

Denver Math Club
October Team Round

1. What does $1 - 2 + 3 - 4 + \cdots - 98 + 99 = ?$

2. What is the sum of the digits of the decimal form of the product $2^{1999} \cdot 5^{2001}$?

3. Find the sum of all prime numbers between 1 and 100 that are simultaneously 1 greater than a multiple of 4 and 1 less than a multiple of 5.

4. What is the largest number of acute angles that a convex hexagon can have?

5. The student lockers at Olympic High are numbered consecutively beginning with locker number 1. The plastic digits used to number the lockers cost two cents apiece. Thus, it costs two cents to label locker number 9 and four cents to label locker number 10. If it costs 137.94 to label all the lockers, how many lockers are there at the school?

6. Define a sequence of real

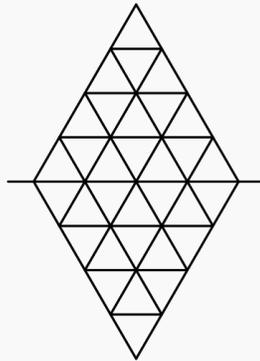
numbers a_1, a_2, a_3, \dots by $a_1 = 1$ and $a_{n+1}^3 = 99a_n^3$ for all $n \geq 1$. Then a_{100} equals

(A) 33^{33} (B) 33^{99} (C) 99^{33} (D) 99^{99} (E) none of the above

7. Let x be a real number such that $\sec x - \tan x = 2$. Then what does $\sec x + \tan x = ?$

8. Homer began peeling a pile of 44 potatoes at the rate of 3 potatoes per minute. Four minutes later Christen joined him and peeled at the rate of 5 potatoes per minute. When they finished, how many potatoes had Christen peeled?

9. Each half of this figure is composed of 3 red triangles, 5 blue triangles and 8 white triangles. When the upper half is folded down over the centerline, 2 pairs of red triangles coincide, as do 3 pairs of blue triangles. There are 2 red-white pairs. How many white pairs coincide?



10. Moe, Nick and Ott are good friends. Ott had no money, but the others did. Moe gave Ott one-fifth of his money, Loki gave Ott one-fourth of his money and Nick gave Ott one-third of his money. Each gave Ott the same amount of money. What fractional part of the group's money does Ott now have?