



# Math Common Core Standards

**“Toward Greater  
Focus and Coherence”**

**Focus Schools: Gr. 6-7  
Professional Learning  
Session I**



# Agenda

I. Setting the Stage

II. The Characteristics of Learners

III. Trying on the Math

*Break*

IV. Pre-Assessment

V. Orientation to the Math Common Core Standards

*Lunch*

VI. Math Practices in Action

VII. Collaborative Planning Time

VIII. Reflection and Evaluation



# Setting the Stage

- Rationale & Purpose
- Grant Expectations
- Smarter Balanced Update
- Workshop Norms



# Strategic Plan 2010-14

## Pillar One: Career and College Ready Students



# Common Core Standards (CCS) Focus

**The focus of the CCS is to guarantee that all students are college and career ready as they exit from high school.**



## Cautions: Implementing the CCSS is...

- Not about “gap analysis”
- Not about buying a text series
- Not a march through the standards
- Not about breaking apart each standard



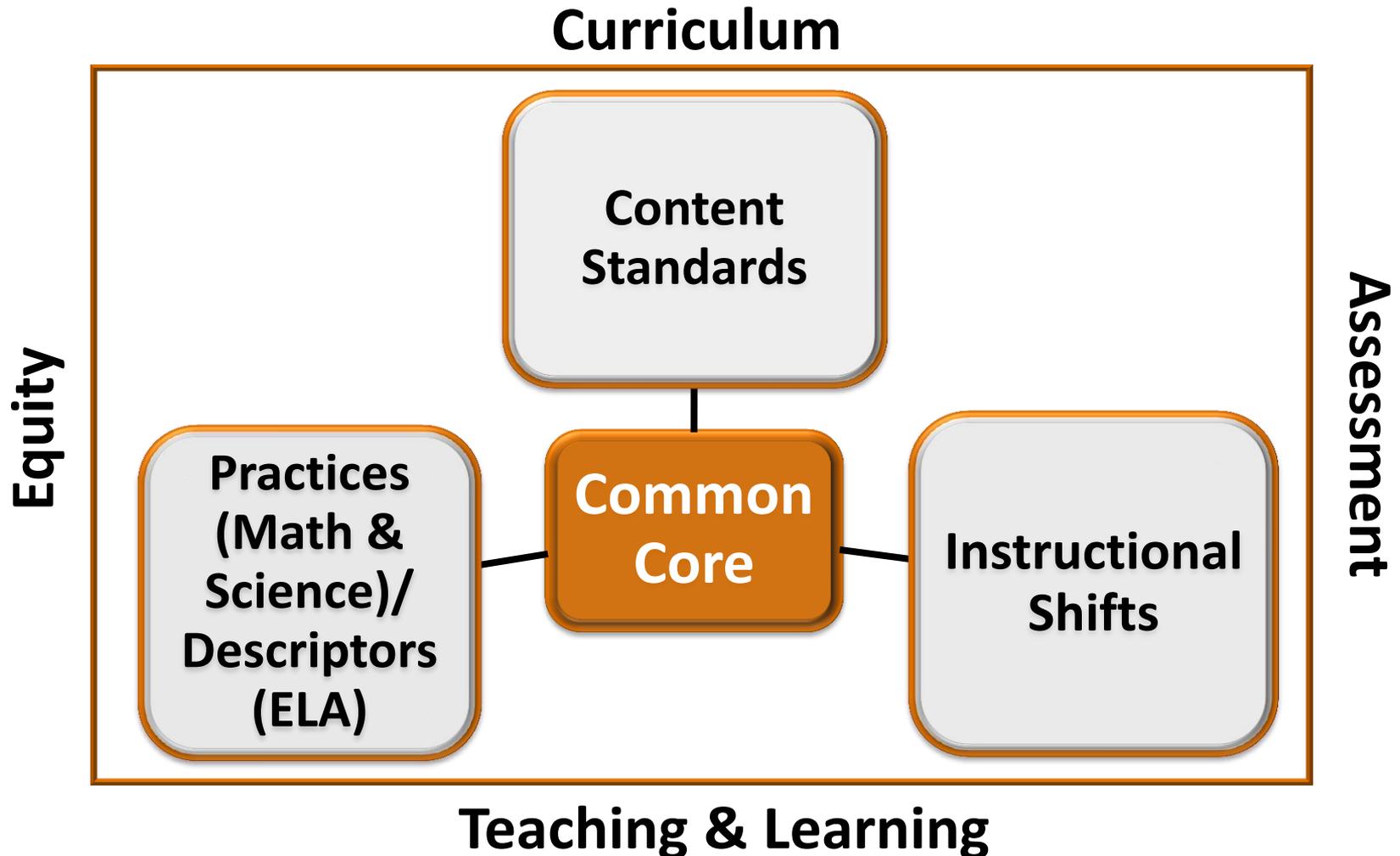
# Mathematical Understanding

## Looks Like...

“One hallmark of mathematical understanding is the ability to justify, in a way appropriate to the student’s mathematical maturity, *why* a particular mathematical statement is true or where a mathematical rule comes from.”



# Common Core Standards Framework





# 2012-13 Focus Areas

- Domains

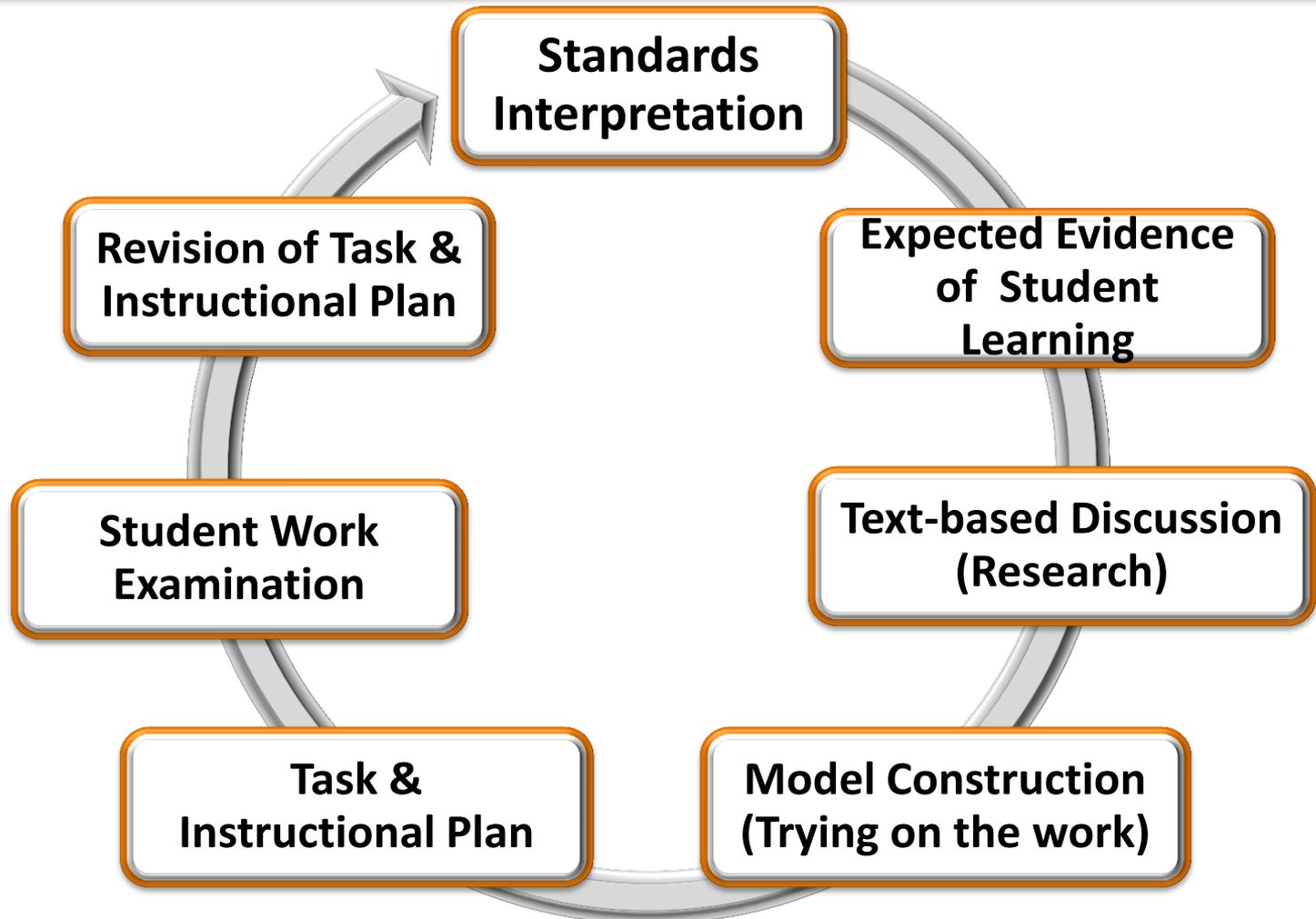
- Gr. 3-5: Number and Operations - Fractions
- **Gr. 6-7: Ratios and Proportional Reasoning & The Number System**
- Gr. 8: Expressions and Equations & Functions

