12/05

Math League News

■ **Our Calculator Rule** Our contests allow both the TI-89 and HP-48. You may use any calculator without a QWERTY keyboard.

■ **Report Your Score On The Internet** We encourage schools to submit scores online. Were you unable to do so last year? Please try again. This year, **all** schools can use Internet Score Reporting. Instructions are included in each contest envelope.

■ **Online Score Reports: What To Do If The Mail Is Late** Scores appear on line before being mailed. About 3 weeks after a contest, scores will appear on our Web site, *www.mathleague.com*.

■ **Contest Dates** Future HS contest dates (and alternate dates), all Tuesdays, are January 10 (3), February 14 (7), March 14 (7), and April 11 (4). The alternate date is always the preceding Tuesday. In case of contest date conflicts, our rules say that, in case of vacations, special testing days, or other *known* disruptions of the normal school day, you should *give the contest on an earlier day*. If scores are late, please attach a brief explanation. We reserve the right to treat as unofficial late scores lacking an explanation. We sponsor an *Algebra Course I Contest* in April, as well as contests for grades 4, 5, 6, 7, and 8. See *www.mathleague.com* for information.

■ **Student Cumulative Scores** Completion of the **Cumulative Column** is optional, but *we list (and consider **official**) only cumulative scores reported in this column.* A student whose cumulative scores are incorrect (or which don't appear regularly in the **Cumulative Column**) may lose eligibility for recognition by the League.

■ **Regional Groupings** We sometimes receive requests about regional groupings. Within guidelines, we *try*, when possible, to honor such requests for the next school year.

■ **What Do We Print in the Newsletter?** Our policy is to print every solution and comment we receive, newsletter space permitting. But we prepare the newsletter before the score report, so slow mail (a big problem in December!) means we don't print some comments. Finally, we may say "so-and-so sent an alternate solution" when tight space means we don't have room to print it.

■ **Some Tips on Getting Students Involved** One advisor asked how to persuade more "always busy" students to take our half-hour contests. Would you like to share your tip? Here's a start: **1)** Hold contests during lunch. Serve ice cream or fruit to those who eat while writing the contest. **2)** Use a bulletin board to name top students on each grade. Make a loudspeaker announcement too. **3)** Send a report to a local community newspaper. **4)** Serve cookies and drinks, with funds provided by the student government. **5)** Hold the contest jointly with a neighboring school. The kids will enjoy the occasional travel and meeting kids from another school. **6)** Post a colorful announcement the day before the contest so no one "forgets" about it on the day of the contest. **7)** At Awards Night, give our Certificate to the students on each grade level who score highest on the contests.

■ **General Comment About Contest 2** Lynette Quigly wrote that "My students got 1-3 correct. The last 3 gave them a challenge. They were still discussing these problems the next day."

■ **Problem 2-4: Comment & An Appeal (Denied)** Student Jason Bland pointed out that anyone who forgot that 0 was a perfect square would have gotten 2, 17, and 59 as answers to the even problems, and $(2)(17)(59) = 2006$. *You're HIRED, Jason!!*

Quite a few appeals were received from students claiming that the perfect squares begin with 1, not 0. One teacher said "Is 0 considered a perfect square by mathematicians? I never considered it to be one." Doris Rowe said "none of my students got 2-4 right because they all overlooked 0 as a perfect square." Ken Thwing explained one source of this error. Ken said "when my students saw *positive* two-digit integers, they assigned the adjective *positive* to the perfect squares as well. We talked about it after the contest. It was a learning moment." On another note, an advisor said "I couldn't find any teacher, high school or college, of about 25 total, that ever taught students that 0 is a perfect square." A different advisor said "We teach 0 is neither negative nor positive and would have eliminated 0 as a candidate." One advisor said we should allow both 17 and 26 as answers because "If you don't, you are penalizing kids . . . [since] the term [perfect square] carries with it a problem. The kids' confusion is legitimate." Another said "incorrect definitions can be found in books, thus making it confusing to students." We considered giving everyone credit for 2-4, but one of our consultants disagreed and the rest of us came around. Let me explain why. When possible, we try to avoid linguistic issues. Problem 2-4 fell through the cracks. Over the past 30 years, we've replaced the expression "perfect square" with "square of an integer" many times. We've tried to avoid this situation. Using "square of an integer" instead of "perfect square" is the best way to ask this question. But the way we did ask it is correct, even if the other wording is more easily understood. Question 2-4, as asked, is a legitimate question with a single correct answer. We asked several tenured mathematics professors at two of this continent's top research universities about this. There was 100% agreement that 0 is a perfect square. No one disagreed! It's on that basis that we can accept only the official answer to question 2-4.

■ **Problem 2-5: Alternate Solutions** Dick Gibbs solved both equations for c. Equating the results $(-x^3+3)/x^2 = -(x^2+1)/x$. Solving, $x = 0$ or 3. Clearly $x \neq 0$. When $x = 3$, $c = -10/3$. Ron Donahoe rewrote the first equation as $x(x^2+cx) + 3 = 0$. Substituting from the second equation, $x(-1) + 3 = 0$, so $c = -10/3$. Student Sagar Karri used the remainder theorem to get a solution.

■ **Problem 2-6: Comment** Dick Gibbs wrote "What a great problem! It took me a while to catch that one of the remainders had to be 0, although it was staring me in the face all along."

Statistics / Contest #2

Prob #, % Correct (top 5 each school)

2-1	99%	2-4	19%
2-2	81%	2-5	33%
2-3	72%	2-6	29%