



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.

■ **Our Internet Score Center** All students whose scores you report must have been tested at exactly the same time. Don't list students from any later class period. Instructions for submitting scores appear on each contest envelope. Scores you enter may be reviewed at any time by returning to the Internet Score Center. About 3 weeks after a contest, scores appear on our Web site, www.mathleague.com. Late scores must be accompanied by a brief explanation of the reason for lateness.

■ **Administer This Year's Contests Online** Any school that is registered for any of our contests for the 2015-2016 school year may now register at <http://online.mathleague.com> for the 2015-2016 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.

■ **Past Contests Online** Teachers of any school registered for any of our 2015-2016 contests can now purchase online versions of the past contests for any selected grade (4th Grade through High School) for \$9.95 per grade level for use throughout this school year at <http://online.mathleague.com>. For this fee, all students in your school can take all the past contests for a specific grade online. We grade each contest for you, provide you with answers and solutions, and keep statistics on each student's performance.

■ **Send Your Comments** to comments@mathleague.com

■ **We Are on Facebook!** Like us at <https://www.facebook.com/TheMathLeagueInc>.

■ **Contest Dates** Future HS contest dates (and alternates), all Tuesdays, are November 10 (Nov. 17), December 8 (Dec. 15), January 12 (Jan. 19), February 9 (Feb. 16), and March 15 (Mar. 22). Please note that each alternate date is on the Tuesday **following** the official date!! For vacations, special testing days, or other *known* disruptions of the normal school day on a contest date, please *give the contest on the following Tuesday*. If your scores are late, please submit a brief explanation. We reserve the right to refuse late scores lacking an explanation. We sponsor an *Algebra Course I Contest* in April, as well as contests for grades 4, 5, 6, 7, & 8. See www.mathleague.com for information.

■ **Not Yet Received Your HS Contest Package?** E-mail dan@mathleague.com so we can reship. If you just recently got the contests, *please take Contest #1 as soon as possible, even if it's late!*

■ **Carefully Check Your Contest Package** Without opening any contest envelope, please check that the remaining envelopes are numbered 2, 3, 4, 5, and 6. If you're missing a contest envelope, e-mail dan@mathleague.com with your name, the school's name, the full school address, and the number of the contest envelope you're missing. We'll mail you another set of contests right away.

■ **Eligibility Rules** Only students officially registered as students at your school may participate. That's our rule.

■ **Authentication of Scores** To give credibility to our results, we authenticate scores high enough to win recognition. Awards indicate compliance with our rules. Please print the Selected Math League Rules (posted on the same page as this Newsletter) and have students read them and then sign them to confirm knowledge of the rules. *Keep* the signed sheets. Do not send them to us unless we request authentication from you.

■ **General Comments About the Contest** Benjamin Wearn said, "Great first contest!" Delfina Levine said, "I think the questions were more difficult than usual, especially #6." Sam Koski said, "Wow, what a start for the first test. Good questions that kids could get into, but enough twists to keep them busy." Chip Rollinson said, "Overall this set of questions seemed more challenging than past October contests. I hope it didn't scare away too many kids from having another go later this year." Joseph S. Griesbach said, "This contest was a bit too hard for contest #1. Most had scores of 0, 1, or 2. I hope they return for the 2nd contest." Henry Valencia said, "We loved the problems with the exception of problem 2." Jeff Rosemeyer said, "Wow. For the first one of the year I thought it was a pretty stout challenge." David Hoffman said, "Kudos to your staff of writers - terrific questions. Check out NYT op-ed column on recreational math 10/12/15. The article speaks to what you are doing. We have formed a math club and will be meeting once every week enjoying math problems and pizza, but maybe not in that order. Take care, and I look forward to future contests." The article to which David refers can be found here:

http://www.nytimes.com/2015/10/12/opinion/the-importance-of-recreational-math.html?_r=0

■ **Question 1-2: Comments and Appeals (Denied)**

Julia Althiser, Delfina Levine, Amy Pergola, Chip Rollinson, and Henry Valencia all commented that many students found the wording of the question unclear. Benjamin Dillon said, "I've seen 1-2 in a puzzle book before, so perhaps students have as well! If so, this problem could be done from memory instead, giving those students an unfair advantage." Matt Veal and Julia Cashman each appealed on behalf of students who answered with "119" or "1.19" without indicating units. A number without units cannot be considered an "amount of money" as called for by the question, so the appeals are denied. (Note that an answer of "119 cents" would be considered correct.)

■ **Question 1-3: Comment** Benjamin Wearn said, "I really liked problem #3 - hadn't seen one like that before."

■ **Question 1-4: Alternate Solutions** Darrin Dobrowolski and Mark Fowler submitted alternate solutions on behalf of students who divided the side of length 17 into segments of y and $17 - y$ and used the Pythagorean Theorem on each triangle within the shaded region to find x . Rob Peven submitted two alternate solutions from his students. One student used the Pythagorean approach above, while the other subtracted the area of the unshaded small triangle from the area of the entire figure, then used the remaining area of the shaded triangle with base 17 to find height x . Chris DeVea suggested an alternate solution in which the law of cosines can be used on the shaded triangle to find the measure of the lower right angle, and the sine of the same angle can be used in conjunction with hypotenuse 9 of the small triangle to find the length x . John Buckley suggests simply calculating x as $9\sin(\arctan(8/15))$. Please note that while this calculation would eventually lead to the correct answer, if a student were to submit that expression as a final answer it would not be considered sufficiently simplified to be counted as correct.

■ **Question 1-5: Comment** Chip Rollinson said, "I imagine some kids brute forced #5."

■ **Question 1-6: Comments** One advisor wondered why there were 5 pairs listed in the solution when the question called for an answer that would result in exactly 3 pairs. Two of the pairs listed in the solution with x - and y - coordinates of 0, respectively, are given for explanatory purposes only, and are not included among the pairs of "positive integers" required by the question. There are only 3 such pairs listed. Another advisor questioned why pairs listed in the solution had a 0 coordinate when positive pairs were called for. Again, it is because those pairs are given for explanatory purposes only, and are not included among the 3 that are responsive to the question.

Statistics / Contest #1			
Prob #, % Correct (all reported scores)			
1-1	78%	1-4	43%
1-2	30%	1-5	36%
1-3	30%	1-6	11%