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Math Common Core Standards

"Toward Greater Focus and Coherence"

Gr. 8 Professional Learning Session I

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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

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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."

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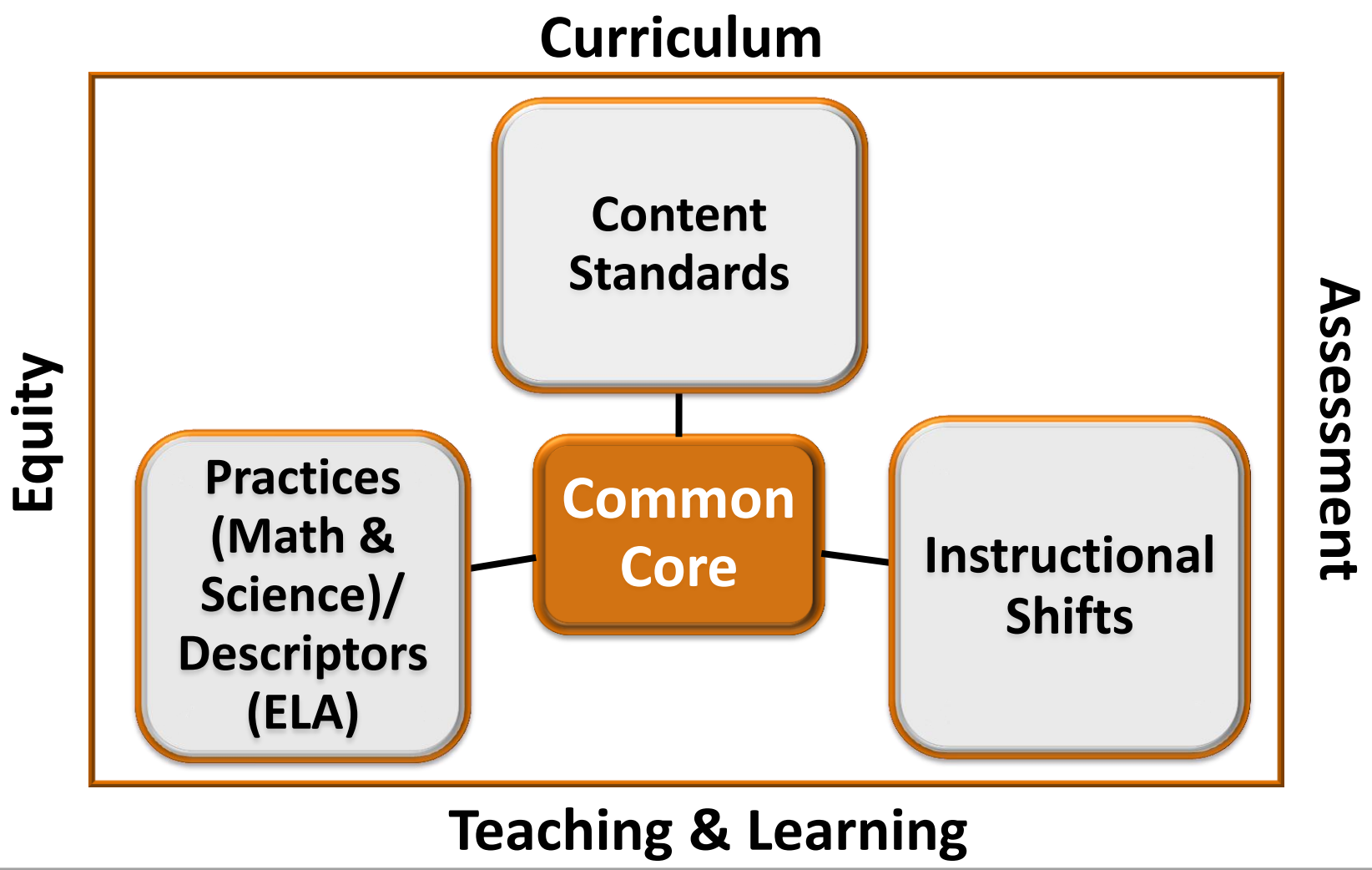
Common Core Standards Framework



