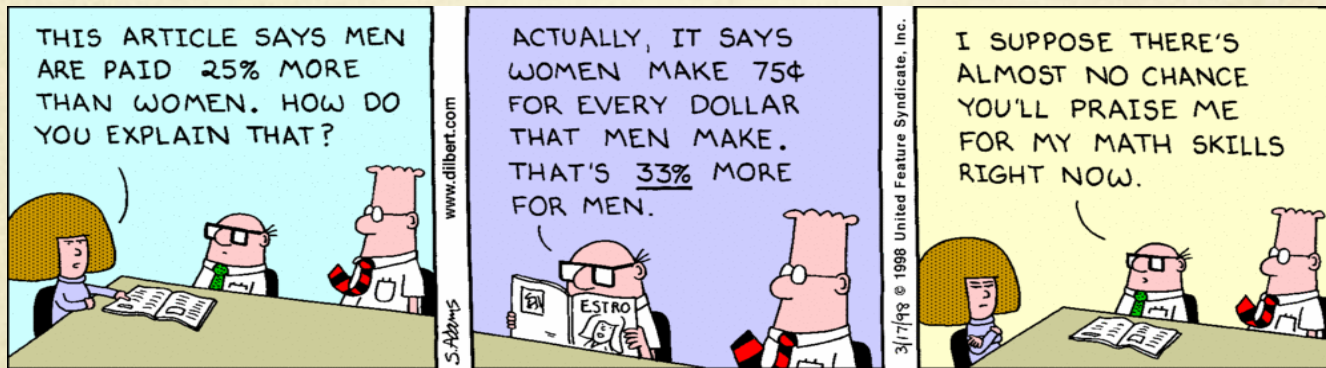


# Today's Theme: The Role of the SMP in Student Ownership of Learning



RAMP-A

November 22, 2013

# Goals:

- Share and reflect on your changes to improve them.
- Share the ideas you used from the October workshop.
- Do a math task and examine others to consider how SMP can be used to **focus** on specific CCSS.
- Do a math task to examine how students' proficiencies with SMP can be improved.

\*Have your copy of the SMP ready; you will need it for every session today. If you don't have one, there are more on the back table.



# Today's Norms

- Ask for what you need...
- Offer assistance when you can...
- Accept help with grace...
- Take risks...
- Confront misconceptions...
- Persist in learning...



# PLC Work from October

- Think about the Formative Assessment task that your group chose. How did you implement it? What did you learn from it?
- What inferences do you make from the student work?
- What implications for your work do you take away from your formative assessment?
- Be ready to share your results with the group.



# Change

- Think about the change you identified from last time.
- What category would you choose to identify your intended area of change?

Increasing cognitive complexity (Go to Room 2)

Being open about mistakes (Go to Room 1)

More group work/ discourse (Back of big room)

Sharing student work (Front of big room)

# Give One, Get One

- On your Give One, Get One sheet, describe the change you made in the past month.
- What did you notice about yourself as you tried out the change? Was it easy to sustain? Did you feel comfortable?
- What did you notice about your students? Did they respond in the way you imagined? Did it improve their learning? What is your evidence?



# Give One, Get One

- Talk with 5 people you don't know well and complete a line for each one.
- What was similar?
- What was intriguing?
- Effect on your ideas?

# Ideal Student

- Revisit your vision of the SMP “ideal” student and your change:
  - Did your change positively affect what your students do to learn? Why or why not?
  - Can you continue, revise, and/or change your approach to have more effect? How?
  - Will your change build on students’ assets? How?
  - Most important components; means of implementation?



# RAMP-A Learning

- What practices or knowledge have we discussed in RAMP that could help foster these practices in our students?

**Formative Assessment**

**Questioning**

**Rich Tasks**

**Cognitive Complexity**

**Discourse**

**Multiple Approaches**

**Examining Student Work**

**Planning from Standards**

**Coherence**

# Making a Change

- Define the details of your change.



# Reflective Friend

- Think about the norms of the day...
- Use the reflective friend protocol to fine tune your desired change. Write his/her name on your sheet!



- You will meet with this friend in January to discuss how the change transpired in your classroom.

# PLC Work Revisited

- What has your PLC done in the past two months that affects your work in the classroom?
- What has been most useful?
- What do you wish for?



# Break!

Snacks in the back.



# *Focus in the CCSS*

## Goals:

- Examine standards to determine their intent and how students may learn them.
- Consider the roles of scaffolding, highlighting, and SMP in students' learning of standards.
- Envision how students' learning could progress through the use of three tasks.