- Math & Science Practices

Math Practices	Science Practices
<b>Make sense of problems and persevere in solving them</b>	<b>Asking questions and defining problems</b>
<b>Attend to precision</b>	<b>Obtaining, evaluating, and communicating information</b>
<b>Model with mathematics</b>	<b>Using mathematics and computational thinking</b>



# Design Methodology





# Grant Expectations

- District PL: Oct. 15, Dec. 4, Feb. 20, & May 22
- On-site PL: Twice During the Year  
(When will be determined by each site)
- Monthly Coaching Support
- 8 Hours of Common Planning
- Pre-assessment
- Summer Institute: Date TBD



# Smarter Balanced A Balanced Assessment System

Common  
Core State  
Standards  
specify  
K-12  
expectations  
for college  
and career  
readiness



**Summative  
assessments**  
Benchmarked to  
college and career  
readiness

Teachers and  
schools have  
information and  
tools they need to  
improve teaching  
and learning



All  
students  
leave  
high school  
college  
and career  
ready

Teacher resources for  
**formative assessment  
practices**  
to improve instruction

**Interim assessments**  
Flexible, open, used  
for actionable  
feedback



# Smarter Balanced : A Balanced Assessment System

School Year

Last 12 weeks of year\*

**DIGITAL CLEARINGHOUSE** of formative tools, processes and exemplars; released items and tasks; model curriculum units; educator training; professional development tools and resources; scorer training modules; and teacher collaboration tools.

Optional Interim Assessment

Computer Adaptive Assessment and Performance Tasks

Optional Interim Assessment

Computer Adaptive Assessment and Performance Tasks

Summative Performance Tasks for Accountability

- Reading
- Writing
- Math

Summative End of Year Adaptive Assessment for Accountability

Re-take option



# Workshop Norms

- Actively Engage (phones off or on “silent”)
- Ask questions
- Share ideas
- Focus on what we can do
- Learn with and from each other
- Have fun and celebrate!



# Characteristics of Learners

What are your perceptions of an excellent reader?

What are your perceptions of an excellent math learner?



# Trying on the Math

## Building Fraction Sense

- Silently, consider each statement.  
Once you and your neighbor have had some *quiet think time*, start discussing.

a)  $\frac{8}{15} > \frac{1}{2}$ ?    b)  $\frac{7}{8} > \frac{8}{9}$ ?    c)  $\frac{1}{4} + \frac{1}{5} + \frac{1}{6} + \frac{1}{7} > 1$ ?



