Instructional Shifts-Focus

Kindergarten

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Why Common Core?

Initiated by the National Governors Association (NGA) and Council of Chief State School Officers (CCSSO) with the following design principles:

- Result in College and Career Readiness
- Based on solid research and practice evidence
- Fewer, higher and clearer

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The CCSS Requires Three Shifts in Mathematics

1. **Focus:** Focus strongly where the standards focus.
2. **Coherence**: *Think* across grades, and *link* to major topics
3. **Rigor:** In major topics, pursue *conceptual* **understanding,** procedural skill and *fluency*, and *application*

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Focus on Focus

- Significantly narrow the scope of content and deepen how time and energy is spent in the math classroom.
- Focus deeply on what is emphasized in the standards, so that students gain strong foundations.

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Focus

- Move away from **"mile wide, inch deep"** curricula identified in TIMSS.
- Learn from international comparisons.
- Teach less, learn more.
- “Less topic coverage can be associated with higher scores on those topics covered because students have more time to master the content that is taught.”

– Ginsburg et al., 2005

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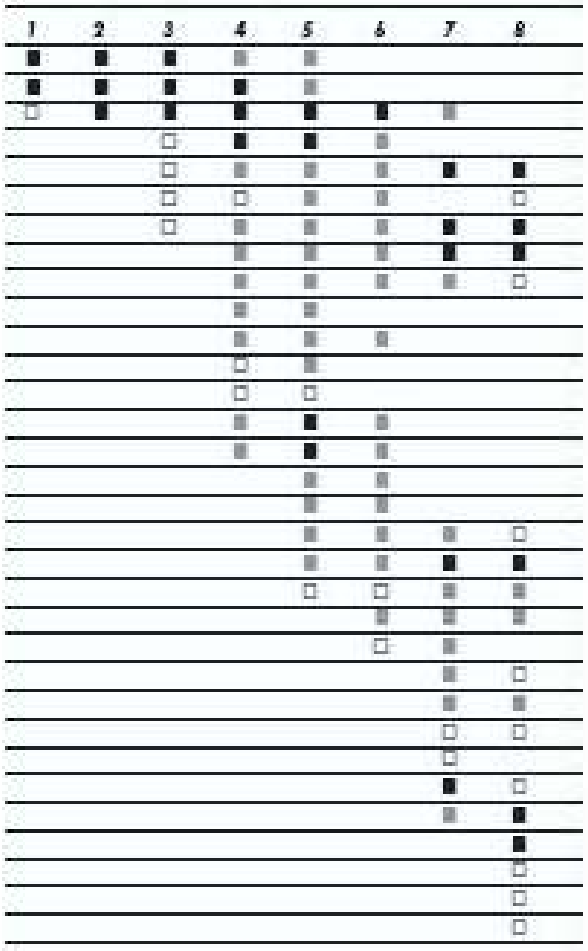
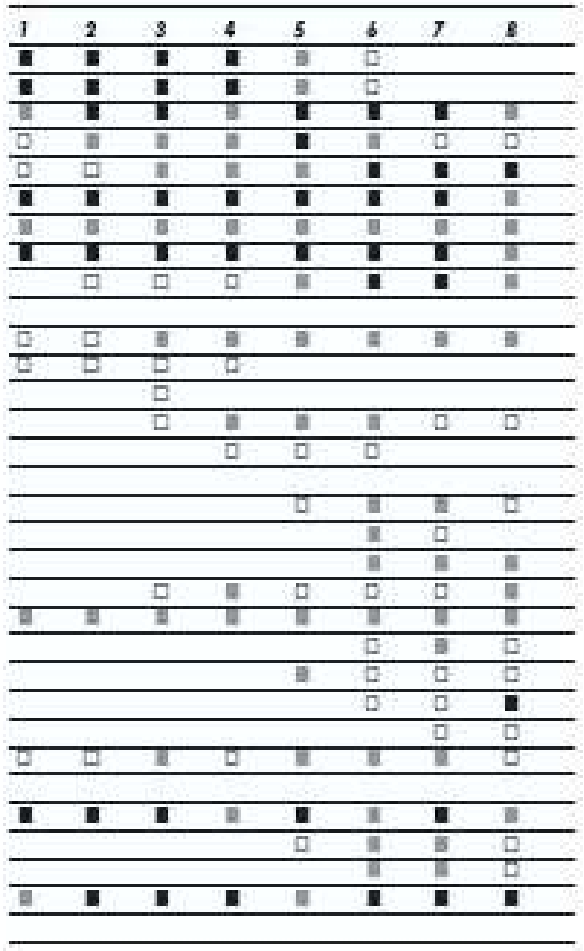
The shape of math in A+ countries

