2003 AMC8

Problem 1

Jamie counted the number of edges of a cube, Jimmy counted the numbers of corners, and Judy counted the number of faces. They then added the three numbers. What was the resulting sum?

Jamie 数了一个正方体的边数，Jimmy 数了它的顶点数，Judy 数了它的面数。然后他们把这三个数字相加。结果是多少？

(A) 12 (B) 16 (C) 20 (D) 22 (E) 26

Problem 2

Which of the following numbers has the smallest prime factor?

下面哪个数有最小的质因子?

(A) 55 (B) 57 (C) 58 (D) 59 (E) 61

Problem 3

A burger at Ricky C's weighs 120 grams, of which 30 grams are filler. What percent of the burger is not filler?

Ricky C's 的汉堡重 120 克，其中 30 克是填料。汉堡的百分之多少不是填料？

(A) 60% (B) 65% (C) 70% (D) 75% (E) 90%

Problem 4

A group of children riding on bicycles and tricycles rode past Billy Bob's house. Billy Bob counted 7 children and 19 wheels. How many tricycles were there?

一群骑自行车和三轮车的孩子经过 Billy Bob 的家。Billy Bob 数了数，一共数到了 7 个孩子和 19 个轮子，那么有多少辆三轮车？

(A) 2 (B) 4 (C) 5 (D) 6 (E) 7

Problem 5

If 20% of a number is 12, what is 30% of the same number?

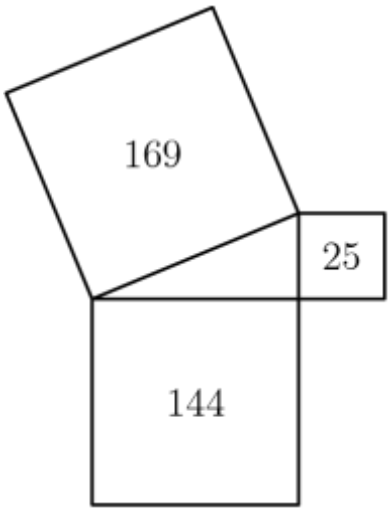
如果一个数的 20％是 12，那么这个数的 30％是多少？

(A) 15 (B) 18 (C) 20 (D) 24 (E) 30

Problem 6

Given the areas of the three squares in the figure, what is the area of the interior triangle?

已知图中三个正方形的面积，求中间位置的三角形的面积是多少？



(A) 13 (B) 30 (C) 60 (D) 300 (E) 1800

Problem 7

Blake and Jenny each took four 100-point tests. Blake averaged 78 on the four tests. Jenny scored 10 points higher than Blake on the first test, 10 points lower than him on the second test, and 20 points higher on both the third and fourth tests. What is the difference between Jenny's average and Blake's average on these four tests?

Blake 和 Jenny 每人参加了四次满分为 100 分的测验。Blake 在四次测试中平均得分为 78 分。Jenny 在第一次测试中比 Blake 高 10 分，在第二次测试中比他低 10 分，在第三次和第四次测试中都比他高 20 分。那么 Jenny 和 Blake 在这四项测试中的平均分的差是多少？

(A) 10 (B) 15 (C) 20 (D) 25 (E) 40

Problem 8

Bake Sale 烘烤物售卖

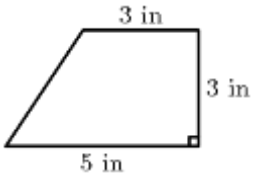
(Problems 8, 9, and 10 use the data found in the accompanying paragraph and figures)

（第 8、9 和 10 题使用文中和图中的数据）

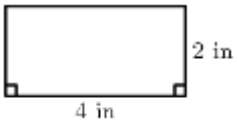
Four friends, Art, Roger, Paul and Trisha, bake cookies, and all cookies have the same thickness. The shapes of the cookies differ, as shown.

