests?

- (1) 10 percent of the trainees did not pass either test.
- (2) 20 percent of the trainees passed only the flight test.

D

WORD PROBLEM PRACTICE

In a marketing survey for products some people were asked which of the products, if any, they use. Of the people surveyed, a total of 400 use A, a total of 400 use B, a total of 450 use C, a total of 200 use A and B simultaneously, a total of 175 use B and C simultaneously, a total of 200 use C and A simultaneously, a total of 75 use A, B, and C simultaneously, and a total of 200 use none of the products. How many people were surveyed?

A. 950

B. 975

C. 1,000

D. 1,025

E. 1,050

WORD PROBLEM PRACTICE

How many integers between 1 and 100, inclusive, can be divided by none of 2, 3, and 5 ?

A. 24

B. 26

C. 28

D. 30

E. 32

WORD PROBLEM PRACTICE

In a certain class, 10 students can play the piano, 14 students can play the violin, 11 students can play the flute. If 3 students can play exactly three instruments, 20 students can play exactly one instrument, how many students can play exactly two instruments?

A. 3

B. 6

C. 9

D. 12

E. 18

WORD PROBLEM PRACTICE

A group of 15 people could speak Spanish, German, or French. $\frac{1}{3}$ of the group can speak Spanish, $\frac{2}{5}$ of the group can speak German, and $\frac{2}{3}$ of the group can speak French. If only one people can speak exactly three languages, how many people can speak exactly two languages?

A. 3

B. 4

C. 5

D. 6

E. 7

表格法

集合问题

WORD PROBLEM PRACTICE

A shipment of banners contains banners of two different shapes, triangular and square, and two different colors, red and green. In a particular shipment 26% of the banners are square and 35% of the banners are red. If 60% of the red banners in the shipment are square, what is the ratio of red triangular banners to green triangular banners?

- A. $7/50$
- B. $3/13$
- C. $7/30$
- D. $13/37$
- E. $35/26$

WORD PROBLEM PRACTICE

One-fifth of the light switches produced by a certain factory are defective. Four-fifths of the defective switches are rejected and $\frac{1}{20}$ of the nondefective switches are rejected by mistake. If all the switches not rejected are sold, what percent of the switches sold by the factory are defective?

A. 4%

B. 5%

C. 6.25%

D. 11%

E. 16%

- 组合 (Combination):

$$C_m^n = \frac{m!}{n!(m-n)!}$$

$$C_m^n = C_m^{m-n}$$

- 排列 (Permutation):

$$P_n^n = n!$$

$$P_m^n = C_m^n \cdot P_n^n = \frac{m!}{(m-n)!}$$

$$P_m^1 = C_m^1 = m$$

A?? C??

排列组合

WORD PROBLEM PRACTICE

晚会上有5个不同的唱歌节目和3个不同的舞蹈节目, 问:

分别按以下要求各可以排出几种不同的节目单?

(1) 3个舞蹈节目排在一起 4320

(2) 3个舞蹈节目彼此隔开 14400

(3) 3个舞蹈节目先后顺序一定 6720

WORD PROBLEM PRACTICE

In a meeting of 3 representatives from each of 6 different companies, each person shook hands with every person not from his or her own company. If the representatives did not shake hands with people from their own company, how many handshakes took place?

A. 45

B. 135

C. 144

D. 270

E. 288

WORD PROBLEM PRACTICE

In how many distinguishable ways can the 7 letters in the word MINIMUM be arranged, if all the letters are used each time?

- A. 7
- B. 42
- C. 420
- D. 840
- E. 5040

目标数/总数

概率问题

WORD PROBLEM PRACTICE

一只袋中装有5只乒乓球，其中3只白色，2只红色. 现从袋中取球2次，每次1只，取出后不再放回. 试求：

(1) 2只球都是白色的概率； $3/10$

(2) 2只球颜色不同的概率； $3/5$

(3) 至少有1只白球的概率. $9/10$

WORD PROBLEM PRACTICE

From a group of 3 boys and 3 girls, 4 children are to be randomly selected. What is the probability that equal numbers of boys and girls will be selected?

