Results of the 2003 Statewide Contest

by Jeff Dodd

Structure of the contest. The Alabama Statewide Mathematics Contest is a high school mathematics contest conducted in two rounds. The first round consists of three 50-question multiple choice written tests: Algebra II with Trigonometry, Geometry, and Comprehensive, which are administered at eight sites, scattered throughout the state. This round is open to all Alabama high schools. Each school may send any number of students to participate; though each student may take only one of the three tests. It is both an individual and team competition; a school's team score for a test is the sum of its four highest individual scores. The second round is a culmination of the team Comprehensive competition in the form of a "ciphering" (Jeopardy-style) tournament to which only high scoring teams from the first round written Comprehensive test are invited.

Each school competes in one of three divisions. The Division One competition is for public schools that are large enough to be classified as 6A in athletics and private schools that offer calculus. The Division Two competition is for public schools classified as 5A or 4A in athletics and private schools which offer one year of mathematics beyond both Algebra II with Trigonometry and Geometry. The Division Three competition is for public schools classified as 3A, 2A, or 1A in athletics and private schools offering no mathematics beyond Algebra II with Trigonometry and Geometry.

Participation. The first round of the contest took place on Saturday, March 1, 2003. This year, a total of 1201 students participated, representing 55 schools. Compared to last year, the number of students participating rose a bit (from 1168 last year) but the number of schools dropped (from 61 last year). Participation continues to be well below the peak participation of 2,021 students and 128 schools in 1988. The second round of the contest took place on Saturday, April 19 at Jacksonville State University in Jacksonville, Alabama. Invited to the second round were 16 teams in Division One, 16 teams in Division Two, and 12 teams in Division Three. Accepting this invitation were 11 teams from Division One, 8 teams from Division Two, and 7 teams from Division Three.

The Algebra II with Trigonometry Competition. This competition involves only the first round written test. The names of this year's top-scoring teams and individuals are displayed in Table 1.

In the Division One Algebra II with Trigonometry competition, Vestavia Hills claimed first place by scoring 942 out of 1000 possible points. The Alabama School of Fine Arts took second place with a score of 853, and Grissom took third place with a score of 827. Comprising the top 25% of the individual scores were 19 students from Vestavia Hills, 8 from Grissom, 7 from the Alabama School of Fine Arts, 3 from Hoover, 4 from Biarwood Christian, and 1 each from Auburn, Clay-Chalkville, and Oak Mountain.

In the Division Two Algebra II with Trigonometry competition, Homewood won the team competition with a score of 669. Cullman took second place with a score of 640, and Albertville took third place with a score of 604. Comprising the top 25% of the individual scores were 3 students from Albertville, 6 from Homewood, 11 from Cullman, 2 from Muscle Shoals, 1 from Fairview, 5 from Huntsville, 5 from West Point, and 2 from Bradshaw.

In the Division Three Algebra II with Trigonometry competition, there were only 10 teams. Cold Springs took first place with a score of 346, narrowly outscoring Lexington (343) and Calera (339). Comprising the top 25% of the individual scores were 1 student from Calera, 4 from Cold Springs, 1 from New Century Technology, 6 from Lexington, 1 from Lauderdale County, 1 from Hanceville, 2 from Holly Pond, 3 from Clay County, 1 from Good Hope, and 1 from St. Clair County.

Table 1
Results of 2003 Algebra II with Trigonometry Contest

Top Individuals Statewide

DIVISION ONE	DIVISION TWO	DIVISION THREE
1. Anton V. Fedorov, Vestavia	1. Justin E. Reeves, Albertville	1. Heather M. Veasey, Calera
2. Ben J. Jedlovec, Grissom	2. Lewis J. Lehe, Homewood	2. Jeremy K. Graves, Cold Springs
3. Chris J. Louis, Vestavia	3. Anand N. Bosmia, Homewood	3. William K. Moore, New Century Technology
4. Ivy Wu, Vestavia	4. Adam W. Royal, Albertville	4. Tyler N. House, Lexington
5. Jonathan D. Waite, Vestavia	5. Sagar A. Patel, Homewood	5. Marlena L. Newton, Lauderdale County
5. Fan Yang, Al. School of Fine Arts		

Other District Leaders (Alphabetical)

Albert H. Lee, Auburn	Anna K. Garner, Dallas County	Justin M. Gravette, Clay County
Noel A. Whitehurst, St. Paul' s Episcopal	Jessica H. Revis, Handley	
	Hunter Till, Greenville	
	Claire E. Vinson, Cullman	

Top Teams Statewide

1. Vestavia	1. Homewood	1. Cold Springs
2. Alabama School of Fine Arts	2. Cullman	2. Lexington
3. Grissom	3. Albertville	3. Calera
4. Briarwood Christian	4. Huntsville	4. Clay County
5. Hoover	5. Muscle Shoals	5. Holly Pond
6. Auburn	6. West Point	6. Lauderdale County

Other District Leaders (Alphabetical)

	Greenville	

The Geometry Competition. This competition involves only the first round written test. The names of this year's top-scoring teams and individuals are displayed in Table 2.