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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
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**

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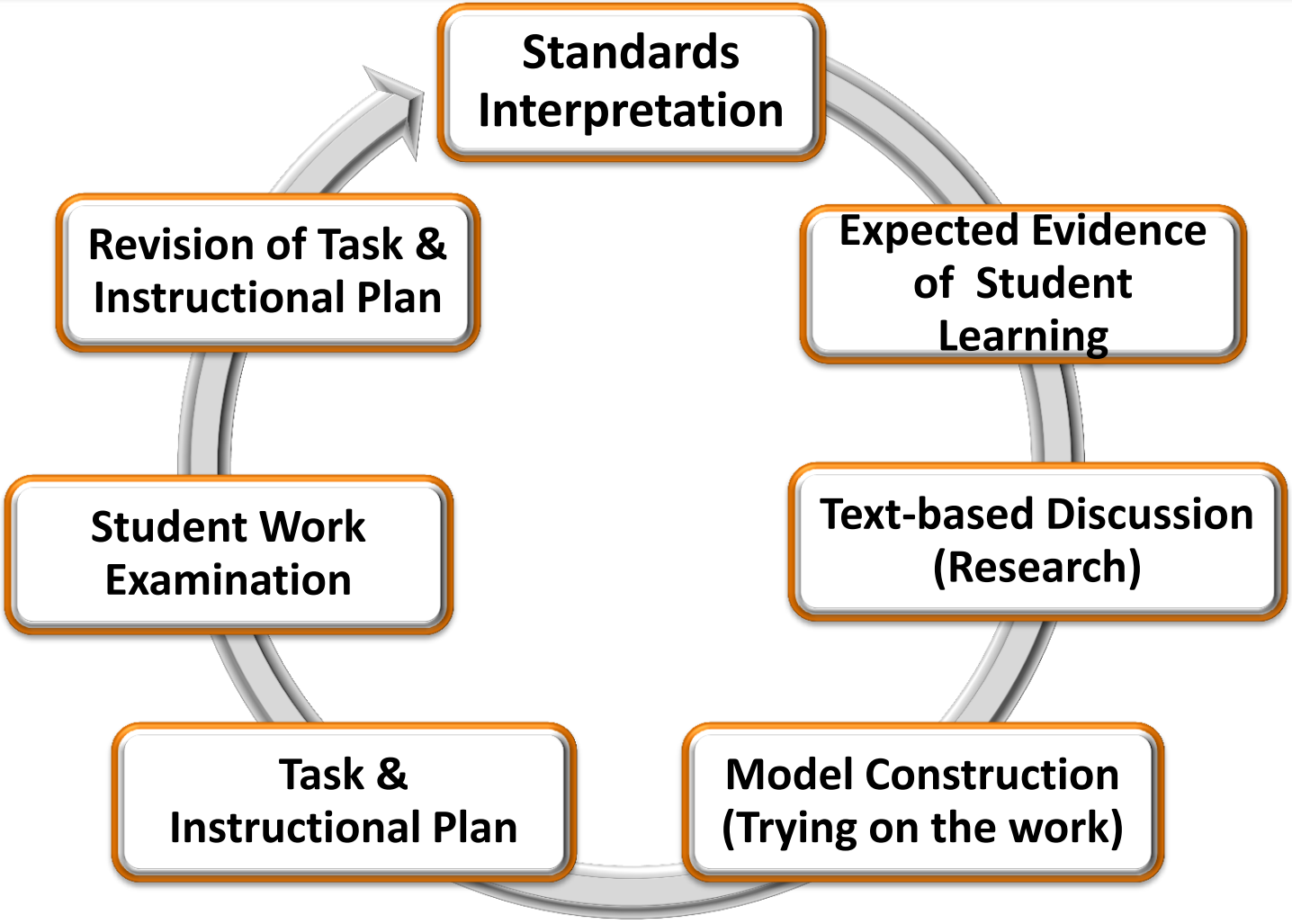
Design Methodology