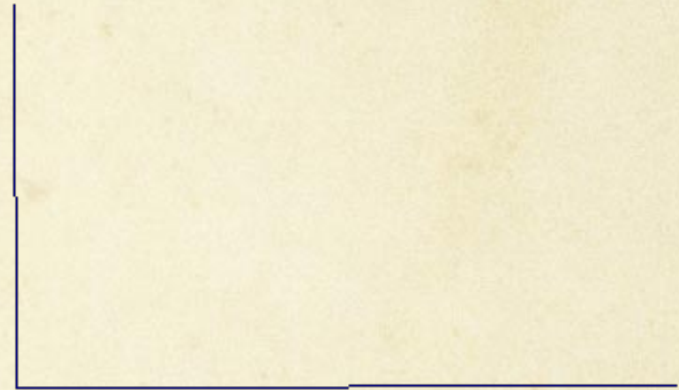
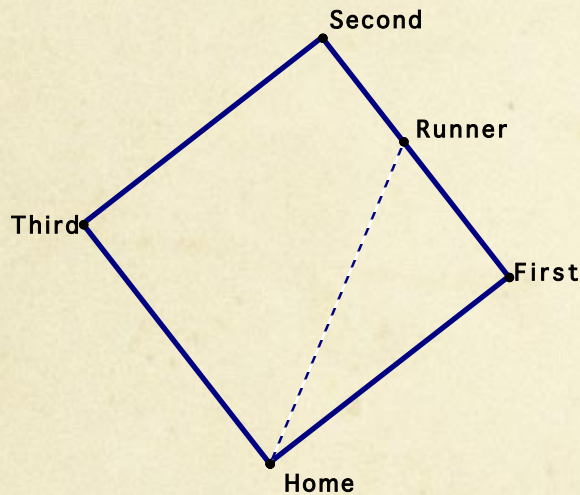


# Function standards:

- Look at the standards and describe in detail what it would mean for students to reach these standards.
- What concepts, procedures, and SMP are involved?
- Discuss which ideas students already learn with sufficient depth and which are new or need increased emphasis.

# Let's do some math!

Remember math norms.



As you solve it, think about how you use the ideas of the standards.



# Solve and Discuss: Three tasks

- How could each task help students better understand the standards?
- Each task includes a list of questions:  
determine the primary use of each question as
  - scaffolding,
  - supporting SMP, or,
  - highlighting standards.

# Sequence

- Determine a sequence for using the tasks.
- What questions would you ask and why?
- Describe how each new task helps students better understand the *standards*.
- How does your intended implementation of each task support students' growth in the SMP?

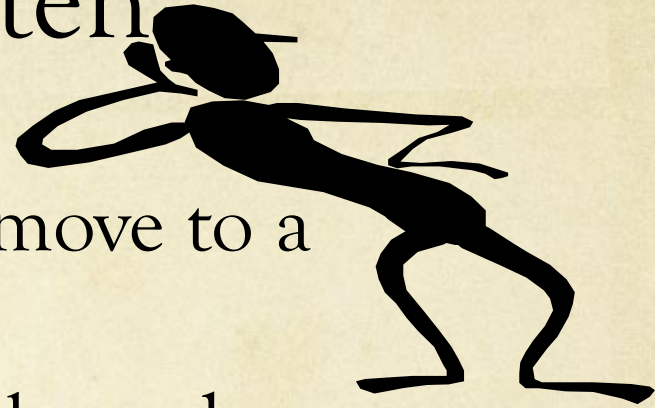




# Implementing the Function Baseball task

Based on their experiences with the previous problems, scaffolding, highlighting, and SMP use, what strategies would you hope students would use, what how might they respond without scaffolding? What SMP would you expect them to use?

# Explain and Listen



- 1-2 people from each group move to a group across the room.
- Explain your sequencing of the tasks, your other choices, and your description of your implementation ideas for the Baseball Function task.
- What ideas did the others consider different from your group?



# Incorporate formative assessment:

Discuss: How would you use exit tasks or entry tasks after each problem to see where students are with key understandings of F-IF or F-BF?

# Individual Reflection

- What ideas of this session are you most likely to use?
- What ideas of this session most conflict with your ideas of teaching and learning?  
Explain.

