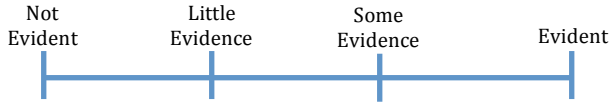
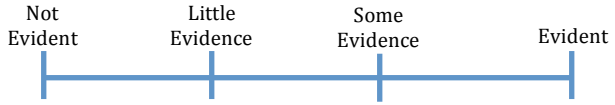
Best Practice Evidence Walk: Mathematics

Adapted from works by S. Beers and J.Carr and EngageNY

Shift #1 Mathematics: Focus		
Common Core Shift	**Implementation Indicator**	**Classroom Observation**
Teachers significantly narrow and deepen the scope of how time and energy is spent in the math classroom. They do so in order to focus deeply on only the concepts that are prioritized in the standards. Students develop a strong foundational knowledge and deep conceptual understanding and are able to transfer mathematical skills and understanding across concepts and grades.	Students are: • Using instructional resources that tie directly to the CCSS.	
	• Working at a pace that matches their levels of proficiency, not a pacing chart.	

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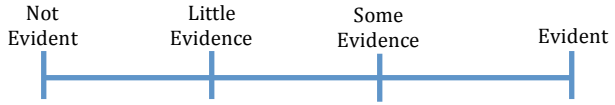
Shift #2 Mathematics: Coherence		
Common Core Shift	**Implementation Indicator**	**Classroom Observation**
Standards are taught and assessed in ways that carefully connect the learning within and across grades so that students build new understanding onto foundations built in previous years. Teachers use understanding of learning progressions presented from grade to grade in the CCSS to monitor students' progress, to provide scaffolding to support student learning, and to go deeper in understanding the concepts, where appropriate	Students are: • Building on their prior knowledge and skills (during instruction and assessment).	
	• Receiving scaffolds to support their learning.	
	• Going deep in exploring and understanding mathematical concepts.	

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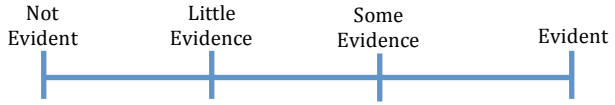
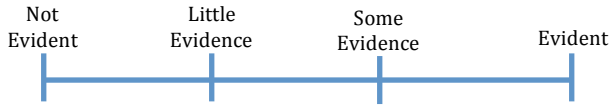
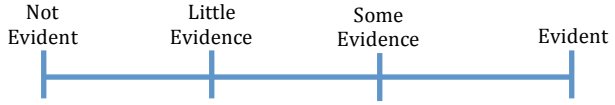
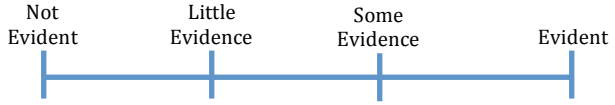
Shift #3 Mathematics: Fluency		
Common Core Shift	**Implementation Indicator**	**Classroom Observation**
In major topics, students pursue the following three aspects of mathematics with equal intensity: 1. Conceptual understanding, 2. Procedural skill & fluency, 3. Application Students engage in authentic, real-life practice of skills and make use of those skills through extended application of concepts.	Students are: □ Pursuing conceptual understanding □ Pursuing procedural skill and fluency	
	• Efficient and accurate in performing foundational, computational procedures without referring to tables and other aids.	
	• Applying a variety of appropriate procedures flexibly as they solve problems.	
	• Engaging in authentic, real-life practice of skills.	
	• Studying algorithms as "general procedures" so they can gain insight to the structure of mathematics (e.g., organization, patterns, predictability).	
	• Using technology (such as calculators) judiciously in ways that do not conflict with development of fluency.	