四个朋友，Art，Roger，Paul 和 Trisha 烤饼干，所有的饼干都有相同的厚度。饼干的形状不同，如图所示。

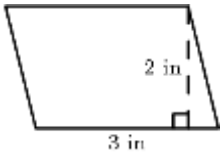
- Art's cookies are trapezoids.



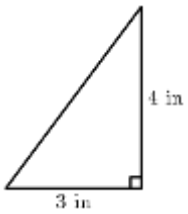
- Roger's cookies are rectangles.



- Paul's cookies are parallelograms.



- Trisha's cookies are triangles.



Each friend uses the same amount of dough, and Art makes exactly 12 cookies. Who gets the fewest cookies from one batch of cookie dough?

每个朋友都用了等量的面团，Art 正好做了 12 块饼干。谁用这批饼干面团做的饼干数最少？

(A) Art **(B)** Roger **(C)** Paul **(D)** Trisha **(E)** There is a tie for fewest.

Problem 9

Each friend uses the same amount of dough, and Art makes exactly 12 cookies. Art's cookies sell for 60 cents each. To earn the same amount from a single batch, how much should one of Roger's cookies cost in cents?

每个朋友都用了等量的面团，Art 正好做了 12 块饼干。Art 的饼干每个卖 60 美分。为了从这批面团赚得同样的钱，那么 Roger 的饼干应该每个卖多少美分？

$\textbf{(A)}\ 18 \qquad \textbf{(B)}\ 25 \qquad \textbf{(C)}\ 40 \qquad \textbf{(D)}\ 75 \qquad \textbf{(E)}\ 90$

Problem 10

How many cookies will be in one batch of Trisha's cookies?

Trisha 能用这批面团做多少个饼干?

$\textbf{(A)}\ 10 \qquad \textbf{(B)}\ 12 \qquad \textbf{(C)}\ 16 \qquad \textbf{(D)}\ 18 \qquad \textbf{(E)}\ 24$

Problem 11

Business is a little slow at Lou's Fine Shoes, so Lou decides to have a sale. On Friday, Lou increases all of Thursday's prices by 10%. Over the weekend, Lou advertises the sale: "Ten percent off the listed price. Sale starts Monday." How much does a pair of shoes cost on Monday that cost 40 dollars on Thursday?

Lou 的精品鞋生意有点不景气，所以 Lou 决定降价促销。周五的时候，Lou 将周四的所有价格上调 10%。周末的时候，Lou 在广告中说：“降价百分之十。降价从周一开始。”一双周四时价格为 40 美元的鞋，在周一时价格是多少？

$\textbf{(A)}\ 36 \qquad \textbf{(B)}\ 39.60 \qquad \textbf{(C)}\ 40 \qquad \textbf{(D)}\ 40.40 \qquad \textbf{(E)}\ 44$

Problem 12

When a fair six-sided die is tossed on a table top, the bottom face cannot be seen. What is the probability that the product of the numbers on the five faces that can be seen is divisible by 6?

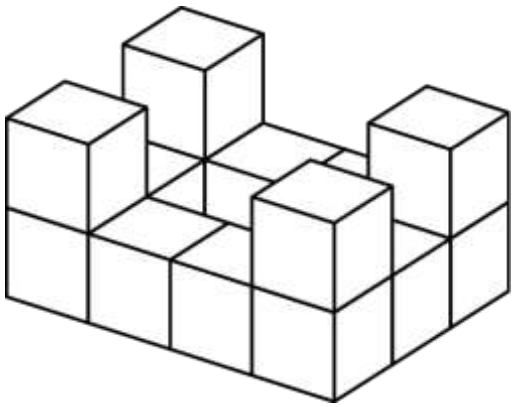
当把一个标准的六面骰子掷到桌面上时，骰子底面数字无法看到。那么其他能看到的五个面上的数字之积能被 6 整除的概率是多少?

