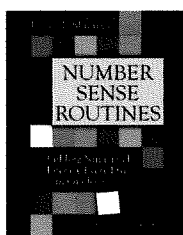


provincial numeracy project in Richmond

Richmond is one of the districts that is part of BC's Provincial Numeracy Project. This is a pilot year for the project, with eight districts involved. The project's goals focus on looking at balanced numeracy experiences in classrooms with a focus on developing number sense. Alongside this is looking at what types of professional learning experiences support teachers in developing and assessing these experiences. Many of the districts are basing their projects on BC's Changing Results for Young Readers model.

In Richmond, we have teams from three schools participating – Byng, Westwind and Kidd. All three schools have goals around mathematics and have done school-wide numeracy assessments. Each school team is comprised of early primary teachers and a learning resource teacher. Teachers were asked to bring their class' assessments and to think about one particular child they were curious about with regards to development of number sense.



During our first session in January, we overviewed the goals and expectations of the project. Teachers were asked to consider a professional inquiry question that paralleled their questions about their focus student in some way. Each teacher was provided with the book Number Sense Routines by Jessica Shumway and we looked at the routines of quick images and counting around the circle on video. We discussed how their classes might respond to

these routines, thinking especially about their focus students.

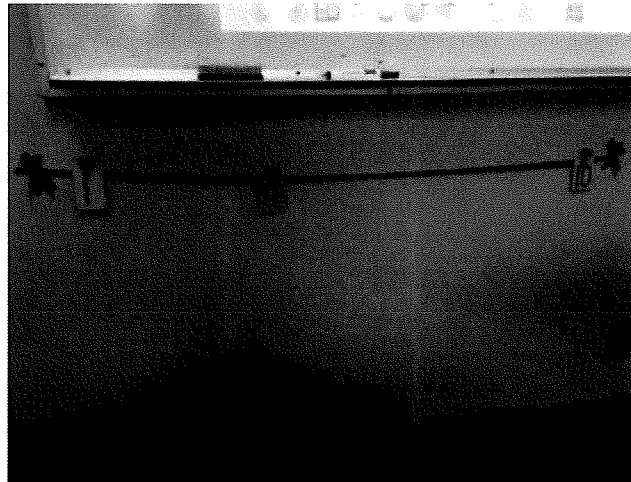
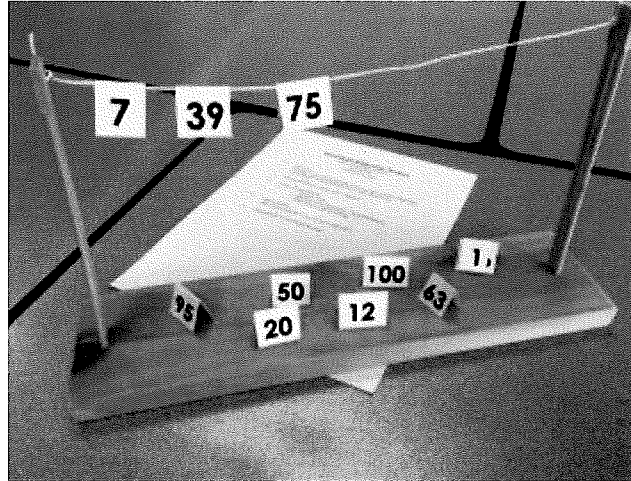


