

Focus and Coherence

Leadership I - Grades 6–8 - Day 1



This document shows where students and teachers should spend the large majority of their time in order to meet the expectations of the Standards.

Not all content in a given grade is emphasized equally in the Standards. Some clusters require greater emphasis than 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. More time in these areas is also necessary for students to meet 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.

Students should spend the large majority¹ of their time on the major work of the grade (■). Supporting work (□) and, where appropriate, additional work (●) can engage students in the major work of the grade.^{2,3}

MAJOR, SUPPORTING, AND ADDITIONAL CLUSTERS FOR GRADE 6

Emphases are given at the cluster level. Refer to the Common Core State Standards for Mathematics for the specific standards that fall within each cluster.

Key: ■ Major Clusters □ Supporting Clusters ● Additional Clusters

- 6.R.P.A. ■ Understand ratio concepts and use ratio reasoning to solve problems.
- 6.NS.A. ■ Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
- 6.NS.B. ● Compute fluently with multi-digit numbers and find common factors and multiples.
- 6.NS.C. ■ Apply and extend previous understandings of numbers to the system of rational numbers.
- 6.EE.A. ■ Apply and extend previous understandings of arithmetic to algebraic expressions.
- 6.EE.B. ■ Reason about and solve one-variable equations and inequalities.
- 6.EE.C. ■ Represent and analyze quantitative relationships between dependent and independent variables.
- 6.G.A. □ Solve real-world and mathematical problems involving area, surface area, and volume.
- 6.SPA. ● Develop understanding of statistical variability.
- 6.SPB. ● Summarize and describe distributions.

HIGHLIGHTS OF MAJOR WORK IN GRADES K–8

K–2	Addition and subtraction – concepts, skills, and problem solving; place value
3–5	Multiplication and division of whole numbers and fractions – concepts, skills, and problem solving
6	Ratios and proportional relationships; early expressions and equations
7	Ratios and proportional relationships; arithmetic of rational numbers
8	Linear algebra and linear functions

REQUIRED FLUENCIES FOR GRADE 6

6.NS.B.2	Multi-digit division
6.NS.B.3	Multi-digit decimal operations

¹ At least 65% and up to approximately 85% of class time, with Grades K–2 nearer the upper end of that range, should be devoted to the major work of the grade. For more information, see Criterion #1 of the K–8 Publishers' Criteria for the Common Core State Standards for Mathematics www.achievethecore.org/publicsp/criteria.

² Refer also to criterion #3 in the K–8 Publishers' Criteria for the Common Core State Standards for Mathematics www.achievethecore.org/publicsp/criteria.

³ Note, the critical areas are a survey of what will be taught at each grade level; the major work is the subset of topics that deserve the large majority of instructional time during a given year to best prepare students for college and careers.

CCSS WHERE TO FOCUS GRADES K–8 MATHEMATICS

An important subset of the major work in grades K–8 is the progression that leads toward middle school algebra.

K	1	2	3	4	5	6	7	8
Know number names and the count sequence	Represent and solve problems involving addition and subtraction	Represent and solve problems involving addition and subtraction	Represent & solve problems involving multiplication and division	Use the four operations with whole numbers to solve problems	Understand the place value system	Apply and extend previous understandings of multiplication and division to divide fractions by fractions	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers	Work with radical and integer exponents
Count to tell the number of objects	Understand and apply properties of operations and the relationship between addition and subtraction	Add and subtract within 20	Understand properties of multiplication and the relationship between multiplication and division	Generalize place value understanding for multi-digit whole numbers	Perform operations with multi-digit whole numbers and decimals to hundredths	Apply and extend previous understandings of numbers to the system of rational numbers	Analyze proportional relationships and use them to solve real-world and mathematical problems	Understand the connections between proportional relationships, lines, and linear equations**
Compare numbers	Understand and apply properties of operations and the relationship between addition and subtraction	Use place value understanding and properties of operations to add and subtract	Understand properties of multiplication and the relationship between multiplication and division	Use place value understanding and properties of operations to perform multidigit arithmetic	Use equivalent fractions as a strategy to add and subtract fractions	Apply and extend previous understandings of numbers to the system of rational numbers	Analyze and solve linear equations and pairs of simultaneous linear equations	
Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from	Work with addition and subtraction equations	Measure and estimate lengths in standard units	Solve problems involving the four operations, and identify & explain patterns in arithmetic	Extend understanding of fraction equivalence and ordering	Apply and extend previous understandings of multiplication and division to multiply and divide fractions	Understand ratio concepts and use ratio reasoning to solve problems	Use properties of operations to generate equivalent expressions	Define, evaluate, and compare functions
Work with numbers 11-19 to gain foundations for place value	Extend the counting sequence	Relate addition and subtraction to length	Develop understanding of fractions as numbers	Build fractions from unit fractions by applying and extending previous understandings of operations	Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition	Apply and extend previous understandings of arithmetic to algebraic expressions	Solve real-life and mathematical problems using numerical and algebraic expressions and equations	Use functions to model relationships between quantities
	Understand place value		Solve problems involving measurement and estimation of intervals of time, liquid volumes, & masses of objects	Understand decimal notation for fractions, and compare decimal fractions	Graph points in the coordinate plane to solve real-world and mathematical problems*	Reason about and solve one-variable equations and inequalities		
	Use place value understanding and properties of operations to add and subtract		Geometric measurement: understand concepts of area and relate area to multiplication and to addition			Represent and analyze quantitative relationships between dependent and independent variables		
	Measure lengths indirectly and by iterating length units							

