2011 AMC8

Problem 1

Margie bought 3 apples at a cost of 50 cents per apple. She paid with a 5-dollar bill. How much change did Margie receive?

Margie 买了 3 个苹果，每个 50 美分。她付了 5 美元，那么她应该找回多少零钱？

(A) $1.50   **(B)** $2.00   **(C)** $2.50   **(D)** $3.00   **(E)** $3.50

Problem 2

Karl's rectangular vegetable garden is 20 feet by 45 feet, and Makenna's is 25 feet by 40 feet. Which of the following statements are true?

Karl 的长方形蔬菜园的尺寸是 20 英尺 x 45 英尺，Makenna 的菜园是 25 英尺 x 40 英尺。下面哪句话是对的？

（A） Karl's garden is larger by 100 square feet．| Karl 的菜园比 Makenna 的大 100 平方英尺。

（B） Karl's garden is larger by 25 square feet． | Karl 的菜园比 Makenna 的大 25 平方英尺。

（C） The gardens are the same size.| 两人的菜园一样大。

（D） Makenna's garden is larger by 25 square feet.| Makenna 的菜园比 Karl 的大 25 平方英尺。

（E）Makenna's garden is larger by 100 square feet.| Makenna 的菜园比 Karl 的大 100 平方英尺。

Problem 3

Extend the square pattern of 8 black and 17 white square tiles by attaching a border of black tiles around the square. What is the ratio of black tiles to white tiles in the extended pattern?

把下图所示的有 8 块黑色和 17 块白色方形瓷砖组成的正方形图案，通过围绕着这个大正方形的外周贴一圈黑色的瓷砖而进行拓展。那么拓展后的图形中，黑色瓷砖和白色瓷砖的个数的比值是多少？
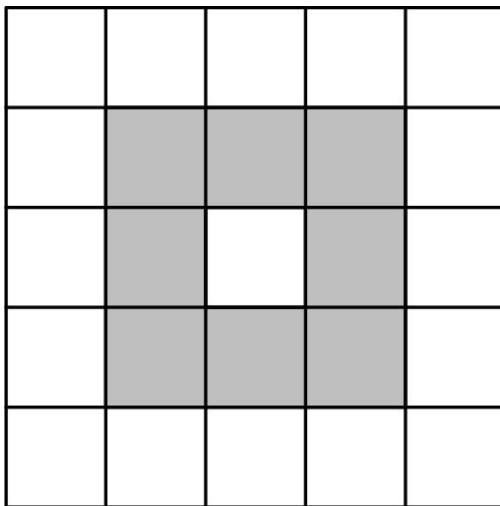
(A) $8 : 17$　　(B) $25 : 49$　　(C) $36 : 25$　　(D) $32 : 17$　　(E) $36 : 17$

Problem 4

Here is a list of the numbers of fish that Tyler caught in nine outings last summer:$2, 0, 1, 3, 0, 3, 3, 1, 2$.Which statement about the mean, median, and mode is true?

下面是 Tyler 去年夏天在 9 次出游中钓到的鱼的数量列表：2，0，1，3，0，3，3，1，2。关于平均值、中位数和众数的说法，下面哪个正确？

mean | 平均值　　median | 中位数　　mode | 众数

(A) median < mean < mode　　(B) mean < mode < median

(C) mean < median < mode　　(D) median < mode < mean

(E) mode < median < mean

Problem 5

What time was it 2011 minutes after midnight on January 1, 2011?

从 2011 年 1 月 1 日凌晨开始，经过 2011 分钟后是什么时间？

(A) January 1 at 9:31 PM |1 月 1 日下午 9:31

(B) January 1 at 11:51 PM |1 月 1 日下午 11:51

(C) January 2 at 3:11 AM |1 月 2 日上午 3:11

(D) January 2 at 9:31 AM |1 月 2 日上午 9:31

(E) January 2 at 6:01 PM |1 月 2 日下午 6:01

Problem 6

In a town of 351 adults, every adult owns a car, motorcycle, or both. If 331 adults own cars and 45 adults own motorcycles, how many of the car owners do not own a motorcycle?