$\textbf{(A)}\ \frac{1}{3} \qquad \textbf{(B)}\ \frac{1}{2} \qquad \textbf{(C)}\ \frac{2}{3} \qquad \textbf{(D)}\ \frac{5}{6} \qquad \textbf{(E)}\ 1$

Problem 13

Fourteen white cubes are put together to form the figure on the right. The complete surface of the figure, including the bottom, is painted red. The figure is then separated into individual cubes. How many of the individual cubes have exactly four red faces?

14 个白色正方体被放在一起形成右边的图形。图形的整个表面（包括底部）被涂成红色。接着将图形分割为各个正方体。有多少个正方体正好有四个红色的面？



(A) 4 **(B)** 6 **(C)** 8 **(D)** 10 **(E)** 12

Problem 14

In this addition problem, each letter stands for a different digit.

在下面的加法问题中，每个字母代表一个不同的数字。

$$\begin{array}{cccc} & T & W & O \\ + & T & W & O \\ \hline F & O & U & R \end{array}$$

If $T = 7$ and the letter O represents an even number, what is the only possible value for W?

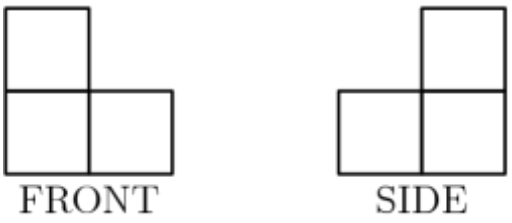
如果 T=7，且字母O代表一个偶数。那么 W的唯一可能值是多少？

(A) 0 **(B)** 1 **(C)** 2 **(D)** 3 **(E)** 4

Problem 15

A figure is constructed from unit cubes. Each cube shares at least one face with another cube. What is the minimum number of cubes needed to build a figure with the front and side views shown?

一种图形是由若干个单位正方体组成。每个正方体都和其他正方体共用至少一个面。这个图形的正视图和侧视图如下图所示，则这个图形最少是由多少个正方体组成?



FRONT | 正面　　SIDE | 侧面

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

Problem 16

Ali, Bonnie, Carlo, and Dianna are going to drive together to a nearby theme park. The car they are using has 4 seats: 1 driver's seat, 1 front passenger seat, and 2 back passenger seats. Bonnie and Carlo are the only ones who know how to drive the car. How many possible seating arrangements are there?

Ali，Bonnic，Carlo 和 Dianna 将一起开车去附近的一个主题公园。他们使用的汽车有 4 个座椅：1 个驾驶员座椅、1 个前排乘客座椅和 2 个后排乘客座椅。车上只有 Bonnie 和 Carlo 会开车。则有多少种可能的安排座位的方法?

(A) 2　　**(B)** 4　　**(C)** 6　　**(D)** 12　　**(E)** 24

Problem 17

The six children listed below are from two families of three siblings each. Each child has blue or brown eyes and black or blond hair. Children from the same family have at least one of these characteristics in common. Which two children are Jim's siblings?

下面列出的六名儿童来自两个家庭，每个家庭有三个兄弟姐妹。每个孩子都有蓝色或棕色的眼睛，和黑色或金色的头发。来自同一家庭的儿童至少有一个共同特征。哪两个孩子是 Jim 的兄弟姐妹？

Child	Eye Color	Hair Color
Benjamin	Blue	Black
Jim	Brown	Blonde
Nadeen	Brown	Black
Austin	Blue	Blonde
Tevyn	Blue	Black
Sue	Blue	Blonde

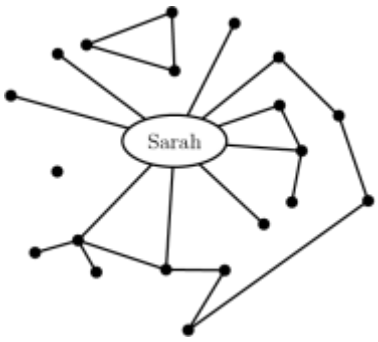
Eye Color | 眼睛颜色　　Hair Color | 头发颜色

(A) Nadeen and Austin　**(B)** Benjamin and Sue　**(C)** Benjamin and Austin　**(D)** Nadeen and Tevyn　**(E)** Austin and Sue

Problem 18

Each of the twenty dots on the graph below represents one of Sarah's classmates. Classmates who are friends are connected with a line segment. For her birthday party, Sarah is inviting only the following: all of her friends and all of those classmates who are friends with at least one of her friends. How many classmates will not be invited to Sarah's party?