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Grant Expectations

Focus Schools

- District PL: Nov. 6, Dec. 7, Feb. 22, & May 24
- On-site PL: Twice During the Year (When will be determined by each site)
- Monthly Coaching Support
- Pre-assessment
- 8 Hours of Common Planning
- Summer Institute: Date TBD

Non-Focus Schools

- District PL: Nov. 6, Dec. 7, Feb. 22, & May 24
- On-site PL: Twice During the Year (When will be determined by each site)
- Quarterly Coaching Support
- Pre-assessment

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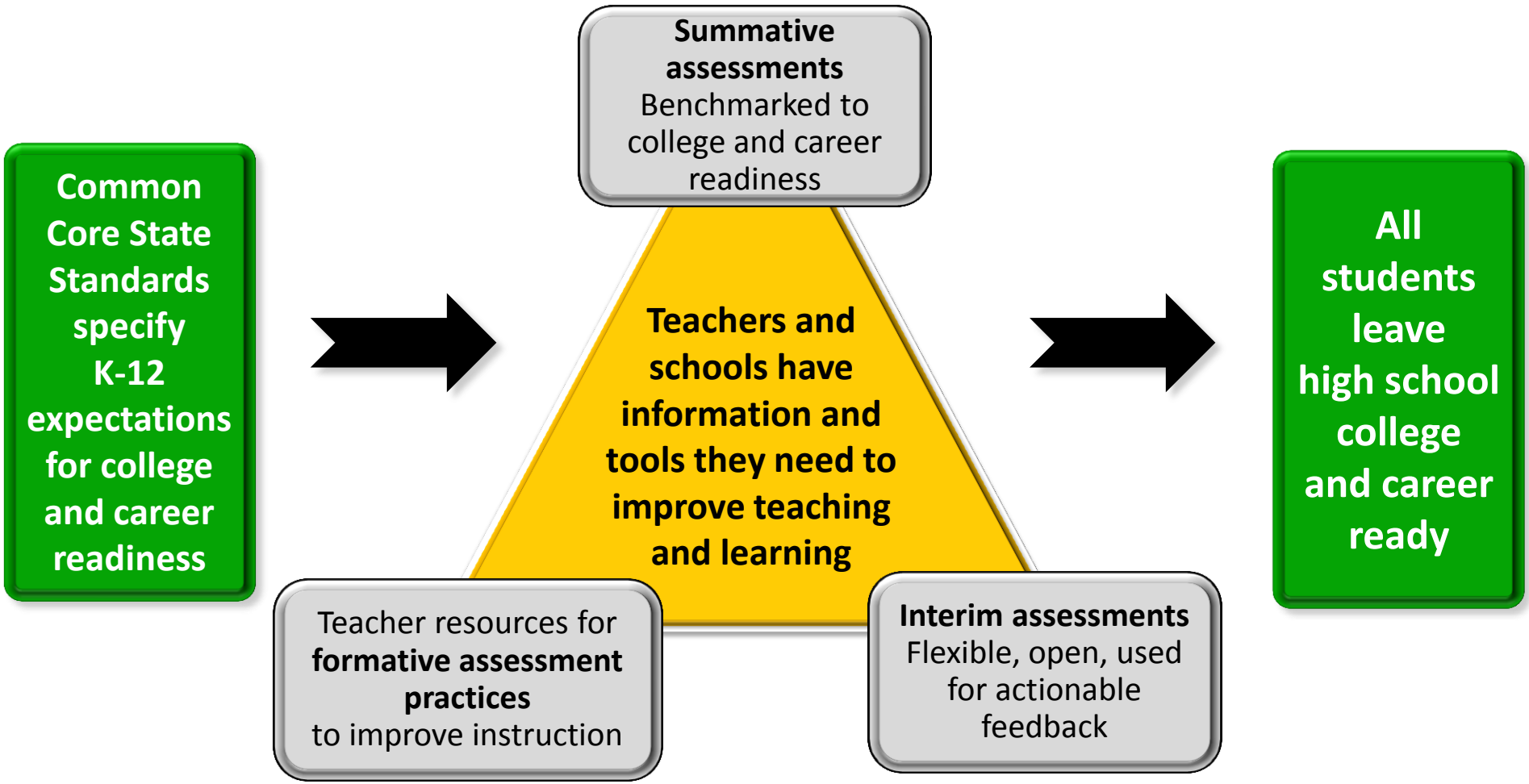
Smarter Balanced
A Balanced Assessment System



