



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!

■ **Dates of Final HS Contest and Algebra Contest** Our final contest of this school year is March 14 (with an alternate date of March 21). In addition, this year happens to be the 30th year of our annual April *Algebra Course I* contest. There's still time for your school to register! Go to www.mathleague.com.

■ **2023-2024 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 17 (Oct. 24), November 14 (Nov. 21), December 12 (Dec. 19), January 16 (Jan. 23), February 13 (Feb. 20), and March 12 (Mar. 19). Have a testing or other conflict? Now is a good time to put an alternate date on calendar!

■ **Rescheduling a Contest and Submitting Results** Do you have a scheduling problem? If school closings or testing days mandate contest rescheduling, our rules permit you to use an alternate contest date. Try to give the contest the week after the regularly scheduled date. If scores are late, attach a brief explanation. Late scores unaccompanied by such an explanation will not be accepted.

■ **End-of-Year Awards** Engraving of awards begins April 1st. We give plaques to the highest-scoring school in each region and to the 2 schools and the 2 students with the highest totals in the entire League. *Winning schools must submit their results to our Internet Score Report Center by March 31st.* Results submitted later *cannot* be used to determine winners. A teacher once asked, "*Has there been any thought to using enrollment figures to divide the schools into two divisions? Personally, I don't care whether we ever receive any team recognition, as my students enjoy the mathematical challenges provided.*" Our groupings are not organized to "even out" the competition. Competition is one feature of our academic enrichment activity, but enrichment should be the main goal. Only a few schools can expect to win, but all schools can profit.

■ **Misspelled Student Name?** An advisor wrote to us to request that the spelling of a student's name, which he had entered incorrectly for previous contests, be changed. We do not make such corrections, because you can! Any advisor in this position should return to the Score Report Center and click on "Late Submissions" for whichever contest has a name or score that needs correcting.

■ **General Comment About Contest #5** Roger Finnell said, "If you make more contests this difficult, you will start losing more schools." To be fair, this comment was submitted before we gave all students credit for question 5-2 (see below), and the difficulties surrounding that question may have been part of the impetus for this comment. Since we did receive the comment, however, and we take very seriously comments such as this one, we would like to address it briefly. We strive to make our contests accessible to as many students as possible while also challenging the best students. To that end, we always try to make sure that each of our contests contains at least two questions that a good ninth grade math student should be able to solve. We may have failed at that in this case with question 5-2, but the percentages for 5-1 and 5-3 show that those questions were fairly accessible to many students. While we realize that if this were a classroom test, those percentages would be disappointing, a math contest is different from a classroom test. On a math contest like ours, a score of 2 correct is good, and even a score of 1 correct should be commended! So, while we may not always achieve our goals to put out a well-balanced contest, we think overall we come very close.

■ **Question 5-2: Appeals (Rejected and Accepted) and Comments**

Timothy Shafer appealed on behalf of students who put an answer of 1 for this question, saying "I had two students use this logic for #2. If you (by good fortune, 1 of 12 chance admittedly) put the weight 2k and the weight 4k on one pan and the weight 6k on the other pan, they would balance and you would know that one not on a pan would be the heaviest cube. There is no other way to have two cubes balance one. Thus 'the least number of balancings that would be needed to identify the heaviest cube' is 1." This appeal was rejected, because although it would be POSSIBLE to succeed with this approach, the method described does not ensure that the heaviest cube would be determined each time the method was used. As was pointed out, this method would work less than 10% of the time. By asking how many weighings would be "needed," the question implies a solution that always yields the heaviest cube. Clearly, a minimum of two weight comparisons would be needed to always find the heaviest cube.

Richard Wright said, "Some of the students were confused about the type of balance. The scale in the picture is not a balance scale as used in the problem. They thought that is was one pan instead of two pan." Uh oh. Then Dave Feinberg said, "I had students who didn't know what was meant by a balance scale, and it didn't help that the drawing showed a different kind of scale. This was the question my students missed most." Double uh oh. Then Josh Frost wrote a very eloquent email on the subject, saying in part, "A lot of kids have no idea what a balance scale is, and especially since the picture given with the problem is NOT a balance scale, but a traditional weighing scale. They don't use them in school ever, so why would they?" Then Karen Nelson appealed on behalf of students who put an answer of 3 for this question, saying "Several of my students answered 3 due to a different interpretation of a 'balance scale.' They looked at the picture by the problem and assumed it was a balance scale like they are used to seeing at the doctors office which would only have one place to put a weight. Could the problem be interpreted this way, and if so, may I give credit to my students who answered with 3?"

All of these advisors' points are well taken. We would have thought that through such images as the balance scales used in depictions of the Libra zodiac sign and the balance scales typically held by the blindfolded image of "blind justice," among others, students would know what such a scale is. Unfortunately, we may have been mistaken in that assumption, and even for those students who understood the term the cartoon included next to the question was misleading as it did not depict the balance scale intended by the question. A far lower percentage of students than expected got the question correct, which led us to the conclusion that the only fair course of action was to effectively throw out the question by giving all students credit for having answered it correctly.

After we decided to give all students credit for this question, Paul McLelland said, "Now that I look at it, that was a horrible cartoon. The giving of credit for that question to all students is fair. Good work!" Matthew Erickson said, "I am trying to submit scores and every time I enter someone's score in it always marks #2 correct and I can't change it. Please advise." Good! Everyone should get credit, so the system works!

We really do appreciate feedback like this on our contests, so thank you to all of the advisors who brought the situation to our attention. We have now rewritten the question to avoid the confusion that some students had. The new version of the question will appear in our volume 9 High School book when we publish it.

Statistics / Contest #5

Prob #, % Correct (all reported scores)

5-1	79%	5-4	33%
5-2	100%	5-5	17%
5-3	62%	5-6	22%