下图中的 20 个点中的每个点代表 Sarah 的一个同班同学。这些同班同学中，若某两人之间是朋友关系，则用线段将这两人相连。Sarah 只打算邀请符合下面条件的人参加她的生日聚会：她的所有朋友，以及所有与她的至少一个朋友是朋友。有多少同学不会被邀请参加 Sarah 的聚会？



(A) 1　**(B)** 4　**(C)** 5　**(D)** 6　**(E)** 7

Problem 19

How many integers between 1000 and 2000 have all three of the numbers 15, 20, and 25 as factors?

1000 和 2000 之间有多少个整数，满足 15，20 和 25 都是它的因子?

(A) 1 **(B)** 2 **(C)** 3 **(D)** 4 **(E)** 5

Problem 20

What is the measure of the acute angle formed by the hands of the clock at 4:20 PM?

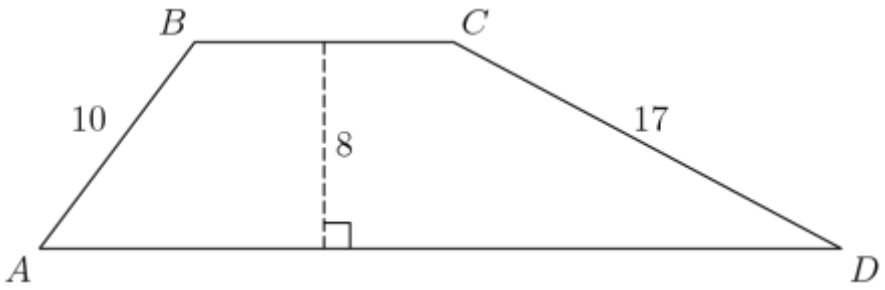
下午 4:20 时，钟面上时针和分针所形成的的锐角是多少度？

(A) 0 **(B)** 5 **(C)** 8 **(D)** 10 **(E)** 12

Problem 21

The area of trapezoid $ABCD$ is 164 cm^2. The altitude is 8 cm, AB is 10 cm, and CD is 17 cm. What is BC, in centimeters?

梯形 *ABCD* 的面积是 164 平方厘米，高为 8 厘米，*AB* 的长为 10 厘米，*CD* 的长为 17 厘米。则 *BC* 的长为多少厘米?

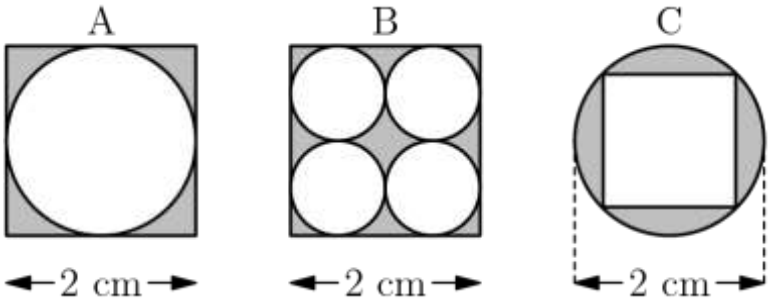


(A) 9 **(B)** 10 **(C)** 12 **(D)** 15 **(E)** 20

Problem 22

The following figures are composed of squares and circles. Which figure has a shaded region with largest area?

