



WSMA Math Bowl- March 29, 2014

Answer Sheet: Creativity Round

Total Points Earned:

/25

Problem 1

Sample solution: Denote as R, r, Y, y, G, g. Weigh a red rock and a yellow against a red and a green. There are two cases. If they are the same, the only possible combination would be either Ry vs rG or rY vs Rg. Thus, weighing the red rocks against each other will tell me which rock is which, and thus, which yellow is which, and which green is which. If one side is heavier, it is either heavier because both of the rocks on the side are heavy, or because both of the rocks on the other side are light, or because both of these statements are true. Therefore, the red rock on the heavy side has to be the heavier of the red rocks. Now, if I take the used green and yellow, and compare their combined weight to the unused green and yellow, there are again, two cases. If one side is heavier, that side has both the heavy rocks. If both sides are the same, since I know that the weight of the used yellow rock cannot exceed the weight of the used green rock, and that that side must have one heavy rock and one light rock, the green rock must be heavy, the yellow must be light, and the rest can be easily deduced from there.

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

/5

Problem 2

No partial credit. The sum of the numbers in each row and column must be 34. Example:

4	14	15	1
9	7	6	12
5	11	10	8
16	2	3	13

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

/5

Problem 3

Zach 1st, Sean 2nd, Derek 3rd, and Adithya 4th.

1 point for each correct placement, and an extra point for getting all 4.

(For official use) Question 3 – Total Points Earned:	/5
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Problem 4

Answer: 50. No partial credit.

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

Answer: $4.8 \cdot 10^{-9}$

3 points for work shown, 1 points for being within a factor of 100, and an additional point for being within a factor of 10.

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