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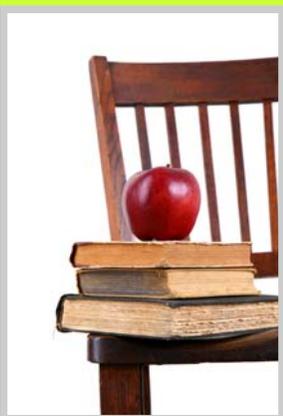
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Math In A Nutshell

Quick Tips for the Hurried Teacher

Content Elementary Math Newsletter from the Southern Nevada Regional Professional Development Program

Volume 2, Issue 3

November/December 2008

NCTM Principals and Standards: A Vision for School Mathematics

A Vision for School Mathematics, Principals and Standards for School Mathematics, NCTM 2000

Imagine a classroom, a school, or a school district where all students have access to high-quality, engaging mathematics instruction. There are ambitious expectations for all, with accommodation for those who need it. Knowledgeable teachers have adequate resources to support their work and are continually growing as professionals. The curriculum is mathematically rich, offering students opportunities to learn important mathematical concepts and procedures with understanding. Technology is an essential component of the environment. Students confidently engage in complex mathematical tasks chosen carefully by teachers. They draw upon knowledge from a wide variety of mathematical topics, sometime approaching the same problem from different mathematical perspectives or representing the mathematics in different ways until they find methods that enable them to make progress. Teachers help students make, refine, and explore conjectures on the basis of evidence and use a variety of reasoning and proof techniques to confirm or disprove those conjectures. Students are flexible and resourceful problem solvers. Alone or in groups and with access to technology, they work productively and reflectively, with the skilled guidance of their teachers. Orally and in writing, students communicate their ideas and results effectively. They value mathematics and engage actively in learning it.

This vision, highly ambitious and ever challenging, presents for teachers a vision of what quality mathematics should look like for each of the children under our care. Yet, with the many pressures faced by teachers on a day to day basis, how do we begin to attain this vision within our classrooms? The National Council of Teachers of Mathematics (NCTM) presented *Curriculum and Evaluation Standards* in 1989 as an initial step in the journey towards improvement of mathematics instruction in our nation. These standards were presented in order to attain three goals; to ensure quality, to indicate goals, and to promote change (NCTM, 2000). *Principals and Standards for School Mathematics* give direction for our professional dialogue and discourse surrounding quality mathematics instruction. In order to prepare today's students for their future in the 21st century, we must ensure that all educators (teachers, parents, and administrators) have an awareness and understanding of the NCTM *Principals and Standards*, and the implications made for classroom instruction.

In order to provide educators with a foundational knowledge base of the NCTM *Principals and Standards*, we will be dedicating the next few issues of **Math in a Nutshell** to the *Principals and Standards*. Each month we will explore a few of the Principals which describe particular features of high-quality mathematics education, as well as the Standards which describe the mathematical content and processes that students should learn. It is important to remember that these dynamic principals and standards serve as guides and instructional tools for decision making in regard to effective classroom instruction. It is the teacher in the classroom who is charged with the responsibility of making these Principals and Standards come alive for her students.



The six Principals for School Mathematics are:

Equity: Excellence in mathematics education requires equity – high expectations and strong support for all students.

Curriculum: A curriculum is more than a collection of activities: it must be coherent, focused on important mathematics, and well articulated across the grades.

Teaching: Effective mathematics teaching requires understanding what students know and need to learn and then challenging and supporting them to learn it well.

Learning: Students must learn mathematics with understanding, actively building new knowledge from experience and prior knowledge.

Assessment: Assessment should support the learning of important mathematics and furnish useful information to both teachers and students.

Technology: Technology is essential in teaching and learning mathematics; it influences the mathematics that is taught and enhances students' learning.

The ten content and process Standards for School Mathematics are:

Content Standards	Process Standards
Number & Operations	Problem Solving
Algebra	Reasoning & Proof
Geometry	Communication
Measurement	Connections
Data Analysis & Probability	Representation

Principals and Standards for School Mathematics, NCTM 2000

The need to understand and be able to use mathematics in everyday life and in the workplace has never been greater.

- NCTM Principals and Standards, 2000

Upcoming RPDP Courses:

CRT Math Camp 3-5

RPDP 549F, 1 graduate credit, UNLV call number
Mondays, January 26, February 2,9,23, 2009

CRT Math Camp 3-5

RPDP 549F, 1 graduate credit, UNLV call number
Wednesdays, January 28, February 4, 11, 18, 2009

Constructed Mathematics Response 3-6

RPDP 549I, 1 graduate credit, UNLV call number
Tuesdays, February 3, 10, 17, 24, 2009

www.rpdp.net

Spotlight of the Month:

Go to www.rpdp.net for a direct link to resources for Basic Fact Strategies . Look in the *Hanlon's Resources* tab for sequenced basic fact strategy worksheets and activities. They are located under "useful resources".

