2012 AMC8

Problem 1

Rachelle uses 3 pounds of meat to make 8 hamburgers for her family. How many pounds of meat does she need to make 24 hamburgers for a neighborhood picnic?

Rachelle 用 3 磅肉为她的家人做了 8 个汉堡包。那么为邻里野餐做 24 个汉堡包需要多少磅肉？

(A) 6   (B) $6\frac{2}{3}$ (C) $7\frac{1}{2}$ (D) 8   (E) 9

Problem 2

In the country of East Westmore, statisticians estimate there is a baby born every 8 hours and a death every day. To the nearest hundred, how many people are added to the population of East Westmore each year?

在 East Westmore 这个国家，统计学家们估计，每 8 小时就会有 1 个婴儿出生，并且每天都会有一人去世。那么每年 East Westmore 国家的人口数会增加多少？结果精确到百位.

(A) 600   (B) 700   (C) 800   (D) 900   (E) 1000

Problem 3

On February 13 *The Oshkosh Northwester* listed the length of daylight as 10 hours and 24 minutes, the sunrise was $6:57$AM, and the sunset as $8:15$PM. The length of daylight and sunrise were correct, but the sunset was wrong. When did the sun really set?

在 2 月 13 号这天，The Oshkosh Northwester 给出的白天时长是 10 小时 24 分钟，日出是早上 6：57，日落是晚上 8：15. 白天时长和日出时间是对的，但日落时间不对。那么正确日落时间是多少？

(A) $5:10$PM   (B) $5:21$PM   (C) $5:41$PM   (D) $5:57$PM   (E) $6:03$PM

Problem 4

Peter's family ordered a 12-slice pizza for dinner. Peter ate one slice and shared another slice equally with his brother Paul. What fraction of the pizza did Peter eat?
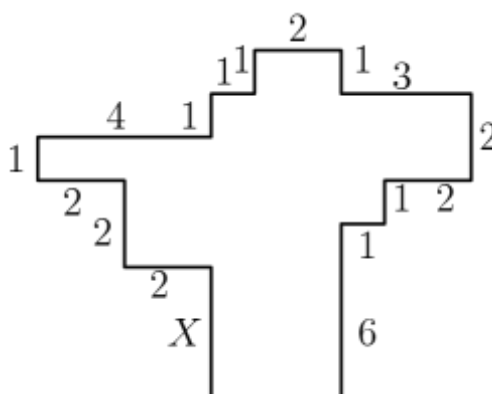
Peter 的家人晚餐订了一块 12 片的比萨。Peter 吃了一片，然后和他的弟弟 Paul 平分了另一片。那么 Peter 所吃的比萨饼占整块的比例是多少？

(A) $\dfrac{1}{24}$　　(B) $\dfrac{1}{12}$　　(C) $\dfrac{1}{8}$　　(D) $\dfrac{1}{6}$　　(E) $\dfrac{1}{4}$

Problem 5

In the diagram, all angles are right angles and the lengths of the sides are given in centimeters. Note the diagram is not drawn to scale. What is the length in X, in centimeters?

如下图所示，所有的角都是直角，并且边长都是以厘米为单位。注意图形没有按比例给出。那么 X 代表的长度是多少厘米？

(A) 1　　(B) 2　　(C) 3　　(D) 4　　(E) 5

Problem 6

A rectangular photograph is placed in a frame that forms a border two inches wide on all sides of the photograph. The photograph measures 8 inches high and 10 inches wide. What is the area of the border, in square inches?

一张长方形的照片被放置在一个框架中，框架在照片的四周形成一个两英寸宽的边界。这张照片高 8 英寸，宽 10 英寸。边界的面积是多少平方英寸？

(A) 36　　(B) 40　　(C) 64　　(D) 72　　(E) 88

Problem 7

Isabella must take four 100-point tests in her math class. Her goal is to achieve an average grade of 95 on the tests. Her first two test scores were 97 and 91. After seeing her score on the third test, she realized she can still reach her goal. What is the lowest possible score she could have made on the third test?

Isabella 必须参加 4 场满分都是 100 分的数学考试。她的目标是平均分达到 95 分。她的前 2 场考试的分数是 97 分和 91 分。当她看到第三场考试分数后，她意识到她还是可以达到她的目标的。那么第三场考试她可能考到的最低分数是多少？

(A) 90　　(B) 92　　(C) 95　　(D) 96　　(E) 97

Problem 8

A shop advertises everything is "half price in today's sale." In addition, a coupon gives a 20% discount on sale prices. Using the coupon, the price today represents what percentage off the original price?

