

2002 Alabama Statewide Mathematics Contest - A Review of the Geometry Exam

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The annual Alabama Statewide Mathematics Contest was, for the 5th consecutive year, directed by the Mathematics Department of Jacksonville State University. The first round was conducted in March 2002, and consisted of three, 50-question, multiple-choice tests in Algebra II with Trigonometry; Geometry; and Comprehensive Mathematics. These tests were administered at eight sites located throughout Alabama. A total of 45 teams and 357 students from three divisions competed in the Geometry portion of the contest. Both team and individual scores were computed, with team scores being based on the sum of the highest individual scores. In this article we will discuss the contents and results of the Geometry test.

The Geometry test questions were developed with the purpose of assessing the student's ability to perform at three levels. The first level involved computational problems that required finding segment length, perimeter, area, and angle measures. Students needed an understanding of basic geometric concepts to solve these problems. The second level consisted of application problems, which included finding edge length, surface area, and volume. A reasonable background in geometric properties of three-dimensional objects was needed to solve these problems. The third level comprised some rather difficult problems aimed at requiring students to think creatively and to use more advanced problem-solving strategies. Overall, the Geometry test seemed to have an appropriate balance of questions.

We analyzed the distribution of questions based on the level of difficulty. Thirteen questions, apparently representing the least

difficult level, were correctly answered by more than 60% of the students. There were 21 questions within the “moderate difficulty range” that were correctly answered by at least 20%, but not more than 60%, of the students. At the most difficult level, 14 questions were correctly answered by less than 20% of the students. Problems # 1 and # 12 had defects and thus were marked correct for everyone. The results of the analysis indicate there was a reasonable balance of questions according to level of difficulty and the test appears to have produced distinct winners in each division.

According to the team scores in the Division I category, the winner scored 833 points, a 61 point margin of victory. There was only a one-point difference between the second and third place teams. The individual competition was close with the winner having a score of 218 points and the top ten students scoring above 198 points. In the Division II category, the first place team scored 778 points, a commanding 84-point margin of victory and the largest margin of the three divisions. The individual competition resulted in a top score of 212 points, which was 13 points higher than second place. In the Division III category, the winning team scored a 33-point margin of victory. The individual competition was close among the top three performers with the winner scoring 164 points, followed by the second and third place students scoring 163 and 161 points respectively. As a whole, both teams and individuals displayed exceptional problem solving talent. The results of the Geometry test are a good indication that our students are receiving a solid foundation in this area of mathematics in our schools. We would like to express our thanks to the course director for allowing us to contribute to an extremely important aspect of Alabama’s Mathematics Education program.

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