下图是由正方形和圆组成的图形。哪个图形的阴影部分的面积最大？

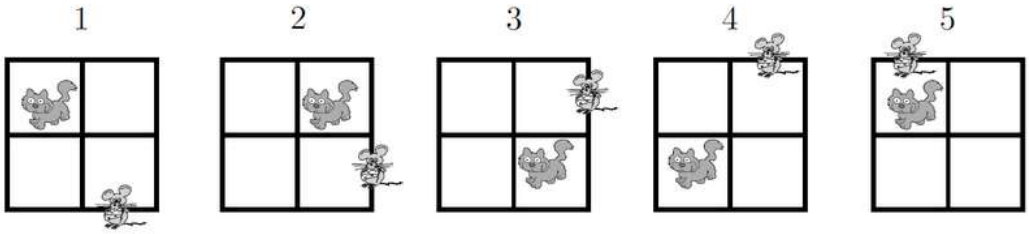


(A) A only **(B)** B only **(C)** C only **(D)** both A and B **(E)** all are equal

Problem 23

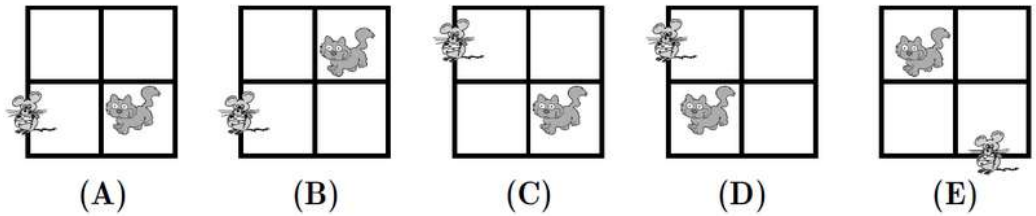
In the pattern below, the cat moves clockwise through the four squares and the mouse moves counterclockwise through the eight exterior segments of the four squares.

在下面的图案里，猫顺时针在四个正方形里移动，老鼠逆时针沿着四个正方形外围的 8 根线段移动。



If the pattern is continued, where would the cat and mouse be after the 247th move?