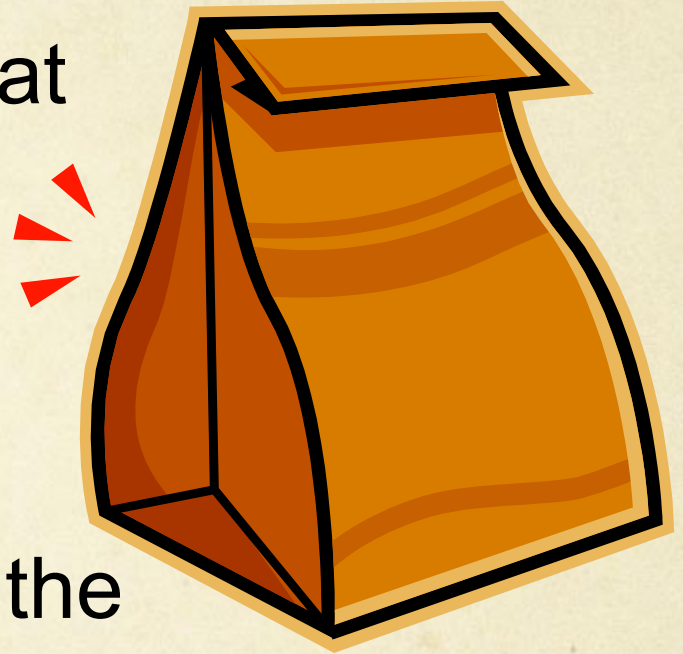




# Lunch

Be ready to start again at 12:20.

Have either your own device or use one from the laptop cart to be ready to use graphing tools.



# Exploring Functions

Goals of the session:

- Investigate our own use of SMPs as we engage in an exploration about the behaviors of quadratic functions and consider how we would help students improve their use of SMP



# Functions Progressions

## Analyze functions using different representations

Functions are often studied and understood as families, and students should spend time studying functions within a family, varying parameters to develop an understanding of how the parameters affect the graph of function and its key features. <sup>F-IF.7</sup>

Within a family, the functions often have commonalities in the qualitative shapes of their graphs and in the kinds of features that are important for identifying functions more precisely within a family.

# Directions

You will receive a card with a function on it. One of the usual coefficients will be a parameter instead of a number.

For example:  $f(x) = ax^2 + 2x - 3$

Investigate and describe the effects of changing the parameter on the graph of the function: [https://  
www.desmos.com/calculator/ix6k9nrjoj](https://www.desmos.com/calculator/ix6k9nrjoj)



# Questions

What questions do you ask yourself as you do this exploration?

Write any initial questions or goals you have, then,

We will pause about every 15 minutes to ask you to write any new, refined, or revised questions or goals.

# SMP from Questions

Compare your questions and goals to the SMP: next to each question or goal, write the SMP number next to it that it most closely relates to.

Read through all the questions/goals related to the same SMP. In what ways did your questions/goals change?



# SMP to Work

Read through the work of your investigation and identify where you used the SMP (choose 1-2 SMP that were identified most often with your questions). Write short descriptions on your solution that indicate how you used the SMP in that part of your exploration.

# Discuss in your PLC

- How did your questions/goals change the level at which you were using the SMP?
- How could this activity inform your teaching?



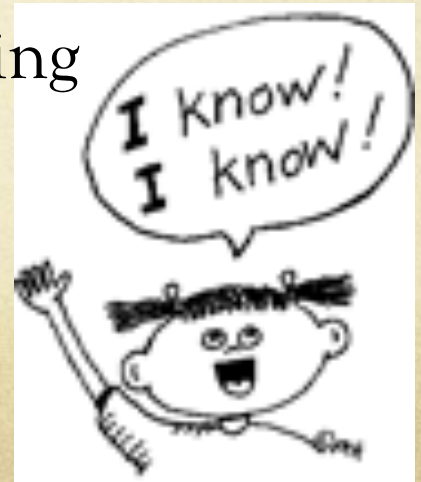
Write a PLC summary statement for each question. (Please turn in these summary statements.)



# Reflect on Today's Theme:

## The Role of the SMP in Student Ownership of Learning

- How do students' proficiencies in the mathematical practices affect their ownership of learning?
- What is our role, as teachers, in helping students become proficient in the mathematical practices?



# Homework

- (PLC) Choose a standard or cluster that you will teach before January 24. Each person should bring a task with cognitive complexity at least 2 that addresses this standard or cluster to the meeting. Discuss scaffolding, highlighting, and SMP for each task.
- (Individual) Use one of the tasks from the Function Baseball activity and bring back copies of ten students' work. Remove their names and copy before marking on them.
- (Individual) Try your change and be ready to check in with your reflective friend at the January workshop.



# Evaluations

- These are brief, but please feel free to add any thoughts you have.
- We use your thoughts and ideas for future planning!
- We appreciate your efforts and insights!