Sacramento City Unified School District

Putting Children First

**Break**

**10 Minutes**



# Pre-Assessment

- Rationale
- Anonymous
- Make your code: The first 2 letters of your mother's maiden name and one more than your birth date (*day* only)

Example: Maiden name: **Go**ld

Birthday: March **24**, 1974

**Code = GO25**



Sacramento City Unified School District

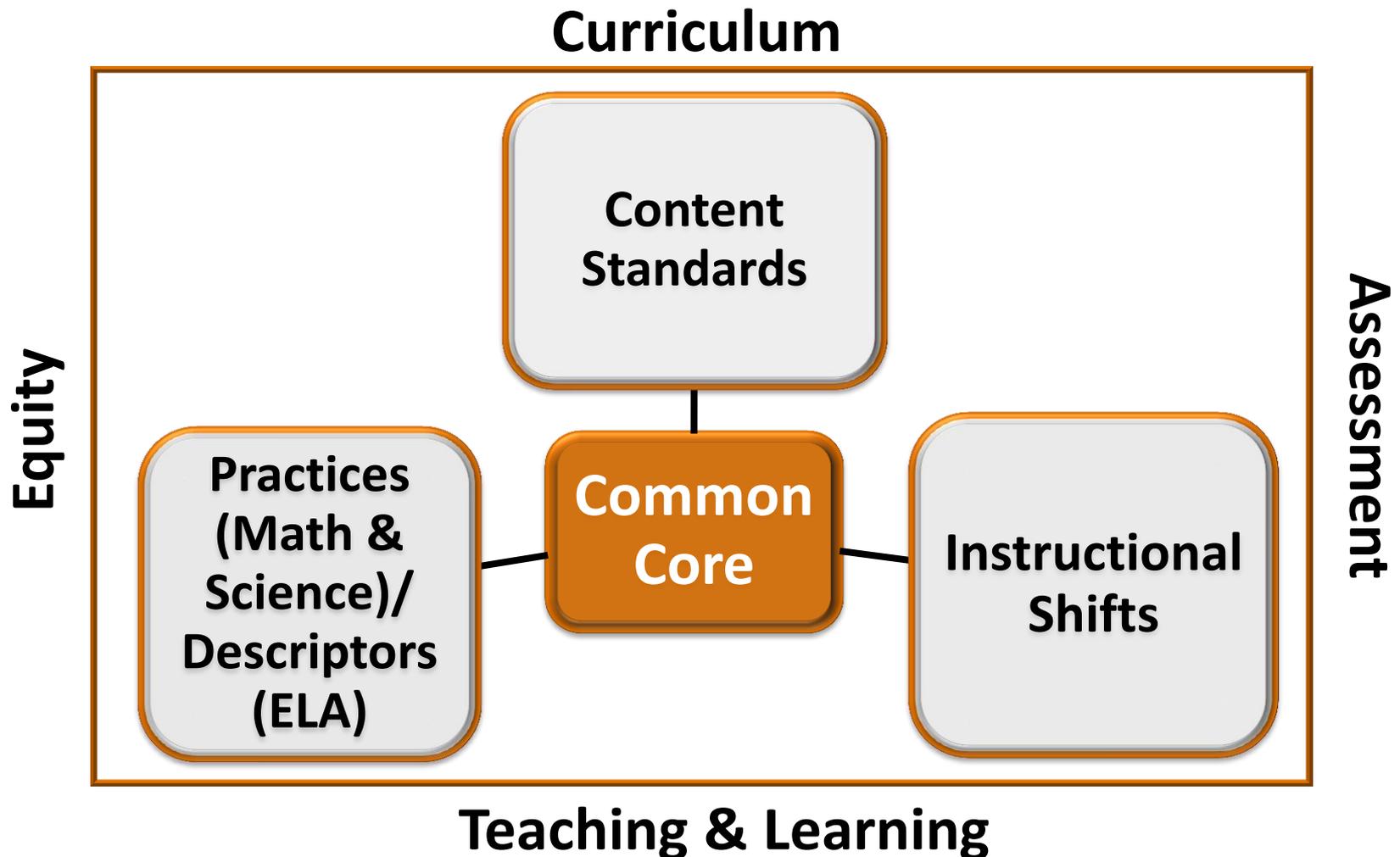
Putting Children First

# Orientation to the CCSS

**“Toward Greater  
Focus and Coherence”**



# Common Core Standards Framework





# Practices in Math and Science

## Mathematics

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.

## Science

1. Adding questions and defining problems
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data



# Practices in Math and Science

## Mathematics

5. Use appropriate tools strategically
6. **Attend to precision**
7. Look for and make use of structure
8. Look for and express regularity in repeated reasoning.