在一个有 351 个成年人的小镇，每个成年人都有汽车，摩托车或者两者兼具。若 331 人有汽车，45 人有摩托车，那么拥有汽车的人当中，有多少人没有摩托车？

(A) 20   **(B)** 25   **(C)** 45   **(D)** 306   **(E)** 351

Problem 7

Each of the following four large congruent squares is subdivided into combinations of congruent triangles or rectangles and is partially bolded. What percent of the total area is partially bolded?

下面 4 个大的全等正方形，每个都被分成几个全等的三角形或者矩形，并且一部分用粗体表示。那么粗体部分的面积占了总面积的百分之多少？
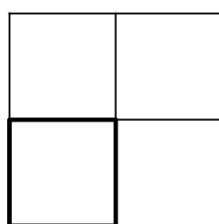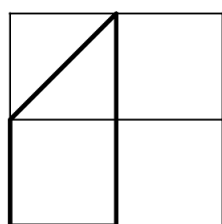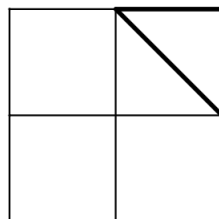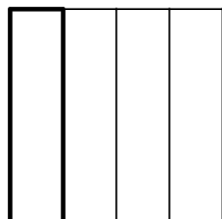
$(A)12\dfrac{1}{2}$ $(B)20$ $(C)25$ $(D)33\dfrac{1}{3}$ $(E)37\dfrac{1}{2}$

Problem 8

Bag A has three chips labeled 1, 3, and 5. Bag B has three chips labeled 2, 4, and 6. If one chip is drawn from each bag, how many different values are possible for the sum of the two numbers on the chips?
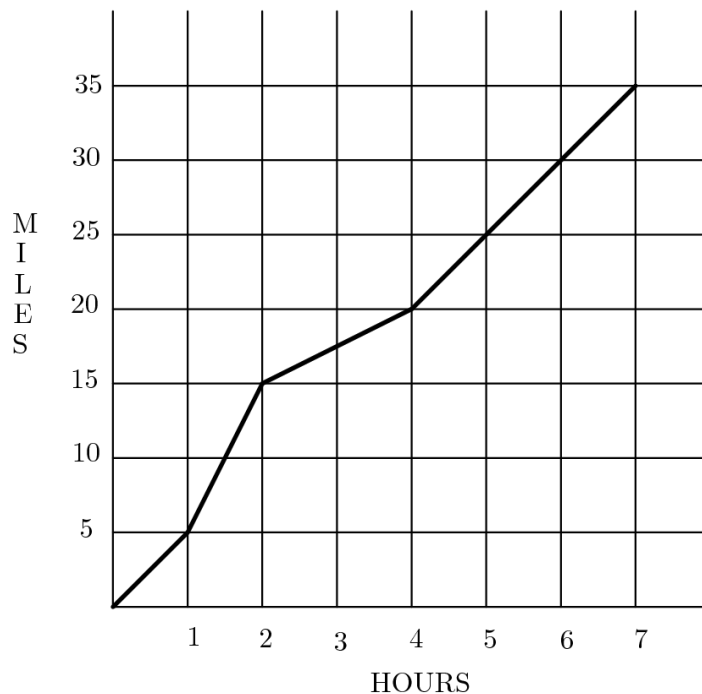
口袋 A 中有标有 1，3，5 的三个筹码，口袋 B 中有标有 2，4，6 的三个筹码。若从每个口袋中随机抽出一个筹码，那么这 2 个筹码上的数字之和有多少种可能的不同值？

(A) 4 (B) 5 (C) 6 (D) 7 (E) 9

Problem 9

Carmen takes a long bike ride on a hilly highway. The graph indicates the miles traveled during the time of her ride. What is Carmen's average speed for her entire ride in miles per hour?

