

2001 AMC10 试题

Problem 1

The median of the list $n, n + 3, n + 4, n + 5, n + 6, n + 8, n + 10, n + 12, n + 15$ is 10. What is the mean?

一列数 $n, n + 3, n + 4, n + 5, n + 6, n + 8, n + 10, n + 12, n + 15$ 的中位数是 10. 那么这列数的平均值是多少?

- (A) 4 (B) 6 (C) 7 (D) 10 (E) 11

Problem 2

A number x is 2 more than the product of its reciprocal and its additive inverse. In which interval does the number lie?

一个数 x 比它的倒数与相反数之积大 2. 那么这个数在哪个区间内?

- (A) $-4 \leq x \leq -2$ (B) $-2 < x \leq 0$ (C) $0 < x \leq 2$ (D) $2 < x \leq 4$ (E) $4 < x \leq 6$

Problem 3

The sum of two numbers is S . Suppose 3 is added to each number and then each of the resulting numbers is doubled. What is the sum of the final two numbers?

两个数之和是 S . 假设每个数加 3, 再将所得的每个数乘 2. 那么最终得到的两个数之和是多少?

- (A) $2S + 3$ (B) $3S + 2$ (C) $3S + 6$ (D) $2S + 6$ (E) $2S + 12$

Problem 4

What is the maximum number for the possible points of intersection of a circle and a triangle?

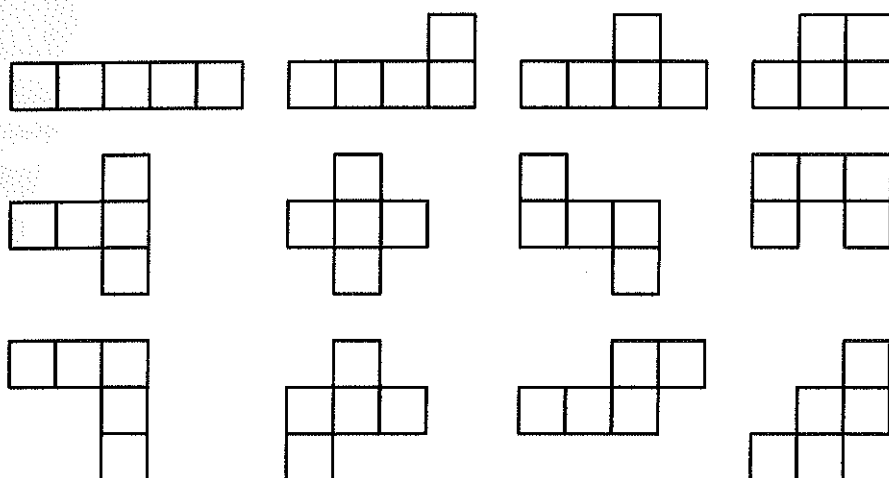
一个圆和一个三角形最多有多少个交点?

- (A) 2 (B) 3 (C) 4 (D) 5 (E) 6

Problem 5

How many of the twelve pentominoes pictured below have at least one line of reflectional symmetry?

下图所示的十二个五柱式中，有多少个至少有一条对称轴？



- (A) 3 (B) 4 (C) 5 (D) 6 (E) 7

Problem 6

Let $P(n)$ and $S(n)$ denote the product and the sum, respectively, of the digits of the integer n . For example, $P(23) = 6$ and $S(23) = 5$. Suppose N is a two-digit number such that $N = P(N) + S(N)$. What is the units digit of N ?

令 $P(n)$ 和 $S(n)$ 分别为整数 n 的所有位上数字的乘积以及和。例如， $P(23) = 6$ ， $S(23) = 5$ 。假设 N 是个两位数，满足 $N = P(N) + S(N)$ 。那么 N 的个位数字是多少？

- (A) 2 (B) 3 (C) 6 (D) 8 (E) 9

Problem 7

When the decimal point of a certain positive decimal number is moved four places to the right, the new number is four times the reciprocal of the original number. What is the original number?

当把某个正的小数的小数点向右移动 4 个位置，新形成的数是原来数的倒数的 4 倍。那么原来的数是多少？

- (A) 0.0002 (B) 0.002 (C) 0.02 (D) 0.2 (E) 2

Problem 8

Wanda, Darren, Beatrice, and Chi are tutors in the school math lab. Their schedule is as follows: Darren works every third school day, Wanda works every fourth school day, Beatrice works every sixth school day, and Chi works every seventh school day. Today they are all working in the math lab. In how many school days from today will they next be together tutoring in the lab?