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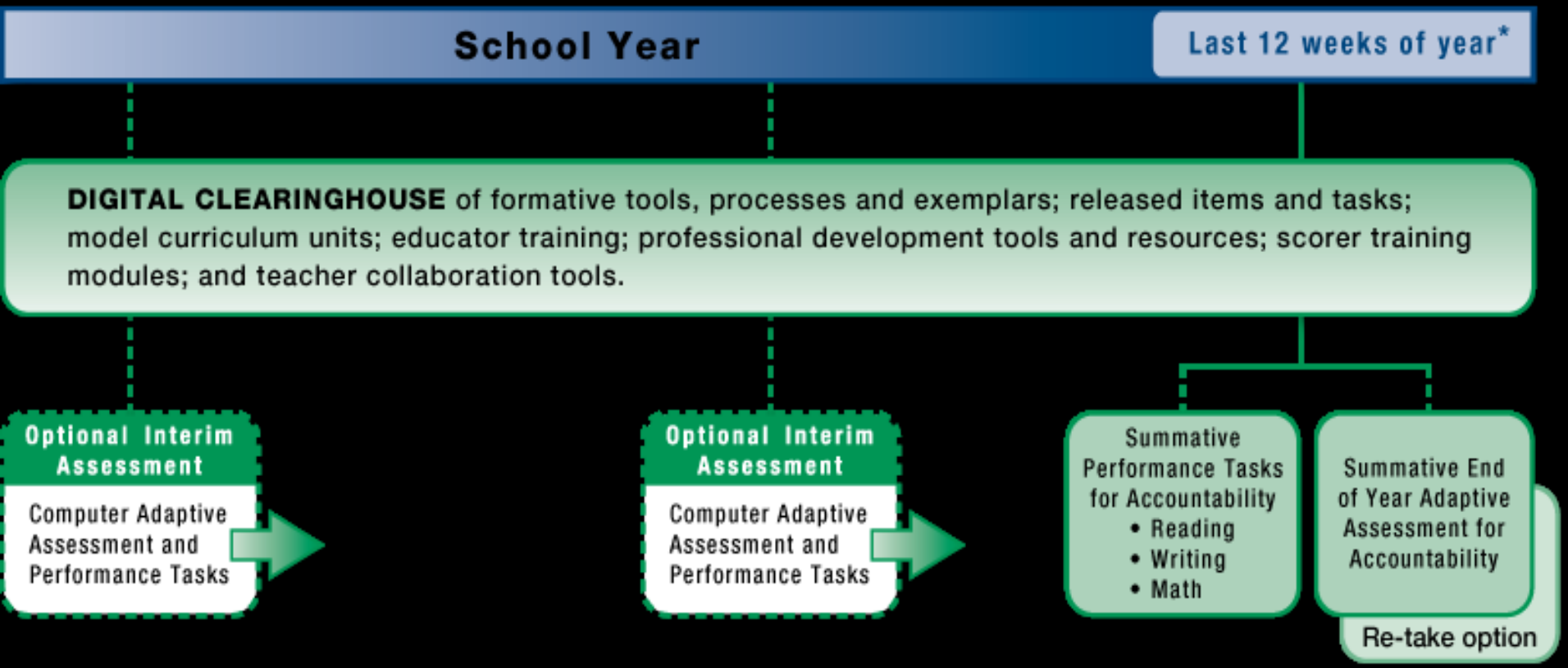
Smarter Balanced : A Balanced Assessment System



