



Math In a Nutshell

Quick Tips For the Hurried Teacher



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

December, 2007

Volume 1, Issue 2

RPDP Elementary Math Team:

The Basics about Basic Facts

Kathy Dees

East Region
855-7770 x. 5333

Dorothea Hepworth

Lincoln County
775-728-4658

Nicole (White) Melton

Southwest Region
799-3835 x. 260

Brenda Pearson

Northwest Region
799-4558 x. 5345

Jackie Peterson

Nye County
775-727-7767

Kristin Petrony

Northeast Region
799-1719 x.5340

Kristian Ryerson

Southeast Region
799-1380 x.4034

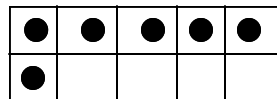
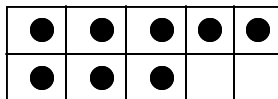
We all agree that mastery of basic facts is an essential component of students' mathematical development. In fact, this fact mastery of arithmetic is often referred to one of "the basics" of the time-honored three R's of elementary education. But really, what are the basic facts, and what experiences are most effective in developing mastery? Basic facts for addition, subtraction, multiplication and division refer to combinations of single digit numbers. Mastery of a basic fact means that a child can give a quick response (in about 3 seconds) without resorting to non-efficient means, such as counting. All children are able to master the basic facts if they are allowed to construct efficient mental tools that will help them. Fortunately, we know quite a bit about helping children develop fact mastery. Simply stated, there are three components or steps that can be identified:

- Help children develop a strong understanding of *number relationships* and operations
- Develop *efficient* strategies for fact retrieval through *effective* practice
- Provide drill in the use and selection of those efficient strategies *once they have been developed*.

Helping children develop a strong understanding of number relationships and operations

Number relationships play a significant role in fact mastery. So what relationships do teachers need to fully understand in order to develop fact mastery among their students? The first big idea is that of number composition – that a whole can be composed from its parts, often in different ways and with different parts (ie: 1+7, 2+6, 3+5, and 4+4 all equal 8). Conversely, number decomposition – that a whole, can be decomposed into parts in different ways (ie: 8 is equal to 1+7, 2+6, 3+5, 4+4). Children who are able to add and subtract with ease and efficiency know the parts of numbers and see the relationships between composition and decomposition of number and addition and subtraction.

Children also need to develop a strong understanding of our Base Ten number system and utilize that system to their advantage. Children need to know "landmark" numbers in our number systems (mainly the multiples of 10). They then need to be able to see relationships of number to these landmarks (ie: 8 is 2 less than 10, therefore 8+6 is 14 because 8 and 2 more is ten, and 10 + 4 is 14).



Develop efficient strategies for fact retrieval through effective practice

An efficient strategy is one that can be done mentally and quickly. The emphasis is on efficiency. Counting is not efficient. A strategy is most useful to students when it is built on and connected to concepts and number relationships. Teachers need to plan frequent mini lessons in which specific strategies are likely to be developed. These mini lessons may be in the context of carefully selected story problems for which students are likely to develop a strategy as they solve it. A second possible approach is a bit more direct; the lesson may

continued on page 2



Math In a Nutshell

Continued...

www.rpd.net



www.rpd.net Spotlight of the Month:

How do I find resources for helping children master the basic facts?



1. Go to the *www.rpd.net* website
2. Click on the red "Math" tab
3. Select the Elementary Resources from the drop down menu
4. Select an area of interest

Upcoming RPDP Elementary Math Classes in January:

- 1/8: Data Analysis 3–5
- 1/9: Writing About Math 3-8
- 1/17: Mathematics Bridge 5-6
- 1/25: Mental Math and Algorithms
- 1/28 & 1/30: Number sense for the Elementary Classroom
- 1/31: Explain it! Constructed Response 3-6
- 1/31: Projects in Math K-5

To attend any of these classes, please register on Pathlore at www.ccsd.net

Children's Literature Connection:

Math for All Seasons by Greg Tang

*A collection of mind stretching math riddles searching for number combinations

12 Ways to get to 11 by Eve Merriam

*Multiple scenarios are presented to search for combinations for eleven

Two of Everything by Lily Toy Hong

*A fable that investigates the doubles strategy for addition

The Basics about Basic Facts (continued from page 1)

revolve around a collection of facts for which a particular type of strategy is appropriate. A class discussion of how the facts are similar or related facilitates the students' ability to make connections and see relationships in order to develop efficient strategies.

Provide drill in the use and selection of efficient strategies once they have been developed.

Drill refers to repetitive activity. Drill activity is appropriate for children who have a strategy they understand and know how to apply effectively. Drill with an "in place" strategy focuses a students' attention on that strategy and helps to develop automaticity. However, it is critically important to avoid premature drill. Premature drill offers no instruction and encourages no new connections or relationships. Without the ability to make connections, children revert back to counting. If drill is undertaken when counting is the only strategy available, all you get is faster counting. This can prove to be frustrating and a waste of time to both teachers and students.

It is unreasonable to expect every student in your class to develop and be comfortable with the same strategies at the same time. Just as children develop literacy skills at different paces, fact mastery is an individual process as well.