2005 AMC8

Problem 1

Connie multiplies a number by 2 and gets 60 as her answer. However, she should have divided the number by 2 to get the correct answer. What is the correct answer?

Connie 把一个数字乘以 2，得到答案为 60。然而，她本应该把数字除以 2 才能得到正确的答案。那么正确答案是什么？

(A) 7.5 **(B)** 15 **(C)** 30 **(D)** 120 **(E)** 240

Problem 2

Karl bought five folders from Pay-A-Lot at a cost of $\$2.50$ each. Pay-A-Lot had a 20%-off sale the following day. How much could Karl have saved on the purchase by waiting a day?

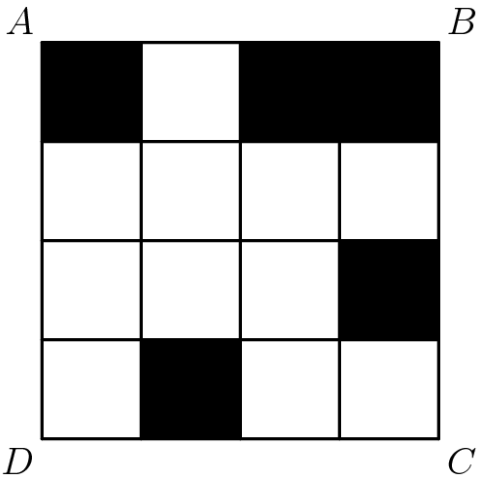
Karl 从 Pay-A-Lot 买了五个文件夹，每个价格为 2.5 美元。Pay-A-Lot 第二天降价 20%。那么 Karl 如果等一天他本可以省下多少钱？

(A) \$1.00 **(B)** \$2.00 **(C)** \$2.50 **(D)** \$2.75 **(E)** \$5.00

Problem 3

What is the minimum number of small squares that must be colored black so that a line of symmetry lies on the diagonal $\overline{BD}$ of square $ABCD$?

要使得正方形 *ABCD* 的一条对称轴位于对角线$\overline{BD}$上，则至少需要将多少个小正方形涂成黑色？



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

Problem 4

A square and a triangle have equal perimeters. The lengths of the three sides of the triangle are 6.1 cm, 8.2 cm and 9.7 cm. What is the area of the square in square centimeters?

一个正方形和一个三角形的周长相等。三角形的三条边长分别是 6.1cm，8.2cm 和 9.7cm。那么正方形的面积是多少平方厘米？

$\textbf{(A)}\ 24 \qquad \textbf{(B)}\ 25 \qquad \textbf{(C)}\ 36 \qquad \textbf{(D)}\ 48 \qquad \textbf{(E)}\ 64$

Problem 5

Soda is sold in packs of 6, 12 and 24 cans. What is the minimum number of packs needed to buy exactly 90 cans of soda?

苏打水以 6 罐、12 罐和 24 罐的包装出售。则购买 90 罐苏打水所需的最少包装数量是多少？

$\textbf{(A)}\ 4 \qquad \textbf{(B)}\ 5 \qquad \textbf{(C)}\ 6 \qquad \textbf{(D)}\ 8 \qquad \textbf{(E)}\ 15$

Problem 6

Suppose d is a digit. For how many values of d is $2.00d5 > 2.005$?

假设 d 是个 1 位数字，那么使得$2.00d5 > 2.005$成立的 d 的取值有多少个？

$\textbf{(A)}\ 0 \qquad \textbf{(B)}\ 4 \qquad \textbf{(C)}\ 5 \qquad \textbf{(D)}\ 6 \qquad \textbf{(E)}\ 10$

Problem 7

Bill walks $\frac{1}{2}$ mile south, then $\frac{3}{4}$ mile east, and finally $\frac{1}{2}$ mile south. How many miles is he, in a direct line, from his starting point?

Bill 先向南行走$\frac{1}{2}$英里，然后向东行走$\frac{3}{4}$英里，最后向南行走$\frac{1}{2}$英里。那么他现在距离起点的直线距离是多少英里？

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

Problem 8

Suppose m and n are positive odd integers. Which of the following must also be an odd integer?