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

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Workshop Norms

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

Characteristics of Learners

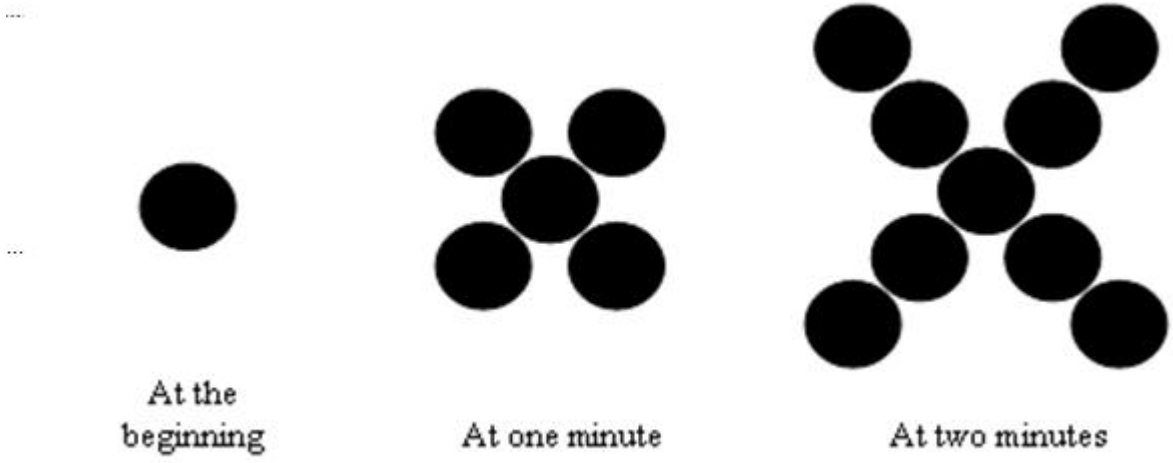
What are your perceptions of an excellent reader?

What are your perceptions of an excellent math learner?

Trying on the Math

Dot Progressions

- Imagine what the picture looks like at 3 minutes
  - How many dots will there be?
  - How do you know?
  - How will you build the picture?



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Break

10 Minutes

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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: Gold

Birthday: March 24, 1974

Code = GO25

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Orientation to the CCSS

"Toward Greater Focus and Coherence"