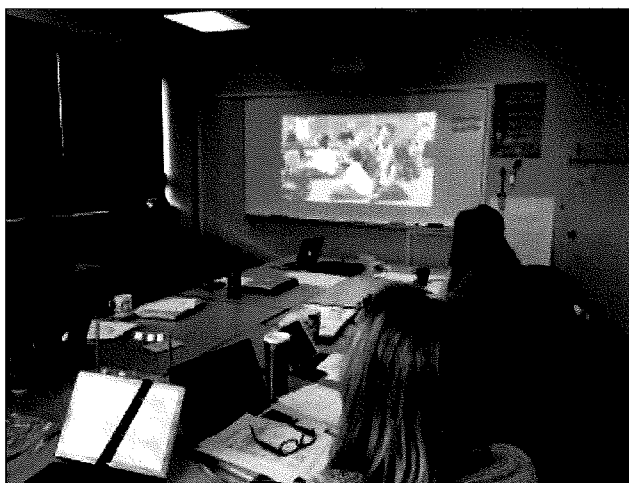
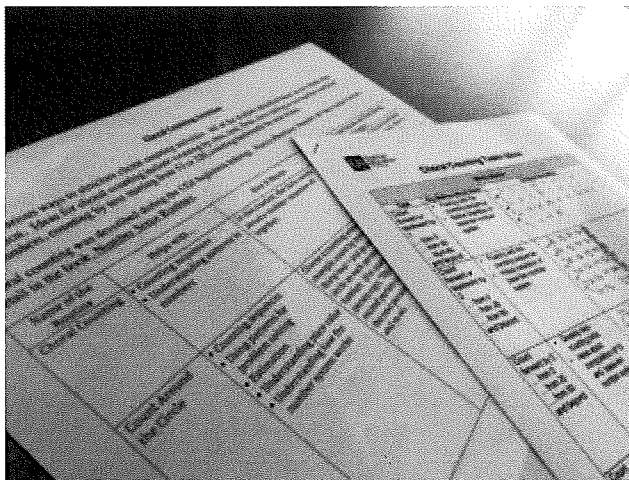
We also looked at the routine of Counting Collections and I shared some images and video from Richmond classrooms that have been using this routine. Again, teachers discussed and planned how this routine might be enacted in their classrooms.



For each of the routines, we “unpacked” the mathematics involved and what we could be looking and listening for. We also discussed how “guided math” supports students’ development by targeting instruction at students’ “just right” level and that many number sense routines could be the foundation of a guided math program. At the end of the session, the teachers completed a project recording form, including a “baseline” profile of their focus students.

During our second session in February, teachers shared what number sense routines they had tried and how their students responded. Two new number sense routines were introduced – numberlines or clotheslines (inspired by the work of Andrew Stadel) and Choral Counting, as found on the University of Washington site tedd.org

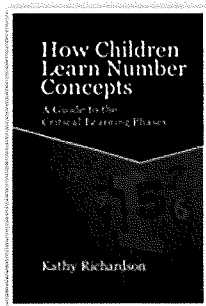




We focused on the big mathematical concept of place value, as related to these two routines, particularly looking at number patterns and the importance of being able to count on from tens. The teachers were provided with a foundational concept brochure about place value that was developed for the BCAMT Cross-District Collaborative Inquiry Reggio-Inspired Mathematics Project. You can find that document here:

Place Value vers 2

The teachers were also provided with the book *How Children Learn Number Concepts* by Kathy Richardson. This book clearly outlines the learning phases students go through as they develop number concepts such as counting and place value. It has examples of experiences that support student learning.

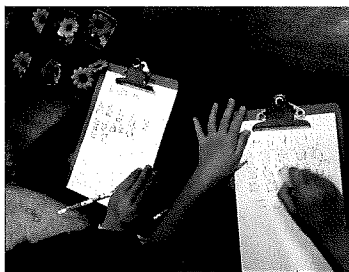
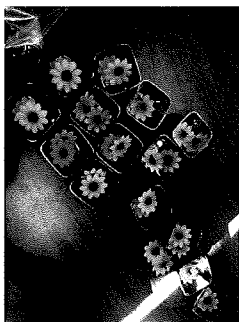
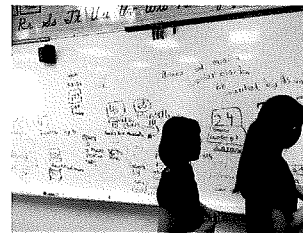
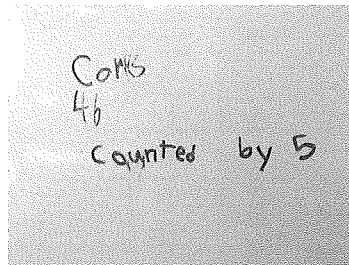
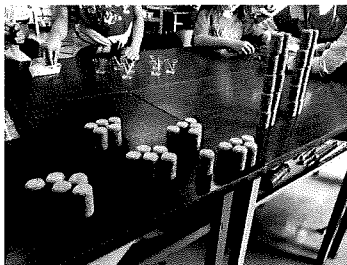
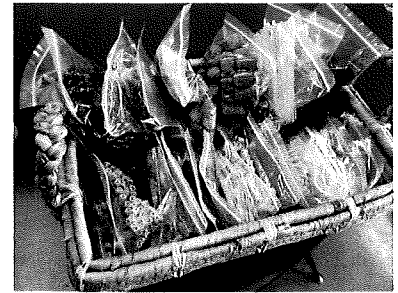


As we move forward with this project we will be looking at assessment tools, iPad apps and thinking more deeply about what balanced numeracy looks like in our classrooms.

