Math Classroom Observation Tool
Companion Guide

This Companion Guide is designed to support leaders in using the observation tool to accurately rate the quality of instruction. It should be used side by side with the Math Classroom Observation Tool to ground ratings in observable evidence and clarify the distinct differences between the rating categories. The descriptors in this guide help ensure consistent interpretation of instructional quality across classrooms and observers.

Learning Environment

Routines: Students execute transitions, routines, and procedures in an efficient manner that maximizes instructional time.

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• Students independently transition between activities quickly and quietly with no loss of instructional time. • Routines are internalized and executed seamlessly. • The teacher immediately begins instruction as transitions end; students are ready and engaged.	• Most students transition efficiently with minimal reminders. • Routines are established and generally followed, with brief pauses or minor redirection. • Instruction resumes promptly after transitions with little time lost.	• Transitions take longer than expected and require repeated teacher reminders. • Some students are unsure of expectations or off-task during routines. • Instructional time is reduced due to inefficiencies in routines or procedures.	• Transitions are disorganized or unclear, resulting in significant loss of instructional time. • Students frequently wait, talk, or move without purpose during routines. • The teacher must stop instruction to manage routines or reset expectations.

Classroom Management: Students follow expectations with positive teacher reinforcements. If misbehavior occurs, students are redirected with minimal disruption to instruction.

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• Students consistently follow expectations without reminders. • The teacher frequently reinforces positive behavior using specific, proactive praise. • When misbehavior occurs, redirection is quick, calm, and discreet, and instruction continues uninterrupted.	• Most students follow expectations with occasional reminders. • The teacher uses positive reinforcement regularly. • Redirections are brief and generally do not interrupt the flow of the lesson.	• Students require frequent reminders to meet expectations. • Positive reinforcement is inconsistent or general. • Redirections interrupt instruction or require stopping to address behavior.	• Expectations are unclear or inconsistently enforced. • Little to no positive reinforcement is observed. • Misbehavior is addressed in ways that significantly disrupt instruction.

Instructional Delivery

Pacing: The teacher maintains appropriate pacing aligned to the purpose of the planned lesson and driving towards student mastery of the objective.

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• Pacing is well-timed and purposeful, with sufficient time for students to practice and demonstrate understanding. • The teacher adjusts pacing in real time based on student responses to ensure mastery of the objective. • Instruction moves efficiently with no	• Pacing generally aligns to the lesson plan and objective. • Most students have adequate time to engage with the content and practice. • Minor adjustments to pacing may be needed, but the lesson remains focused on the objective.	• Pacing is uneven, with some parts of the lesson rushed and others dragging. • Limited time is provided for students to practice or show understanding. • The lesson moves forward without clear evidence that students are progressing toward mastery.	• Pacing is misaligned to the lesson objective. • Students have limited or no opportunities to practice or demonstrate understanding. • The lesson concludes without evidence of student progress toward the objective.

unnecessary waiting or rushed moments.			
Explicit Model: The teacher explicitly models mathematical reasoning by thinking aloud, using representations to build conceptual understanding, making clear connections within and across grade-level content, and/or demonstrate, efficient procedures.			
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● The teacher models grade-level reasoning aligned to the objective while thinking aloud. ● The model reflects the intended rigor of the lesson and clearly shows both how and why mathematics works. ● Representations are used purposefully to support conceptual understanding and connections within the lesson.	● The teacher models a grade-level strategy aligned to the objective. ● The model generally reflects the rigor of the lesson, though explanations or connections may lack some depth or clarity. ● Representations support understanding but may not fully strengthen conceptual connections.	● The teacher models steps or a strategy related to the objective, but the model only partially reflects the rigor of the lesson. ● Explanations focus more on how to complete the steps than on why they work. ● Representations may be present but are not clearly connected to conceptual understanding.	● The teacher does not model reasoning aligned to the grade-level objective. ● The model lowers or misses the intended rigor of the lesson, or no clear modeling is observed. ● Students are not shown the level of thinking required to meet the objective.
Academic Language: The teacher uses accurate and precise mathematical language in explanations.			
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● The teacher consistently uses accurate, grade-level mathematical language. ● Terms and symbols are clearly defined and used precisely in explanations. ● Students accurately use mathematical language when explaining their thinking.	● The teacher generally uses correct mathematical language. ● Key terms are introduced and used during explanations. ● Some students use mathematical language correctly.	● Mathematical language is used inconsistently or unclearly. ● Key terms are mentioned but not clearly explained. ● Students rarely use mathematical language or use it incorrectly.	● Mathematical language is unclear or incorrect. ● Explanations rely on informal or vague language. ● Students do not use mathematical language during the lesson.
Questions & Tasks: The teacher uses effective questions and tasks that intentionally target all aspect(s) of rigor (conceptual understanding, procedural skill and fluency, automaticity, application).			
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● Questions and tasks intentionally address multiple aspects of rigor within the lesson. ● Students engage in understanding concepts, practicing procedures, and applying math in meaningful contexts. ● Tasks build toward mastery of the objective.	● Questions and tasks address more than one aspect of rigor. ● Students have opportunities to practice procedures and demonstrate understanding. ● Some aspects of rigor may be emphasized more than others.	● Questions and tasks focus primarily on a single aspect of rigor (often procedures). ● Opportunities for conceptual understanding or application are limited. ● Tasks do not fully support mastery of the objective.	● Questions and tasks do not meaningfully address grade-level rigor. ● Student work is limited to isolated or repetitive tasks. ● Tasks do not support understanding or application.
Frequent Practice: The teacher provides frequent opportunities for practice using multiple engagement strategies (independent, partner, and group practice; think-pair-share; turn and talk; everybody writes; whiteboard responses, show call with student work).			
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● Students engage in frequent math practice throughout the lesson. ● The teacher intentionally uses multiple engagement strategies to ensure all students participate. ● Practice opportunities clearly support progress	● Students have regular opportunities to practice math during the lesson. ● More than one engagement strategy is used, though participation may vary. ● Practice generally aligns to the objective.	● Practice opportunities are infrequent or rely on a single engagement strategy. ● Some students participate while others remain passive.	● Students have little to no opportunity to practice math during the lesson. ● Engagement strategies are absent or used ineffectively. ● Practice does not support student understanding of the objective.

