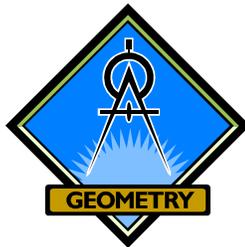
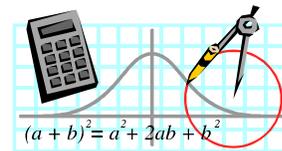
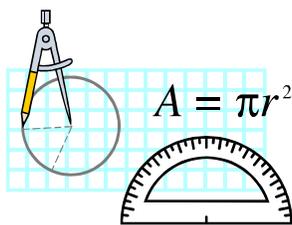


High School Assessment Core Learning Goal 2 Geometry



Instructional Activities



Maryland State Department of Education
Developed 2003

Core Learning Goal 2 Instructional Activities

| | |
|--|----------|
| Introduction | Page 1 |
| Activity 1: Transformations | Page 3 |
| Activity 2: The Pythagorean Theorem, the Distance Formula, and Slope | Page 36 |
| Activity 3: Constructions, Sketches, and Drawings | Page 49 |
| Activity 4: Different Methods of Constructions | Page 59 |
| Activity 5: Different Methods of Proof | Page 81 |
| Activity 6: Similarity and Congruence | Page 138 |
| Activity 7: Application of Properties of Quadrilaterals in the Coordinate Plane | Page 158 |
| Activity 8: Quadrilaterals in the Coordinate Plane | Page 164 |
| Activity 9: Area and Volume of Similar Figures | Page 173 |
| Activity 10: Prisms: Area and Volume | Page 198 |
| Activity 11: Real World Activities involving Volume, Surface Area, and Trigonometry | Page 216 |

Introduction

The National Council of Teachers of Mathematics (NCTM) in its *Principles and Standards for School Mathematics* has set a vision of the mathematics that students need to learn, how that mathematics should be taught and how its learning should be assessed as we move into the twenty-first century. The *Maryland Mathematics Core Learning Goals* (CLG) document puts forth the core content in algebra, data analysis, and geometry that will be assessed on the High School Assessment (HSA). The CLG call for a shift in emphasis from memorization of isolated facts and procedures to emphasis on conceptual understandings, multiple representations and connections, mathematical modeling, and mathematical problem solving. The implementation of the NCTM standards and the CLG by the classroom teacher presents a challenge and paradigm shift in the way we have traditionally taught and assessed mathematics.

This manual is designed for Maryland mathematics teachers to use with their classes in preparation for the HSA Mathematics Test 2 that assesses Goal 2: Geometry, Measurement, and Reasoning. The activities in this manual were developed to guide and support a classroom teacher's instruction. The language of the HSA was used when developing the activities. Emphasis was placed on the differences between explanations and justifications in mathematics. Teachers should consider the level of prior knowledge required to complete each activity when determining the appropriateness of the activities for their students. The activities and worksheets in this manual may be duplicated or customized according to the demands of the local school system's curricula and to each teacher's particular needs. This manual should be cited as the source if any of the activities are used in another publication or presentation.

The writers of this manual hope that Maryland's teachers will find this manual to be a resource that can be used easily, that supports their own and the state's instructional and assessment goals, and helps them meet the demands of their profession so that students will achieve academic success.

Acknowledgements

Prepared by

Edward Nolan
Montgomery County Public Schools

Under the direction of

Linda Kaniecki
Maryland State Department of Education

With Assistance from

Elaine Crawford
Maryland State Department of Education

With special thanks to the following educators for their valuable contributions:

| | |
|----------------------|------------------------------------|
| Lynn Clough | Anne Arundel County Public Schools |
| Stacey Cooper | Baltimore City Public Schools |
| Della Hanna | Anne Arundel County Public Schools |
| Edward Nolan | Montgomery County Public Schools |
| Bradley Okin | Harford County Public Schools |
| Sharon Young | Charles County Public Schools |

Maryland State Department of Education
Office of Mathematics
Donna Watts, Coordinator