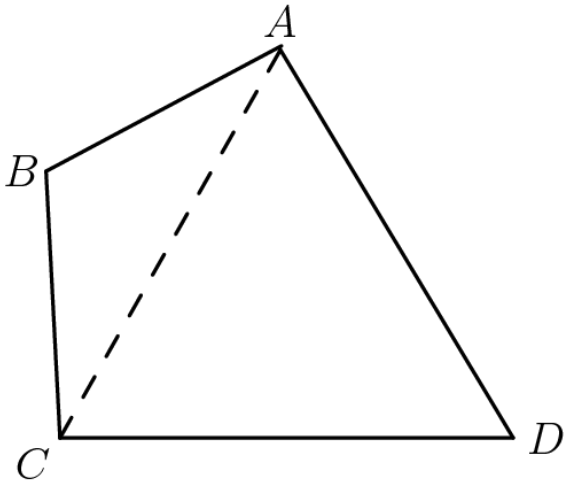
假设 m 和 n 都是正奇数，下面哪个一定也是奇数？

$\textbf{(A)}\ m+3n \qquad \textbf{(B)}\ 3m-n \qquad \textbf{(C)}\ 3m^2+3n^2 \qquad \textbf{(D)}\ (nm+3)^2 \qquad \textbf{(E)}\ 3mn$

Problem 9

In quadrilateral $ABCD$, sides $\overline{AB}$ and $\overline{BC}$ both have length 10, sides $\overline{CD}$ and $\overline{DA}$ both have length 17, and the measure of angle ADC is 60°. What is the length of diagonal $\overline{AC}$?

四边形 $ABCD$ 中，边$\overline{AB}$和$\overline{BC}$的长度均为 10，边$\overline{CD}$和$\overline{DA}$的长度均为 17，角 ADC 的度数是 60°，那么对角线$\overline{AC}$的长度是多少？



$\textbf{(A)}\ 13.5 \qquad \textbf{(B)}\ 14 \qquad \textbf{(C)}\ 15.5 \qquad \textbf{(D)}\ 17 \qquad \textbf{(E)}\ 18.5$

Problem 10

Joe had walked half way from home to school when he realized he was late. He ran the rest of the way to school. He ran 3 times as fast as he walked. Joe took 6 minutes to walk half way to school. How many minutes did it take Joe to get from home to school?

Joe 从家步行去学校，当他意识到自己已经迟到时，已经走了总路程的一半，他跑完了剩下的路程，跑步的速度是步行速度的 3 倍。已知 Joe 步行的一半路程耗时 6 分钟，那么他从家到学校总共花了多少分钟？

$\textbf{(A)}\ 7 \qquad \textbf{(B)}\ 7.3 \qquad \textbf{(C)}\ 7.7 \qquad \textbf{(D)}\ 8 \qquad \textbf{(E)}\ 8.3$

Problem 11

The sales tax rate in Bergville is 6%. During a sale at the Bergville Coat Closet, the price of a coat is discounted 20% from its \$90.00 price. Two clerks, Jack and Jill, calculate the bill independently. Jack rings up \$90.00 and adds 6% sales tax, then subtracts 20% from this total. Jill rings up \$90.00, subtracts 20% of the price, then adds 6% of the discounted price for sales tax. What is Jack's total minus Jill's total?

Bergville 地区的销售税税率为 6%。在 Bergville 大衣柜的一次销售中，一件大衣的价格从原价 90 美元起打了 20%的折扣。Jack 和 Jill 两名职员独立计算账单。Jack 先将 90 美元加上 6%的销售税，然后从总额中减去 20%。Jill 先将 90.00 美元减去 20%，然后再在折扣价格的基础上加上 6%的销售税。则 Jack 所得到的价格减去 Jill 所得到的价格的结果是多少？

$\textbf{(A)}\ -\$1.06 \qquad \textbf{(B)}\ -\$0.53 \qquad \textbf{(C)}\ 0 \qquad \textbf{(D)}\ \$0.53 \qquad \textbf{(E)}\ \$1.06$

Problem 12

Big Al, the ape, ate 100 bananas from May 1 through May 5. Each day he ate six more bananas than on the previous day. How many bananas did Big Al eat on May 5?