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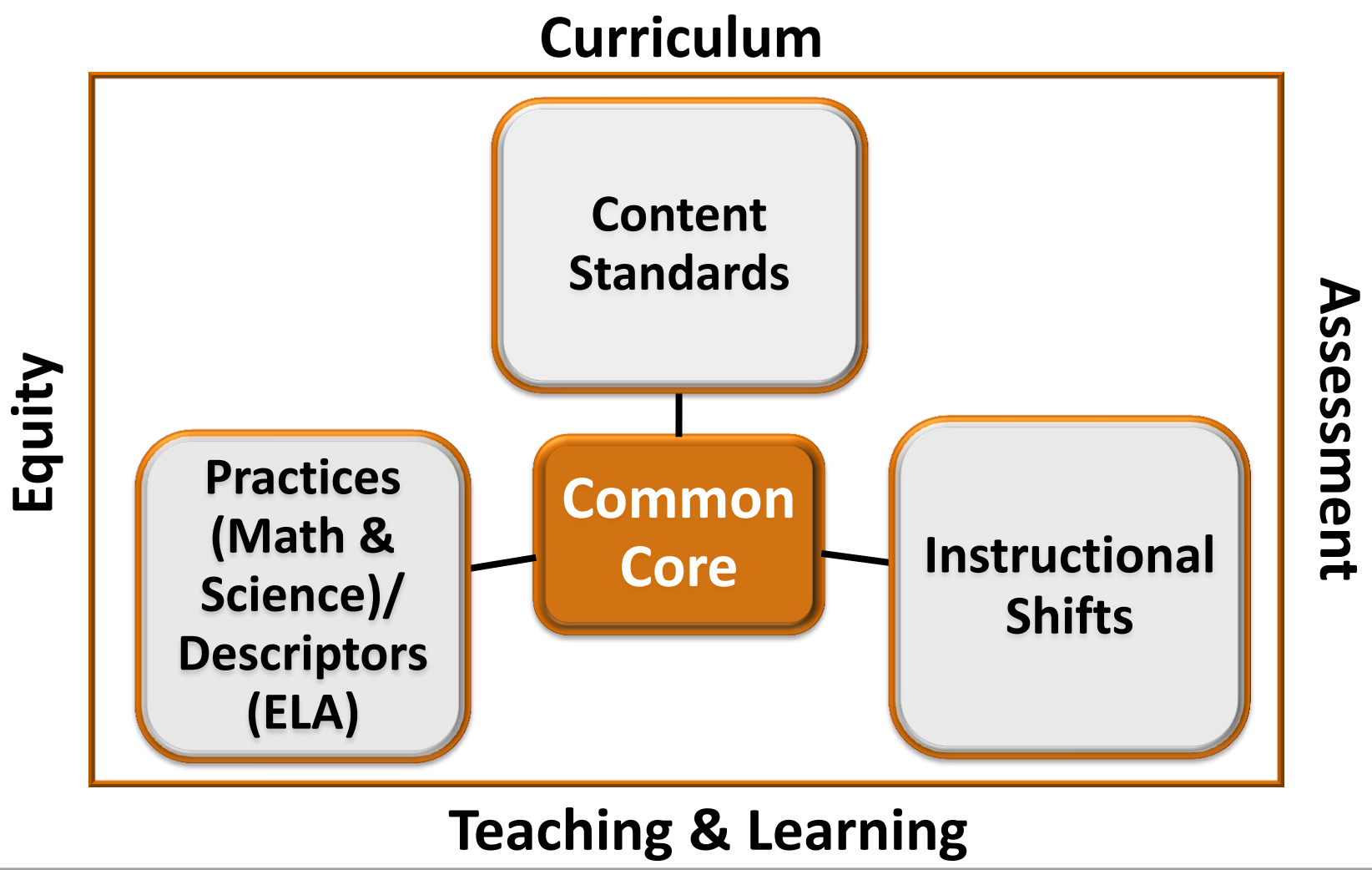
Common Core Standards Framework



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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

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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

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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.

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Format Example

Expressions and Equations 8.EE

Domain

Understand the connections between proportional relationships, lines, and linear equations.

5. Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.*
6. Use similar triangles to explain why the slope *m* is the same between any two distinct points on a non-vertical line in the coordinate plan; Derive the equation *y=mx* for a line through the origin and the equation *y=mx+b* for a line intercepting the vertical axis at *b.*

Standard

Cluster

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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 & Quantity
			Number and Operations – Fractions			The Number System			
Operations and Algebraic Thinking						Expressions and Equations			Algebra
							Functions		Functions
Geometry									Geometry
Measurement and Data						Statistics and Probability			Statistics & Probability

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Math Instructional Shifts

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

Rigor

Mathematics & Corresponding Science Practices

Mathematics Practices	Science Practices
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 the "Dot Progressions"

- 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 Dot Progressions 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 the "Dot Progressions"