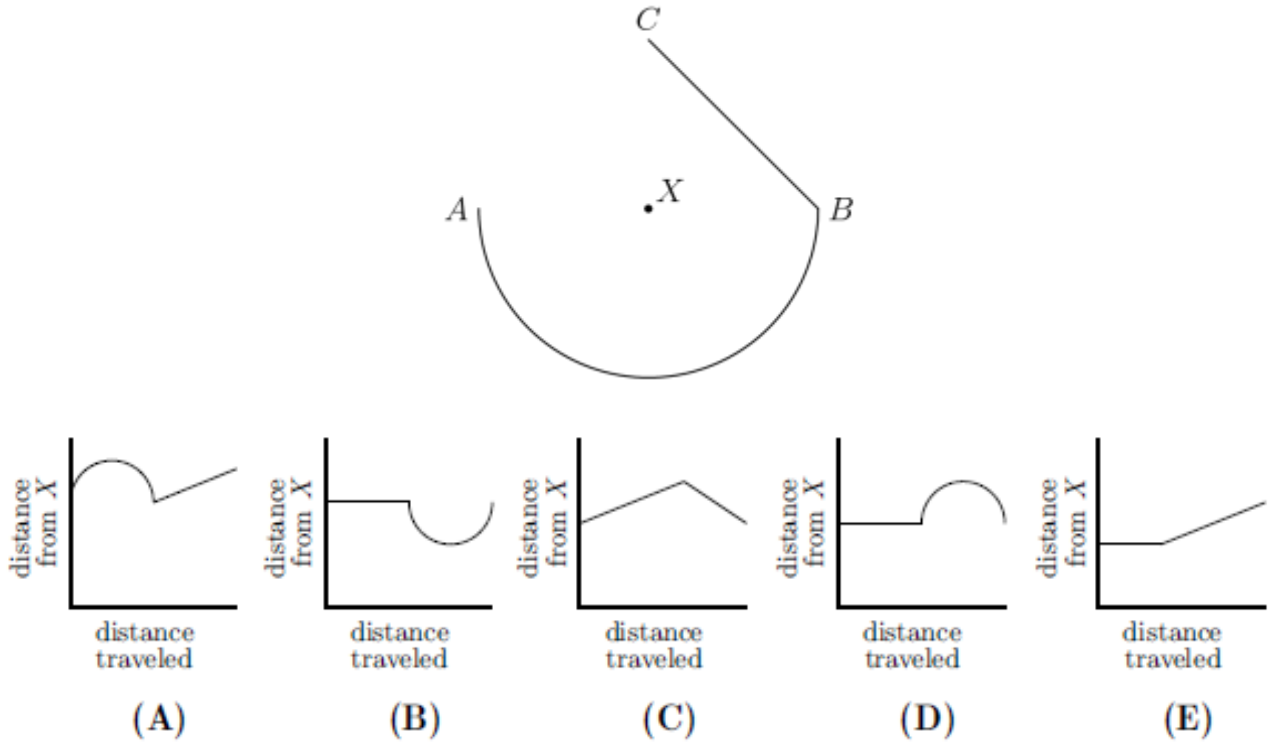
依照此规律，则在第 247 次移动结束后，猫和老鼠分别会在哪里？



Problem 24

A ship travels from point A to point B along a semicircular path, centered at Island X. Then it travels along a straight path from B to C. Which of these graphs best shows the ship's distance from Island X as it moves along its course?

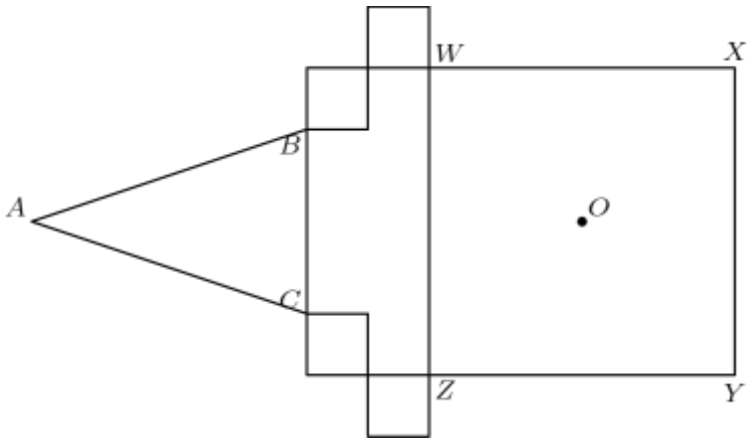
一艘船沿着以岛 X 为圆心的半圆形路径从点 A 航行到点 B。然后它沿着直线路径从 B 到 C。下面这些图表中哪一个最能显示当船沿航线行驶时，船与岛 X 的距离变化？



Problem 25

In the figure, the area of square $WXYZ$ is $25\ \text{cm}^2$. The four smaller squares have sides 1 cm long, either parallel to or coinciding with the sides of the large square. In $\triangle ABC$, $AB = AC$, and when $\triangle ABC$ is folded over side $\overline{BC}$, point A coincides with O, the center of square $WXYZ$. What is the area of $\triangle ABC$, in square centimeters?

在下图中，正方形 $WXYZ$ 的面积为 25 平方厘米。四个小正方形边长为 1 厘米，它们的各边与大正方形的边平行或重合。在$\triangle ABC$中， $AB = AC$，若将$\triangle ABC$沿着边$\overline{BC}$折叠，则点 A 和正方形$WXYZ$的中心O重合。那么 $\triangle ABC$的面积是多少平方厘米？



(A) $\frac{15}{4}$ **(B)** $\frac{21}{4}$ **(C)** $\frac{27}{4}$ **(D)** $\frac{21}{2}$ **(E)** $\frac{27}{2}$

2003 AMC 8 Answer Key

1	2	3	4	5	6	7	8	9	10	11	12	13
E	C	D	C	B	B	A	A	C	E	B	E	B
14	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	
D	B	D	E	D	C	D	B	C	A	B	C	