Mathematics topics intended at each grade by at least two-thirds of A+ countries





Mathematics topics intended at each grade by at least two-thirds of 21 U.S. states

[1] *Schmidt, Houang, & Cogan, "A Coherent Curriculum: The Case of Mathematics." (2002).*

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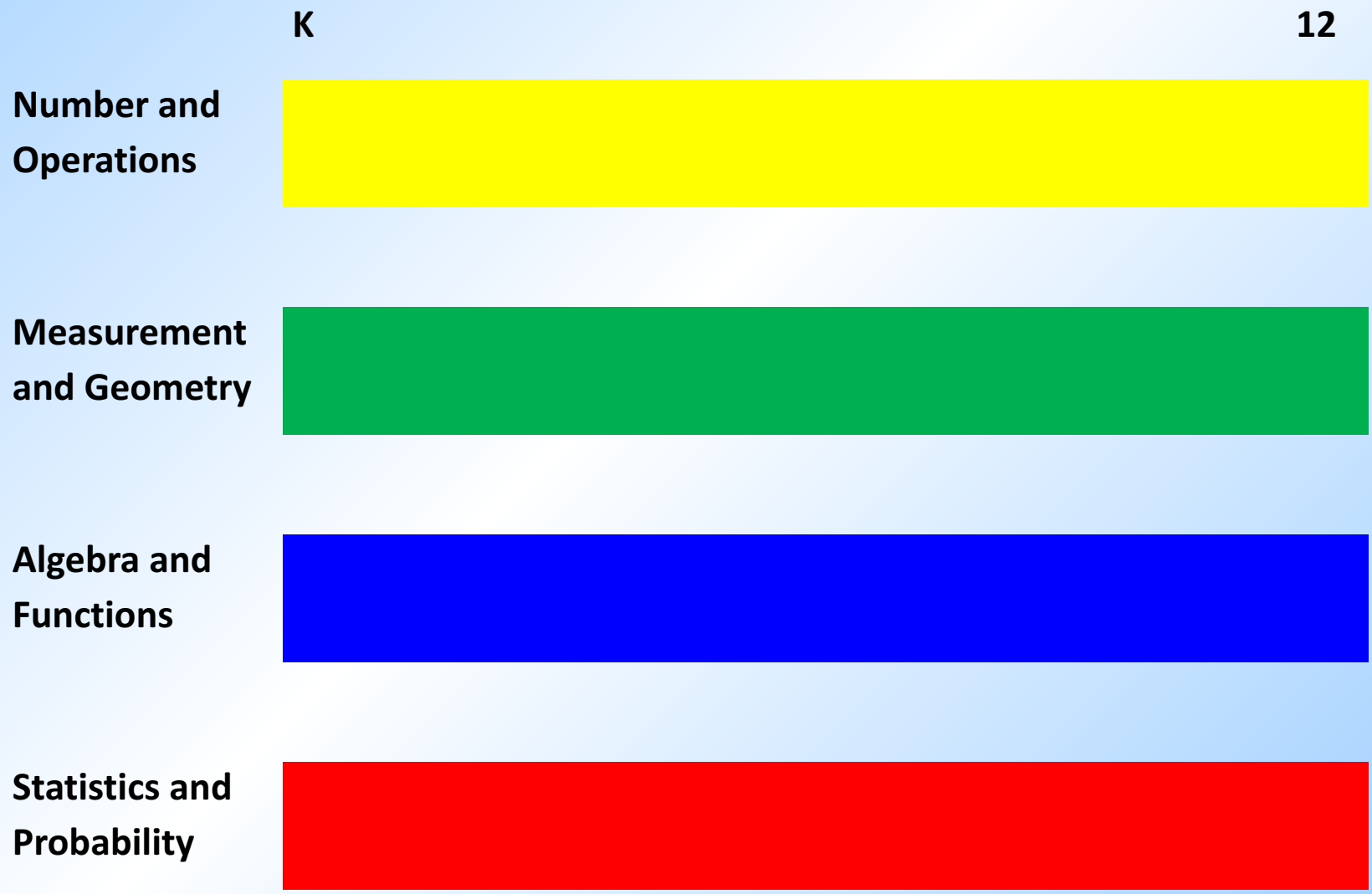
Traditional U.S. Approach