* Indicates a cluster that is well thought of as a part of a student's progress to algebra, but that is currently not designated as major by the assessment consortia in their draft materials. Apart from the one asterisked exception, the clusters listed here are a subset of those designated as major in the assessment consortia's draft documents.

** Depends on similarity ideas from geometry to show that a linear equation has a graph which is a straight line and conversely.

Doing the Work of the Lesson—Protocol

Step One Focus

Do the Math On Your Own

Share Solutions and
Different Solution Paths

Identify the Standard(s)
Being Addressed

Determine if Content is
Major, Supporting, or
Additional

Step Two Anticipation Guide

Begin to Anticipate
Instruction Needed to
Meet Demands of the
Standard(s)

*What should we see if the
teacher is addressing the
standard(s) correctly?*

Step Three Coherence

Identify the Prerequisite
Standards

Observe Instruction for
Focus and Coherence

Step Four Rigor

Identify the Aspects of
Rigor in the Language of
the Standards

Anticipate Instruction
Needed to Meet Rigor of
the Standards

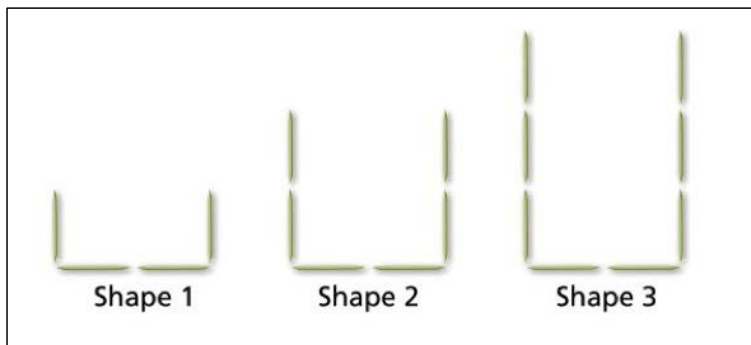
*What should we see if the
teacher is addressing the
aspect(s) of rigor correctly?*

Observe Instruction or
Examine Student Work for
Evidence of Rigor

Student Assignment: Participant Handout

Instructions:

1. Draw the next 3 stages of the toothpick pattern.
2. Complete the graphic organizer to represent the pattern.



Algebraic Expression

Description in Words

Table

Model

Shape Number							
Number of Toothpicks							

Target Expression: $2n+2$

Directions: Determine if these expressions are equivalent to our target expression. Use mathematical evidence to support your answer and write yes or no. *BONUS:* Write what property you can use to support your answer.

1. $2n + 2$

4. $2(n + 1)$

7. $3n + 5 - n - 3$

2. $n + n + 1 + 1$

5. $2(n + 2)$

8. $n + 1 - n - 1$

3. $n^2 + 2$

6. $2(n + 2) - 2$

9. $3(n + 1) - n - 1$

Exit Slip

Determine which, if any, expressions are equivalent.

Regina's Expression: $2n + 2 + (n - 1)$

Davere's Expression: $3(n + 1) - 2$

Itzel's Expression: $4n - (n - 1)$

Aniqa's Expression: $3 + 1n$

Protocol Step Two

Develop an Anticipation Guide - Focus

Pedagogical Content Strategies in an Equitable Classroom	
Intended Standard(s):	
What Would We See?	What Would We Hear?