## Science

5. **Using mathematics and computational thinking**
6. Constructing explanations and designing solutions
7. Engaging in argument from evidence
8. **Obtaining, evaluating, and communicating information**



# Math Content Standards Format

- **Domains** are larger groups of related standards. Standards from different domains may sometimes be closely related.
- **Clusters** are groups of related standards. Note that standards from different clusters may sometimes be closely related, because mathematics is a connected subject.
- **Standards** define what students should understand and be able to do.

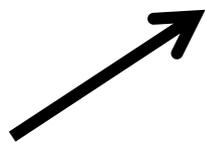


# Format Example

## Ratios and Proportional Relationships 7.RP

← Domain

**Analyze proportional relationships and use them to solve real-world and mathematical problems.**



Standard

1. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. *For example, if a person walks  $1/2$  mile in each  $1/4$  hour, compute the unit rate as the complex fraction  $1/2/1/4$  miles per hour, equivalently 2 miles per hour.*
2. Recognize and represent proportional relationships between quantities.
  - a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
  - b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
  - c. Represent proportional relationships by equations. *For example, if total cost  $t$  is proportional to the number  $n$  of items purchased at a constant price  $p$ , the relationship between the total cost and the number of items can be expressed as  $t = pn$ .*
  - d. Explain what a point  $(x, y)$  on the graph of a proportional relationship means in terms of the situation, with special attention to the points  $(0, 0)$  and  $(1, r)$  where  $r$  is the unit rate.
3. Use proportional relationships to solve multistep ratio and percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.*

Cluster

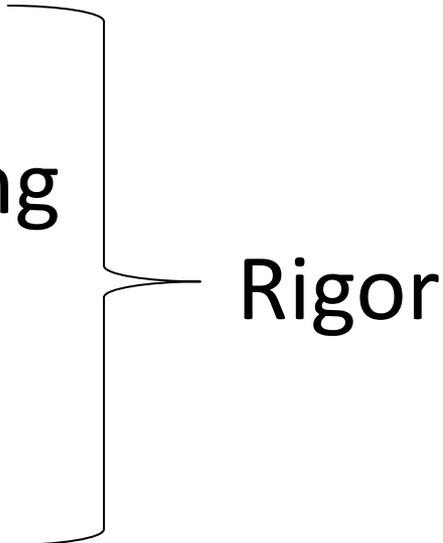


# Learning Progression Across Domains

K	1	2	3	4	5	6	7	8	9-12
Counting & Cardinality									
	Number and Operations in Base Ten					Ratios and Proportional Relationships			
			Number and Operations – Fractions		The Number System				
Operations and Algebraic Thinking					Expressions and Equations			Algebra	
								Functions	
Geometry									Geometry
Measurement and Data					Statistics and Probability				Statistics & Probability



# Math Instructional Shifts

- Focus
  - Coherence
  - Fluency
  - Deep Understanding
  - Application
  - Dual Intensity
- 
- Rigor



# Mathematics & Corresponding Science Practices

<b>Mathematics Practices</b>	<b>Science Practices</b>
Make sense of problems and persevere in solving them	Asking questions and defining problems
Attend to precision	Obtaining, evaluating, and communicating information
Model with mathematics	Using mathematics and computational thinking



# Digging into the Math Practices

- Silently, read *Math Practice 1. Make Sense of Problems and Persevere in Solving Them*
- Note 2-3 key ideas that struck you



# Digging into the Math Practices

- At your table:
  - Paraphrase what the person before you shared
  - Share 1 key idea  
(first speaker will paraphrase the last speaker)



# Digging into the Math Practices

## Connect Practice #1 back to “Fraction Sense”

- Identify times when you were making sense of the problem
- Identify times when you were persevering
- What things prompted you to make sense of problems and persevere in solving them?
- What else is evident in Practice #1 that you did not identify from the Fraction Sense activity?