- Identify times when you were attending to precision?
- What things prompted you to attend to precision?
- What else is evident in Practice #6 that you did not identify from the Dot Progressions 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)

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Digging into the Math Practices

Connect Practice #4 back to "Dot Progressions"

- Definition of "Model"

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Modeling with Mathematics

Not Modeling	Modeling
Jeremiah mowed lawns over the summer and saved $120. He plans to spend $6.50 per week going out to the movies. Mrs. Smith tells her class the expression $120 - 6.5m$ describes the amount of money Jeremiah has after going to the movies m times. Explain whether you agree or disagree with Mrs. Smith.	Henry and Jose are gaining weight for football. Henry weighs 205 pounds and is gaining 2 pounds per week. Jose weighs 195 pounds and is gaining 3 pounds per week. When will they weigh the same?

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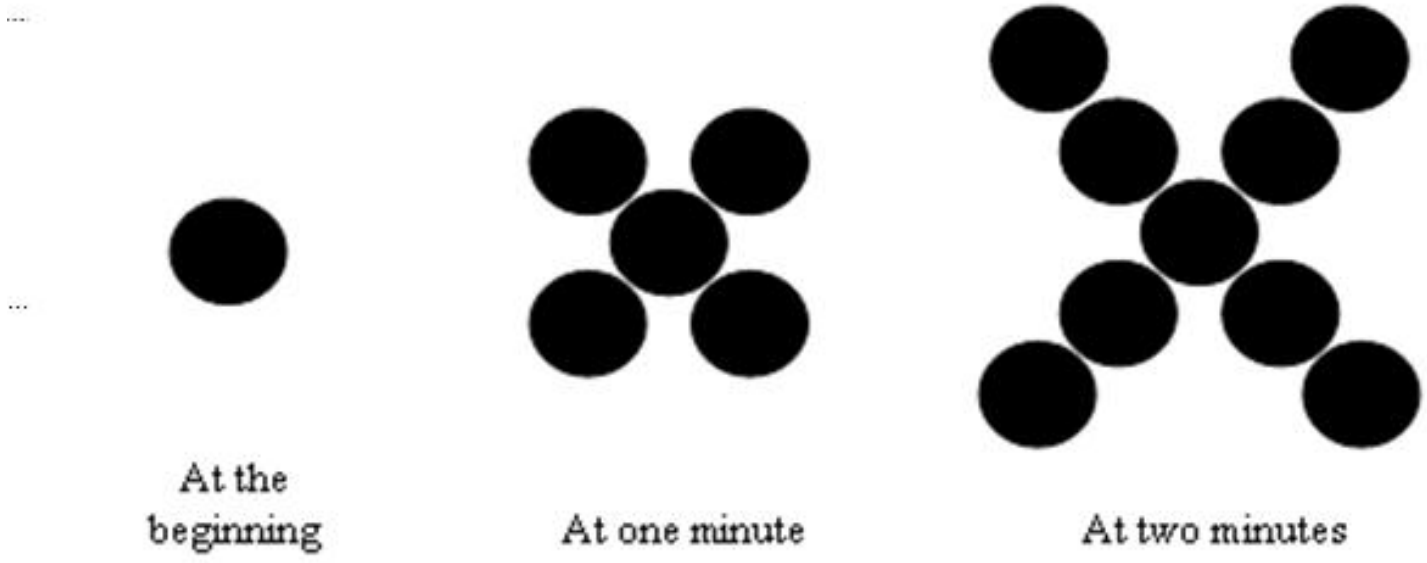
Lunch

1 hour ~ Enjoy!

