

Montlake Math Challenge

December 4, 2008

December Math Olympiad

Announcements: This will be our last meeting until after winter break. We will meet next on January 8, 2009. Have a great break and a happy new year!

Problem 1; Kai is 2 years older than Teddy. The sum of their ages is 34. In 17 years, what will the difference of their ages be?

Problem 2: Every day, Bill pushes a rock 10 feet up a hill. Every night while he sleeps, the rock slides 3 feet back down the hill. If the hill is 73 feet tall, how many days will it take for Bill to push the rock up the hill?

Problem 3: What is the area of a square whose perimeter is 90 inches?

Problem 4: Farmer Steve has chickens and cows in his field. He counts 30 heads and 86 legs. How many chickens are there?

Problem 5: A group of math students stand in a circle. Each student is assigned a number, starting at 1, and increasing in order around the circle by 1. (So if I am number 5, the person to my left is number 6 and the person to my right is number 4). If person 57 stands across the circle from person 163, who stands across from person 1?

Problem 6: Twelve boys and twelve girls attend prom at Columbia High School. If each of the boys dances with each of the girls, how many dances occur?

Problem 7: There are 5 people at a party. Is it possible for each person to shake hands with exactly 3 other people? (Hint: Remember when we talked about graphs?) ((Hint: The answer is no, tell me why))

Problem 8: In how many ways can first, second, and third place medals be awarded in a 9-person race if no ties are allowed?

Problem 9: How many two-digit numbers contain the digit 1 but not the digit 8?

Problem 10: One card is drawn from a standard 52 card deck. What is the probability that it is either red or a jack?

Problem 11: If it takes 2 chickens 3 days to lay 5 eggs, how many eggs will 9 chickens lay in 14 days?

Problem 12: Jeff adds 3 numbers $(x+y+z)$ and gets an even number. Alice adds two of the same numbers that Jeff added, plus one different number $(x+y+w)$ and gets an odd number. Is the sum $z+w$ even or odd? Why? (Assume no one made a mistake while adding.)