In the Division One Geometry competition, Vestavia Hills won first place by scoring 884 out of a possible 1000 points. Remarkably, for the second straight year the Alabama School of Fine Arts and Briarwood Christian finished separated by only one point, scoring 794 and 793 to take second and third place respectively. (Hoover was right on their heels with a score of 789!) Comprising the top 25% of the individual scores were 15 students from Vestavia Hills, 5 from Briarwood Christian, 3 from Hoover, 5 from the Alabama School of Fine Arts, 3 from Grissom, and 1 each from Oak Mountain and Central.

In the Division Two Geometry competition, Homewood won first place by scoring 668. Cullman took second place with a score of 644 and Albertville took third place with a score of 561. Comprising the top 25% of the individual scores were 7 students from Cullman, 16 from Homewood, 3 from Albertville, 3 from West Point, 2 from Muscle Shoals, 4 from Bradshaw, and 1 from Dallas County.

In the Division Three competition, there were only 10 teams. First place honors went to Winfield City with a score of 544. Second place went to Lexington with a score of 377 and third place to Holly Pond with a score of 357. (Winfield City' s167 point margin of victory was the largest in any of the nine first round team competitions this year.) Comprising the top 25% of the individual scores were 7 students from Winfield City, 2 from Lexington, 3 from Holly Pond, 1 from Calera, 1 from Hanceville, and 2 from Clay County.

Table 2
Results of 2003 Geometry Contest

Top Individuals Statewide

DIVISION ONE	DIVISION TWO	DIVISION THREE
1. Laura M. Sims, Vestavia	1. Daniel J. Hollis, Cullman	1. Murray D. Spruiell, Winfield City
2. David C. Harris, Vestavia	2. Josh G. Mullins, Homewood	2. Ashley E. Bryant, Winfield City
3. John W. Naramore, Vestavia	3. James M. Donovan, Homewood	3. Zachary B. Wilbanks, Winfield City
4. Adam M. Trettel, Briarwood Christian	4. Jonathan Yeatman, Albertville	4. David R. Nix, Winfield City
4. Sara K. Clay, Vestavia	5. Blair E. Segers, Homewood	5. Alisha M. Jaynes, Lexington
		5. Evan D. Smothers, Winfield City

Other District Leaders (Alphabetical)

Kevin Chou, Grissom	Justin A. Mott, Dallas County	Rachel Ciliax, New Century Technology
Janice S. Kim, Central	Rocco Romeo, Handley	Kimberly J. Crist, Clay County
Carol A. Thetford, St. Paul' s Episcopal	Jonah R. Taylor, Rehobeth	Anthony L. Morrison, Calera
Chao Zhang, Auburn		

Top Teams Statewide

1. Vestavia	1. Homewood	1. Winfield City
2. Alabama School of Fine Arts	2. Cullman	2. Lexington
3. Briarwood Christian	3. Albertville	3. Holly Pond
4. Hoover	4. West Point	4. Clay County
5. Grissom	5. Bradshaw	5. Hanceville
6. Spain Park	6. Muscle Shoals	6. Calera

Other District Leaders (Alphabetical)

Auburn	Rehobeth	
Central		
St. Paul' s Episcopal		

The Comprehensive Competition. The results of the first round written test are displayed in Table 3. (When reviewing the results, bear in mind that there is a different version of the written Comprehensive test for each of the three Divisions.) The results of the second round ciphering tournament, which determined the final team placings in the Comprehensive competition, are displayed in Table 4.

In the first round Division One competition, Vestavia Hills took first place with a score of 973 out of 1000 possible points, the highest team score in any of the nine first round team competitions (thereby completing a sweep of all three of the first round competitions). Hoover took second place with a score of 941, and Grissom took third place with a score of 935. Comprising the top 25% of the individual scores were 9 students from Hoover, 23 from Vestavia Hills, 9 from Grissom, 1 from Bob Jones, 1 from Loveless Academic Magnet Program, 2 from Auburn, 1 from Briarwood Christian, 2 from Oak Mountain, 1 homeschooled student, 1 from Randolph School, 1 from Sparkman, and 2 from the Alabama School of Fine Arts. (We congratulate Weichen Zhu from Hoover High School who scored a perfect 250 on the Division One Comprehensive Test!)