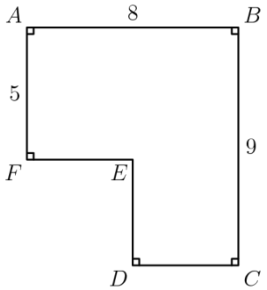
从 5 月 1 日到 5 月 5 日，Big AL 这只大猩猩共吃了 100 根美味的黄香蕉。他每天比前一天多吃六根香蕉。那么它在 5 月 5 日这天吃了多少根美味的香蕉？

$\textbf{(A)}\ 20 \qquad \textbf{(B)}\ 22 \qquad \textbf{(C)}\ 30 \qquad \textbf{(D)}\ 32 \qquad \textbf{(E)}\ 34$

Problem 13

The area of polygon $ABCDEF$ is 52 with $AB = 8$, $BC = 9$ and $FA = 5$. What is $DE + EF$?

多边形 *ABCDEF* 的面积是 52，其中 *AB*=8，*BC*=9，*FA*= 5。则 *DE* + *EF* 是多少？



$\textbf{(A)}\ 7 \qquad \textbf{(B)}\ 8 \qquad \textbf{(C)}\ 9 \qquad \textbf{(D)}\ 10 \qquad \textbf{(E)}\ 11$

Problem 14

The Little Twelve Basketball Conference has two divisions, with six teams in each division. Each team plays each of the other teams in its own division twice and every team in the other division once. How many conference games are scheduled?

小十二篮球联赛有两个赛区，每个赛区有六支球队。每支球队在各自的赛区内与其他球队比赛两次，且和另一个赛区内的每支球队比赛一次。则一共安排了多少场比赛？

$\textbf{(A)}\ 80 \qquad \textbf{(B)}\ 96 \qquad \textbf{(C)}\ 100 \qquad \textbf{(D)}\ 108 \qquad \textbf{(E)}\ 192$

Problem 15

How many different isosceles triangles have integer side lengths and perimeter 23?

有多少个不同的等腰三角形，满足各边长度均为整数，且周长为 23?

$\textbf{(A)}\ 2 \qquad \textbf{(B)}\ 4 \qquad \textbf{(C)}\ 6 \qquad \textbf{(D)}\ 9 \qquad \textbf{(E)}\ 11$

Problem 16

A five-legged Martian has a drawer full of socks, each of which is red, white or blue, and there are at least five socks of each color. The Martian pulls out one sock at a time without looking. How many socks must the Martian remove from the drawer to be certain there will be 5 socks of the same color?

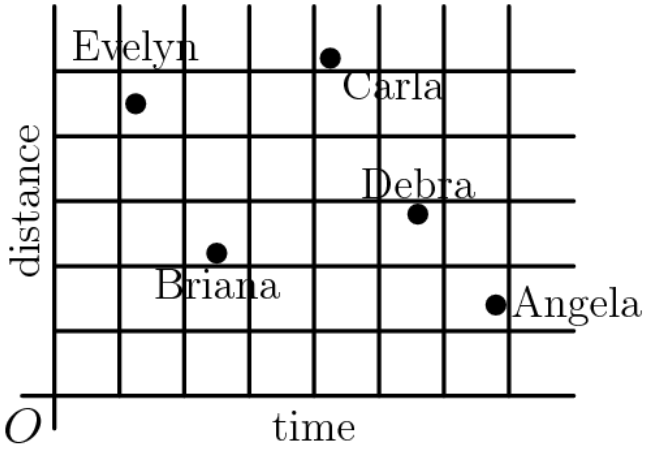
一个五条腿的火星人有一个装满袜子的抽屉，每只袜子都是红色、白色或蓝色，每种颜色至少有五只袜子。火星人每次从抽屉只拿出一只袜子，且不看取出的是什么颜色。则火星人必须从抽屉里拿出多少只袜子才能确保会有 5 只相同颜色的袜子？

$\textbf{(A)}\ 6 \qquad \textbf{(B)}\ 9 \qquad \textbf{(C)}\ 12 \qquad \textbf{(D)}\ 13 \qquad \textbf{(E)}\ 15$

Problem 17

The results of a cross-country team's training run are graphed below. Which student has the greatest average speed?