Wanda、Darren、Beatrice 和 Chi 是学校数学实验室的辅导老师。他们的日程安排如下：Darren 每三个学校日工作一次，Wanda 每四个学校日工作一次，Beatrice 每六个学校日工作一次，Chi 每七个学校日工作一次。今天，他们都在数学实验室工作。那么他们下一次都在数学实验室一起辅导的时间是从今天开始的多少个学校日后？

- (A) 42 (B) 84 (C) 126 (D) 178 (E) 252

Problem 9

The state income tax where Kristin lives is levied at the rate of $p\%$ of the first \$28000 of annual income plus $(p + 2)\%$ of any amount above \$28000. Kristin noticed that the state income tax she paid amounted to $(p + 0.25)\%$ of her annual income. What was her annual income?

Kristin 居住的州所得税按照如下方法征收：不超过 28000 美元的部分的税率为 $p\%$ ，超过 28000 美元的部分的税率为 $(p + 2)\%$ 。Kristin 注意到，她总共缴纳的州所得税相当于她的年收入的 $(p + 0.25)\%$ 。那么她的年收入是多少？

- (A) \$28,000 (B) \$32,000 (C) \$35,000 (D) \$42,000 (E) \$56,000

Problem 10

If x , y , and z are positive with $xy = 24$, $xz = 48$, and $yz = 72$, then $x + y + z$ is

如果 x , y , z 都是正数，且满足 $xy = 24$, $xz = 48$, 以及 $yz = 72$ ，那么

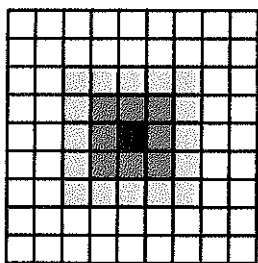
$x + y + z$ 等于

- (A) 18 (B) 19 (C) 20 (D) 22 (E) 24

Problem 11

Consider the dark square in an array of unit squares, part of which is shown. The first ring of squares around this center square contains 8 unit squares. The second ring contains 16 unit squares. If we continue this process, the number of unit squares in the 100th ring is

考虑一组单位正方形中的一个灰色正方形，其中一部分如图所示。围绕该中心正方形的第一个正方形环包含 8 个单位正方形。第二个环包含 16 个单位正方形。如果我们继续这个过程，第 100 个环中的单位正方形的个数是



- (A) 396 (B) 404 (C) 800 (D) 10,000 (E) 10,404

Problem 12

Suppose that n is the product of three consecutive integers and that n is divisible by 7. Which of the following is not necessarily a divisor of n ?

假设 n 为三个连续整数之积，且 n 能被 7 整除。下面哪个不一定是 n 的一个因子？

- (A) 6 (B) 14 (C) 21 (D) 28 (E) 42

Problem 13

A telephone number has the form $ABC - DEF - GHIJ$, where each letter represents a different digit. The digits in each part of the numbers are in decreasing order; that is, $A > B > C$, $D > E > F$, and $G > H > I > J$.

Furthermore, D , E , and F are consecutive even digits; G , H , I , and J are consecutive odd digits; and $A + B + C = 9$. Find A .

一个电话号码有这种形式 $ABC - DEF - GHIJ$ ，其中每个字母代表一个不同的数字。每一部分的数字成递减顺序，也就是， $A > B > C$, $D > E > F$, $G > H > I > J$ 。另外， D , E , 和 F 是连续的偶数。 G , H , I , 和 J 是连续的奇数； $A + B + C = 9$ 。求 A 。

- (A) 4 (B) 5 (C) 6 (D) 7 (E) 8

Problem 14

A charity sells 140 benefit tickets for a total of \$2001. Some tickets sell for full price (a whole dollar amount), and the rest sells for half price. How much money is raised by the full-price tickets?

一家慈善机构出售的 140 张福利券总额为 2001 美元。有些票是全价(整数美元), 其余的票是半价。全价票能筹到多少钱?

- (A) \$782 (B) \$986 (C) \$1158 (D) \$1219 (E) \$1449

Problem 15

A street has parallel curbs 40 feet apart. A crosswalk bounded by two parallel stripes crosses the street at an angle. The length of the curb between the stripes is 15 feet and each stripe is 50 feet long. Find the distance, in feet, between the stripes.

街道两旁平行的路缘相距 40 英尺。一条以两条平行条纹为边界的人行横道以一定角度穿过街道。条纹之间的路缘长度为 15 英尺, 且每条条纹的长度为 50 英尺。求条纹之间的距离, 以英尺为单位。

- (A) 9 (B) 10 (C) 12 (D) 15 (E) 25

Problem 16

The mean of three numbers is 10 more than the least of the numbers and 15 less than the greatest. The median of the three numbers is 5. What is their sum?

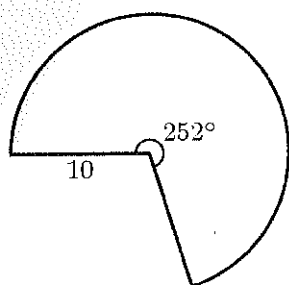
某 3 个数的平均数比最小的数大 10, 比最大的数小 15。这 3 个数的中位数是 5。那么它们的和是多少?

