Glossary of Terms: Secondary Mathematics

academic language: Oral and written language used for academic purposes. It is the language students must have to learn content in schools. Academic language is the means by which students develop and express content understandings. Academic language includes the language of the discipline (vocabulary and functions and forms of language associated with learning outcomes in a particular subject) and the instructional language used to engage students in learning content.

assessment (formal and informal): Refers to all those activities undertaken by teachers and by their students that provide information to be used as feedback to modify the teaching and learning activities in which they are engaged (see Black and William 1998). Assessments provide evidence of students’ prior knowledge, thinking, or learning in order to evaluate what students understand and how they are thinking. Informal assessments may include such things as student questions and responses during instruction and teacher observations of students as they work. Formal assessments may include such things as quizzes, homework assignments, lab reports, papers, journals, and projects.

assessment tool/procedure: Any method for strategically gathering evidence of student learning (e.g., observing students as they work; posing questions; or administering more formal written assessments that include evaluation criteria, such as rubrics).

central focus: A statement or phrase that captures or summarizes the overarching learning outcomes associated with content standards and learning objectives. It may not be as broad or comprehensive as a big idea or essential question used in a longer unit of instruction, but it should represent a focus beyond facts and skills. For example, the central focus for an elementary mathematics learning segment might be equivalent fractions or equivalencies. The learning segment would focus on conceptual understanding and the associated computational/procedural understandings and reasoning/problem solving skills.

engaging students in learning: Using instructional and motivational strategies that promote students’ active involvement in learning tasks that increase their knowledge, skills, and abilities related to specific learning objectives. Intellectual engagement in learning contrasts with student participation in learning tasks that are not well designed and/or implemented and do not increase student learning.

evaluation criteria: Performance indicators or dimensions that are used to assess evidence of student learning. They indicate the qualities by which levels of performance can be differentiated and that anchor judgments about the learner’s degree of success on an assessment. Evaluation criteria can be represented in various ways, such as a rubric, a point system for different levels of performance, or rules for awarding full versus partial credit. Evaluation criteria may examine correctness/accuracy, cognitive complexity, sophistication or elaboration of responses, or quality of explanations.

instructional language: Language teachers use to direct student engagement in learning (task directions, routines, questions, explanations, etc.) AND language that students need to participate with each other in a learning activity, task, or discussion (questions, explanations, etc., used in whole-class, small-group, or partner interactions). Instructional language may or may not be subject specific.

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**language demands**: Specific ways language (reading, writing, listening, and speaking) will need to be used by students to participate in learning tasks and demonstrate their learning. In mathematics, students use a mixture of everyday and mathematics-specific language when they use mathematical terms to share their problem solving strategies, participate in discussions to evaluate mathematical ideas, use different representations to explore mathematical relationships, and use conventional forms and notation to demonstrate the ability to apply concepts and procedures to solve problems. Language demands vary by discipline and language function/form, and students’ language development.

**language development**: Students’ language abilities in terms of speaking, listening, reading, and writing skills. All students, including high-performing students, can improve their academic language proficiency in terms of precise language choices, more clear and/or complex communication, and greater fluency with discipline-specific language.

**language forms**: Structures or ways of organizing oral or written language serve a particular function within each subject area. In mathematics, language forms include symbolic representations such as numbers, equations, and proofs (which can be translated into words), tables and graphs (which are shorthand language for summarizing complex sets of data), and narrative (e.g., explanations of problem solutions). If the function is to compare, then appropriate language forms could include Venn diagrams or pattern sentences like “The _____ is longer/larger/heavier than the ______.” If the function is to explain, then students might use sentence starters like “First, I…” “Then I…” to structure the explanation, and use “Finally, I…” to signal the conclusion.

**language functions**: For oral and written language in classrooms, the function is the purpose the language is intended to achieve within each subject area. Functions are associated with verbs found in learning outcome statements. Common language functions in mathematics include describing mathematical phenomena, modeling to demonstrate mathematical phenomena, predicting from models and data, comparing based on common attributes, summarizing mathematical information, justifying conclusions, evaluating data and mathematical representations, classifying based on attributes, explaining phenomena and processes, drawing conclusions based on data, representing mathematical information and mathematical models, and so on.

**learning objectives**: Student learning outcomes to be achieved by the end of the lesson or learning segment.

**learning segment**: A set of 3–5 lessons that build one upon another toward a central focus, with a clearly defined beginning and end.

**prior learning and experience**: Includes students’ academic content knowledge, language development, social and emotional development, family/cultural assets, interests, and lived experiences.

**scaffolding**: A special type of instructional support to allow students to do a task that they cannot yet do independently. Like scaffolding for buildings under construction, the support is designed to be temporary and to be removed or gradually reduced as students learn to do the task by themselves.

**social and emotional development**: Refers to the ways in which children and adolescents develop understandings of self and others. Milestones at various levels of development include identity formation, self-awareness/self-concept, pro-social behavior, peer relationships, social responsibility, and moral reasoning.
**special needs:** Refers to categories addressed by federal law (Individuals with Disabilities Education Act), identified learning disabilities, gifted and talented, and other features of student learning that may require individualized instruction or assessment.