In the Division Two competition, Homewood won the team competition with a score of 845. Albertville took second place with a score of 790, and Cullman took third place with a score of 714. Comprising the top 25% of the individual scores were 10 students from Homewood, 5 from Albertville, 3 from Bradshaw, 5 from West Point, 9 from Cullman, 3 from Guntersville, 3 from Huntsville, 1 from Rehobeth, 1 from Dallas County, and 2 from Muscle Shoals.

In the Division Three competition, there were only 12 teams. First place honors went to Calera for a score of 733. Winfield City took second place with a score of 707 and Sand Rock took third place with a score of 628. Comprising the top 25% of the individual scores were 3 students from Sand Rock, 6 from Calera, 6 from Winfield City, 3 from Plainview, 1 from New Century Technology, 1 from Lexington, 1 from Good Hope, 4 from Holly Pond, and 2 from Lauderdale County.

Based on the team scores for the written Comprehensive test, selected schools were invited to the second round ciphering tournament. Seedings for the tournament were also determined from these scores. The format of the tournament (which is described in the Spring 1999 issue of this *Journal*) is a combinatorial arrangement accommodating up to 16 teams which allows each team to play each other team exactly once *in only five rounds,* followed by a tie breaker for first place if necessary. So the scoring can be done very much as in a standard round robin tournament.

In the Division One tournament, top-seeded Vestavia won all of its matches to take first place. Third-seeded Grissom took second place, losing only to Biarwood Christain and Vestavia in very close matches. Third place went to second-seeded Hoover, whose only losses of the day were to Vestavia and Grissom. The fourth place trophy went to fifth-seeded Oak Mountain.

In the Division Two tournament, second-seeded Albertville won all but two of its matches (tying Homewood and Cullman) to take first place. Seventh-seeded Muscle Shoals took second place, losing only to Albertville. At the end of the day, top-seeded Homewood and third-seeded Cullman were tied for third place with two losses each. Since they also tied in their head-to-head match, third place went to Homewood and fourth place to Cullman on the basis of the seedings from the first round competition.

In the Division Three tournament, top-seeded Calera won all of its matches to take first place. Third-seeded Sand Rock took second place, losing only to Calera. Second-seeded Winfield City took third place, losing only to Calera and Sand Rock. And sixth-seeded Lexington took the fourth place trophy, losing only to Calera, Sand Rock, and Winfield City.

Comments. Every school that participated in the contest is to be congratulated on its efforts. We hope that the contest questions will prove interesting and useful to teachers and students long after the contest is over. Our editors are continuing to work on adjusting the level of difficulty of all the tests and the ciphering questions to yield optimal results (plenty of challenges for all, yet an overall level that is not too frustrating for the average participant). Specific comments and suggestions regarding our questions are welcome.

We feel strongly that any motivated student can benefit from participating in the contest, and would like to see more participation, particularly among smaller schools. We remind everyone that a school does not need to field teams for all three tests and there is no minimum number of students required to field a team for any of the three written tests! (For example, a school can send just one student to take just one test!) Of course, a team of fewer than four students will be at a serious disadvantage in team competition. But every student competes on an equal footing with every other student in individual competition. Hundreds of awards (trophies, plaques, and certificates) are given to individuals and teams at the district and state levels. These can provide competitive motivation, and (friendly!) cross-town rivalries can provide even more. (Challenge a fellow teacher today!)

Table 3
Results of 2003 Comprehensive Written Test

Top Individuals Statewide

DIVISION ONE	DIVISION TWO	DIVISION THREE
1. Weichen Zhu, Hoover	1. Hamilton C. Simpson, Homewood	1. Kevin S. Webb, Sand Rock
2. Chris P. Terndrup, Vestavia	2. Chad Davis, Albertville	2. Kathryn O. McGlawn, Calera
3. Eric A. Mog, Grissom	3. Michelle L. McGaha, Albertville	3. Frank S. Orona, Calera
3. Catherine L. Dooley, Vestavia	4. Andrew A. Garfrerick, Bradshaw	4. Kyle J. Gainer, Winfield City
5. Richard C. Hsiung, Vestavia	5. Christopher J. Holby, Homewood	5. David Vining, Winfield City
5. Anjana S. Madan, Vestavia		

Other District Leaders (Alphabetical)