- (A) 5 (B) 20 (C) 25 (D) 30 (E) 36

Problem 17

Which of the cones listed below can be formed from a 252° sector of a circle of radius 10 by aligning the two straight sides?

通过将一个半径为 10，圆心角为 252° 的扇形的两条平直的边重合起来，可以形成下面哪个圆锥体？



(A) A cone with slant height of 10 and radius 6

一个斜高为 10，半径为 6 的圆锥体

(B) A cone with height of 10 and radius 6

一个高为 10，半径为 6 的圆锥体

(C) A cone with slant height of 10 and radius 7

一个斜高为 10，半径为 7 的圆锥体

(D) A cone with height of 10 and radius 7

一个高为 10，半径为 7 的圆锥体

(E) A cone with slant height of 10 and radius 8

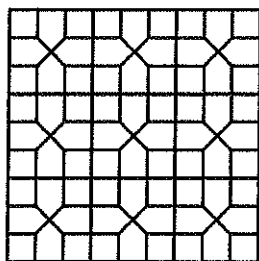
一个斜高为 10，半径为 8 的圆锥体

Problem 18

The plane is tiled by congruent squares and congruent pentagons as indicated. The percent of the plane that is enclosed by the pentagons is closest to

下图中的平面由全等正方形和全等五边形铺成。那么五边形所覆盖的平面面积占

总面积的百分数最接近



- (A) 50 (B) 52 (C) 54 (D) 56 (E) 58

Problem 19

Pat wants to buy four donuts from an ample supply of three types of donuts: glazed, chocolate, and powdered. How many different selections are possible?

Pat 想从供应充足的三种甜甜圈中购买四个甜甜圈：上釉甜甜圈、巧克力甜甜圈和粉末甜甜圈。可能有多少种不同的选择？

- (A) 6 (B) 9 (C) 12 (D) 15 (E) 18

Problem 20

A regular octagon is formed by cutting an isosceles right triangle from each of the corners of a square with sides of length 2000. What is the length of each side of the octagon?

从一个边长为 2000 的正方形的每个角上切除一个等腰直角三角形，就形成一个正八边形。那么这个正八边形的每条边长是多少？

- (A) $\frac{1}{3}(2000)$ (B) $2000(\sqrt{2} - 1)$ (C) $2000(2 - \sqrt{2})$ (D) 1000 (E) $1000\sqrt{2}$

Problem 21

A right circular cylinder with its diameter equal to its height is inscribed in a right circular cone. The cone has diameter 10 and altitude 12, and the axes of the cylinder and cone coincide. Find the radius of the cylinder.

一个底面直径等于高的直圆柱体内接在一个直圆锥体中。此圆锥的直径为 10，高为 12，且圆柱体和圆锥体的轴线重合。求圆柱体的半径。

- (A) $\frac{8}{3}$ (B) $\frac{30}{11}$ (C) 3 (D) $\frac{25}{8}$ (E) $\frac{7}{2}$

Problem 22

In the magic square shown, the sums of the numbers in each row, column, and diagonal are the same. Five of these numbers are represented by v , w , x , y , and z . Find $y + z$.

在如下图所示的魔方中，每一行，每一列以及每条对角线上的数字之和均相同。

其中 5 个数用 v , w , x , y 和 z 代替。求 $y + z$ 。

v	24	w
18	x	y
25	z	21

- (A) 43 (B) 44 (C) 45 (D) 46 (E) 47

Problem 23

A box contains exactly five chips, three red and two white. Chips are randomly removed one at a time without replacement until all the red chips are drawn or all the white chips are drawn. What is the probability that the last chip drawn is white?

一个盒子里恰好有五个筹码，其中三个红色，两个白色。每次不放回地随机取出一个筹码，直到取出所有红色筹码或白色筹码。则最后一次取出的是白色筹码的概率是多少？

- (A) $\frac{3}{10}$ (B) $\frac{2}{5}$ (C) $\frac{1}{2}$ (D) $\frac{3}{5}$ (E) $\frac{7}{10}$

Problem 24

In trapezoid $ABCD$, $\overline{AB}$ and $\overline{CD}$ are perpendicular to $\overline{AD}$, with $AB + CD = BC$, $AB < CD$, and $AD = 7$. What is $AB \cdot CD$?

在梯形 $ABCD$ 中， $\overline{AB}$ 和 $\overline{CD}$ 均垂直于 $\overline{AD}$ ，且

$AB + CD = BC$, $AB < CD$, $AD = 7$ 。那么 $AB \cdot CD$ 是多少？

- (A) 12 (B) 12.25 (C) 12.5 (D) 12.75 (E) 13

Problem 25

How many positive integers not exceeding 2001 are multiples of 3 or 4 but not 5?

有多少个不超过 2001 的正整数是 3 或 4 的倍数，但不是 5 的倍数？

- (A) 768 (B) 801 (C) 934 (D) 1067 (E) 1167