toward mastery of the objective.		• Practice is loosely aligned or not clearly connected to the objective.	

Breadth of Practice: All students are engaged in the practice required for mastery in ways that reveal their thinking (e.g. discussion, practice, justifying their thinking).

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• All or nearly all students actively engage in math practice that reveals their thinking. • Students explain, represent, or justify their mathematical ideas. • The teacher uses strategies that ensure every student participates.	• Most students engage in math practice that reveals their thinking. • Opportunities exist for students to explain or show their reasoning. • Participation is generally high, with few students disengaged.	• Practice reveals the thinking of only some students. • Participation is uneven, with several students passive or off-task. • The teacher relies on volunteers or a small group of students to share thinking.	• Few students engage in practice that reveals their thinking. • Student participation is limited to short or surface-level responses. • The teacher has little visibility into most students' understanding.

Depth of Practice: Students do the cognitive work of the lesson at the depth required for mastery by giving precise responses, engaging in reasoning and problem-solving, and persevering through rigorous tasks.

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• Students consistently engage in reasoning and problem-solving aligned to the lesson goal. • Students explain their thinking and use representations or strategies to support their answers. • Students persevere through challenging tasks without the teacher reducing the level of work.	• Students engage in grade-level reasoning and problem-solving. • Some students explain their thinking, though depth may vary. • Most students remain engaged with the task, even when it is challenging.	• Student work focuses more on completing steps than explaining or reasoning. • Problem-solving opportunities are limited or shortened. • Students disengage or rely heavily on the teacher when tasks become challenging.	• Tasks require little reasoning or problem-solving. • Students primarily follow steps or give brief answers without explanation. • The rigor of work is reduced rather than supporting students to persevere.

Monitoring and Responding to Student Learning

Checks for Understanding: The teacher deliberately checks for understanding through questioning, student work tasks, and formative assessments throughout the lesson.

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• The teacher intentionally uses formative prompts or assessments at multiple, strategic points in the lesson. • Prompts are clearly aligned to the lesson objective and designed to reveal student understanding. • The checks provide clear information about how students are progressing toward the objective.	• The teacher uses formative prompts or assessments at key points in the lesson. • Prompts are aligned to the lesson objective. • The checks provide a general sense of student understanding.	• The teacher uses formative prompts or assessments inconsistently or at limited points in the lesson. • Prompts are loosely aligned to the lesson objective or are not well-timed. • The checks provide limited information about student understanding.	• The teacher rarely or does not use formative prompts or assessments to assess understanding. • Opportunities to assess student understanding are missing or poorly timed. • Little to no information is gathered to understand student learning.

Monitoring: The teacher actively monitors student work by circulating the classroom, checking for understanding, and analyzing both verbal and written responses.

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• The teacher consistently circulates to observe and listen to students' mathematical thinking.	• The teacher circulates and checks student work during math practice.	• The teacher circulates inconsistently or focuses primarily on whether answers are correct.	• The teacher does not actively monitor student work.

● Monitoring focuses on understanding, not just completing problems. ● The teacher gathers clear evidence of student reasoning through verbal explanations and written work.	● Verbal and written responses are reviewed to gauge understanding. ● Evidence of student thinking is collected for most students.	● Monitoring focuses primarily on whether work is completed or answers are correct. ● Student reasoning is observed for only some students.	● Student understanding is largely inferred rather than checked. ● Little to no evidence of student thinking is collected.
Responding: The teacher makes adjustments in response to student learning (scaffolding understanding of abstract concepts by connecting to **c**oncrete and pictorial representations, providing language supports, giving individual feedback, addressing misconceptions, modeling, etc.)			
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● The teacher consistently adjusts instruction based on student learning needs. ● Scaffolds connect abstract ideas to concrete or pictorial representations. ● Feedback, modeling, and supports directly address misconceptions.	● The teacher makes appropriate adjustments when student needs are apparent. ● Scaffolds and supports are aligned to the grade-level objective. ● Most students benefit from the adjustments made.	● Adjustments are limited, delayed, or overly general. ● Supports are not clearly connected to student learning needs. ● Some misconceptions persist despite adjustments.	● Instruction continues without meaningful adjustment. ● Supports are absent or misaligned to student needs. ● Misconceptions are not addressed.