一家商店做了如下广告："今天所有商品半价。"另外，还有可以使价格降低 20% 的一张优惠券可以使用。若使用优惠券，那么今天的商品价格相当于原价降低了百分之多少？

(A) 10　　(B) 33　　(C) 40　　(D) 60　　(E) 70

Problem 9

The Fort Worth Zoo has a number of two-legged birds and a number of four-legged mammals. On one visit to the zoo, Margie counted 200 heads and 522 legs. How many of the animals that Margie counted were two-legged birds?

Fort Worth 动物园有一些两只腿的鸟，和一些 4 只腿的哺乳动物。一次 Margie 去动物园，数到了 200 个头，522 条腿。那么 Margie 数到的动物中，有多少是两只腿的鸟？

(A) 61　　(B) 122　　(C) 139　　(D) 150　　(E) 161

Problem 10

How many 4-digit numbers greater than 1000 are there that use the four digits of 2012?

使用 2012 的四个数字，能组成多少个大于 1000 的四位数？

(A) 6　　(B) 7　　(C) 8　　(D) 9　　(E) 12

Problem 11

The mean, median, and unique mode of the positive integers 3, 4, 5, 6, 6, 7, and x are all equal. What is the value of x?

正整数 3,4,5,6,6,7 和 x 组成的一组数，它们的平均数、中位数、唯一的众数都相等。那么 x 的值是多少？

(A) 5　　(B) 6　　(C) 7　　(D) 11　　(E) 12

Problem 12

What is the units digit (ones place digit) of 13^{2012}?

13^{2012}的个位数是多少？

(A) 1　　(B) 3　　(C) 5　　(D) 7　　(E) 9

Problem 13

Jamar bought some pencils costing more than a penny each at the school bookstore and paid $\$1.43$. Sharona bought some of the same pencils and paid $\$1.87$. How many more pencils did Sharona buy than Jamar?

Jamar 在学校的书店买了一些铅笔，每支价格超过 1 美分，总共付了 1.43 美元。Sharona 也买了一些相同的铅笔，总共支付 1.87 美元。那么 Sharona 买的铅笔教比 Jamar 多多少支？

(A) 2　　(B) 3　　(C) 4　　(D) 5　　(E) 6

Problem 14

In the BIG N, a middle school football conference, each team plays every other team exactly once. If a total of 21 conference games were played during the 2012 season, how many teams were members of the BIG N conference?

在名为"BIG N"的中学足球联盟中，每个队需要与其他队比赛一次。如果 2012 赛季总共进行了 21 场比赛，那么这个足球联盟有多少支球队？

(A) 6　　(B) 7　　(C) 8　　(D) 9　　(E) 10

Problem 15

The smallest number greater than 2 that leaves a remainder of 2 when divided by 3, 4, 5, or 6 lies between what numbers?

大于 2 且除以 3,4,5 或 6 所得余数均为 2 的最小整数在下面哪两个数之间？

(A) 40 and 50   (B) 51 and 55   (C) 56 and 60   (D) 61 and 65   (E) 66 and 99

Problem 16

Each of the digits 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9 is used only once to make two five-digit numbers so that they have the largest possible sum. Which of the following could be one of the numbers?

用数字 0,1,2,3,4,5,6,7,8,9 组成两个 5 位数（每个数字只使用一次），使这两个五位数的和最大。下面哪个可能是这两个数之一？

(A) 76531   (B) 86724   (C) 87431   (D) 96240   (E) 97403

Problem 17

A square with integer side length is cut into 10 squares, all of which have integer side length and at least 8 of which have area 1. What is the smallest possible value of the length of the side of the original square?

一个边长为整数的正方形被分割成 10 个小正方形，这些小正方形的边长也都是整数，并且至少有 8 个面积为 1．那么原来大正方形的边长的最小值是多少？

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

Problem 18

What is the smallest positive integer that is neither prime nor square and that has no prime factor less than 50?

有一个正整数，既不是质数，也不是完全平方数，且没有小于 50 的质因数。那么符合要求的最小正整数是多少？

(A) 3127   (B) 3133   (C) 3137   (D) 3139   (E) 3149

Problem 19

In a jar of red, green, and blue marbles, all but 6 are red marbles, all but 8 are green, and all but 4 are blue. How many marbles are in the jar?

一个罐子里装有红绿蓝三种颜色的玻璃球，除了 6 个之外的其他玻璃球都是红色的，除了 8 个之外的其他玻璃球都是绿色的，除了 4 个之外的其他玻璃球都是蓝色的。那么罐子里有多少个玻璃球？

(A) 6   (B) 8   (C) 9   (D) 10   (E) 12

Problem 20

What is the correct ordering of the three numbers $\dfrac{5}{19}$, $\dfrac{7}{21}$, and $\dfrac{9}{23}$, in increasing order?

