

## Howard County Public Schools

10910 Route 108

Ellicott City, MD 21042

Superintendent: Dr. Sydney L. Cousin

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The Howard County Public School System consists of 72 schools from the elementary through high school level. The Doing What Works topic, *Developing Effective Fractions Instruction for K-8*, features one elementary school and one middle school from the district. They are:

- ◆ Pre-K-12
- ◆ 49% White
- ◆ 21% Black
- ◆ 16% Asian
- ◆ 8% Hispanic
- ◆ 6% Two or more races

- **Elkridge Middle School**

Serving a diverse population of sixth through eighth graders, Elkridge Middle School has received a number of awards for students' strong achievement in math. Of the nearly 700 students who attend the school, 85% scored at proficient or advanced levels on the 2010 Maryland State Assessment.

- **Bryant Woods Elementary School**

Columbia's Bryant Woods Elementary School serves pre-K through fifth grade. The student body of 350 is ethnically and economically diverse, with about half the students receiving free/reduced-price lunch. The school has received state recognition for significant performance growth across all student subgroups. In 2010, 81% of students scored at proficient or advanced levels on the Maryland State Assessment.

These schools are representative of the district's overall strong performance in math. Districtwide results of the most recent Maryland State Assessment showed 89% of students scoring at proficient or advanced, and 98% of the class of 2010 passed the Algebra assessment.

Howard County's math curriculum is consistent with the Maryland State Curriculum and Core Learning Goals, as well as the National Council of Teachers of Mathematics *Principles and Standards for School Mathematics*. The district also builds in additional objectives to increase students' understanding of math concepts.

During the 2010-2011 school year, math coaches and staff began reviewing and preparing to revise the curriculum in light of the new, more rigorous requirements of the Common Core standards, especially those related to rational numbers. To deepen teachers' work in helping students develop a conceptual understanding of fractions, the district has also begun integrating the recommendations from the Practice Guide, *Developing Effective Fractions Instruction for Kindergarten Through 8th Grade*, into curricular objectives. Current curricular objectives related to the Practice Guide recommendations highlighted on DWW include:

- Second graders are expected to be able to read, write, and represent simple fractional parts (half, third, fourth, etc.) of a region or set using models and symbols that match fractions equivalent to one whole and one half.

- Students in grade 6 mathematics should be able to determine and use rates, unit rates, and percents as ratios in the context of a problem; write and solve proportions; and determine discounts and sales tax.
- By the end of grade 7, students should be able to complete more complex analysis of ratios, proportions, and percents, such as determining equivalent ratios, percent of a number, rate of increase and decrease, discounts, simple interest, commission, and sales tax; writing and solving proportions; and determining and using rates, unit rates, and percents as ratios in the context of a problem.

The district has organized small professional learning communities to build up teachers' understanding of math content knowledge and pedagogy in expectation of more rigorous requirements under the Common Core State Standards. The professional learning communities empower teachers to examine their classroom practice, review student work, design assessments, and check on their own math content understanding. Teachers have the opportunity to work through problems using concrete materials and visual representations and to practice their mathematical discourse and communication.

Howard County's expectations for teachers, adapted from the National Council of Teachers of Mathematics, have been formalized as Standards for Teaching and Learning Mathematics. The Standards are:

- Knowledge of Mathematics and General Pedagogy
- Knowledge of Student Mathematics Learning
- Worthwhile Mathematical Tasks
- The Learning Environment
- Discourse
- Reflection on Student Learning
- Reflection on Teaching Practice

Each Standard includes additional details on what teachers need to do to satisfy expectations. For example, the Standards on Worthwhile Mathematical Tasks states that teachers should "design learning experiences and pose tasks that are based on sound and significant mathematics and that

- engage students' intellect;
- develop mathematical understandings and skills;
- stimulate students to make connections and develop
- a coherent framework for mathematical ideas;
- call for problem formulation, problem solving, and
- mathematical reading;
- promote communication about mathematics;
- represent mathematics as an ongoing human activity; and
- display sensitivity to, and draw on, students' diverse background experiences and dispositions."

Math instructional leaders conduct regular classroom walkthroughs to evaluate teachers' adherence to the standards.

**This project has been funded at least in part with Federal funds from the U.S. Department of Education under contract number ED-PEP-11-C-0068. The content of this publication does not necessarily reflect the views or policies of the U.S. Department of Education nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.**