



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.

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

■ **Contest Dates** Future HS contest dates (and alternate dates), all Tuesdays, are December 12 (Dec. 19), January 9 (Jan. 16), February 13 (Feb. 20), and March 20 (Mar. 27). (Each alternate date is the Tuesday following the official date.) For vacations, special testing days, or other *known* disruptions of the normal school day, 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.

■ **Regional Groupings** Within guidelines, we try, when possible, to honor regional grouping requests for the next school year.

■ **What Do We Print in the Newsletter?** Space permitting, we print every solution and comment we receive. We prepare the newsletter early, so we can use only what we have at that time.

■ **How Do I Change the Spelling of a Student Name?** Please note that an advisor can always return to the Score Report Center to change the spelling of a student's name or to correct a score. We stay out of the loop on such changes. Any advisor noticing a need for such changes should feel free to make them directly.

■ **Can I Add Additional Names and Scores to an Earlier Contest?** One advisor asks, "Since some students did very well in the second contest, can we add their names (with the scores) to the Contest 1 report?" We always allow adding additional names and scores to an earlier contest as long as the additions do not affect the team total previously submitted for the earlier contest.

■ **Administer This Year's Contests Online** Any school that is registered for any of our contests for the 2017-2018 school year may now register at www.online.mathleague.com for the 2017-2018 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 will administer each contest at least one day in advance of the actual contest date.

■ **General Comments About the Contest** Roger Finnell said, "Two unusually tough contests in a row!" Jeff Marsh said, "I do not want this to sound too whiny, but Contest #2 was way too difficult. My colleagues and I who challenge ourselves were quite humbled and only earned 3s. The first three questions are quite simple (as per usual), but the jump from 2-3 to 2-4 is considerable. I cannot remember the last time I scored a 3 on a contest (perhaps when I was in high school?!). If this contest almost crushed my spirits, then what might it have done to some of our students? I think the last three problems are all #5- and #6-caliber problems for the future. The combination of these six problems just seemed too tough. (whining over)." Melanie Dolloff said, "This past contest was very discouraging to my top students and also to the new members who are participating for the first time. I have always enjoyed taking part in the contests myself, but this past contest was just plain too hard, in my opinion." Mark Luce said, "Seemed a tougher-than-usual contest." Joseph Li said, "Thank you for providing this wonderful opportunity to students who are interested in math. I think this is also a very good practice for AMC: a combination of easy problems and challenging problems and students need to complete it in short time. This one is easier than the first one." Bill Blaskopf said, "My students felt that this was a VERY challenging contest."

John MacNeish said, "Thanks it is a pleasure for us to be participating in these contests." Dan LaVallee said, "I really like the questions so far this year." Chip Rollinson said, "Wow, tough group of problems! I don't remember a single contest as challenging as this one was. I hope it doesn't scare away too many students from participating next month." A general note from Math League about the difficulty level of this contest: we were disappointed that this contest turned out to be so difficult for so many students. While we strive to make the first two questions accessible to most students, the middle two questions somewhat more difficult, and the last two questions challenging to virtually all participants, we do not always succeed in these goals. Unlike standardized tests that are validated on large groups of students before being administered, our contests are reviewed by a small group of high school and university teachers. Sometimes the consensus of this informed group is wrong about the difficulty level of a particular contest. While we do believe that the quality of our work speaks for itself over the many years of Math League's existence, please rest assured that we are reviewing the contest material to ensure that we do an even better job in the future.

■ **Question 2-4: Comments and Appeals (Accepted and Denied)** Rose Suarez appealed on behalf of students who answered 44444444 and 88888888 to this question. Unfortunately, since the wording of the question specifically calls for two digits as a response, the question was not answered as asked, and the students cannot be given credit. Denise Denhartog, Ben Dillon, Sam Koski, Dan LaVallee, and Richard Nickerson each appealed and pointed out that the wording of the question, specifically the phrase "will sometimes have," does not limit the difference in question to EXACTLY or EXCLUSIVELY eight identical even digits. The question could be interpreted to allow for differences with at least eight 0's as digits in addition to others. Students who responded with 0 and either 4 or 8 as the answer can be given credit for their response under this interpretation of the question.

■ **Question 2-5: Comments and Alternate Solution** Bill Blaskopf said, "I was disappointed that more of my students didn't get #5." Mark Luce said, "None of my students successfully solved either problem 5 or 6. I do think problem 5 is an excellent extra-credit type of geometry problem." Robert Hilton submitted an alternate solution from one of his students, who solved by drawing a line through point P perpendicular to sides AD and BC . Noting that the pieces of that line could be labeled as $3y$ and $2y$ due to the similar triangles, the student used the area of 90 to solve for $xy = 6$ and was thus able to find the area of triangle $PEB = 12$.

■ **Question 2-6: Comments, Appeal (Rejected), and Alternate Solutions** Mark Luce said, "Not sure I would have gotten problem 6 myself, even though I am familiar with the Chinese Remainder Theorem." Deanna Abromowitz said, "Students said it was more difficult to understand the wording of this problem than taking the English regents." Carol Oberholtzer and Anne Rollick each appealed on behalf of students who answered 999999 to this question. This answer cannot be given credit, as it does not in fact honor the restriction in the question. (Using the test of divisibility by 10^6 it is close, but there is a remainder of 2.) Bryan Knight submitted an alternate solution in which he used a graphing calculator to find consecutive integers that are multiples of 2^6 and 5^6 respectively (in either order). Chip Rollinson had a student who also used divisibility by 2^6 and 5^6 , but he extrapolated from the given 890625 solution using mods to figure that the last six digits of 890624^2 would be the other solution.

Statistics / Contest #2

Prob #, % Correct (all reported scores)

2-1	85%	2-4	16%
2-2	64%	2-5	13%
2-3	70%	2-6	5%