Alexander C. Cheng, LAMP	Valarie A. Boyd, Handley	Ryan G. House, Lexington
Robert G. Eberly, Daphne	Kevin J. Strickland, Dallas County	Jonathan D. Rizor, New Century Technology
Travis M. Hicks, Central	Josh D. Tyson, Rehobeth	

Top Teams Statewide

1. Vestavia	1. Homewood	1. Calera
2. Hoover	2. Albertville	2. Winfield City
3. Grissom	3. Cullman	3. Sand Rock
4. Alabama School of Fine Arts	4. West Point	4. Plainview
5. Oak Mountain	5. Bradshaw	5. Holly Pond
6. Bob Jones	6. Guntersville	6. Lauderdale County
7. Auburn	7. Huntsville	7. Lexington
8. Briarwood Christian	8. Muscle Shoals	8. Good Hope

Other District Leaders (Alphabetical)

Central	Greenville	
St. Paul' s Episcopal	Handley	

The Statewide Contest: 1998 - 2003, a brief retrospective. Next year, the contest will be under new management, as Jac Cole of Huntingdon College becomes its third director. (But a number of us at JSU will continue to contribute to the contest, just as a number of people at AUM have continued to work on the contest since its move from AUM to JSU.)

Over the past five years, we have retained the basic structure for the contest established by contest' s founding director, Chester Palmer [1]. However, we have made a number of adjustments, many in response to requests from team coaches:

- **Test Content:** We now give three different versions of the first round written Comprehensive Test, one for each Division, in order to give the Division II and Division III schools tests that are less discouraging for their average participants. The Algebra II test was renamed the Algebra II with Trigonometry Test, and a few basic trigonometry questions are now included in this test, in order to match the current Alabama Course of Study.
- **Final Round Format:** The format of the final round ciphering tournament (technically the second round of the Comprehensive Competition) has been changed. Details of the new format can be found in previous issues of this *Journal* [2, 3].

- **Home Schooled Students:** We have had a few students register for the contest as "home schooled" students. For the time being, we are operating under the (unwritten) rule that a student may register for the written Division I Comprehensive Test (only) as "home schooled". Such a student is eligible for individual awards on the same basis as any Division I student but of course cannot be involved in the team competition. Whether this policy is adequate, and whether or not it should be put in the contest brochure (thereby being made part of the official rules of the contest) is a matter that should probably be decided in the near future.
- **Awards:** We have substantially increased the numbers of team awards given in the contest, adding plaques for teams finishing 4^{th} - 6^{th} in the Algebra II with Trigonometry Competition and the Geometry Competition, and for teams finishing 4^{th} - 8^{th} in the first round written and second round ciphering Comprehensive Competitions. We also have added certificates for all teams finishing in the top half of any competition who do not qualify for trophies or plaques.
- **Contest Web Site:** We have constructed a web site for the contest that includes all the information and materials necessary for participation in the contest, including the official brochure, previous tests (with answers), and suggested study resources for students and coaches. An answer key for the first round written tests is posted there immediately after the tests are administered so that the students can consult it while the questions are still fresh in their minds. (It takes at least 10 days for us to process the tests and send the results to the team coaches.)
- **Mailing Lists:** Each fall, the contest has always tried to mail brochures to every public and private high school in the state brochures (addressed generically to the "Mathematics Department Chair"), and also to every system superintendent in the state. For the past several years, we have been using mailing labels supplied by the state department of education so that we are sure that we have a complete and current set of addresses each year. (However, we are aware that at many schools, these brochures do not end up in the right hands.) We also maintain an email mailing list with addresses gleaned from the contest registration forms (and from anyone else who requests to be added). This email list has been a valuable tool for conducting discussions with and maintaining contact with many (though not all) of the team coaches, as well as disseminating timely announcements.

We have responded to nearly every reasonable suggestion that we have received from team coaches. In fact, the only major suggestions that we have not implemented are: (1) providing complete solutions for our test items, and (2) expanding the contest "downward" to the Algebra I and perhaps 7^{th}-8^{th} grade levels. The only reason that we have not been able to produce solution sets and have not seriously considered developing an Algebra I written test is that we have lacked the man-hours of labor that these projects would take. However, both of these ideas are still very much alive as possibilities for the near future.

We have received no serious complaints about the contest from team coaches over the past five years, and our impression is that the coaches who participate regularly are, for the most part, satisfied with the quality of the contest. However, participation in the contest dropped substantially five years ago when the contest moved from AUM to JSU and has remained low (but stable) since, with about 55 - 60 teams bringing about 1200 students to the first round written tests each year. We are disappointed that despite the improvements outlined above, and a number of promotional efforts, we have not been able to attract more participation to the contest. However, we certainly have not exhausted the possible strategies for improving participation and we still believe that the contest can continue to prosper in the future. One thing that would certainly help is more support for mathematics teams from school principals and superintendents. In our view, support (financial and otherwise) for extracurricular academic activities lags inexcusably far behind support for extracurricular athletic activities at most schools. In general, this problem seems to be most severe at smaller, more rural schools, just the places where team coaches need the most support and encouragement to develop and maintain good math teams.

