

MATH OBSERVATION COACHING TOOL



About the Tool

The KSDE Math Observation Coaching Tool illustrates the most important elements of quality mathematics instruction as outlined in the [Vision for Quality Instruction in Math](#). It provides a common language to articulate what quality math instruction looks like in practice for each Focus Area:



The tool consists of the following components:

- **Focus Areas:** Core components, or elements, of quality instruction as defined by the vision
- **Indicators:** Brief descriptions of observable teacher actions that are most significant for the focus area (indicators are not exhaustive)
- **Look-Fors:** Student and teacher actions that can provide evidence for the indicator

This tool can be used in a variety of ways to support coaching, peer observations, and professional learning.

Please note that it is non-evaluative and should not be used for formal teacher evaluation. For recommended uses, refer to the Observation Coaching Tools Guidance document.

Best Practices

Observations should be no shorter than 10 minutes, though a minimum of **15-20 minutes** is recommended. Note that you may not observe evidence for all indicators in a single observation. Consider observing at different parts of the lesson to gather information across indicators. Many look-fors describe what students are doing or thinking; these should only be marked when there is evidence that a clear majority of students (over 70%) are participating in the identified action.

Use the note-taking templates to make note of the lesson's topic and objectives, target standard(s), number of students and curricular materials being used (if any). Take [low-inference notes](#) to reduce the influence of assumptions, opinions, and judgment on your ratings.

Additional Learning

For additional learning on content-specific terms and concepts embedded in the observation coaching tool, utilize the [Math Standards Alignment Toolkit](#). The toolkit includes resources and guidance related to:

- Breaking down the math standards
- Understanding appropriate Depth of Knowledge (DOK)
- Unpacking the Standards for Mathematical Practice (SMPs)

For more information contact the KSDE STEM Program Manager (Math) at 785-296-6823.

Focus 1: Focus & Coherence

- 1A. The teacher articulates clear goals for learning that are situated within learning progressions and focus the lesson.
- 1B. The teacher facilitates activities that meet the depth and complexity of the grade-level standards.
- 1C. Mathematical concepts are connected within and/or across grades as appropriate, reflecting the coherence in the standards.

Focus 2: Conceptual Understanding

- 2A. The teacher engages students in making connections among mathematical representations to deepen their understanding of the learning target.
- 2B. Opportunities are provided for students to provide reasoning and to work through tasks with multiple entry points or multiple strategies and solutions.

Focus 3: Procedural Fluency

- 3A. The mathematics of the lesson is explicit by using and connecting mathematical representations, explanations, and/or examples beyond just showing students how to get the answer.
- 3B. Multiple opportunities are provided for students to practice core procedures across a variety of problems.

Focus 4: Application

- 4A. Tasks that promote reasoning and problem-solving are facilitated and purposeful questions are asked.
- 4B. Opportunities for students to engage in explaining and justifying their thinking using precise mathematical language are provided (beyond just stating answers).

Focus 5: Productive Struggle

- 5A. The teacher deliberately poses questions that make visible students' current understanding (including misconceptions) and adapts the lesson to support and extend learning.
- 5B. Multiple opportunities are provided for students to engage in mathematical discourse and share their representations and/or solution methods.

LESSON CONTEXT			
Teacher:	Date/Time:	Grade/Subj:	# of Students:
Materials: ☐ Teacher-Created ☐ Adopted (name below)	Learning Target:	Standard(s):	
Observational Focus:			
Focus 1: FOCUS AND COHERENCE			
Indicator	Look Fors		
1A. The teacher articulates clear goals for learning that are situated within learning progressions and focus the lesson.	☐ The teacher communicates the mathematical goal and how it connects to prior or future learning. ☐ Students can explain how the learning goal connects to previous learning. ☐ Students can articulate the purpose for learning.		
1B. The teacher facilitates activities that meet the depth and complexity of the grade-level standards.	☐ The teacher provides tasks that emphasize key concepts or structures central to grade-level standards. ☐ Students work on grade-aligned tasks. ☐ Students are engaged in tasks that require reasoning and problem solving.		
1C. Mathematical concepts are connected within and/or across grades as appropriate, reflecting the coherence in the standards.	☐ Students use prior knowledge or methods to solve problems. ☐ The teacher references prior and future grade-level concepts.		
Focus 2: CONCEPTUAL UNDERSTANDING			
Indicator	Look Fors		
2A. The teacher engages students in making connections among mathematical representations to deepen their understanding of the learning target.	☐ Teacher uses a variety of methods to allow students to engage with problems, such as: cooperative learning strategies (group work, turn-and-talks, etc.); independent practice; manipulatives; whole-class polling (whiteboards, clickers, hand signals, etc.) ☐ Students use visuals, tools, or models to solve problems. ☐ Students access and use concepts and procedures as tools for problem-solving.		
2B. Opportunities are provided for students to provide reasoning and to work through tasks with multiple entry points or multiple strategies and solutions.	☐ Teacher prompts and students provide reasoning to explain why methods work, using evidence or examples. ☐ Students explain why a method works and make their thinking visible through models, diagrams, or written steps. ☐ Students work with practical/relevant problems and tasks that potentially have multiple pathways and solutions. ☐ Students use various strategies to solve problems.		

Focus 3: PROCEDURAL FLUENCY

Indicator	Look Fors
3A. The mathematics of the lesson is explicit by using and connecting mathematical representations, explanations, and/or examples beyond just showing students how to get the answer.	☐ Students follow steps accurately and explain why each step works, using reasoning or examples. ☐ The teacher reinforces precise language, symbols, and notation during explanations. ☐ Students are able to transfer procedures to different contexts because they understand the procedure's foundational concept(s). ☐ The teacher connects why a procedure works, not just how to carry it out.
3B. Multiple opportunities are provided for students to practice core procedures across a variety of problems.	☐ Students show increasing accuracy, efficiency, and flexibility through continued practice and application of procedures. ☐ The teacher provides practice opportunities that vary in structure and context, supporting flexibility and accuracy.

Focus 4: APPLICATION

Indicator	Look Fors
4A. Tasks that promote reasoning and problem-solving are facilitated and purposeful questions are asked.	☐ Students persevere through difficulty and don't immediately ask for help. ☐ The teacher provides support without taking over the thinking. ☐ The teacher asks questions that focus on reasoning and solution pathways. ("Why?", "How do you know?", "Can you convince me of that?")
4B. Opportunities for students to engage in explaining and justifying their thinking using precise mathematical language are provided (beyond just stating answers).	☐ Students explain and justify their thinking using precise mathematical language where appropriate. ☐ The teacher provides tasks that require students to analyze, interpret situations, choose strategies, and justify their reasoning using mathematical evidence.

Focus 5: PRODUCTIVE STRUGGLE

Indicator	Look Fors
5A. The teacher deliberately poses questions that make visible students' current understanding (including misconceptions) and adapts the lesson to support and extend learning.	☐ Students explain their thinking process or reasoning method ☐ Multiple students are solicited for response(s) or asked to build on others' ideas ☐ Students use multiple strategies or revise their thinking ☐ The teacher allows students time and space to grapple before intervening.
5B. Multiple opportunities are provided for students to engage in mathematical discourse and share their representations and/or solution methods.	☐ Student-to-student discussions are present with meaningful participation. ☐ The teacher supports students to select strategies or try different approaches without directing every step. ☐ Students pose clarifying and probing questions that refine reasoning and promote collective understanding of key concepts.