Bergen County Mathematics League

Good Luck To You

Good Luck To All

Contest #1 (No Calculators) **2007-2008**

Part I *Time Limit: 12 minutes* On contests #2, #4, and #6, ***any S.A.T. calculator will be allowed.***

1-1. What is the units' digit of the product 99π, when it's multiplied out?

1-2. The diameter of my car's new tires was 26 inches. When wore down uniformly 1/4 inch, the tires will need $x\%$ more revolutions to cover a given distance than when the tires were new. To the nearest tenth, what is the value of x?

Part II *Time Limit: 12 minutes*

1-3. Of the 24 possible arrangements of the digits 9, 4, 3, and 2, how many represent a prime?

1-4. In a circle with both an inscribed and a circumscribed equilateral triangle, if the area of the smaller of these two triangles is 12, what is the area of the larger?

Part III *Time Limit: 12 minutes*

1-5. What are two numbers which differ by 5 whose square roots add up to 5?

1-6. If the coefficients of the cubic polynomial P are positive integers, for what value of k will the graph of $y = P(x)$ pass through (1,10), (3,k), and (10,1234)?

***Notice*: Questions next meet will repeat the themes of questions 1-2 and 1-4.**

Answers

1-1. 1

1-2. 2.0 (do not accept 2 or 2.000)

1-3. 0

1-4. 48

1-5. 4, 9

1-6. $58 = 1(3)^3+2(3)^2+3(3)+4$