卡门在一条丘陵公路上骑了很长时间的自行车。这张图表显示了她骑车时行驶的英里数。卡门整个旅程的平均速度是多少英里每小时？

Miles | 英里数   Hours | 小时数

(A)2   (B)2.5   (C)4   (D)4.5   (E)5

Problem 10

The taxi fare in Gotham City is \$2.40 for the first $\frac{1}{2}$ mile and additional mileage charged at the rate \$0.20 for each additional 0.1 mile. You plan to give the driver a \$2 tip. How many miles can you ride for \$10?
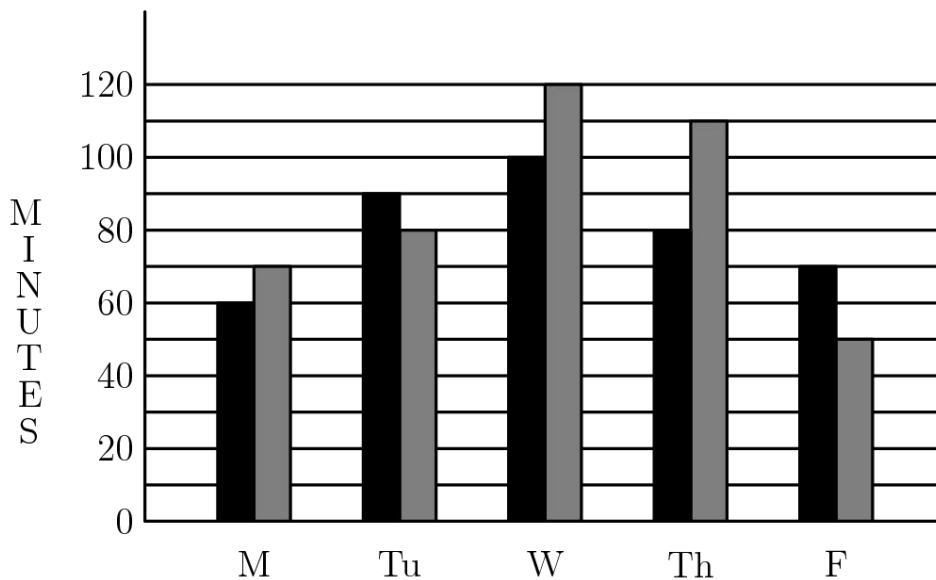
高谭市的出租车前$\frac{1}{2}$英里收费 2.40 美元，后面每增加 0.1 英里收费 0.20 美元。你还打算给司机 2 美元小费，那么 10 美元你能坐多少英里？

(A) 3.0   (B) 3.25   (C) 3.3   (D) 3.5   (E) 3.75

Problem 11

The graph shows the number of minutes studied by both Asha (black bar) and Sasha(grey bar) in one week. On the average, how many more minutes per day did Sasha study than Asha?

下图显示了一周内 Asha（黑色长条）和 Sasha（灰色长条）的学习时间（分钟）。那么 Sasha 平均每天的学习时间比 Asha 多多少分钟？

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

Problem 12

Angie, Bridget, Carlos, and Diego are seated at random around a square table, one person to a side. What is the probability that Angie and Carlos are seated opposite each other?
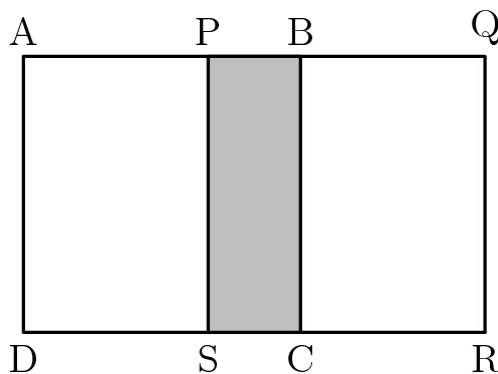
Angie，Bridget，Carlos 和 Diego 随机围着一张方桌坐下，一人坐一边。那么 Angie 和 Carlos 面对面坐着的概率是多少？

(A) $\frac{1}{4}$ (B) $\frac{1}{3}$ (C) $\frac{1}{2}$ (D) $\frac{2}{3}$ (E) $\frac{3}{4}$

Problem 13

Two congruent squares, $ABCD$ and $PQRS$, have side length 15. They overlap to form the 15 by 25 rectangle $AQRD$ shown. What percent of the area of rectangle $AQRD$ is shaded?