越野队的训练结果如下图所示。则哪个学生的平均速度最高？



Distance | 距离　　Time | 时间

(A) Angela　　**(B)** Briana　　**(C)** Carla　　**(D)** Debra　　**(E)** Evelyn

Problem 18

How many three-digit numbers are divisible by 13?

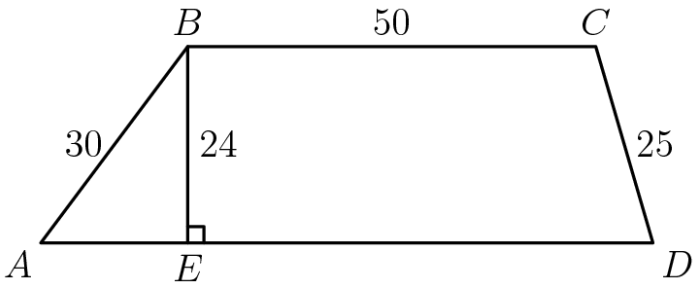
能被 13 整除的三位数有多少个?

(A) 7　　**(B)** 67　　**(C)** 69　　**(D)** 76　　**(E)** 77

Problem 19

What is the perimeter of trapezoid $ABCD$?

梯形 *ABCD* 的周长是多少？



(A) 180　　**(B)** 188　　**(C)** 196　　**(D)** 200　　**(E)** 204

Problem 20

Alice and Bob play a game involving a circle whose circumference is divided by 12 equally-spaced points. The points are numbered clockwise, from 1 to 12. Both start on point 12. Alice moves clockwise and Bob, counterclockwise.
In a turn of the game, Alice moves 5 points clockwise and Bob moves 9 points counterclockwise. The game ends when they stop on the same point. How many turns will this take?

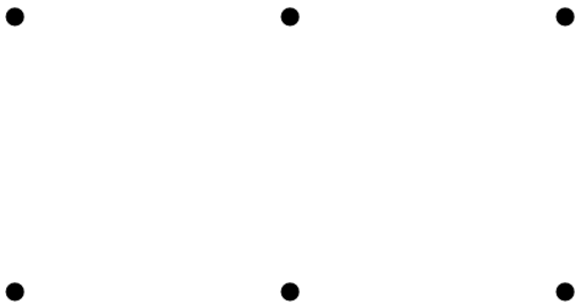
Alice 和 Bob 玩了一个游戏，游戏中有一个圆的周长被 12 个等距点分成 12 等份。这些点按顺时针方向从 1 到 12 编号。两个人都从第 12 个点开始。Alice 顺时针移动，而 Bob 逆时针移动。在游戏的每个回合，Alice 顺时针移动 5 个点，Bob 逆时针移动 9 个点。当他们停在同一点上时，比赛结束。则到游戏结束一共需要经过多少个回合？

$\textbf{(A)}\ 6 \qquad \textbf{(B)}\ 8 \qquad \textbf{(C)}\ 12 \qquad \textbf{(D)}\ 14 \qquad \textbf{(E)}\ 24$

Problem 21

How many distinct triangles can be drawn using three of the dots below as vertices?

使用下图中其中 3 个点作为顶点，可以构成多少个不重叠的三角形？



$\textbf{(A)}\ 9 \qquad \textbf{(B)}\ 12 \qquad \textbf{(C)}\ 18 \qquad \textbf{(D)}\ 20 \qquad \textbf{(E)}\ 24$

Problem 22

A company sells detergent in three different sized boxes: small (S), medium (M) and large (L). The medium size costs 50% more than the small size and contains 20% less detergent than the large size. The large size contains twice as much detergent as the small size and costs 30% more than the medium size. Rank the three sizes from best to worst buy.

