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 2012-2013 school year may now register at www.mathcontestsonline.com for the 2012-2013 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 2012-2013 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. 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 alternate dates), all Tuesdays, are November 13 (Nov. 20), December 11 (Dec. 18), January 8 (Jan. 15), February 12 (Feb. 19), March 12 (Mar. 19). 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?** Phone 1-201-568-6328 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.

Statistics / Contest #1

Prob #, % Correct (*all reported scores*)

1-1	75%	1-4	44%
1-2	57%	1-5	9%
1-3	37%	1-6	11%

■ **General Comments About the Contest** Apparently, this contest was a tough one. Joanne Gillette said, "I like it when the first contest is a bit easier. Then the new students who try out the contest are encouraged to return. They also make positive comments to their friends." Mark Luce said, "Tough first contest! None of my students solved Problem 6. Only one of my students solved Problem 5. I hope we do better on subsequent contests!" Kevin Horstman said, "The first contest made it difficult to drum up excitement for Math League this year. I had a hard time explaining the math behind question # 5 to my students." Josh Turner said, "I thought this was a pretty [difficult] contest for the first one of the year. My seniors thought so too. They were certainly challenged by the questions, although they're a bit trepidatious moving forward. Good start!" Ted Heavenrich said, "I really enjoyed these problems. My students, on the other hand, found them to be fairly tough. I worry about whether some of the kids have been discouraged from competing in the future." Lynda Vincent said, "As a first contest, my students, especially the younger students who I am hoping to motivate to stick with the program, found this one to be very difficult." Tim Smith said, "Brutal! We had about 200 kids take it and not one score above 3...a devastating blow in the first contest...I'll be interested to see what other schools post. From my end, the first contest being hard does not help me sell the contest...I'd love for them to get progressively harder, but I felt this one was a bit too challenging too early." Susan Greenberg said, "I gave the contest today and was surprised at how poor our students did on this contest. Usually the first contest is not so challenging! I will be interested to see if other schools struggled as well." Chuck Garner said, "Overall it was another good contest with which to start the year!" Karen Holmes said, "A very interesting first contest." Dean Ballard said, "Good contest!" Denes Jakob said, "We always enjoy the challenge of your contests. It is nice to see how these problems generate some great mathematical discussions among my enthusiastic math league students." Eric Drake said, "Just to let you know. My student [who] scored the perfect 6 on this contest completed it in just under 9 minutes. She is amazing."

■ **Question 1-1: Appeals (Accepted and Rejected)** Several of our advisors wrote in to ask about student answers to Question 1-1 that weren't in reduced form. Dave Holze, Veronica Scarpati, Sarah Jane Black, Deborah Stepelman, and Dave Ollar all brought up the situation. All answers giving fractions mathematically equivalent to $\pi/2$ should be marked as correct as long as they don't contain an undefined variable such as r. An answer containing such a variable can be correct only if it gives a domain restriction on the variable. Thus an answer of $\pi r/2r$ is incorrect, whereas an answer of $\pi r/2r, r \neq 0$ is correct.

■ **Question 1-2: Alternate Solution** Denes Jakob suggested an alternate solution using simultaneous equations. Adding each of [1] $a - b = 1005$ and [2] $a - b = -1005$ to each of [3] $b - c = 1007$ and [4] $b - c = -1007$ in turn yields $a - c = 2012$ or -2 or 2 or -2012; thus $|a - c| = 2$ or 2012.

■ **Question 1-5: Alternate Solution** Two students, including one advised by John Walter, suggested solving by using combinatorics. One added $_9C_1 + _9C_2 + ... + _9C_9$ to build the acceptable numbers; the other considered the different ways to remove digits from 123456789 and so added $_9C_0 + _9C_1 + ... + _9C_8$ to count the acceptable numbers.

■ **Question 1-6: Comments** Several of our advisers found the wording of Question 1-6 to be less than clear. Chuck Garner said, "Problem 6 was a good problem but it was worded strangely ~ it threw off all but one of my students!" Anne Marciano said, "Many of my students felt that there was a lot of ambiguity in questions #5 and #6. After they took it and I tried the questions I would have to partially agree. I think they struggled with #5 because they are weak in the area of set theory. But I think #6 was very unclear. It felt like there was a piece of information missing. The one student who did get it right did it on a logical guess which really had nothing to do with the correct answer. I would like to know if any other people felt this way." Karen Holmes said, "I thought the wording of question #6 was unclear. Personally, I stared at it, re-read it numerous times, and still was uncertain what it was asking." Dean Ballard said, "We had a lot of students answer #6 with '17,' missing the requirement that (x,y) be *positive* integers."