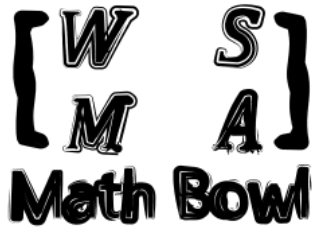


Answer Sheet: MS Creativity Round

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
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Problem 2

(For official use) Question 2 – Total Points Earned:	/ 5
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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
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Problem 4

The patten 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
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Problem 5

(For official use) Question 5 – Total Points Earned:	/ 5
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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 $f \neq 1$, so the LHS and RHS are not equal. Therefore, for $ax+by = 1$, a and b must be relatively prime, by contradiction.