

BRIDGING MATH PRACTICES
OCTOBER 7, 2014


WELCOME BACK!!



To do now:
Protocol presenters
please check in with
Maddie or Sharon

MSP Review & Overview

- 2 year grant
- 1of 2 MSP grants awarded for math in the state
- Build capacity to better support students' mathematical reasoning and communication of their reasoning
- University–School Partnerships
- Cross-district PLC





AGENDA OVERVIEW

TIME	ACTIVITY
8:30	Welcome & Reconnecting
8:50	Math
	Break – 10 min.
10:15	Argumentation
11:45	LUNCH – 30 min.
12:15	Communicating Reasoning
	Break – 10 min.
1:10	Reflection – Share Learning
	Collaborative Work
2:50 – 3:00	Closure

COMMUNITY AGREEMENTS

We agree to

- Make this a safe place for people to share.
- Listen to others' struggles without judging
- Agree to disagree, allow for difference of opinion.
- Stay focused on the objective.
- Respect each other's perspective.
- Be willing to explain our reasoning.
- Give and receive constructive feedback.
- Allow everyone "think-time".
- Be respectful of each other's time.



We also agree that

- Everyone should have a voice.
- Everyone should feel safe when given the option to contribute.
- People should actively listen to each other, with an open mind.

Finally, we agree that we should ...

- Enjoy our time here!

BUSINESS & REMINDERS

- Protocol Presenters – materials ready?
- Folder System
 - Collecting students' work
 - Organizing in/out materials
 - Communicating with Bridging Partners
- Other?

How's it going?

Name _____

1. *Success with bringing argumentation in the classroom.*

2. *Challenge with bringing argumentation in the classroom.*

MATH Goals

- Continue to deepen understanding of the mathematical structures that support proportional and algebraic reasoning
- Investigate multiple representations that model proportional and other relationships
- Analyze affordances and constraints of different representations and be able to translate between them
- Understand the importance they have in communicating and/or supporting mathematical reasoning

Salary Options



We will work on this in two groups:

One group stays here (with Fabiana):

2nd- 5th grade teachers and math coaches.

Another group in Room 142 (with Steve):

6th grade – high school teachers.

Salary Options



Suppose you are given three different options for salary at a temporary job. The job lasts 24 weeks, and your goal is to earn the largest total salary for the 24 weeks.

PLAN A	PLAN B	PLAN C
Earn \$2000 each week	Earn \$850 the first week, and salary increases by \$100 each week	Earn 1 penny the first week, 2 pennies the second week, 4 pennies the next week, and so on, doubling your salary each week.

Salary Options

There are multiple ways to go about solving the problem. First, let's analyze each salary option using different representations:

- Tables
- Graphs
- Algebraic expressions
- Other (e.g.: strip diagrams)

Multiple Representations

Think about...

- What does each representation uncover about the problem?
- Do we need to go over all of them? One of them? Which one is "best"?
- What does this have to do with **mathematical reasoning**?

Multiple Representations

Tables (beyond input/output construction)

Example: What do we "see" when relationship is proportional?

X (Euros)	Y (Dollars)
2	3
4	6
10	15

constant ratio!

$$\frac{y}{x} = k$$

Other strategies can we use to analyze relationships on a table:

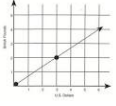
First ratios; First differences; Second differences; and more!

What do these help us uncover about the relationship?

Multiple Representations

Graphs

What do we “see” when relationship is proportional?
 Line through the origin
 slope= k



What do graphs help us uncover about the relationships?
 Behavior for relevant values of x or y : intersections, small values, large values
 Comparisons: When is one better than another
 Make predictions

Multiple Representations

Algebraic expressions

What do we “see” when relationship is proportional?
 $y = kx$ k is *CONSTANT*

What do we gain from analyzing algebraic expressions?
 Analysis of algebraic structure helps discover:
 important points
 make comparisons
 make predictions, and more...

Multiple Representations

Building mathematical reasoning:

- Uncover important features of a situation
- Show how I am thinking about a situation
- Understand how *you* are thinking about a situation
- Aid explanations and/or arguments
