A quick guide for observing classroom content and practice

In a 3rd grade math class you should observe students engaged with at least one math content and practice standard:

**Mathematical Practices**
- Making sense of problems and persevering in solving them
- Reasoning abstractly and quantitatively
- Constructing viable arguments and critiquing the reasoning of others
- Modeling with mathematics
- Using appropriate tools strategically
- Attending to precision
- Looking for and making use of structure
- Looking for and expressing regularity in repeated reasoning

**Content Standards**

**Operations and Algebraic Thinking (OA)**
- Using multiplication and division within 100 to solve word problems and describe situations involving equal groups, arrays, and measurement quantities, by using drawings and equations with a symbol for the unknown number (variable) to represent the problem
- Applying properties of operations (commutative, associative, identity and distributive) to multiply (Students are not required to name the properties)
- Fluently multiplying and dividing within 100, using a range of strategies and algorithms, such as the relationship between multiplication and division or properties of operations
- Solving two-step word problems using the four operations (whole numbers only)
- Assessing the reasonableness of answers using mental computation and estimation strategies such as rounding

**Number and Operations in Base Ten (NBT)**
- Fluently adding and subtracting within 1000, using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction
- Using place value understanding to round whole numbers to the nearest 10 or 100

**Number and Operations—Fractions (NF)**
- Understanding that fractions represent a part-whole relationship, beginning with unit fractions (1/b)
- Explaining equivalence of fractions and comparing fractions by reasoning about their size
- Understanding and representing a fraction as a number on the number line within the interval from 0 to 1

**Measurement and Data (MD)**
- Telling and writing time to the nearest minute, measure time intervals in minutes, and solve word problems involving addition and subtraction of time intervals in minutes
- Measuring and estimating liquid volumes and masses of objects using standard metric units of grams (g), kilograms (kg), and liters (l) and use drawings to solve one-step word problems
- Drawing a scaled picture graph and a scaled bar graph to represent a data set with several categories, and using the graph to solve how many more and how many less problems
- Generating measurement data by measuring lengths of objects using rulers marked with halves and fourths of an inch. Recording and showing the data by making a line plot (dot plot)
- Recognizing area as an attribute of plane figures, measuring it by counting unit squares, and relating it to multiplication and addition (tiling)
- Solving real-world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths and finding an unknown side length

**Geometry (G)**
- Recognizing rhombuses, rectangles, squares, and trapezoids as examples of quadrilaterals
- Comparing and classifying shapes by their sides and angles
- Partitioning shapes into parts with equal areas and expressing the area of each part as a unit fraction of the whole

**NOTES**
- In a 3rd grade math class you should observe students engaged with at least one math content and practice standard:
- Mathematical Practices
- • Making sense of problems and persevering in solving them
  • Reasoning abstractly and quantitatively
  • Constructing viable arguments and critiquing the reasoning of others
  • Modeling with mathematics
- Content Standards
  • Operations and Algebraic Thinking (OA)
  • Number and Operations in Base Ten (NBT)
  • Number and Operations—Fractions (NF)
  • Measurement and Data (MD)
  • Geometry (G)
Mathematics What to Look For
The example below features three Indicators from the Standards of Effective Practice. These Indicators are just a sampling from the full set of Standards and were chosen because they create a sequence: the educator plans a lesson that sets clear and high expectations, the educator then delivers high quality instruction, and finally the educator uses a variety of assessments to see if students understand the material or if re-teaching is necessary. This example highlights teacher and student behaviors aligned to the three Indicators that you can expect to see in a rigorous 3rd grade math classroom.

**Expectations**
(Standard II, Indicator E)

**What is the teacher doing?**
- Communicating both the language and content objectives for students and why they are important
- Creating culturally responsive lessons that engage and sustain student attention
- Focusing attention on mathematical language (e.g., linguistic complexity, conventions, and vocabulary)
- Representing and relating solution methods orally, visually, and with concrete objects

**What are the students doing?**
- Applying mathematical strategies and concepts when engaging with meaningful real-world problems
- Using mathematical language precisely to convey meaning and understanding of concepts
- Evaluating different representations of a problem and different solution pathways

**Instruction**
(Standard II, Indicator A)

**What is the teacher doing?**
- Highlighting when students draw explicitly upon class content during discussions with peers
- Encouraging students to interpret structures and formulate conjectures about mathematical situations
- Highlighting commonalities, differences, and patterns in student's ideas.

**What are the students doing?**
- Specifically choosing symbols and words to express their mathematical ideas to others
- Showing persistence and focus in working together toward a shared goal
- Drawing explicitly upon content they have learned in class in conversations with peers

**Assessment**
(Standard I, Indicator B)

**What is the teacher doing?**
- Conducting frequent checks for student understanding and adjusting instruction accordingly
- Prompting students to explain their reasoning and listening to their responses to identify misconceptions
- Providing exemplars that convey mathematical reasoning and understanding (both teacher and student generated)

**What are the students doing?**
- Purposefully incorporating feedback from teacher and peers into actions
- Demonstrating learning in multiple ways (e.g., student discourse, completion of class work)
- Engaging in challenging learning tasks regardless of learning needs (e.g., linguistic background, disability, academic gifts)