

As you come in...

Please finish making your grid
rectangle chart from yesterday
and hang it up on the wall.

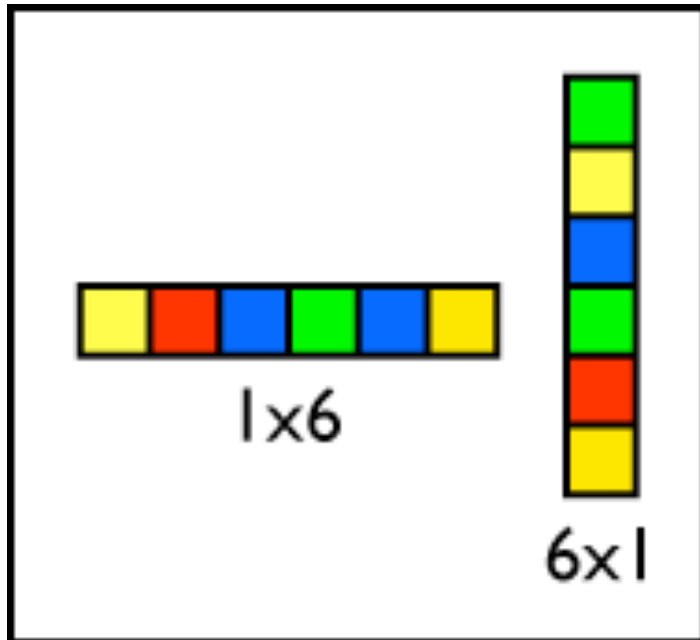
Class #2

- Questions and comments about syllabus/course
- Discuss grid rectangle problem
- View videotape: Practice learning to hear students' mathematics
- Work on definitions of even and odd numbers
- *Exercise in proving a statement is mathematically true; what does it mean to “prove” something in mathematics (and in other subjects)?*
- Wrap up & assignments

Comments about Comments

- From yesterday...
 - Overall, positive comments
 - Enjoyed interactions with classmates
 - Some anxiety --- about math, our expectations, working together
 - Intrigued by thinking about math in a different way -- importance of listening, the focus on “why”, exploring alternative methods, relearning math you thought you knew
 - Appreciated connections to teaching
- Other questions/comments about syllabus/course?

The Grid Rectangle Problem



For numbers of tiles from 1 - 36, build all the grid rectangles you can.

How do you know you have all of them?

What patterns do you notice?

Discuss the Grid Rectangle Problem

- Choose one number of tiles and explain how you know you have all of the grid rectangles for that number.
- Share one of your patterns with your partner. Describe the pattern and try to explain why it occurs.

Partner: Why are you convinced?

Viewing Mathematics Teaching

- **Context**
 - Third graders
 - Multi-cultural and multi-lingual class
 - Working on odd and even numbers, January

Timeline of Work on Even and Odd Numbers

Starting point:
Recognize and correctly
label small cases



Ending point:
Define even/odd and
use definitions to reason:
Claims and critiques

Thursday, January 18

Meeting with fourth grade class:
Even and odd numbers

Friday, January 19

Debriefing the meeting

(Return to conjectures about even and odd numbers)

Odd + odd = even

Even + even = even

Odd + even = odd

Shea brings up idea: 6 could be even or odd

Class attempts to refute, using three different definitions of even numbers: alternating (even, odd, even, odd. . .), fair share ($2k$ or $k + k$), pairing by twos ($k2$ or $2 + 2 + \dots + 2 + 2$)

Lin generalizes Shea's claim in an effort to refute it:
"What about 10? Why don't you call 10 an even and an odd number?"

Ogechi develops clearer expression of definition of odd numbers
(*"numbers with a 1 in the middle $2 + 2 + 2 + \dots + 1 + \dots + 2 + 2 + 2$ "*)

Rania observes pattern: 14, 18, 22, 26 . . . (period four)

Teacher labels the generalized class of even numbers "Shea Numbers"; class defines as "even numbers that have an odd number of groups of twos"

Definitions of even and odd number are reconciled and made more precise: $k2$ (even) and $k2 + 1$ (odd)

...

Friday, January 26

Jillian and Shekira argue that it is not possible to prove Bernadette's conjecture: An odd number plus an odd number equals an even number.

Tuesday, January 30

Bernadette offers a proof of the conjecture.

Viewing Focus

What do students in this class understand about what an even or an odd number is?

Discuss Video

- What do students in this class understand about what an even or an odd number is?
 - What definitions do they have for “even number”?
 - What other evidence do you see about their knowledge of even and odd numbers?

What makes a “good” definition?

- Mathematically precise — correctly identifies the kind of object, process, property
- Usable by user community — based on already-defined and understood term

Examine Textbook Definitions for Even Number

1. An even number is a number of the form $2k$, where k is an integer.
2. An even number is a natural number that is divisible by 2.
3. An even number is any multiple of 2.
4. An even number is a number that has 0, 2, 4, 6, or 8 in the ones place.

What is a mathematically
precise and usable definition of
“even number”
for third graders?

Why Work on Mathematical Definitions?

- Brings us in a better position to
 - judge the appropriateness and accuracy of the definitions presented in curriculum materials;
 - make sense of the different definitions used by children and make decisions about their mathematical accuracy; and
 - help children develop, revise, and refine their own definitions.
- Helps us
 - deepen our understanding of mathematical ideas and concepts as we connect them together; and
 - develop a sensitivity in using mathematical language in a precise way.

Assignments

- Complete survey & comment on syllabus (by Sunday)
- Daily Math Workout: Do mathematics “workouts” every day, alone or with others
 - Write to us by Saturday, July 9, to tell us how your workouts are going and any help you need
- Partner assignment (due Monday, July 18)
 - Assigned partners; joint write-up
 - Details on website by Friday
- Please leave your notebooks here - we’ll bring them to your class this afternoon

Study Hall

- Once per week in the conference room in Suite 2400
- Open to both ELMAC cohorts
- Possible days & times:
 - Tuesdays, 4:00 - 6:00 pm
 - Wednesdays, 4:00 - 6:00 pm
 - Thursdays, 4:00 - 6:00 pm

Comment Cards

- What study hall day would you prefer?
 - Tuesdays, Wednesdays, or Thursdays, 4:00-6:00 pm
- Any thoughts about the first week...
 - Insights
 - Lingering questions or concerns
 - Other feedback

Please leave your notebooks!