ABCD 和 *PQRS* 是两个全等的正方形，边长均为 15. 它们重合形成一个 15 x 25 的矩形 *AQRD*，如图所示。那么阴影部分占了矩形 *AQRD* 面积的百分之多少？

(A) 15   **(B)** 18   **(C)** 20   **(D)** 24   **(E)** 25

Problem 14

There are 270 students at Colfax Middle School, where the ratio of boys to girls is $5:4$. There are 180 students at Winthrop Middle School, where the ratio of boys to girls is $4:5$. The two schools hold a dance and all students from both schools attend. What fraction of the students at the dance are girls?

Colfax 中学有 270 个学生，男生和女生的比例是 5:4。Winthrop 中学有 180 个学生，男生和女生的比例是 4:5。这两个学校举行了一次舞会，并且两个学校的学生都参加了这次舞会。那么舞会上女生所占总学生数的比例是多少？

(A) $\dfrac{7}{18}$ **(B)** $\dfrac{7}{15}$ **(C)** $\dfrac{22}{45}$ **(D)** $\dfrac{1}{2}$ **(E)** $\dfrac{23}{45}$

Problem 15

How many digits are in the product $4^5 \cdot 5^{10}$?

$4^5 \cdot 5^{10}$ 的乘积结果有多少位数字？

(A) 8   **(B)** 9   **(C)** 10   **(D)** 11   **(E)** 12

Problem 16

Let A be the area of the triangle with sides of length $25, 25,$ and $30.$ Let B be the area of the triangle with sides of length $25, 25,$ and $40.$ What is the relationship between A and B?

A 表示边长为 25，25，30 的三角形的面积，B 表示边长为 25，25，40 的三角形的面积，那么 A 和 B 的关系是什么？

(A) $A = \dfrac{9}{16}B$ **(B)** $A = \dfrac{3}{4}B$ **(C)** $A = B$ **(D)** $A = \dfrac{4}{3}B$

(E) $A = \dfrac{16}{9}B$

Problem 17

Let w, x, y, and z be whole numbers. If $2^w \cdot 3^x \cdot 5^y \cdot 7^z = 588,$ then what does $2w + 3x + 5y + 7z$ equal?

已知 w，x，y 和 z 都是整数。若 $2^w \cdot 3^x \cdot 5^y \cdot 7^z = 588$，那么 $2w + 3x + 5y + 7z$ 等于多少？

(A) 21 **(B)** 25 **(C)** 27 **(D)** 35 **(E)** 56

Problem 18

A fair 6-sided die is rolled twice. What is the probability that the first number that comes up is greater than or equal to the second number?
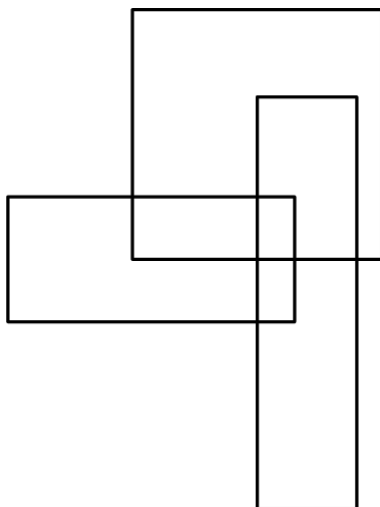
一个标准的 6 面骰子掷了两次，那么第一次正面朝上的数大于或等于第二次正面朝上的数的概率是多少？

(A) $\dfrac{1}{6}$ **(B)** $\dfrac{5}{12}$ **(C)** $\dfrac{1}{2}$ **(D)** $\dfrac{7}{12}$ **(E)** $\dfrac{5}{6}$

Problem 19

How many rectangles are in this figure?
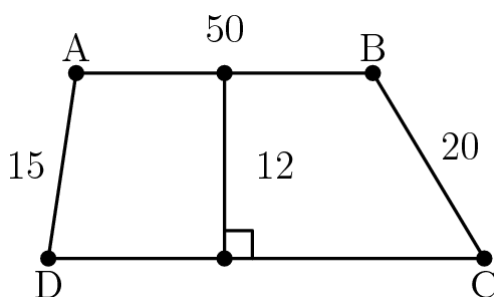
下图中有多少个长方形?