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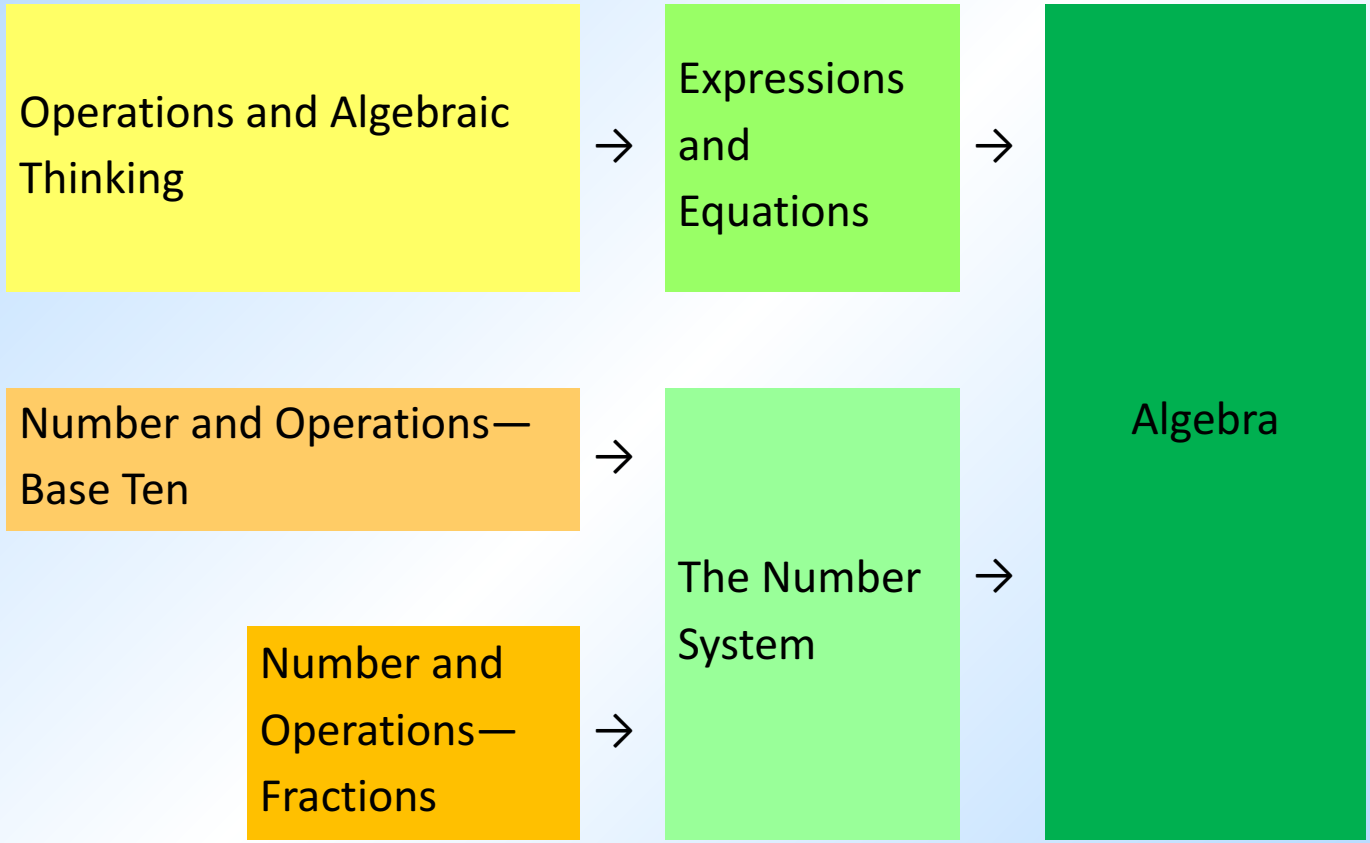
Focusing Attention Within Number and Operations



