RAMP - Algebra

October 26, 2012

Goals today

- ✓ Do some math together and reflect on our use of mathematical practices, and seeing structure in expressions.
- ✓ Consider ways to motivate students to learn algebra.
- ✓ Examine tasks for their cognitive complexity and structure.
- ✓ Understand TPEP criteria in relation to the CCSS.

Group Process and Collaboration

Requirements of Participants

- ✓ Know our intentions – use to guide actions.
- ✓ Maintain productive ways of listening, responding, and inquiring.
- ✓ Know when to be assertive (refocus, stay on task), when to integrate (attempt to understand others' viewpoints).
- ✓ Know and support the group purpose, process, development.

Challenges and Opportunities

- ✓ Find our Goals in your binders and read them.
- ✓ Underline one or two goals that you think will present the greatest challenges for us.
- ✓ Put a star by the one or two goals that you think will present the greatest opportunities for us.
- ✓ Discuss in your groups and combine your thoughts onto the paper provided.

Seeing Structure in Expressions

On the paper provided, without looking at the CCSS-M, what do you think "Seeing Structure in Expressions" means?

$3x + 2y$

Second, can you identify some possible algebra topics in which students might see structure in expressions?

Hold on to this; we will revisit it later in the day.

Let's do some math!

- ✓ Get ready by revisiting the "math norms." Discuss with your group:
  - ✓ Which norms do you value most?
  - ✓ Which norm will be hardest for you to stick to?
  - ✓ How will you respond if the norms are violated?

Norms for Doing Math Together

- ✓ Allow quiet think time, begin talking when everyone is ready.
- ✓ Offer help, not solutions when we ask.
- ✓ Ask for help when you need it.
- ✓ It's math, have fun!
- ✓ Stay on task and persist in problem solving.

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Mathematical “Practicecards”

Write the following descriptions on your four colored cards:

- Yellow: Reason quantitatively
- Purple: Create a representation
- Green: Make a conjecture
- Pink: Critique an argument

Grid: Task A

- ✓ Fill in the rest of the grid by following any patterns you notice. Make sure that all patterns still hold.
- ✓ Look for and describe other patterns and relationships in the grid.

Justify and Explain

Be sure to justify your conjectures and explain how you know the pattern will work in all cases.

Task B

- ✓ The patterns work similarly in this grid.
- ✓ Find different ways to find the cell value at the question mark.

Task C

- ✓ The patterns work similarly in this grid.
- ✓ Find different ways to find the cell value at the question marks.

Reflect and discuss

- Look through your Algebra CCSSM and determine which standards we addressed.
- Which ‘practicecards’ did you use the most? The least?
- Did your teammates label practices the same way you would label them?
- What were some overall affects of using the practicecards?

Break!

Cognitive Complexity

- ✓ Look at the descriptions of Cognitive Complexity. Which, if any, standards for mathematical practices are described in each level?

Cognitive Complexity in the Content of CCSS

- **Level 1: Recall**
- **Level 2: Skill/Concept**
- **Level 3: Strategic Thinking**
- **Level 4: Extended Thinking**

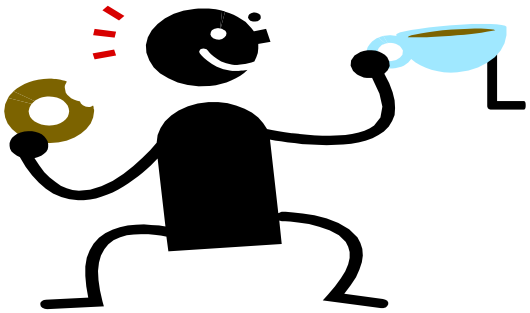
Thinking about Cognitive Complexity

- ✓ Choose a rubber band from your table. Find a partner who has the same color rubber band as you – but not from your table!
- ✓ Move around the room and examine the posted tasks.
- ✓ Determine the cognitive complexity for several tasks. Could each task be used to address the domain "Seeing Structure in Expressions?"

RAMP-A Moodle

Erik Wolfrum

http://classrooms.esd101.net/



Lunch!!

What affects students' interest in and motivation to learn mathematics?

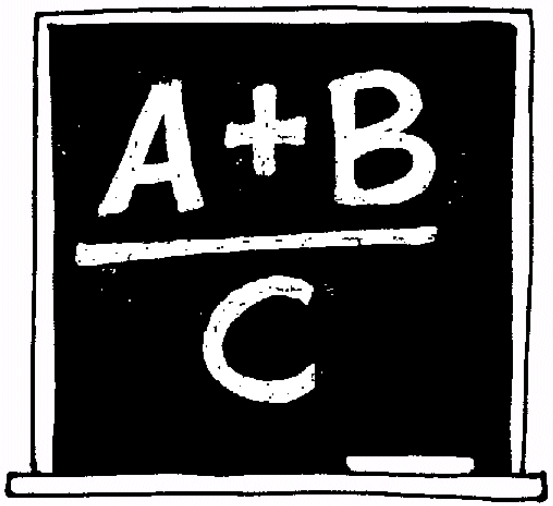
- ✓ As you eat lunch, read what research says may affect students' motivation to learn math, discuss with your group, and incorporate your own ideas. Put specific ideas on a Post-it note and add to the poster.

Cognitive Complexity

- ✓ **Share** within your PLCs and come to a consensus on the cognitive complexity of each of the tasks.
- ✓ **Discuss** the potential for the task to support students' ability to see structure in expressions.
- ✓ **Record**: For each task, put a sticker on the poster to indicate your group's decision about cognitive complexity.

Seeing Structure in Expression

- ✓ On the paper you wrote this morning about SSE, add to it to describe how your understanding of this algebra domain has changed. Mark these changes as 'afternoon additions.'



Break!

TPEP

Homework

- ✓ Individually: Go onto the website and post one thing that would help everyone get to know you better as a teacher.
- ✓ PLC: Discuss cognitive complexity, SMP 2 and 3, and seeing structure in expression as they relate to your Area of Focus.
- ✓ Set up observations.

Evaluations

- ✓ Janet!