WSMA Math Bowl- March 7, 2015

Answer Sheet: MS Creativity Round

Total Points Earned:

/25

Problem 1

Sample solution: (1+1+1)!

Accept any solution that uses exactly 3 ones (no other numbers) and evaluates to 6.

(For official use) Question 1 – Total Points Earned:	/ 5

Problem 2

(For official use) Question 2 – Total Points Earned:	/ 5

Rewrite to x^4 = 5y+2. x,y>0, and x^4 never ends in 2 or 7 for integer x, and 5y+2 always ends in 2 or 7, so for no integer x do they end with the same units digit, and are therefore never equal.

Problem 3

Put one white coin in one bowl and put 9 white coins and 10 black coins in the other.

(For official use) Question 3 – Total Points Earned:	/ 5

Problem 4

The patter is a+ b = a^2-b^2, so 99^2-33^2 = 8712 for full 5 points.

If there is another way to evaluate a+b that works for all a+b given and results in a different answer for 99 + 33, award 4/5 points.

(For official use) Question 4 – Total Points Earned:	/ 5

Problem 5

(For official use) Question 5 – Total Points Earned:	/ 5

If a and b are not relatively prime, factor out their common factor to make f*(a'x+b'y) = 1, where f, a', x, b', and y are all integers because f is a factor. a'x+b'y = 1/f. The left hand side is the sum of integers, so it is an integer. 1/f is not an integer because f=/1, so the LHS and RHS are not equal. Therefore, for ax+by =1, a and b must be relatively prime, by contradiction.