K 1 2 3 4 5 6 7 8 High School

Key Areas of Focus in Mathematics

Grade	Focus Areas in Support of Rich Instruction and Expectations of Fluency and Conceptual Understanding
K–2	Addition and subtraction - concepts, skills, and problem solving and place value
3–5	Multiplication and division of whole numbers and fractions – concepts, skills, and problem solving
6	Ratios and proportional reasoning; early expressions and equations
7	Ratios and proportional reasoning; arithmetic of rational numbers
8	Linear algebra

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Engaging with the shift: What do you think belongs in the major work of each grade?

Grade	Which two of the following represent areas of major focus for the indicated grade?		
K	Compare numbers	Use tally marks	Understand meaning of addition and subtraction
1	Add and subtract within 20	Measure lengths indirectly and by iterating length units	Create and extend patterns and sequences
2	Work with equal groups of objects to gain foundations for multiplication	Understand place value	Identify line of symmetry in two dimensional figures
3	Multiply and divide within 100	Identify the measures of central tendency and distribution	Develop understanding of fractions as numbers
4	Examine transformations on the coordinate plane	Generalize place value understanding for multi-digit whole numbers	Extend understanding of fraction equivalence and ordering
5	Understand and calculate probability of single events	Understand the place value system	Apply and extend previous understandings of multiplication and division to multiply and divide fractions

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Content Emphases by Cluster--Kindergarten

Not all of the content in a given grade is emphasized equally in the standards. Some clusters require greater emphasis than the others based on the depth of the ideas, the time that they take to master, and/or their importance to future mathematics or the demands of college and career readiness. In addition, an intense focus on the most critical material at each grade allows depth in learning, which is carried out through the Standards for Mathematical Practice.

To say that some things have greater emphasis is not to say that anything in the standards can safely be neglected in instruction. Neglecting material will leave gaps in student skill and understanding and may leave students unprepared for the challenges of a later grade. The following table identifies the Major Clusters, Additional Clusters, and Supporting Clusters for this grade.

Key: Major Clusters; Supporting Clusters; Additional Clusters

Counting and Cardinality
- **Know number names and the count sequence.**
- **Count to tell the number of objects.**
- **Compare numbers.**

Operations and Algebraic Thinking
- **Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.**

Number and Operations in Base Ten
- **Work with numbers 11-19 to gain foundations for place value.**

Measurement and Data
- **Describe and compare measureable attributes.**
- **Classify objects and count the number of objects in categories.**

Geometry
- **Identify and describe shapes.**
- **Analyze, compare, create, and compose shapes.**

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Content Emphases by Cluster--Grade 1

Not all of the content in a given grade is emphasized equally in the standards. Some clusters require greater emphasis than the others based on the depth of the ideas, the time that they take to master, and/or their importance to future mathematics or the demands of college and career readiness. In addition, an intense focus on the most critical material at each grade allows depth in learning, which is carried out through the Standards for Mathematical Practice.

