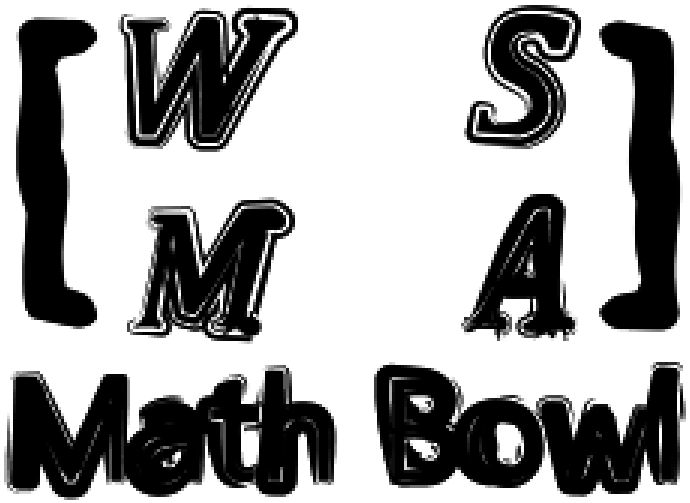


# Elimination Round 3

1st Annual WSMA Math Bowl

May 27, 2011

# Problem 1

Find the smallest positive integer value of $x$ such that $x^2 - x + 29$ is not a prime number.

# Problem 2

Evaluate the sum of the first 20 odd numbers minus the sum of the first 20 even numbers.

# Problem 3

In a sequence, if $a_1 = 1, a_2 = 2$, and $a_{k+2} = a_{k+1} - a_k$, what is $a_{42}$?

# Problem 4

A scout troop buys 1000 candy bars at a price of five for 2 dollars. They sell all the candy bars at the price of two for 1 dollar. What was their profit, in dollars?

# Problem 5

What is the probability that when I flip 6 coins, I see more heads than tails?

# Problem 6

In the first three of five math tests out of 100 points, Sam scored 91, 91, and 96. After taking the last two tests, what is the sum of the greatest integer mean, greatest integer median, and greatest and unique integer mode possible for the five scores?

# Problem 7

How many digits does the quantity $2^{33}$ have in decimal form?

# Problem 8

Evaluate the following sum in base ten:

$$1310_5 + 2112_4 + 12211_3$$

# Problem 9

Alice rides on a Ferris wheel that is 100 feet tall and whose base is on the ground. If the Ferris wheel completes one revolution in 9 minutes and Alice starts on the ground, after how many minutes is Alice first 75 feet above the ground?

# Problem 10

The sum of 18 consecutive positive integers is a perfect square. What is the smallest possible value of this sum?

# Extra Problem
# (only if needed)

What is the sum of the first 15 cubes?