Engaging your own Reasoning:

A family decides to start a garden on their square lot. The parents take ¼ of the lot. Their ¼ is a perfect square in the north-east corner. The other ¾ was divided equally in size and shape among the 4 children.

Draw a picture showing how the division was done. Remember that each of the 4 sections is congruent.

NCTM Teaching Children Mathematics. October 2011
Creating Spaces for Mathematical Reasoning. Barbara Graves.

What teachers do to support reasoning in their classrooms:

1. Ask questions that require children to engage with the mathematics in the problem/task.

2. Elicit children to demonstrate what they know using language, actions, and/or representations.

3. Wait… then wait some more.
   Pause.
   Clarify or Connect.

4. Facilitate children engaging with each other instead of always ping ponging back and forth to you.

Question…
Elicit
Wait….
Facilitate and assist children in:
- Clarifying their own thinking
- Thinking about each other's thinking
- Challenging, adding-on, or clarifying reasoning constructed by the class.

Reflect, connect and extend thinking…

Videos used…

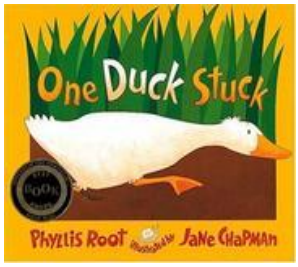
All the videos used in the presentation today are available for free public viewing. This will enable you to revisit session content and engage in mathematical reasoning conversations with others referencing the same videos used in our work together today.

Math Solutions Resources for Teachers: **http://mathsolutions.wistia.com/projects/7191d658c1**
Erikson Early Math Collaborative: http://earlymath.erikson.edu/the-math-in-blocks/

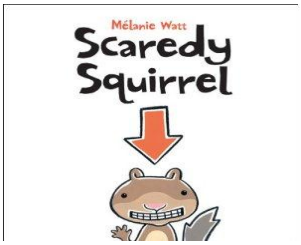
Some picture books to use to helps support student reasoning

List compiled by Jennifer Brokofsky (jenniferbrokofsky.wordpress.com)

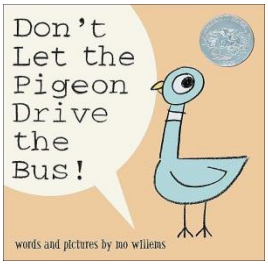
Actual Size by Steve Jenkins-
The beautiful illustrations in this book are the actual size of the animal or part of the animal being described. This makes this book a great starting point for discussions about measurement, comparisons, estimations, and scale. I find that students love to compare themselves to the animals in the story and really get a sense of how big or how small they are. Carole Saundy- Fullerton has created some wonderful task cards and activities that can expand the learning opportunities in the book.



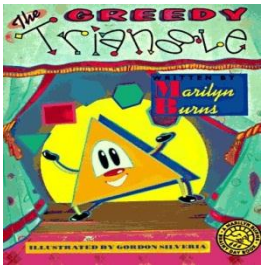
One Stuck Duck by Phyllis Root- This is a much-loved book of my own children as it has such a catchy rhythm to it. I love using this book to teach students the concept of growing patterns as on each page the number of animals goes up by one. In addition to growing patterns this book provides many opportunities to explore numbers to 10, and one to one correspondence. Extension activities such as addition, subtraction and graphing are also possible.



Scaredy Squirrel by Melanie Watt- I had this book on my list last year and could not leave it out this year. Not only is it a witty (and funny) book it also has a strong math connection…the measurement of time and problem solving. Students can talk about how much time has passed through out the story as well as Scaredy's careful problem solving and reasoning as he tries to work through his fear of the unknown.



Don't Let the Pigeon Drive the Bus by Mo Williams- I love this book and it's links to math are very strong. Students can explore the idea of constructing an argument with logical reasoning as well as critiquing the reasoning of others. Students can inquiry about the questions *What is a good **argument** and how can I create a good **argument** to support my thinking in math?*



The Greedy Triangle by Marilyn Burns- In this book students can explore reasons why triangles and quadrilaterals are useful in the world. This is a great way to support students making Math to World connections with literature and geometry.