~Janice

Counting Collections

Students in grades 2 & 3 at Diefenbaker chose collections to count. The focus was on counting all of the objects. They were asked to record their count and how they counted. The students often grouped the objects by 2s, 5s or 10s to make counting more efficient and accurate. When presented with collections with large quantities the students grouped the materials by in larger groups such as 20s or 25s.



Students in Kindergarten & grade 1 at Diefenbaker also counted collections. Most of the students counted by 1s but also began to count by 2s and 10s, grouping their objects in different ways. The students recorded their counts using pictures, numbers and words.

Curricular Competencies

- Develop abilities to make sense of quantities
- Use reasoning and logic to explore and make connections
- Communicate in many ways
- Connect mathematical concepts to each other



Curricular Content

- Number concepts
 - Subitizing
 - One-to-one correspondence
 - Cardinality
 - Counting forward
 - Counting on
 - Place value
 - Skipcounting by 2s, 5s and 10s (counting by multiples)
 - Equal groups
 - Connecting repeated addition to multiplication

As teachers, we noticed that the students were highly engaged in counting their collections and working with a partner was a critical structure to encourage math talk. We also noticed how students supported and challenged each others' thinking, often checking and building on each others' counts.



introducing clothesline to the kindergarten students at General Currie

Last Tuesday, I made another visit to the kindergarten classrooms at General Currie Elementary. During each visit I introduce a new mathematical “routine” to the students and teachers and then extend the routine with some related learning experiences.

I introduced the “clothesline” introduced to me via Twitter by Andrew Stadel last year. There is a website dedicated to sharing information about clothesline math [HERE](#). Most of the work I have seen done with the clothesline is at the middle school level and I can see great uses for it in exploring equivalent fractions, decimal fractions and percentages with our intermediate students. In looking at the kindergarten mathematics curriculum for BC, sequencing and representing numbers from 0-10 is an important learning standard and connects to the use of the clothesline, a form of interactive numberline.

We began with just the numeral cards and the students came up on a a time (in random order) to place their cards on the clothesline. They were asked to state their reasoning for why they put their cards where they did.



After the 0-10 cards were in place, we took them off and then I shuffled them with the ten frame and tally cards and handed one card out to each student. Again, the students came up one or two or three at a time and placed their cards, explaining their reasoning. When there was an equivalent representation already in place, they just placed the card on top of the other.





The tent cards I created can be downloaded here:

[0-10-tent-cards](#)

When I asked the first class of kindergarten students one way of showing “seven”, one little guy held up seven fingers. I hope to take some photos of the students finger combinations next week when I visit to include these on a set of cards.

I can also see great potential for the clothesline to look at multiple representations of numbers in grades 2-5 to help students think about place value.

After each class worked with the clothesline, the students could choose from several related learning experiences, all that focused on sequencing numbers or representing quantities to 10.