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Key: Major Clusters; Supporting Clusters; Additional Clusters

Operations and Algebraic Thinking
Represent and solve problems involving addition and subtraction.
Understand and apply properties of operations and the relationship between addition and subtraction.
Add and subtract within 20.
Work with addition and subtraction equations.
Number and Operations in Base Ten
Extending the counting sequence.
Understand place value.
Use place value understanding and properties of operations to add and subtract.
Measurement and Data
Measure lengths indirectly and by iterating length units.
Tell and write time.
Represent and interpret data.
Geometry
Reason with shapes and their attributes.

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Exploring the Major Clusters

Work with your group to complete chart.

- Identify at least one or two important mathematical concepts within the major clusters. What do students need to learn prior to these concepts?
- What evidence would convince you that a student understands these concepts?
- How do these concepts support learning in later grades?
- What common misconceptions do students have when studying this critical area? What challenges have you had in teaching these critical area concepts?

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Examples from Smarter Balance

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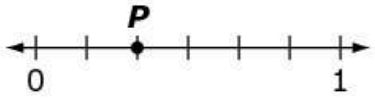
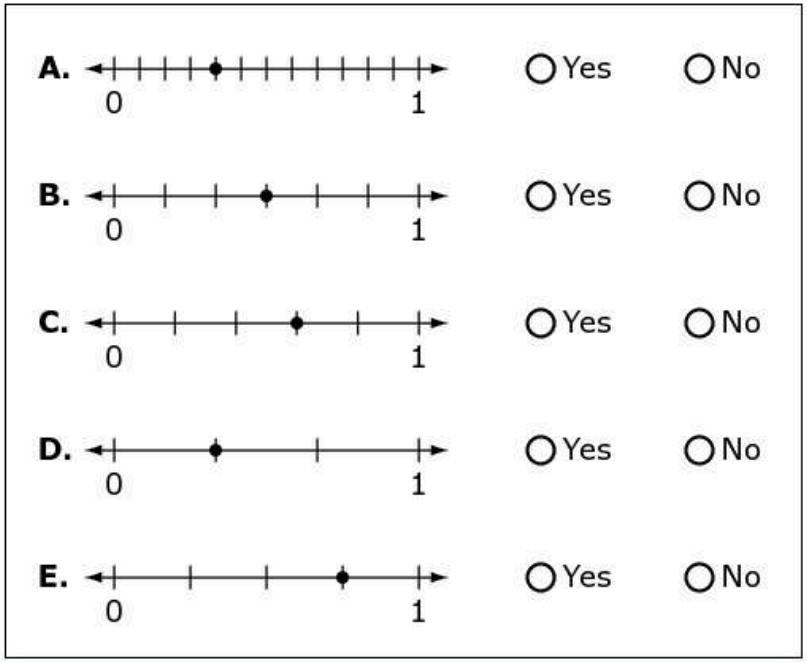
Look at point *P* on the number line.



Look at number lines A – E. Is the point on each number line equal to the number shown by *P*? Choose Yes or No.



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Examples from Smarter Balance

43022

A rectangle is 6 feet long and has a perimeter of 20 feet.

What is the width of this rectangle? Explain how you solved this problem.