$\dfrac{5}{19}$，$\dfrac{7}{21}$和$\dfrac{9}{23}$这三个数由小到大的正确排序是哪个？

(A) $\dfrac{9}{23} < \dfrac{7}{21} < \dfrac{5}{19}$ (B) $\dfrac{5}{19} < \dfrac{7}{21} < \dfrac{9}{23}$ (C) $\dfrac{9}{23} < \dfrac{5}{19} < \dfrac{7}{21}$

(D) $\dfrac{5}{19} < \dfrac{9}{23} < \dfrac{7}{21}$ (E) $\dfrac{7}{21} < \dfrac{5}{19} < \dfrac{9}{23}$

Problem 21

Marla has a large white cube that has an edge of 10 feet. She also has enough green paint to cover 300 square feet. Marla uses all the paint to create a white square centered on each face, surrounded by a green border. What is the area of one of the white squares, in square feet?

Marla 有一个边长为 10 英尺的大的白色正方体。她同时还有能够粉刷 300 平方英尺的绿漆。Marla 使用了全部的绿漆，将白色正方体涂成了这样的一个正方体：正方体的每个面的中央都有一个白色正方形，四周被绿边围绕。那么其中一个面上的白色正方形的面积是多少平方英尺？

(A) $5\sqrt{2}$ (B) 10   (C) $10\sqrt{2}$ (D) 50   (E) $50\sqrt{2}$

Problem 22

Let R be a set of nine distinct integers. Six of the elements are 2, 3, 4, 6, 9, and 14. What is the number of possible values of the median of R?

R 是由 9 个不同的整数组成的集合。其中 6 个元素是 2,3,4,6,9 和 14．那么 R 的中位数有多少个可能的值？

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

Problem 23

An equilateral triangle and a regular hexagon have equal perimeters. If the area of the triangle is 4, what is the area of the hexagon?
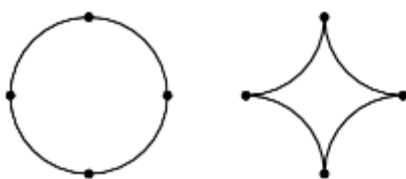
一个等边三角形和一个正六边形的周长相等。若三角形的面积是 4，那么六边形的面积是多少？

(A) 4   (B) 5   (C) 6   (D) $4\sqrt{3}$ (E) $6\sqrt{3}$

Problem 24

A circle of radius 2 is cut into four congruent arcs. The four arcs are joined to form the star figure shown. What is the ratio of the area of the star figure to the area of the original circle?

半径为 2 的圆被分割成 4 段相等的弧，这 4 段弧拼接成如图所示的星型。那么这个星型的面积和原来圆的面积的比值是多少？

(A) $\dfrac{4-\pi}{\pi}$ (B) $\dfrac{1}{\pi}$ (C) $\dfrac{\sqrt{2}}{\pi}$ (D) $\dfrac{\pi-1}{\pi}$ (E) $\dfrac{3}{\pi}$

Problem 25

A square with area 4 is inscribed in a square with area 5, with one vertex of the smaller square on each side of the larger square. A vertex of the smaller square divides a side of the larger square into two segments, one of length a, and the other of length b. What is the value of ab?

一个面积为 4 的正方形内接在一个面积为 5 的正方形内，小正方形的每个顶点分别落在大正方形的每条边上。小正方形的某个顶点将大正方形的一条边分成了 2 条线段，长度分别是 a 和 b，那么 ab 的值是多少？
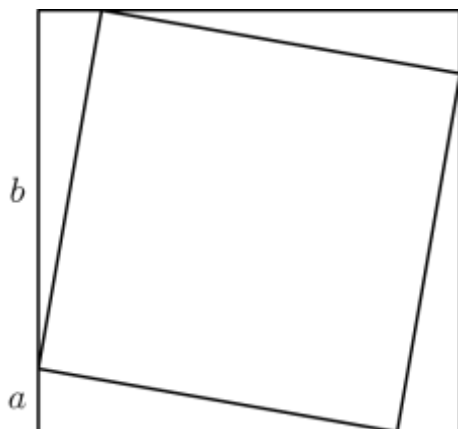
(A) $\dfrac{1}{5}$ (B) $\dfrac{2}{5}$ (C) $\dfrac{1}{2}$ (D) 1   (E) 4

2012 AMC 8 Answer Key

1	2	3	4	5	6	7	8	9	10	11	12	13
E	B	B	C	E	E	B	D	C	D	D	A	C

14	15	16	17	18	19	20	21	22	23	24	25	
B	D	C	B	A	C	B	D	D	C	A	C	