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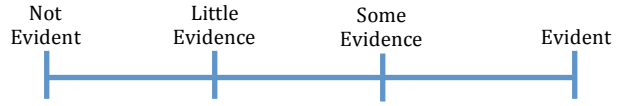
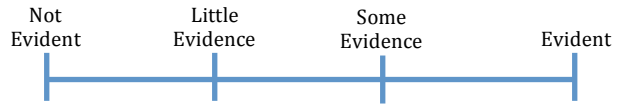
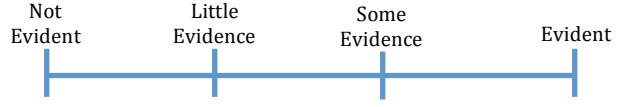
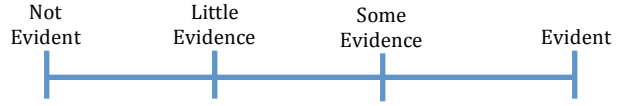
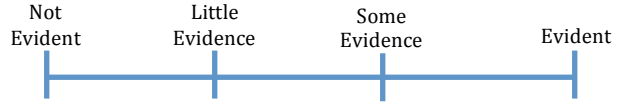
Shift #4 Mathematics: Deep Conceptual Understanding		
Common Core Shift	**Implementation Indicator**	**Classroom Observation**
Teachers teach more than "how to get an answer" and instead support students' ability to access concepts from a number of perspectives so that students are able to see math as more than a set of mnemonics or discrete procedures. Deep conceptual understanding of core content at each grade is critical for student success in subsequent years. Students with conceptual understanding know more than isolated facts and methods – they understand why a mathematical idea is important and the contexts in which it is useful.	Students are: □ Pursuing conceptual understanding □ Pursuing procedural skill and fluency	
	• Having time to "make sense" of math lessons.	
	• Justifying why a particular math statement is true or where a mathematical rule comes from.	
	• Writing and speaking about their understanding of mathematics content and procedures.	
	• Using precise and accurate mathematics, academic language, terminology, and concrete or abstract representations (e.g., pictures, symbols, expressions, equations, graphics, models).	
	• Engaging in extended application of concepts.	

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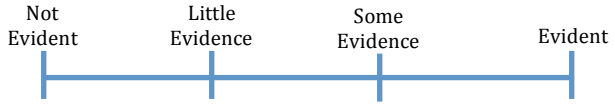
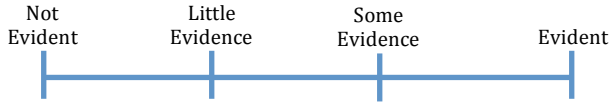
Shift #5 Mathematics: Applications (Modeling)		
Common Core Shift	**Implementation Indicator**	**Classroom Observation**
Students are expected to use math and choose the appropriate concept for application even when they are not prompted to do so. Teachers at all grade levels identify opportunities for students to apply math concepts in "real world" situations. Teachers in content areas outside of math, particularly science, ensure that students are using math – at all grade levels – to make meaning of and access content.	Students are: • Choosing the appropriate concept or procedure to solve a problem or analyze a situation without being prompted which to use.	
	• Practicing and receiving feedback before engaging in independent practice.	
	• Representing the problem situation and their solution symbolically, graphically, and/or pictorially (may include technological tools) appropriate to the context of the problem.	
	• Identifying variables, computing and interpreting results, reporting on findings, and justifying the reasonableness of their results and procedures within context of the task.	

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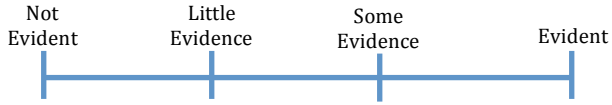
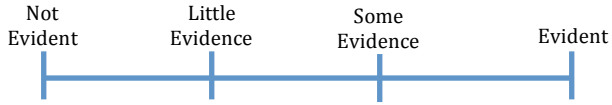
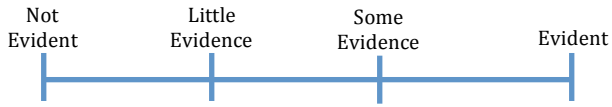
Shift #6 Mathematics: Balanced Emphasis (Dual Intensity)		
Common Core Shift	**Implementation Indicator**	**Classroom Observation**
Students need to both practice and understand mathematics. It is more than just a balance between these two priorities – both are occurring with intensity. Teachers create opportunities for students to participate in authentic practice and make use of those skills through extended application of math concepts.	Students are: • Having time to "make sense" of math lessons.	
	• Writing and speaking about their understanding of mathematics content and procedures.	
	• Engaging in debriefing discussion following exploration of tasks and reflecting on their thinking processes after task completion.	
	• Engaging in authentic, real-life practice of skills.