Math Practices in Action

Dot Progressions Continued…



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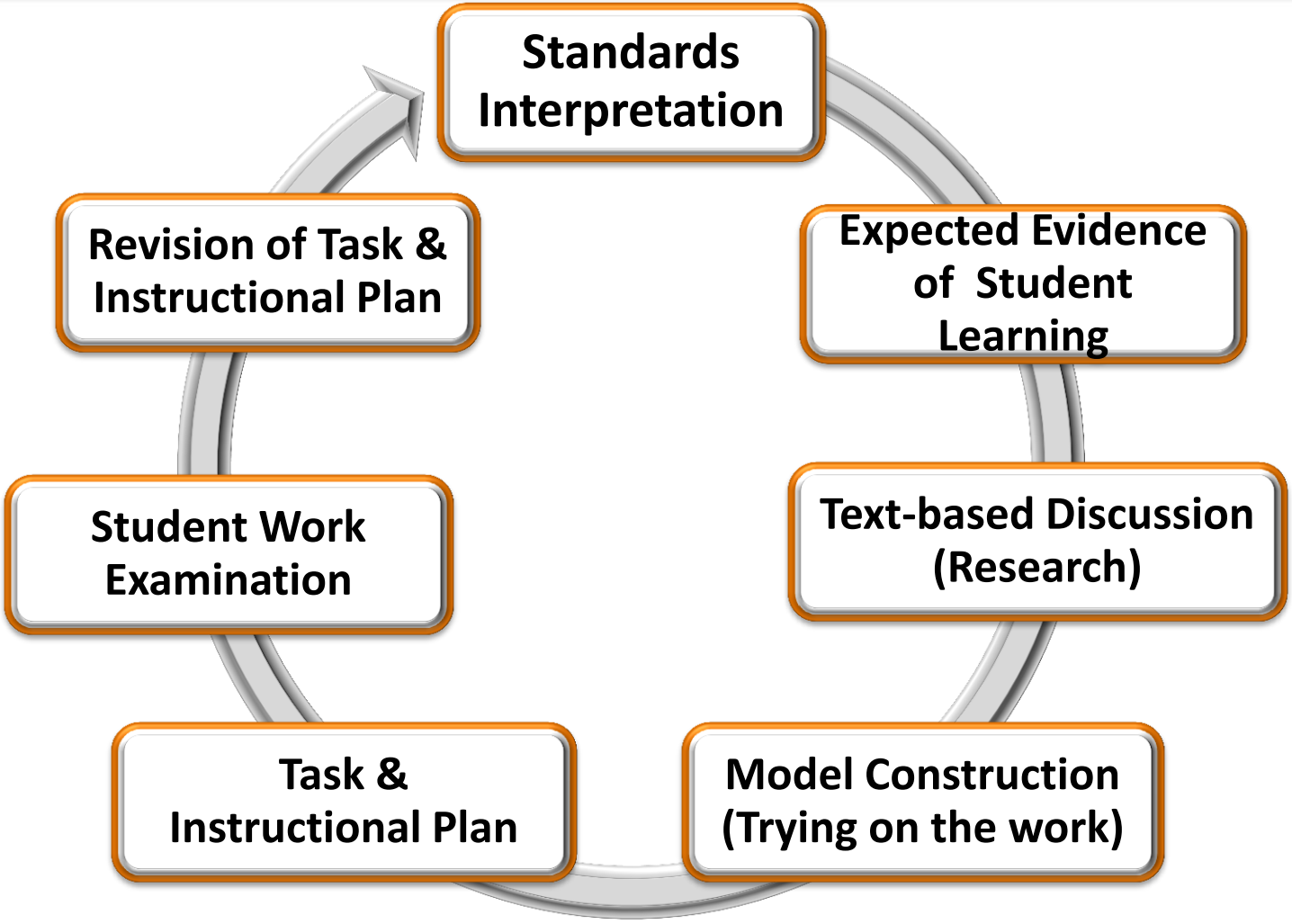
Design Methodology



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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
www.illustrativemathematics.org
www.cmc-math.org
www.achievethecore.org
www.insidemathematics.org
www.commoncoretools.me
www.engageNY.org
http://www.smarterbalanced.org/smarter-balanced-assessments/#item

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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?