WSMA Math Bowl – March 7, 2015

HS Time Attack

1	Tom is moving mattresses, which takes 30 minutes, but he also has to take a 2 hour shower. This is all done from 1PM to 4PM. If his brother randomly walks into his room in this interval. What is the probably that his brother will walk in while he is showering?
2	Calculate the inradius of triangle with side lengths 3, 4, 5.
3	Find the area of triangle with two side lengths 5, 6 with an angle 30 degrees between them.
4	Find the distinct roots of this polynomial: $f(x) = x^3 - 3x^2 + 3x - 1$
5	Solve the system of equations: 3x-5y = 15 2y - 2x = 6
6	Tom and Fred decided to spice up their problem writing routine. Everyday Tom would write 2 times as many problems as yesterday, and Fred would write half as many problems. If Tom starts writing 3 problems on day 1, and fred starts writing 8, how many whole problems have written in 8 days?
7	What is the sum of the two two digit prime numbers whose product of digits is 21?
8	Margie bought 34 apples at 15 cents a piece. If she paid with a 30 dollar bill, how much change did she receive?
9	An arc of a circle is length 16. If its radian measure is 1 (not pi), what is the area of the circle?
10	What is the smallest number of cents you cannot make with 3 pennies, 3 nickels, 1 dime, and 129430 quarters?

11	Which quadrant does the line y=5x+12 not pass through?
12	What is the sum of the factors of 2015?
13	What is the average of 12.37, 12.61, 12.78, 12.98, and 13.76?
14	What is 2^36 mod 7?
15	What is the area of a triangle with coordinates (0, 2), (1, 0), and (0.5, 3)?
16	What is the sum of the infinite geometric sequence 16+8+4+2+1+0.5...
17	The four distinct lines of symmetry in a square are drawn. Including triangles of different area, how many triangles are there in total?
18	Jaenic has to blow his nose in a bathroom located on each integer point on |y|+|x| = 2. If he is at the origin, and can move integer distances to the left, right, up, or down, how many ways are there to get to a bathroom in two moves?
19	Two functions F and Y are defined as follows F(n)=2Y(n-1)+3F(n-1) Y(n)=2Y(n-1)+F(n-1) If F(1) = 4, and Y(1) = 9, then what is F(4)+Y(4)?
20	If a can of lemonade has 5 calories per can, and a can of Surge Powerade has 97 calories per can, what is the largest number of calories he cannot drink by combining a certain number of cans of lemonade and Surge Powerade?
21	What type of conic is equidistant from a point and a line?
22	If every moozl is a poozl, and some poozls are kroozls, and every poozl is a moozl, and all kroozls are eezels, then is there an eezel that is a moozl? Answer using either yes, no?
23	What is the angle formed by the minute and hour hand at 7:30?
24	What is 334455 in base 11?