Content Coaching: Unbound

A Tool to Deepen Understanding of Standards, Shifts and Content

So what do you do when you see that students aren't "getting it"? These content-specific questions are intended to be used by teachers, leaders and coaches for job-embedded development of Math and ELA content knowledge, post-lesson debriefing, coaching and lesson planning. The questions should be used to probe and push the thinking behind instructional practices, and to guide informed and actionable decisions on the changes needed for students to engage in grade-level, standards-aligned learning.

This tool is to be used in conjunction with the Instructional Practice Guide suite of tools from Student Achievement Partners. The [Instructional Practice Guides](#) are an important first step for diagnosing where and when Common Core instruction is taking place. Because every Core Action and every Shift cannot be observable in every lesson, [Beyond the Lesson Discussion Guides](#) offer questions for teachers and coaches to consider in order to ensure effective CCSS implementation over the course of the year. *Content Coaching: UnboundEd* provides an even more granular layer of instructional analysis and recommended next steps focused on application of content related to standards in the classroom.

MATH

Shift	Questions that Develop Understanding of Math Standards, Shifts and Content	
Leading the Conversation:		
<ul style="list-style-type: none"> • What are the knowledge and skills required to be successful on this task? • To what grade and standard is the task aligned? 		
Focus	<p>If not grade-level standards:</p> <ul style="list-style-type: none"> • Why was instruction not addressing grade-level standards? • What data or other work supports the decision to teach non-grade-level standards? • Is this part of the major work of that grade? <p>If not major work of the grade:</p> <ul style="list-style-type: none"> • How will this chosen standard authentically lead students back to working with math content that is emphasized in this grade? • How does this task connect to the major work in the grades above and below? 	
Coherence	<p>Across Grade Coherence</p> <ul style="list-style-type: none"> • Does the instruction carefully connect learning across grades so that students can build new understanding onto foundations built in previous years? • Are the students who get it making connections to previous learning? • For students who are not getting it, is the teacher leading students to make connections to previous learning? 	<p>Within Grade Coherence</p> <ul style="list-style-type: none"> • Is the instruction leveraging how the standards within a grade were built to reinforce a major topic by utilizing supporting, complementary topics? • Are the non-major work standards being taught supporting priority content? • If supporting standards are not linking to major work of the grade: What do the standards say?

	<ul style="list-style-type: none"> What prerequisite knowledge is a student lacking to be able to make those connections? <p>If students are still not making connections:</p> <ul style="list-style-type: none"> Ask: What prerequisite knowledge is a student lacking to be able to make those connections? Consider: share time studying the wiring diagram, studying linking standards, with next steps being digging into curriculum for additional lessons on knowledge gaps. 	<ul style="list-style-type: none"> How can this chosen standard authentically lead students back to working with math content that is to be emphasized in this grade? <p>If supporting standards are not linking to major work of the grade:</p> <ul style="list-style-type: none"> What do the standards say? Same question as before: How can this chosen standard authentically lead students back to working with math content that is to be emphasized in this grade? 	
Rigor	<p>Procedural Skill and Fluency</p> <p>If fluency opportunities are not present:</p> <ul style="list-style-type: none"> Where is/will fluency practice be built in upcoming lessons? <p>If students show fluency as a limiter in their math work:</p> <ul style="list-style-type: none"> How will students' lack of fluency be addressed? Consider curriculum: fluency activities from high-quality lessons for the area that is limiting students 	<p>Conceptual Understanding</p> <p>If conceptual understanding opportunities are not present:</p> <ul style="list-style-type: none"> How can more opportunities be worked into what the students are thinking when working with math concepts? <p>If students show conceptual understanding as a limiter in their math work:</p> <ul style="list-style-type: none"> Consider gaps: re-ask questions in Coherence activities Consider curriculum: study high-quality lessons aligned to the standard of Focus 	<p>Modeling/Application</p> <p>If application opportunities are not present:</p> <ul style="list-style-type: none"> How can more application opportunities be folded into the student math experience? <p>If students are provided external prompts to complete application problems:</p> <ul style="list-style-type: none"> How can the teacher adapt opportunities so that students can apply math they know without the prompting? Consider curriculum: study high-quality tasks aligned to the standard of Focus
<p>Want more from UnboundEd? Check out our Math Content Guides: Unbound and other resources to help enhance instruction.</p>			

Post-Observation Discussion

1. What are the teacher's strengths in the math content that you would want to leverage?
2. How would you deepen her understanding and skill with this standard and the Focus and Coherence Shifts?
3. What are 1-2 moments of equity in the classroom? What are 1-2 moments that could be more equitable?