

STANDARD FOR MATHEMATICAL PRACTICE OBSERVATION TOOL

SMP	NEEDS IMPROVEMENT	EMERGING	PROFICIENT	EXEMPLARY
MAKE SENSE OF PROBLEMS AND PERSEVERE IN SOLVING THEM.	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Is strictly procedural. <input type="checkbox"/> Does not require students to check solutions for errors. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Does not allow for wait time; asks leading questions to rush through task. <input type="checkbox"/> Does not encourage students to individually process the tasks. <input type="checkbox"/> Is focused solely on answers rather than processes and reasoning. 	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Is overly scaffolded or procedurally “obvious”. <input type="checkbox"/> Requires students to check answers by plugging in numbers. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Allots too much or too little time to complete task. <input type="checkbox"/> Encourages students to individually complete tasks, but does not ask them to evaluate the processes used. <input type="checkbox"/> Explains the reasons behind procedural steps. 	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Is cognitively demanding. <input type="checkbox"/> Has more than one entry point. <input type="checkbox"/> Requires a balance of procedural fluency and conceptual understanding. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Allows ample time for all students to struggle with task. <input type="checkbox"/> Expects students to evaluate processes implicitly. <input type="checkbox"/> Models making sense of the task (given situation) and the proposed solution. 	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Allows for multiple entry points and solution paths. <input type="checkbox"/> Requires students to defend and justify their solution by comparing multiple solution paths. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Differentiates to keep advanced students challenged during work time. <input type="checkbox"/> Integrates time for explicit meta-cognition. <input type="checkbox"/> Expects students to make sense of the task and the proposed solution.
REASON ABSTRACTLY AND QUANTITATIVELY.	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lacks context. <input type="checkbox"/> Does not make use of multiple representations or solution paths. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Does not expect students to interpret representations. <input type="checkbox"/> Expects students to memorize procedures with no connection to meaning. 	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Is embedded in a contrived context. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Expects students to model and interpret tasks using a single representation. <input type="checkbox"/> Explains connections between procedures and meaning. 	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Has realistic context. <input type="checkbox"/> Requires students to frame solutions in a context. <input type="checkbox"/> Has solutions that can be expressed with multiple representations. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Expects students to interpret and model using multiple representations. <input type="checkbox"/> Provides structure for students to connect algebraic procedures to contextual meaning. <input type="checkbox"/> Links mathematical solution with a question’s answer. 	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Has relevant, realistic context. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Expects students to interpret, model, and connect multiple representations. <input type="checkbox"/> Prompts students to articulate connections between algebraic procedures and contextual meaning.
CONSTRUCT VIABLE ARGUMENTS AND CRITIQUE THE REASONING OF OTHERS.	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Is ambiguously stated. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Does not ask students to present arguments or solutions. <input type="checkbox"/> Expects students to follow a given solution path without opportunities to make conjectures. 	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Is not at the appropriate level. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Does not help students differentiate between assumptions and logical conjectures. <input type="checkbox"/> Asks students to present arguments but not to evaluate them. <input type="checkbox"/> Allows students to make conjectures without justification. 	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Avoids single steps or routine algorithms. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Identifies students’ assumptions. <input type="checkbox"/> Models evaluation of student arguments. <input type="checkbox"/> Asks students to explain their conjectures. 	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Allows for multiple solution paths or solutions that create the need for mathematical discourse. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Helps students differentiate between assumptions and logical conjectures. <input type="checkbox"/> Prompts students to evaluate peer arguments. <input type="checkbox"/> Expects students to formally justify the validity of their conjectures.
MODEL WITH MATHEMATICS.	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Encourages students to identify variables and to perform necessary computations. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Identifies appropriate variables and procedures for students. <input type="checkbox"/> Does not discuss appropriateness of their model. 	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Encourages students to identify variables, perform computations, and interpret results. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Verifies that students have identified appropriate variables and procedures. <input type="checkbox"/> Explains the appropriateness of their model. 	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Encourages students to identify variables, compute and interpret results, and report findings using a mixture of representations. <input type="checkbox"/> Illustrates the relevance of the mathematics involved. <input type="checkbox"/> Requires students to identify extraneous or missing information. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Asks questions to help students identify appropriate variables and procedures. <input type="checkbox"/> Facilitates discussions in evaluating the appropriateness of their model. 	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Encourages students to identify variables, compute and interpret results, report findings, and justify the reasonableness of their results and procedures within context of the task. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Expects students to justify their choice of variables and procedures. <input type="checkbox"/> Gives students opportunities to evaluate the appropriateness of their model.