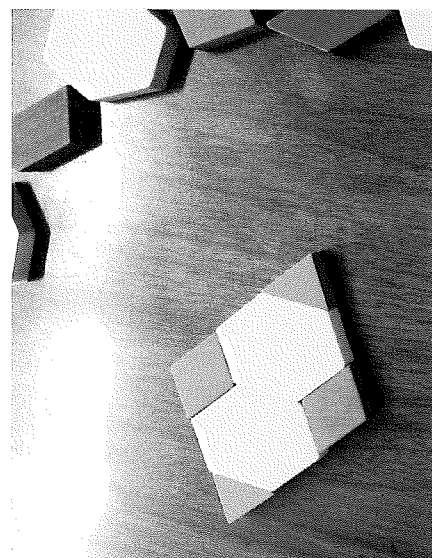
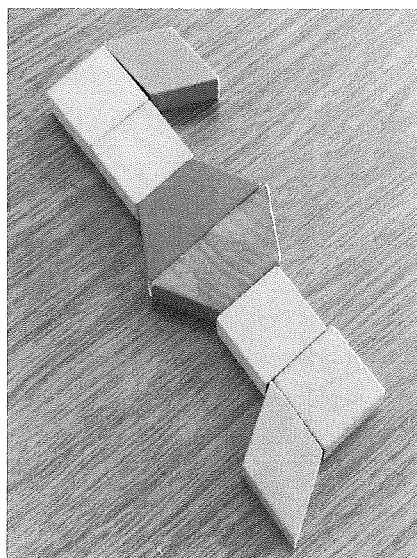
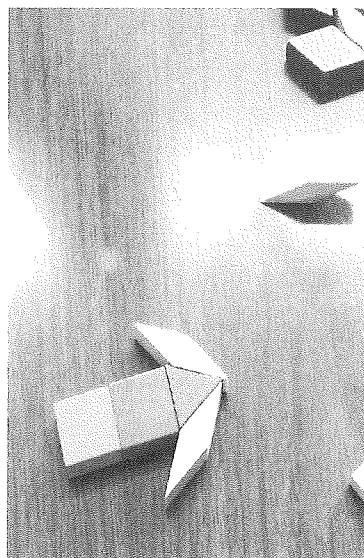
Quick Images

The Routine: An image is presented to the students for a short period of time (two-three seconds). This image can include a display of dots, geometric figures, base-ten blocks, or other materials. Students recreate what they saw by building, drawing or describing it. Students explain their own view of the image or model, including how they saw it or what it reminded them of.

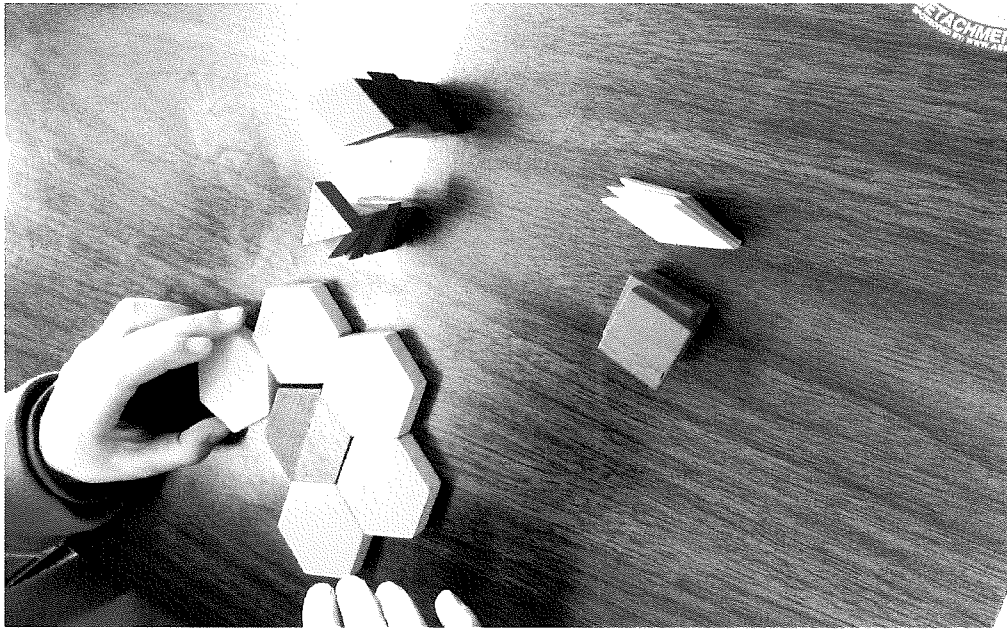
Extensions: The teacher can change for how long the image is shown, how many times it is shown and the difficulty of the image. Students also enjoy creating images or constructions for their classmates to represent.

Mathematical Content and Competencies:

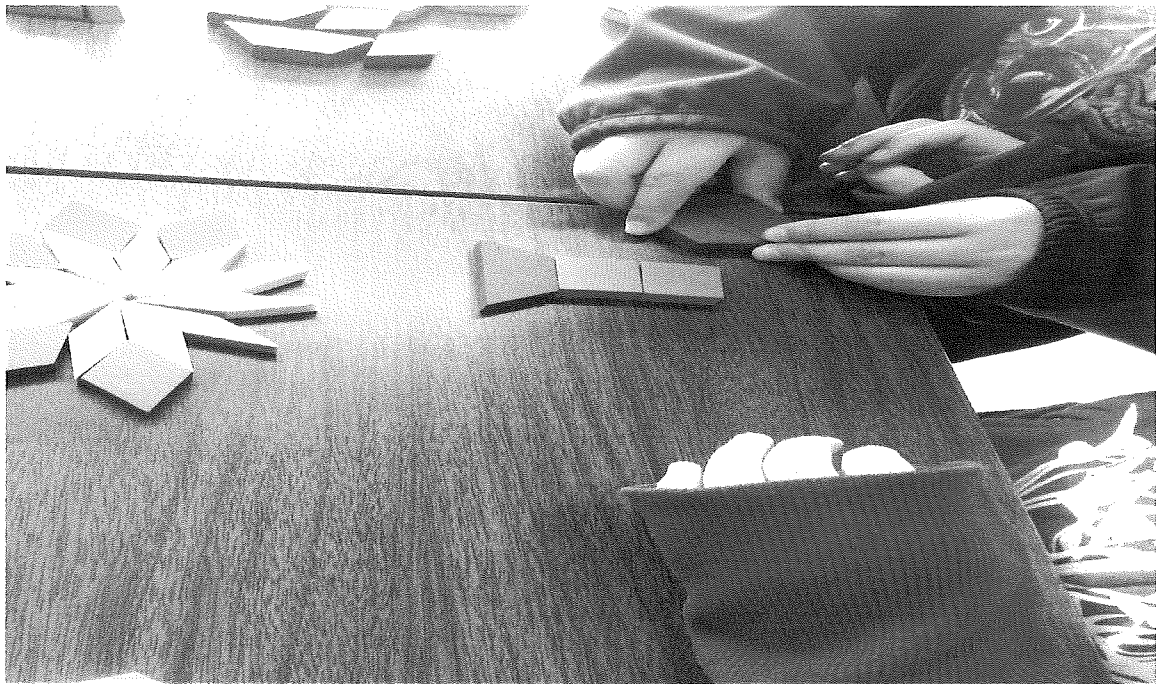
- composition and decomposition of numbers
- parts-whole relationships
- representing quantity
- use of models
- visual-spatial relationships
- positionality and transformational geometry
- apply spatial strategies such as subitizing
- communicate mathematical ideas
- connect mathematical concepts to each other and to the world



Grade 3&4 students at Woodward Elementary were shown an image that they were asked to recreate using geometric tiles and then explain in words.



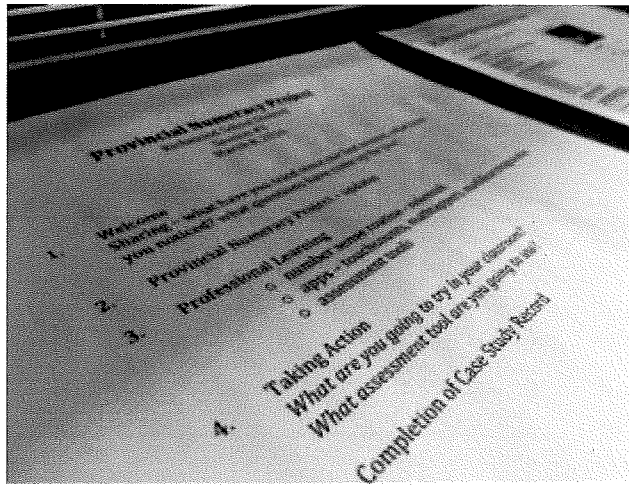
A student at work recreating an image at Woodward Elementary.



Students started working in pairs to recreate the more difficult images at Woodward Elementary, negotiating what they each remembered of the image.