A. $1/10$

B. $4/9$

C. $1/2$

D. $3/5$

E. $2/3$

WORD PROBLEM PRACTICE

Six cards numbered from 1 to 6 are placed in an empty bowl. First one card is drawn and then put back into the bowl; then a second card is drawn. If the cards are drawn at random and if the sum of the numbers on the cards is 8, what is the probability that one of the two cards drawn is numbered 5 ?

A. $1/6$

B. $1/5$

C. $1/3$

D. $2/5$

E. $2/3$

WORD PROBLEM PRACTICE

2把钥匙, 放到有5把钥匙的钥匙链中, 相邻的概率为多少 (分直线和环形)?

$2/7$, $1/3$

WORD PROBLEM PRACTICE

What is the probability that events A and B both occur?

(1) The probability that event A occurs is 0.8.

(2) The probability that event B occurs is 0.6.

E

描述统计学

1. 算术平均数 (Average or Arithmetic Mean): 所有数据之和除以数据个数.
2. 中数 (Median): 将所有数据从小到大排列, 取中间的数或中间两个数的算术平均数.
3. 众数 (Mode): 一组数据中出现频率最高的数. 一组数据中可能有不止一个众数.
4. 极差 (Range): 一组数据中最大数与最小数之差.

WORD PROBLEM PRACTICE

The 10 households on a certain street have household incomes that range from \$34,000 to \$150,000 and an average (arithmetic mean) household income of \$60,000. If the household with the highest income and the one with the lowest income are excluded, what is the average household income for the remaining 8 households?

- A. \$41,600
- B. \$47,000
- C. \$52,000
- D. \$61,000
- E. \$75,000

WORD PROBLEM PRACTICE

For the positive numbers n , $n + 1$, $n + 2$, $n + 4$ and $n + 8$, the mean is how much greater than the median?

A. 0

B. 1

C. $n + 1$

D. $n + 2$

E. $n + 3$

WORD PROBLEM PRACTICE

The least and greatest numbers in a list of 7 real numbers are 2 and 20, respectively. The median of the list is 6, and the number 3 occurs most often in the list. Which of the following could be the average of the numbers in the list?

I. 7 II. 8.5 III. 10

A. I only

B. I and II only

C. I and III only

D. II and III only

E. I, II and III

WORD PROBLEM PRACTICE

The standard deviation of four numbers a , b , c , and d is M , then the standard deviation of which of the following **MUST** be M ?

A. $\sqrt{a^2}$, $\sqrt{b^2}$, $\sqrt{c^2}$, $\sqrt{d^2}$

B. a^2 , b^2 , c^2 , d^2

C. $2a$, $2b$, $2c$, $2d$

D. $a + 2$, $b + 2$, $c + 2$, $d + 2$

E. $a + 2$, $b - 2$, $c + 2$, $d - 2$

WORD PROBLEM 文字问题

- ▶ 工作问题
- ▶ 利息问题
- ▶ 集合问题（文氏图）
- ▶ 集合问题（表格法）
- ▶ 排列组合问题
- ▶ 概率问题
- ▶ 描述统计学

CURRICULUM

- ▶ Arithmetic 算术 (Lesson One)
- ▶ Algebra 代数 (Lesson One)
- ▶ Geometry 几何 (Lesson Two)
- ▶ Word Problem 文字问题 (Lesson Two)
- ▶ 数学词汇补充
- ▶ 考点归纳
- ▶ 技巧讲解
- ▶ 习题练习

1. 《GMAT数学快速高分突破》 机考模拟150题
2. PREP破解4套题 (难)(KMF)

HOMework



**YOU ARE
A CHINESE,
GO GET YOURSELF
A 51 !**

Thanks.

By Will