KIPP Math Conceptual Understanding Evidence Guide[1]

Worthy Task.	**Questioning.**	**Productive Struggle.**	**Discourse.**	**Making Thinking Visible.**
The task moves the student forward in the progression of conceptual understanding.	Questions drive towards greater student understanding through advancing and probing thinking.	Students grapple with mathematical ideas and relationships.	Builds towards a shared understanding of mathematical ideas.	The lesson requires students to show deep understanding of the content.

Purpose: The purpose of this tool is to help leaders and teachers calibrate around what excellent math instruction that results in student understanding looks like. It's also to help leaders observe and provide feedback to teachers.

Worthy Task [2] The task moves the student forward in the progression of conceptual understanding.	• Aligns with worthwhile mathematics content • Has a relevant or interesting mathematical or real-world context • Provides opportunities for students to develop and demonstrate mathematical habits of mind • Requires students to demonstrate understanding or make their thinking visible and promotes discourse • Allows for the use of different representations, approaches, and entry points • Involves students in an inquiry-oriented or exploratory approach • Connects previous knowledge to new learning • Is cognitively demanding
Questioning Questions drive towards greater student understanding through advancing and probing thinking.	**Teacher Behaviors** • Plans for and asks questions that promote or assess students understanding, extension of thinking, and/or probing of student thinking but do not take over or funnel student thinking • Allows for sufficient wait time to that more students can formulate and offer responses • Can explain the purpose for each question asked **Student Behaviors** • Expect to be asked to explain, clarify, or elaborate on their thinking • Listen to, comment on, and question the contributions of their classmates • Think carefully about how to present their responses to questions clearly, without rushing to respond to quickly
Productive Struggle Students grapple with mathematical ideas and relationships.	**Teacher Behaviors** • Plans for and anticipates what students might struggle with during a lesson and is prepared to support them productively through the struggle • Gives students adequate uninterrupted time to struggle and asks questions that scaffold student thinking without stepping in to do the work for them • Reiterates that errors and confusion are part of the learning process by facilitating discussions on mistakes,

[1] This tool is based on *Principles to Actions: Ensuring Mathematical Success for All* published by the National Council of Teachers for Mathematics, 2014.
[2] This list is a guide, not a check list. A worthy task may not have all of these characteristics.

	misconceptions, and struggles • Praises students for their efforts in making sense of mathematical ideas and perseverance in reasoning through problems • Plans for possible ways that students may show work
	Student Behaviors
	• Able to self-regulate and self-monitor their own thinking throughout the duration of the task • Look for patterns to gain a deeper understanding of the material • Look for multiple solution strategies when approaching a task or problem • Ask questions that are related to the source of their struggles and will help them make progress in understanding and solving tasks • Makes sense of problems and perseveres in solving them • Able to get over frustrations quickly and maintain focus on task
Discourse Builds towards a shared understanding of mathematical ideas.	**Teacher Behaviors**
	• Acknowledges multiple approaches or solutions and highlights them in a logical order for students • Ensures progress toward mathematical goals by making explicit connections to student approaches and reasoning • Circulates the room during student work time to monitor and assess progress • Plans for possible student articulation of the concept
	Student Behaviors
	• Focus on the why behind their approach to the task or problem, not the how • Able to justify or explain their thinking • Make conjectures or predictions • Build upon and critique the reasoning of others • Actively listen when others are speaking
Make Thinking Visible The lesson requires students to show deep understanding of the content.	**Teacher Behaviors**
	• Carefully plans questions that will be answered independently in order to gather data about student progress • Make in the moment decisions on how to respond to students with questions and prompts that probe, scaffold, and extend student thinking • Elicit and gather evidence of student understanding at strategic points during instruction
	Student Behaviors
	• Share responses verbally to questions (in pairs or whole group) only after they have had a chance to answer them individually so that teacher has an accurate gauge of individual progress. • Reflect on mistakes and misconceptions to improve mathematical understanding • Ask questions of, respond to, and give suggestions to support the learning of their classmates • Assess and monitor their own progress towards mathematics learning goals and identify areas in which they need to improve