provincial numeracy project in Richmond: session three

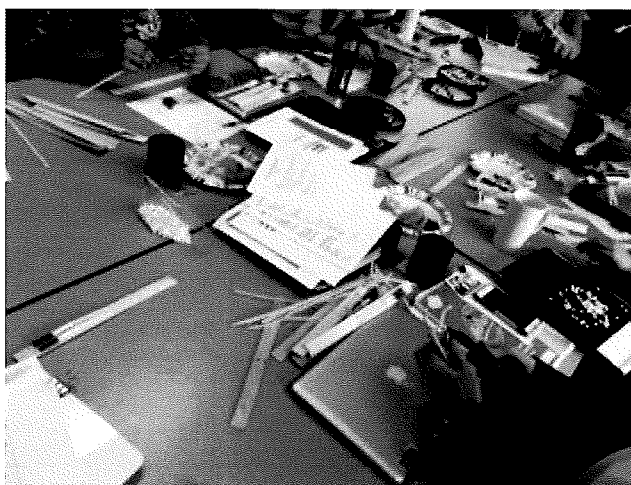
As previously shared [HERE](#), Richmond is participating in BC's Provincial Numeracy Project this year. The school teams involved came together before spring break to share what routines they had tried in classrooms (counting collections, choral counting, counting around the circle, numberlines) and how their students responded to these routines.



We looked at different ways to use an abacus, particularly focusing on decomposing and composing numbers, counting by 10s and 1s as well as addition and subtraction strategies.



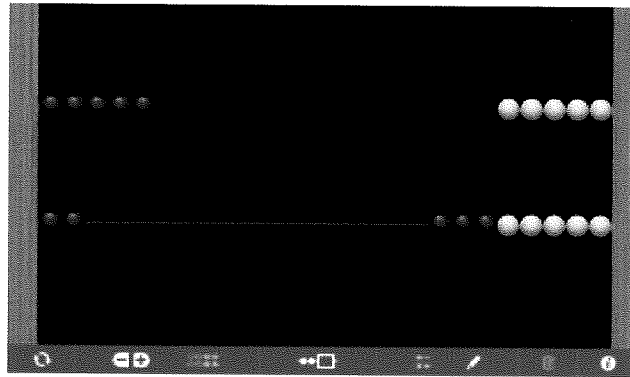
In both the books *Number Talks* and *Number Sense Routines*, rekenreks are used as tools to develop number sense and computational fluency. The Rekenrek is a special kind of abacus, originating in the Netherlands. More information and instructional ideas can be found [HERE](#) and [HERE](#). As part of our session, teachers created rekenreks for student use, using paint stir sticks, beads and pipe cleaners.



We watched a video of a teacher using rekenreks with her kindergarten class as part of a number talk (view it [HERE](#)) and discussed different ways we could use this tool with our students, with a focus on using them during small group instruction/guided math.

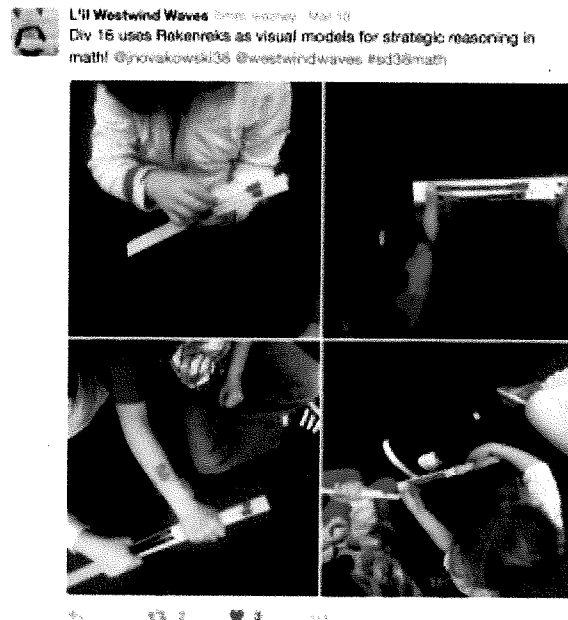
We also looked at various apps to support the development of number sense,

including the Math Learning Center app that uses rekenreks – available as a web version [HERE](#) or in iOS or Android formats.



Other recommended apps include [Touchcounts](#) (uses finger gesturing to compose and decompose quantities), [FindSums](#) (uses five, ten and hundred frames to support understanding of addition) and the [Number Frames](#) app.

“Homework” for the teachers was to try the rekenreks with their students...



and to try an assessment tool with their focus students, chosen from the Provincial Numeracy Project blog. The tools that we are curating on the blog have all been created by BC educators to use with BC students. At our final session in April, we will compare what the different assessment tools have to

offer our students.

In April, teachers will also complete a final case study form about their student as well as write a short professional narrative about their experience in this project. The provincial team is meeting in Victoria in June to share what has been happening in districts across the province and to make plans for next year. Richmond is looking forward to continuing to ride the numeracy wave!

~Janice