Nassau County Interscholastic Mathematics League

Contest # 1 **Answers must be in simplest exact form, unless otherwise noted.** **2004-2005**

No Calculators

Problems 1-2 Time limit: 10 minutes.

1) Assume that x can be any real number other than 1 or 1.2, and y is not zero.
Solve the equation below for y in terms of x:

$$\frac{x}{y} + 5x = 6 + \frac{1}{y}.$$

2) The first three terms of a geometric sequence are x – 3, x – 1, and 3x – 7. Find all possible numerical values of the fourth terms of the sequence.

Problems 3-4 Time limit: 10 minutes.

3) How many six-digit numbers can be formed using the digits 1, 2, 2, 3, 3, and 4 which are greater than 343122?

4) For how many of the eight possible combinations of truth values for the statements p, q, and r, will the statement $p \vee (q \wedge \sim r)$ be true?

Problems 5-6 Time limit: 10 minutes.

5) Pirandello's Pizza charges the same price for each square inch of pizza. If a 6 inch diameter pizza sells for $12.40, what is the price of a 9 inch diameter pizza?

6) If the diagonal of a rectangle has length 14 feet, and the area of the rectangle is 64 square feet, find the number of feet in the perimeter of the rectangle.

Answers.

1) $y = \frac{x-1}{6-5x}$ 2) 1,16

3) 32 4) 5

5) $27.90 6) 36