## NCTM 2009 Annual Meeting

## Beyond Counting and Calendar: Number Sense for Primary School Students

Lisa Rogers

# Math Solutions.

"During the early years teachers must help students strengthen their sense of number, moving from the initial development of basic counting techniques to more sophisticated understandings of the size of numbers, number relationships, patterns, operations, and place value." (Principals and Standards, p. 79)

Two things are for sure:

- Number sense rests on making sense of mathematical concepts and procedures.
- Different people reason in different ways.

~M. Burns

To increase students' breadth and depth of number sense, teachers must select meaningful tasks that encourage all students to:

think about numbers,

reflect on reasonableness, and

use numbers and operations in a variety of situations.

#### *Teaching Number Sense* By Hilde Howden

Ms. Howden asked the children to tell the first thing that came to their minds when she said "twenty-four."

<u>Class #1</u>

"two dimes and four pennies"

"two tens rods and four ones cubes" (from a set of base-ten blocks)

"two dozen eggs"

"four nickels and four pennies"

"take a penny away from a quarter"

"take six pennies from three dimes"

"My uncle had a birthday on Saturday and he's twenty-four."

"My mother was twenty-four last year."

"I'll be twenty-four in nineteen years."

"the day before Christmas"

"Twenty-four is when the hand is almost in the middle of twenty and thirty." (looking at an old-fashioned grocery scale hanging in the corner of the classroom)

"My big brother got a cut this long and it took seventeen stitches to sew it up. That's almost twenty-four."

<u>Class</u> <u>#2</u>

Several children traced the number 24 in the air and others nodded in agreement.

With a little prodding, one pupil found 24 on the calendar.

"24 appears on my digital watch once every hour."

Number Sense builds on students' natural insights and convinces them that mathematics makes sense, that it is not just a collection of rules to be applied.

Hilde Howden, 1989

**Components of Number Sense** 

Counting

Number Relationships

**Decomposing and Composing Numbers** 

Landmark Numbers

**Computational Flexibility** 

**Place Value** 

What Do You See? Cards



130

#### Ten Frames

Number Sense is.....

... a "good intuition about numbers and their relationships. It develops gradually as a result of exploring numbers, visualizing them in a variety of contexts, and relating them in ways that are limited by traditional algorithms". Hilde Howden (1989)

With a few tiny adjustments, if we knew how to make them, we could release the genius in every child. Albert Einstein

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