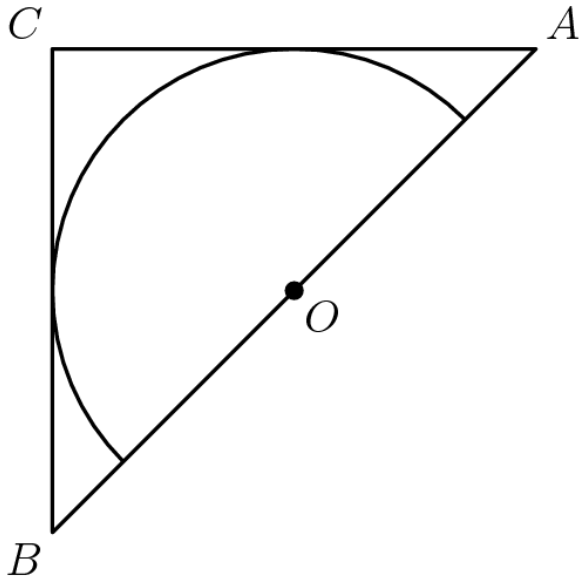
一家公司卖三种不同大小的盒子包装的洗涤剂：小盒子（S）、中盒子（M）和大盒子（L）。中号比小号贵 50%，且洗涤剂含量比大号少 20%．大号的洗涤剂含量是小号的两倍，价格比中号高 30%。请将这三种不同尺寸的洗涤剂按照性价比从高到低排列。

$\textbf{(A)}\ \text{SML} \qquad \textbf{(B)}\ \text{LMS} \qquad \textbf{(C)}\ \text{MSL} \qquad \textbf{(D)}\ \text{LSM} \qquad \textbf{(E)}\ \text{MLS}$

Problem 23

Isosceles right triangle ABC encloses a semicircle of area 2π. The circle has its center O on hypotenuse $\overline{AB}$ and is tangent to sides $\overline{AC}$ and $\overline{BC}$. What is the area of triangle ABC?

等腰直角三角形 *ABC* 内包含了一个面积为 2 π 的半圆，圆的圆心O在斜边$\overline{AB}$上，且和边$\overline{AC}$，$\overline{BC}$相切。则三角形 *ABC* 的面积是多少？



(A) 6 **(B)** 8 **(C)** 3π **(D)** 10 **(E)** 4π

Problem 24

A certain calculator has only two keys [+1] and [x2]. When you press one of the keys, the calculator automatically displays the result. For instance, if the calculator originally displayed "9" and you pressed [+1], it would display "10." If you then pressed [x2], it would display "20." Starting with the display "1," what is the fewest number of keystrokes you would need to reach "200"?

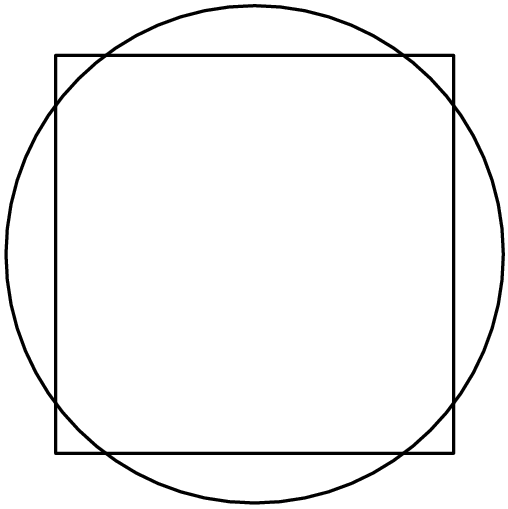
某个计算器只有两个键［＋1］和［x2］。按其中一个键时，计算器会自动显示计算结果，例如，如果计算器最初显示“9”，当你按下［＋1］，它将显示“10”。如果你接着再按下［x2］，它将显示“20”。从显示“1”开始，你最少需要按键多少次才能得到结果“200”？

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

Problem 25

A square with side length 2 and a circle share the same center. The total area of the regions that are inside the circle and outside the square is equal to the total area of the regions that are outside the circle and inside the square. What is the radius of the circle?

一个边长为 2 的正方形和一个圆，两者中心重合。位于圆内且在正方形之外的区域的面积，等于位于圆外且在正方形之内的区域的面积。那么圆的半径是多少？



$\textbf{(A)}\ \frac{2}{\sqrt{\pi}} \qquad \textbf{(B)}\ \frac{1+\sqrt{2}}{2} \qquad \textbf{(C)}\ \frac{3}{2} \qquad \textbf{(D)}\ \sqrt{3} \qquad \textbf{(E)}\ \sqrt{\pi}$

2005 AMC 8 Answer Key

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