

A quick guide for observing classroom content and practice

In grade 7, instructional time should focus on four critical areas:

1.

Developing an understanding of proportional relationships and applying proportional reasoning to solve real world problems including problems of scale (RP)

2.

Developing understanding of operations with rational numbers and working with expressions and linear equations (NS)

3.

Solving problems involving informal geometric constructions and with 2- and 3-dimensional shapes involving area, surface area, and volume (G)

4.

Drawing inferences about populations based on samples (SP)

In a 7<sup>th</sup> 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

### Ratios and Proportional Relationships (RP)

- Computing *unit rates* associated with ratios of fractions
- Recognizing and representing *proportional relationships* between quantities
- Using an understanding of ratios, rates, and proportionality to solve a wide variety of percent problems (*discounts, interest, taxes, tips, gratuities, commissions, percent increase or decrease*)

### The Number System (NS)

- Applying and extending previous understandings of operations with fractions to add, subtract, multiply, and divide *rational numbers*
- Solving real-world and mathematical problems involving the four operations with *integers* and other rational numbers

### Expressions and Equations (EE)

- Using properties of operations to generate *equivalent expressions*
- Solving real-life and mathematical problems using numerical and *algebraic expressions* and equations
- Using variables to represent quantities in a real-world or mathematical problem (*equations and inequalities*)

### Geometry (G)

- Solving problems involving *scale drawings* of geometric figures
- Understanding and describing the relationships among the *radius, diameter, circumference* and *circumference of a circle* and how these correspond to formulas for finding the area and circumference
- Solving real-life mathematical problems involving *angle measure, area, surface area, and volume*

### Statistics and Probability (SP)

- Using *random sampling* to draw inferences about a population
- Drawing informal comparative inferences about two populations
- Investigating *chance* processes and developing, using, and evaluating probability models

NOTES

**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 7<sup>th</sup> grade math classroom.

**Expectations**  
(Standard II, Indicator E) Plans and implements lessons that set clear and high expectations and also make knowledge accessible for all students.

**What is the teacher doing?**

- Establishing classroom routines that support students to defend their thinking
- Asking students to respond to the thinking and arguments of others
- Representing and relating solution methods orally, visually, with concrete objects, or by using technology to create dynamic models

**What are the students doing?**

- Identifying a lesson's standards or objectives and how they connect to unit goals
- Persisting when engaging with mathematical tasks
- Applying mathematical strategies and concepts when engaging with meaningful real-world problems
- Using mathematical language precisely to convey meaning and understanding of concepts

**Instruction**  
(Standard II, Indicator A) Uses instructional practices that reflect high expectations regarding content and quality of effort and work; engage all students; and are personalized to accommodate diverse learning styles, needs, interests, and levels of readiness.

**What is the teacher doing?**

- Highlighting when students draw explicitly upon quantitative reasoning during discussions with peers
- Encouraging students to interpret structures and formulate conjectures about mathematical situations
- Providing students with opportunities to evaluate different approaches to a problem

**What are the students doing?**

- Referencing mathematical elements using specific vocabulary and symbols when expressing their mathematical ideas to others
- Resolving conflicts with peers in order to work together effectively
- Using quantitative reasoning to communicate ideas to others

**Assessment**  
(Standard I, Indicator B) Uses a variety of informal and formal methods of assessments to measure student learning, growth, and understanding to develop differentiated and enhanced learning experiences and improve future instruction.

**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., mid-unit assessment, group work)
- Engaging in challenging learning tasks regardless of learning needs (e.g., linguistic background, disability, academic gifts)