STANDARDS FOR MATHEMATICAL PRACTICE OBSERVATION TOOL

SMP	NEEDS IMPROVEMENT	EMERGING	PROFICIENT	EXEMPLARY
USE APPROPRIATE TOOLS STRATEGICALLY.	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Does not incorporate additional learning tools. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Does not incorporate additional learning tools. 	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lends itself to one learning tool. <input type="checkbox"/> Does not involve mental computations or estimation. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Demonstrates use of appropriate learning tools. 	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lends itself to multiple learning tools. <input type="checkbox"/> Gives students opportunity to develop fluency in mental computations. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Chooses appropriate learning tools for student use. <input type="checkbox"/> Models error checking by estimation. 	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Can be solved using a variety of learning tools (i.e., graph paper, calculator, manipulatives). <input type="checkbox"/> Requires students to demonstrate fluency in mental computations. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Allows students to choose appropriate learning tools. <input type="checkbox"/> Allows for student flexibility and creativity when using appropriate tools.
ATTEND TO PRECISION.	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Gives imprecise instructions. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Does not intervene when students are being imprecise. <input type="checkbox"/> Does not point out instances when students fail to address the question completely or directly. 	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Has overly detailed or wordy instructions. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Inconsistently intervenes when students are imprecise. <input type="checkbox"/> Identifies incomplete responses but does not require student to formulate further response. <input type="checkbox"/> Does not encourage students to check for errors. 	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Has precise instructions. <input type="checkbox"/> Encourages students to check solutions for errors using at least one other solution path. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Consistently demands precision in communication and in mathematical solutions. <input type="checkbox"/> Identifies incomplete responses and asks student to revise their response. 	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Includes assessment criteria for communication of ideas. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Expects and models precision in communication and in mathematical solutions. <input type="checkbox"/> Encourages students to identify when others are not addressing the question completely.
LOOK FOR AND MAKE USE OF STRUCTURE.	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Requires students to automatically apply an algorithm to a task without evaluating its appropriateness. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Does not recognize students for developing efficient approaches to the task. <input type="checkbox"/> Requires students to apply the same algorithm to a task although there may be other approaches. 	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Engages students in a situation where they look for an underlying structure before (or instead of) automatically applying an algorithm. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Identifies efficient approaches presented by individual students, but does not encourage students to share their strategies with the rest of the class. <input type="checkbox"/> Demonstrates the same algorithm to all related tasks although there may be other, more efficient approaches. 	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Engages students in discussion emphasizing relationships between concepts. <input type="checkbox"/> Encourages students to demonstrate their flexibility in representing mathematics in a number of ways. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Works with all students to develop reasonable and efficient ways to accurately perform basic operations. <input type="checkbox"/> Continuously questions students about the reasonableness of their intermediate results. 	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Encourages students to identify the most efficient solution path for the task. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Prompts students to identify mathematical structure of the task in order to identify the most effective solution path. <input type="checkbox"/> Encourages students to justify their choice of algorithm or solution path.
LOOK FOR AND EXPRESS REGULARITY IN REPEATED REASONING.	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Is disconnected from prior and future concepts. <input type="checkbox"/> Has no logical progression that leads to pattern recognition. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Does not show evidence of understanding the hierarchy within concepts. <input type="checkbox"/> Presents or examines task in isolation. 	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Is overly repetitive or has gaps that do not allow for development of a pattern. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Does not draw connections to prior or future concepts. 	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Reviews prior knowledge and requires cumulative understanding. <input type="checkbox"/> Lends itself to developing a pattern or structure. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Connects concept to prior and future concepts to help students develop an understanding of procedural shortcuts. <input type="checkbox"/> Demonstrates connections between tasks. 	<p>Task:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Addresses and connects to prior knowledge in a non-routine way. <input type="checkbox"/> Requires recognition of pattern or structure to be completed. <p>Teacher:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Encourages students to connect task to prior concepts and tasks. <input type="checkbox"/> Prompts students to generate exploratory questions based on the current task. <input type="checkbox"/> Engages students in discussion related to repeated reasoning that may occur in a problem's solution.

TEACHER: _____

DATE: _____

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