2005 Primary World Math Contest Tryout on 4/5 & 4/19/05 Ewa Garg

Name: _____ **DOB:** _____ **Age:** _____
School: _____ **Grade** _____ **email:** _____
Parent name: _____ **email:** _____
Ph: _____ **Address:** _____

No calculator. 15 problems in 45 mins. Write answer in box. Only correct answer counts, no partial credit.

1. A set of magnetic letters contains two of each consonant and three of each vowel. Only a complete set of letters can be purchased. How many complete sets of magnetic letters must be purchased to make a sign which reads: "MATHCOUNTS COMPETITION TODAY"? 1. _____

A B C

2. Lemon Ice sold 3.9 million CD's at $14.00 each. Lemon Ice received a royalty of 6% for each CD sold. How many dollars did Lemon Ice receive? 2. _____

3. Fill in the two blanks in the expression 0.5 __ 0.2 __ 5 with two different operation symbols from this list: ×, +, ÷. What is the greatest possible value of this expression? Express your answer as a decimal to the nearest tenth. 3. _____

4. Aaron's weight is 10 pounds greater than twice Levi's weight. If the sum of their weights is 118 pounds, how many more pounds is Aaron's weight than Levi's weight? 4. _____

5. Mikka wants to order a pizza with two different toppings. He has 8 different toppings to choose from. How many different pizzas could he order? 5. _____

6. Each of the symbols $\star$ and $*$ represent an operation in the set $\{+, -, \times, \div\}$, and $\frac{12\star 2}{9*3} = 2$. What is the value of $\frac{7\star 3}{12*6}$? Express your answer as a common fraction. 6. _____

7. There is only one set of five prime numbers that form an arithmetic sequence with a common difference of 6. What is the sum of those five prime numbers? 7. _____

8. A spiral staircase turns 270° as it rises 10 feet. The radius of the staircase is 3 feet. What is the number of feet in the length of the handrail? Express your answer [redacted]. in radical form in term of π. No need to Simplify. 8. _____

9. Let u, v, w, x, y and z be six different integers selected from 1 to 9. What is the smallest possible value of $\frac{x}{y} + \frac{u}{v} + \frac{w}{z}$? Express your answer as a decimal rounded to the nearest hundredth. 9. _____

10. How many equilateral triangles can be formed within the same plane using at least two vertices that are also vertices of a given regular hexagon? 10. _____

11. Lisa had 5 hits in 20 times at bat. How many consecutive hits must she get to raise her batting average to 0.500?

11. _____

12. A 6 x 6 x 6 cube is formed by arranging 1 x 1 x 1 cubes. The faces of the large cube are then painted green. How many 1 x 1 x 1 cubes have at least two green faces?

12. _____

13. A five-digit number that is divisible by 6 is to be formed. What is the largest possible number that can be formed if four of its digits are 3, 5, 7, and 9?

13. _____

14. If x and y are two different digits and z is any natural number, for how many combinations of x and y will $(10^z)x + y$ be divisible by 9?

14. _____

15. A square, 10 cm on each side, has four quarter circles drawn with centers at the four corners. How many square centimeters are in the area of the shaded region? Express your answer in terms of π.

15. _____