Nassau County Interscholastic Mathematics League

Contest # 1

Answers must be exact or must have 4 (or more) significant digits, correctly rounded, unless otherwise noted

1998-99

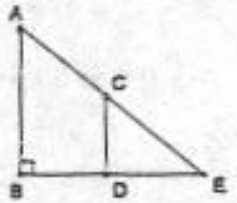
Problems 1-2. Time limit 10 minutes.

1. Find a positive number which is one more than its positive reciprocal.

2. Point C is on side BD of ΔABD.
If $m\angle B = 35°$, $m\angle CAD = 40°$, and $m\angle ACD = x°$, find the range of possible values for x.

Problems 3-4. 10 minutes.

3. In the figure shown, $\angle B$ is a right angle.
$\overline{CD} \parallel \overline{AB}$, AB = 13, BD = 12, DE = 14
Find the length of $\overline{CD}$.



4. Solve for all possible values of x: $|x-2|+|x-5|=4$

Problems 5-6. 11 minutes.

5. Points P(-3,14), Q(5,10), R(3,0), and S(-1,-4) are given. The midpoints of the sides of quadrilateral PQRS are connected to form a new quadrilateral. Find the area of this new quadrilateral.

6. If * and # are chosen from the set $\{\wedge, \vee, \rightarrow\}$ of logic symbols, find all ordered pairs (*,#) for which the expression $(p*q)\#p$ will always be true (a tautology). [Note that * and # need not be distinct]