(**A**) 8   (**B**) 9   (**C**) 10   (**D**) 11   (**E**) 12

Problem 20

Quadrilateral $ABCD$ is a trapezoid, $AD = 15$, $AB = 50$, $BC = 20$, and the altitude is 12. What is the area of the trapezoid?

四边形 *ABCD* 是个梯形，其中 *AD*=15，*AB*=50，*BC*=20，且高为 12. 那么这个梯形的面积是多少?

(**A**) 600   (**B**) 650   (**C**) 700   (**D**) 750   (**E**) 800

Problem 21

Students guess that Norb's age is $24, 28, 30, 32, 36, 38, 41, 44, 47,$ and $49.$ Norb says, "At least half of you guessed too low, two of you are off by one, and my age is a prime number." How old is Norb?

学生猜测 Norb 的年龄是 24，28，30，32，36，38，41，44，47 和 49 岁。Norb 说："你们中至少有一半猜的太低，有 2 个同学猜的跟实际年龄相差 1 岁，并且我的年龄是个质数"。那么 Norb 多大?

(A) 29　　(B) 31　　(C) 37　　(D) 43　　(E) 48

Problem 22

What is the **tens** digit of 7^{2011}?

7^{2011}的十位数字是多少?

(A) 0　　(B) 1　　(C) 3　　(D) 4　　(E) 7

Problem 23

How many 4-digit positive integers have four different digits, where the leading digit is not zero, the integer is a multiple of 5, and 5 is the largest digit?

有多少个各个位上数字不同的 4 位数，满足以下条件：最高位不为 0，这个 4 位数是 5 的倍数，且 5 是最大的数字?

(A) 24　　(B) 48　　(C) 60　　(D) 84　　(E) 108

Problem 24

In how many ways can 10001 be written as the sum of two primes?
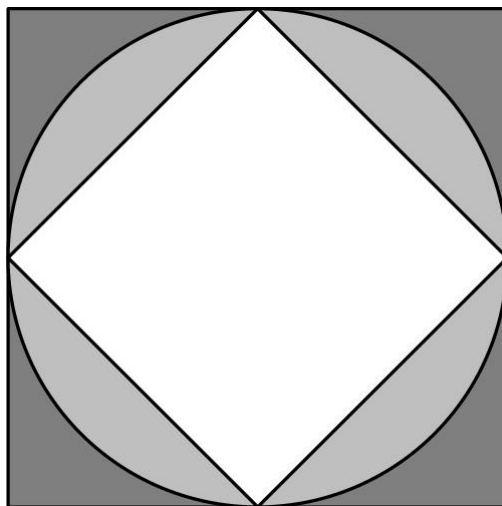
有多少种方法可以将 10001 写成两个质数之和?

(A) 0　　(B) 1　　(C) 2　　(D) 3　　(E) 4

Problem 25

A circle with radius 1 is inscribed in a square and circumscribed about another square as shown. Which fraction is closest to the ratio of the circle's shaded area to the area between the two squares?

一个半径为 1 的圆内切于一个正方形中，并且外接于另一个正方形，如图所示。那么圆的阴影部分的面积和两个正方形之间的面积的比值最接近下面哪个分数？

(A) $\dfrac{1}{2}$　　(B) 1　　(C) $\dfrac{3}{2}$　　(D) 2　　(E) $\dfrac{5}{2}$

2011 AMC 8 Answer Key

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

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

2011 AMC 8 Solution

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