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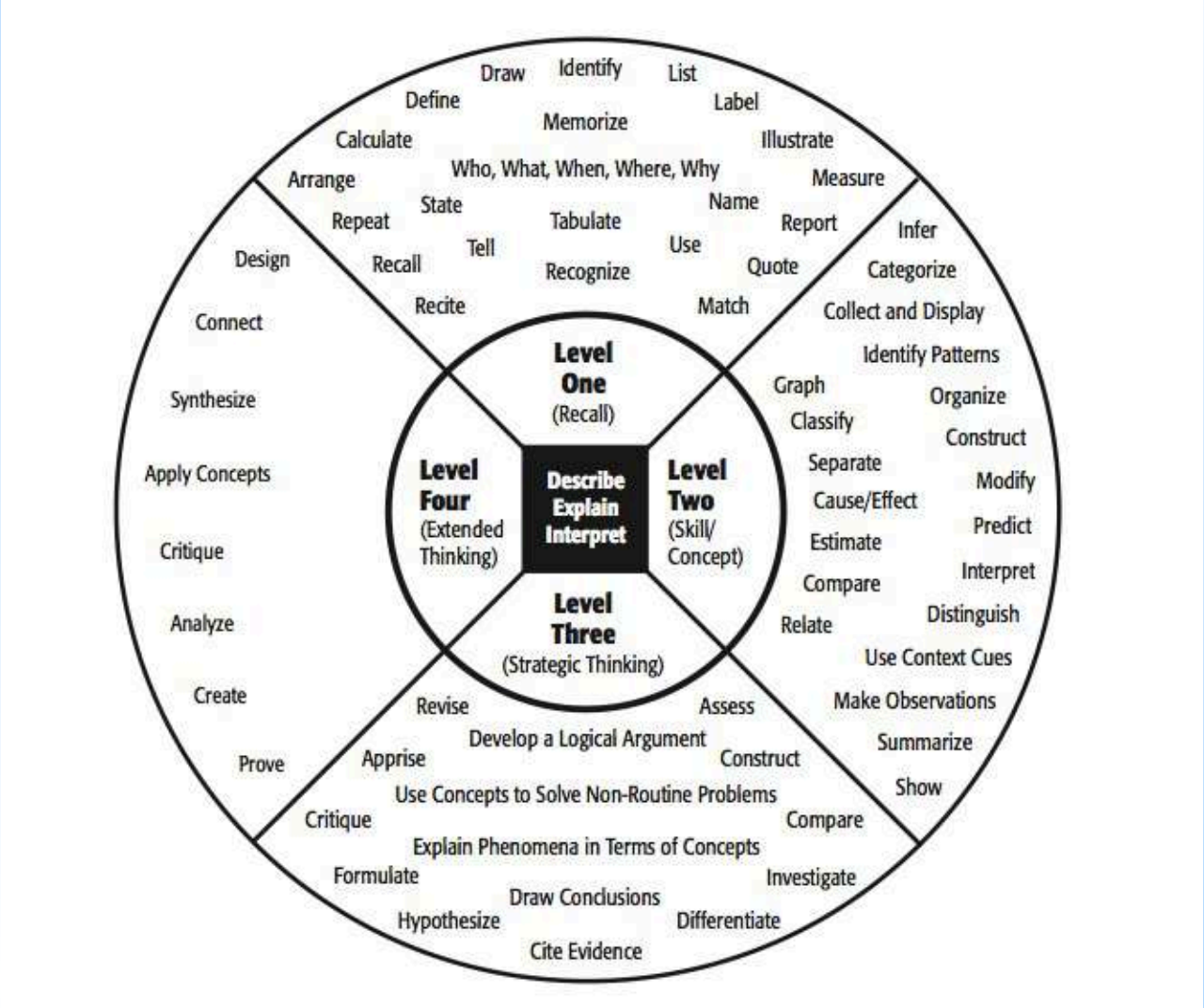
Depth of Knowledge



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Whole Group Discussion

- How do the mathematical concepts build from grade to grade?
- What are the similarities in the types of evidence that would convince you that a student understands these ideas?
- Are there common themes in student misconceptions and in challenges to teaching?
- Compare the concepts in the critical areas with those that you are currently teaching. How are they similar? How are they different?

Next Steps

- How will you use the major clusters to inform your curriculum and guide your instruction?

- What does this mean for your instruction tomorrow?

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Reflection

- How do the major clusters help to bring focus to the standards at your grade level?
- What questions do you still have about the major clusters?
- How has this activity increased your understanding of the instructional core?

Resource

- www.achievethecore.org
- www.illustrativemathematics.org
- www.pta.org/4446.htm
- commoncoretools.me
- www.corestandards.org
- http://educationnorthwest.org/category/topics/mathematics

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