Acknowledgements. Many people worked on the contest this year. We thank everyone who helped; your efforts were valuable and much appreciated. Here we can list only some of those who made special contributions.

Diane Porter of Troy State University prepared the brochures and supervised the printing and distribution of the written tests. Martha Knight of Jacksonville State University handled registration. The written tests were constructed by Susan P. Slattery of Alabama State University (Algebra II with Trigonometry), Scott

Brown of Montgomery Alabama (Geometry), and Jaedeok Kim of JSU (Comprehensive). The Algebra II with Trigonometry test was edited by Jeff Dodd, Tom Leathrum, and Steve White, and typeset by Tom Leathrum and Jeff Dodd, all of JSU. The Geometry test was edited by Jeff Dodd, Jaedeok Kim, Youngmi Kim, and Steve White, and typeset by Steve White, all of JSU. The Comprehensive tests were edited by Jimmy Nanney, William Nowell, Yafang Song, and Pantelimon Stanica, and typeset by William Nowell, all of Auburn University at Montgomery. The ciphering problems were written by Scott Brown of Montgomery, AL and Jeff Dodd of JSU, compiled and edited by Jeff Dodd, and typeset by Jeff Dodd and Steve White of JSU, with additional checking and editing by Steve White, Jan Case, David Dempsey, Jaedeok Kim, Martha Knight, Deborah Primm, and Ed Smith, all of JSU. Steve White and Jeff Dodd of JSU did the scoring and score reporting for the written tests and prepared the certificates. Rhonda Wilks of JSU arranged for the trophies. The site contacts for the contest were David Muse of U. of North Alabama, Barbara Rice of Alabama A&M University, Zhijian Wu of U. of Alabama Tuscaloosa, John Mayer of U. of Alabama Birmingham, Martha Knight of Jacksonville State University, Jimmy Nanney of Auburn University at Montgomery, Ameina Summerlin of U. of South Alabama, and Paige Davis of Lurleen B. Wallace State Junior College. Jeff Dodd and the faculty of the Mathematical, Computing and Information Sciences Department of JSU hosted the final round ciphering tournament.

Table 4
Final Round Team Placings in 2003 Comprehensive Contest

DIVISION ONE	DIVISION TWO	DIVISION THREE
1. Vestavia	1. Albertville	1. Calera
2. Grissom	2. Muscle Shoals	2. Sand Rock
3. Hoover	3. Homewood	3. Winfield City
4. Oak Mountain	4. Cullman	4. Lexington
5. Auburn	5. West Point	5. Holly Pond
6. Briarwood Christian	6. Fairview	6. Lauderdale County
7. Alabama School of Fine Arts	7. Huntsville	7. Hanceville
8. Clay-Chalkville	8. Guntersville	
9. Bob Jones		
10. Central		
11. Alma Bryant		

The contest is administered by a joint committee of the Alabama Council of Teachers of Mathematics and the Alabama Association of College Teachers of Mathematics. The committee continues to be in need of assistance from present or former teachers of secondary or post-secondary mathematics. If you might like to help, if you would like to obtain further information of any kind about the contest, or if you have comments or suggestions regarding the contest, please feel free to contact the new contest director Jac Cole (jcole@huntingdon.edu, 334-833-4508) or the author of this article. You can also look at the contest web site, which contains a wealth of information about the contest. As of this writing, the site resides at http://mcis.jsu.edu/mathcontest, but it will move to Huntingdon College some time during the summer of 2003. (When this move occurs, we will post directions to the new site at the address of the old site. Don' t forget to change your bookmarks or shortcuts if you have any!)

References

1. Chester Palmer. "The 1997 Ciphering Competition at the Statewide Math Contest," *Alabama Journal of Mathematics*, Vol. 22 No. 1 1998, 35-40.
2. Jeff Dodd. "A Novel Tournament: A New Combinatorial Design for the Final Round of the Alabama Statewide Mathematics Contest," *Alabama Journal of Mathematics*, Vol. 23 No. 1 1999, 37-42.
3. Jeff Dodd. "Some Combinatorial Questions," *Alabama Journal of Mathematics*, Vol. 24 No. 2 2000, 25-27.

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