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 12 (February 19) and March 19 (March 26). 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.*

■ **2019-2020 Contest Dates:** 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 15 (Oct. 21), November 12 (Nov. 19), December 10 (Dec. 17), January 7 (Jan. 14), February 11 (Feb. 18), and March 17 (Mar. 24). 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 out website, *www.mathleague.com.*

■ **Administer This Year's Contests Online** Any school that is registered for any of our contests for the 2018-2019 school year may now register at http://online.mathleague.com for the 2018-2019 Online Contests at no cost. The advantages of administering the online versions of our contests rather than the paper and pencil ones are that you do not have to grade your students' papers and that you do not have to submit any scores at our Score Report Center ~ these tasks are done automatically for you when your students take our contests online. If you decide to use this free service, you must set up your account and set the day you are going to administer each contest at least one day in advance of the actual contest date.

■ **General Comments About Contest #4:** Denes Jakob said, "Enjoyable Contest #4!" Richard Nickerson said, "Our students found this set of problems both interesting and very accessible; by far the greatest number of 5s we have ever had on a contest (unfortunately so many of our students answered 137 for #6, overlooking that 6 also went into 60, or answered 28 for #4, I guess assuming that they were positive integers). Some students thought to align 4 triangles in #2 to create a large square with area of 16 to answer #2 with no calculation."

■ **Question 4-3: Appeal (Accepted) and Alternate Solution:** Fred Deppe appealed on behalf of students who answered this question with "30" without a degree symbol. Given that the question specifies that the answer will be in degrees, "30," "30 degrees," and "30°" are all acceptable answers that should be given credit. Denes Jakob had a student solve this question using a trigonometric approach. This student made the simplifying assumption that the triangle was isosceles based on the fact that there are isosceles triangles whose bases are a chord of length 10 in this circle. Since the angle opposite the side of length 10 has measure equal to half the measure of the intercepted arc, it has the same measure no matter where its vertex lies on the circle. He then said, "The height of this triangle is equal to the height of the equilateral triangle plus the radius, that is $5\sqrt{3}+10$. Using tangent ratio in the right triangle formed by this height, half the chord, and one of the legs of the isosceles triangle, $\tan(A)=5/(5\sqrt{3}+10)$ (where A is half the measure of the unknown angle). Thus, A has degree-measure 15 and the unknown angle has degree-measure 30."

■ **Question 4-5: Comment:** Mike McKay said, "No students came up with the answer, but another teacher came up with 'undefined' for an answer for 4-5 as $a = b = c = 0$. I agreed with them." While it certainly is true as a general matter that all three variables could be set equal to 0 while satisfying the equations given in the question, in the context of this contest the existence of the question presumes and implies the existence of an answer. In terms of Math League appeals policy, "if both trivial and non-trivial solutions exist, it is the solvers' responsibility to focus on the non-trivial solution(s)." That having been said, it is always our intent to make questions as clear and unambiguous as is reasonably possible, so in future published versions of this question Math League will include the restriction that $abc \neq 0$. Thank you for your comment, Mike!

Statistics / Contest #4			
Prob #, % Correct (*all reported scores*)			
4-1	85%	4-4	31%
4-2	71%	4-5	76%
4-3	49%	4-6	6%