

Name: _____ **Team:** _____

Directions: You have 30 minutes to complete these 3 problems. All answers must be written in accordance with the conventions on the Conventions page on the MMM website. Write all of your answers on the this sheet. You may only use scratch paper provided by the MMM. No calculators allowed. Please remember to check your work!

1. For x and y integers with absolute value at most 20 where $y^2 + 2xy - 2x = 1$, find the sum of the absolute values of the distinct possible values for y .

1. _____

2. Compute the number of ways to tile a 3×12 grid with L-trominoes (**not** tetrominos). (An L-tromino is three squares in an L- or corner-ey shape.)

2. _____

3. Jerry flips a coin until he gets 3 heads in a row. What is the expected number of heads which he flips?

3. _____