



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.

■ **Use the Internet to View Scores or Send Comments** to comments@mathleague.com. You can see your results at www.mathleague.com.

■ **Upcoming Contest Dates & Rescheduling Contests** Contest dates (and alternate dates), all Tuesdays, are February 14 (February 7) and March 13 (March 6). If **vacations, school closings, or special testing days** interfere, please reschedule the contest. Attach a brief explanation, or scores will be considered unofficial. We sponsor an *Algebra Course I* Contest and contests for grades 4, 5, 6, 7, and 8. Get information and sample contests at www.mathleague.com.

■ **2012-2013 Contest Dates and Change in Alternate Date Policy:** We schedule the six contests to be held four weeks apart (mostly) and to end in March. Next year's contest (and alternate) dates, all Tuesdays, are October 16 (Oct. 23), November 13 (Nov. 20), December 11 (Dec. 18), January 8 (Jan. 15), February 12 (Feb. 19), March 12 (Mar. 19). Please note that starting in October 2012, each alternate date will be on the Tuesday **following** the official date!! Have a testing or other conflict? Now is a good time to put an alternate date on calendar!

■ **What Do We Publish?** Did we not mention your name? We use everything we have when we write the newsletter. But we write the newsletter early, so sometimes we're unable to include items not received early enough. We try to be efficient! Sorry to those whose solutions were too "late" to use.

■ **T-Shirts Anyone?** We're often asked, "are T-shirts available? The logo lets us recognize fellow competitors!" Good news — we have MATH T-shirts in a variety of sizes at a **very** low price. Use them as prizes for high or even perfect scores, or just to foster a sense of team spirit! The shirts are of grey material and feature a small, dark blue logo in the "alligator region." A photo of the shirt is available at our website. There's one low shipping charge per order, regardless of order size. To order, use our website, www.mathleague.com.

■ **Contest Books Make A Great Resource** Have you seen our contest books? Kids love to work on past contests. To order, use our website, www.mathleague.com.

■ **General Comments About Contest #4:** Mary Wands said, "This week in January was a tough week to work in a Math League contest. It was the first week back from Christmas break for our school and I think the student's brains were made of jelly!" Sarah Manchester said, "My students and I are enjoying the contests very much. They are a great challenge and we are learning new strategies as we work through them." Chris Jones said, "We love Math League!"

■ **Question 4-1: QUESTION WITHDRAWN and Comments** All students will receive credit for question #4-1 since the conditions set forth in the problem cannot be met. Originally, this question specified that there were 2011 integers instead of 2012. When one of us (who shall remain nameless!) was about to send the contests to our printer, he noticed that the year used in the question did not match the new year in which the contest would be given. He decided to change the number in the contest and the solutions to 2012; it seemed more appropriate to him that since this would actually be our first question of 2012 it should reference the current year. Of course, on the spur of the moment, he didn't realize that it would make the conditions of the question impossible. Although we knew about this error the day before the official contest date, it was too late to contact all schools about it. Rather than announce that there was a flaw in the question after some schools had already taken this contest, we decided to let the contest be administered without comment to all students so that no one would gain an advantage by knowing that the first question was flawed. Thanks just the same to all of the advisors who pointed out the problem, including Paul Kustos, Cathy Michaelis, Christine DeVeau, Tom Vasold, Chris Jones, and Chip Rollinson. Maria Gale said, "I don't think the first question is unfair. I was skeptical that the sum was possible, but it didn't stop me from answering about the average if the sum was possible." Robert Nielson wondered, despite our giving credit to all students, whether student answers of 4.04814×10^6 and $4.0481E6$ would have gotten credit as

equivalent to the exact answer of 4048144. Since 4.04814×10^6 is correctly rounded to 6 significant digits, we would have given credit for it. The latter answer, in calculator notation, is in a format that is not standard mathematical notation. We would not want to reinforce use of non-mathematical notation, and would not give credit.

■ **Question 4-2: Appeals (Accepted) and Comment** Tim Thayer and George Benack each wanted to verify that credit should be given to a student who answered 1/30, 1/29 in that order. Since we did not specify an order for the fractions in the answer and the answer was not in the form of an ordered pair, the order is immaterial and credit should be given.

■ **Question 4-3: Appeals (Accepted and Denied) and Comments** Justin and Angie DeRosa appealed on behalf of a student who answered "Febuary," spelled incorrectly. Since we do not grade on spelling and since "Febuary" is clearly just a misspelling of the name of the month (which is what this question requires), this answer is correct. On the other hand, Debbie Ott and Justin and Angie DeRosa appealed on behalf of students who answered "the second one" or "2nd month" to this question. Clay Bennett had a similar appeal, saying, "One of the students put down month number 2 as his answer. He said it was because the directions on the top say to give an exact value or have 4 or more significant digits. He thought he needed to give a value for the month." We do sometimes require a word or a name as an answer, and since those responses do not actually answer the question posed, they cannot be given credit. Benjamin Dillon said, "wording needed to be more straightforward here to clue students in that the name of a month was required. Several students had answers such as 'the middle month' or 'the third month.' And, although no students seemed to be slowed down by technicalities, I was: Are we talking Jewish months with different names? Lunar months that are all the same length? How should the answer '2' be scored? Finally and most importantly, what if the birthday is February 29th and doesn't actually fall in ANY of the months unless it's a leap year?" Duly noted that the possibility of other systems of months exists; a birthday of February 29th, however, would not satisfy the conditions of the question. George Benack pointed out a slight inaccuracy in our solution, saying, "Taken together, the three consecutive months that include February actually have 88, 89 or 90 days since (December, January, February) has $31+31+28 = 90$."

■ **Question 4-4: Appeal (Denied) and Alternate Solutions** Mark Mulac appealed on behalf of a student who answered " $\arccos(\frac{\sqrt{2}}{2})$ " to this question. This answer cannot be given credit, because it shows a lack of knowledge required to give an answer in degrees or radians. James Conlee said, "For #4, a colleague used the law of cosines. I used trig (inverse tan of angle below ABC and then again for angle above ABC, then subtracted from 180)."

■ **Question 4-5: Comment** Benjamin Dillon said, "Must we mislead students by suggesting that the problem involves optimization ('least possible value') when there is in fact only one solution?"

■ **Question 4-6: Comments** Jon Mormino said, "The note in number 6 doesn't seem to make sense. It seems that it should be Method IV and not a note. None of the methods will always yield a solution; each exploits the unique particulars of the problem." Joel Patterson said, "Wow! One equation is a point and the other is the union of 2 lines through that point! (I graphed it with Geogebra.) That's crazy."

Statistics / Contest #4

Prob #, % Correct (all reported scores)

4-1	—%	4-4	64%
4-2	73%	4-5	20%
4-3	50%	4-6	11%