## Digging into the Math Practices

- Silently, read *Math Practice #6: Attend to Precision*
- Note 2-3 key ideas that struck you



# Digging into the Math Practices

- At your table:
  - Paraphrase what the person before you shared
  - Share 1 key idea  
(first speaker will paraphrase the last speaker)



# Digging into the Math Practices

## **Connect Practice #6 back to “Fraction Sense”**

- Identify times when you were making sense of the problem
- Identify times when you were attending to precision
- What things prompted you to attend to precision in solving them?
- What else is evident in Practice #6 that you did not identify from the Fraction Sense activity?



## Digging into the Math Practices

- Silently, read *Math Practice #4: Model with Mathematics*
- Note 2-3 key ideas that struck you



# Digging into the Math Practices

- At your table:
  - Paraphrase what the person before you shared
  - Share 1 key idea  
(first speaker will paraphrase the last speaker)



# Digging into the Math Practices

**Connect Practice #4 back to  
“Fraction Sense”**

Definition of “Model”



# Modeling with Mathematics

## Not Modeling

Use a tape diagram to solve the following problem:

The water slides at the amusement park cost \$.50 more than the roller coaster. John rode on the water slides 5 times and on the roller coaster 4 times. He spent \$25 on all the rides. How much money did he spend on the water slides?

## Modeling

Angel and Jayden were at track practice. The track is  $\frac{2}{5}$  km around. Angel ran 1 lap in 2 min. Jayden ran 3 laps in 5 min.

1. How many minutes does it take Angel to run one kilometer? What about Jayden?
2. How far does Angel run in one minute? What about Jayden?
3. Who is running faster? Explain your reasoning.



# Lunch

1 hour ~ Enjoy!

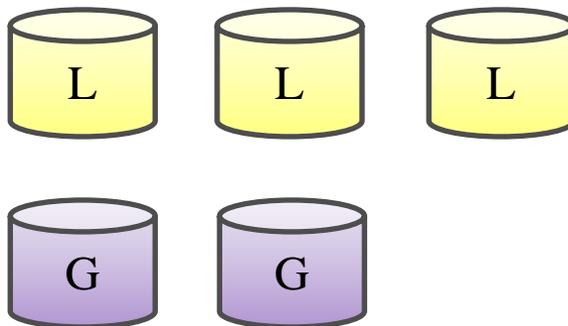


# Math Practices in Action

## Building Proportional Reasoning

*Consider the following:*

A juice mixture is made by combining 3 cups of lemonade and 2 cups of grape juice.





# Math Practices in Action

## Tape Diagrams

Representing ratios with tape diagrams

**Lemonade**

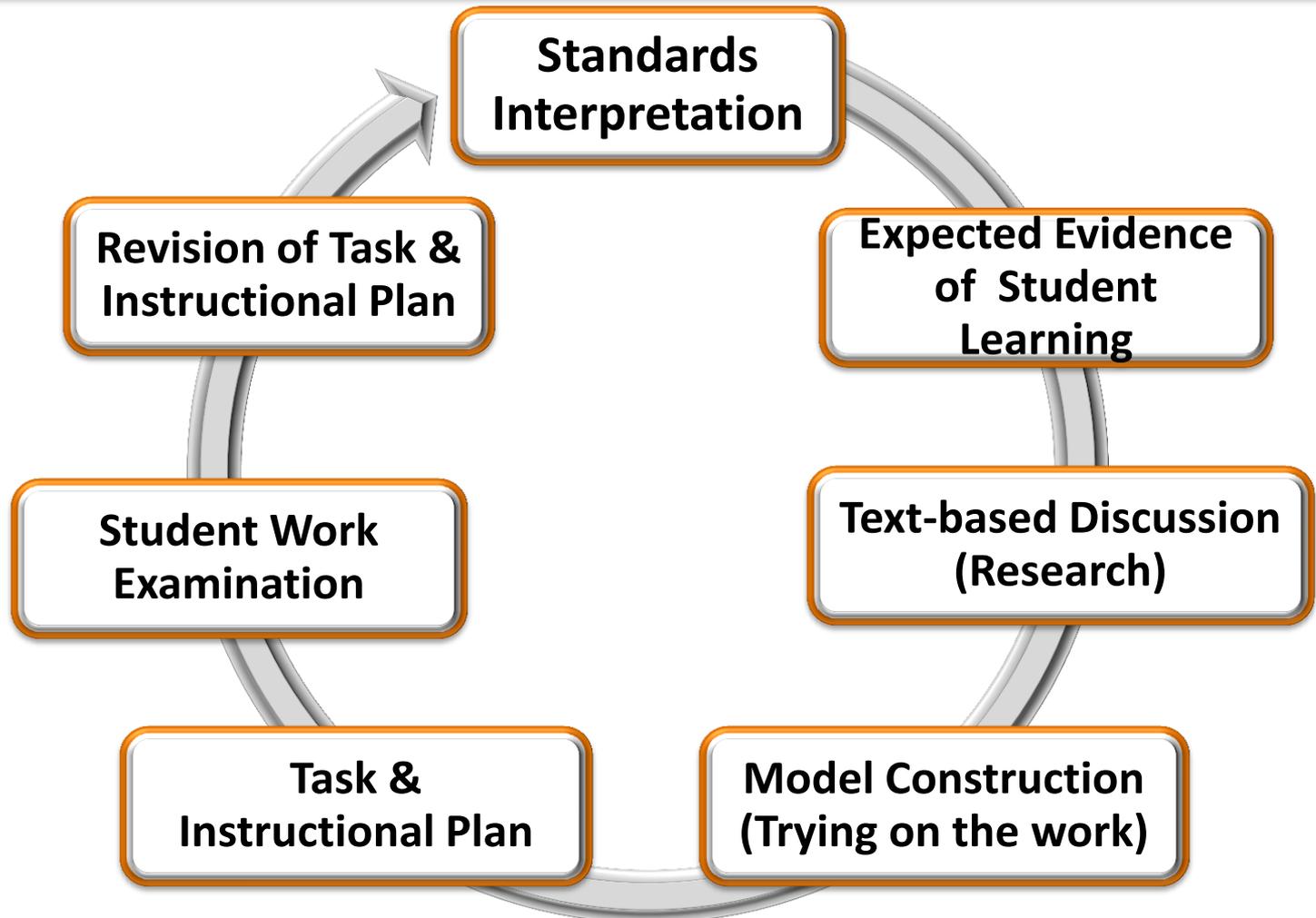


**Grape Juice**





# Design Methodology





# Enhancing our Current Curriculum

## 6<sup>th</sup> Grade California Math Unit 3, Ch 6, Lesson 2

### Version A

In which situations will the rate  **$x$  feet/ $y$  minutes** increase?

Give an example to explain your reasoning.

- a)  $x$  increases,  $y$  is unchanged
- b)  $x$  is unchanged,  $y$  increases

### Version B

In which situations will the rate  **$x$  feet/ $y$  minutes** increase?

Give examples to explain your reasoning.

- a)  $y$  is unchanged
- b)  $x$  is unchanged
- c)  $x$  and  $y$  are both changed



# Collaborative Planning

## To be continued on your released day at your site:

- Choose a standard that you will be teaching in the next few weeks.
- Collaboratively with your colleagues, build a lesson that:
  - Demonstrates 1 or more of the focused Math Practices: 1, 4, 6.
- Use the “Planning Guide” document to clearly describe your lesson.
- Engage your students in this lesson before we meet again.

## For our next whole-group session, please bring:

- Your completed “Planning Guide” document
- Evidence from the lesson
  - Samples of student work from 3 focal students



# Resources

[www.corestandards.org](http://www.corestandards.org)

[www.illustrativemathematics.org](http://www.illustrativemathematics.org)

[www.cmc-math.org](http://www.cmc-math.org)

[www.achievethecore.org](http://www.achievethecore.org)

[www.insidemathematics.org](http://www.insidemathematics.org)

[www.commoncoretools.me](http://www.commoncoretools.me)

[www.engageNY.org](http://www.engageNY.org)

<http://www.smarterbalanced.org/smarter-balanced-assessments/#item>



# Reflection and Evaluation

On the back of your evaluation form, please elaborate on Item #1 by answering the following question:

What is something that you know now about the Mathematics Common Core State Standards that you did not know when you got here this morning?