

ASSESSMENT OPTIONS

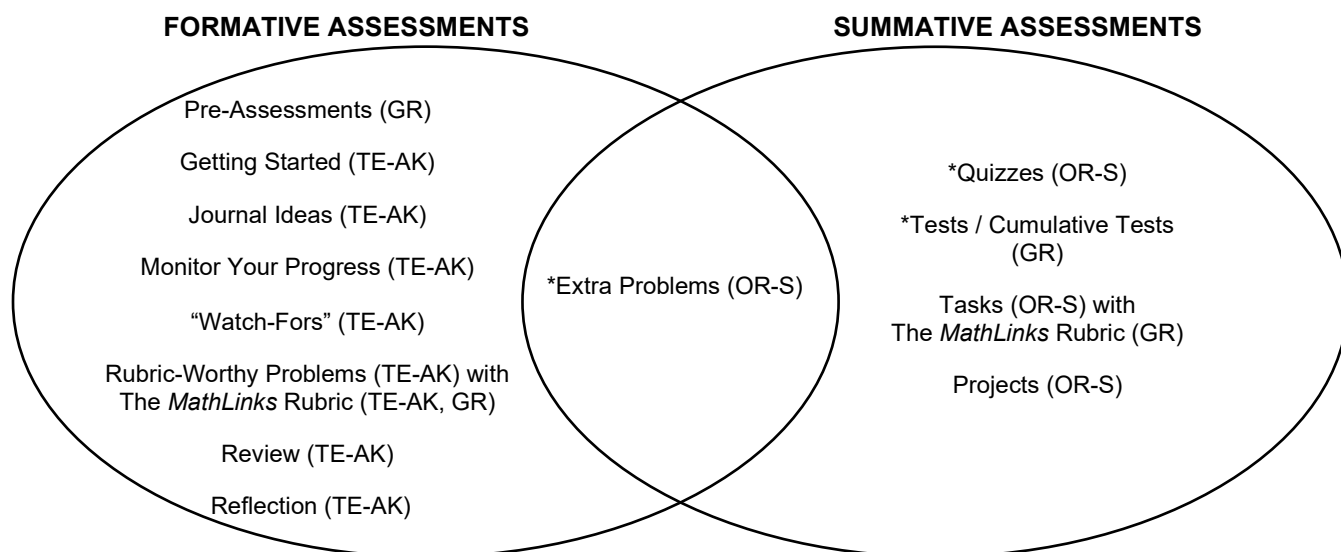
Assessment may be characterized as a “systematic collection and analysis of information to improve student learning” (Stassen, 2001). The framework of Universal Design for Learning (UDL) explicitly calls for multi-dimensional assessment practices. According to Lambert (2020), mathematical assessments should be flexible, allowing for multiple means of expression (e.g., talking, writing, drawing, typing responses) as well as actionable feedback to students.

OVERVIEW OF FORMATIVE AND SUMMATIVE ASSESSMENTS

LOCATIONS OF THE FEATURES AND PROBLEMS REFERENCED IN THIS SECTION

Print	Portal
Teacher Edition / Student Packet (TE / SP) <ul style="list-style-type: none"> Unit Planning Information (TE-UPI) Annotated Answer Key, including Student Packet and Lesson Notes (TE-AK) Program Information (PI)	Landing Page (LP) Grade 6 Unit Resources → <Unit number> (UR) <ul style="list-style-type: none"> Teacher Edition (TE) Student Packet (SP) Other Resources for Adults (OR-A) Other Resources for Students (OR-S) Grade 6 General Resources (GR)

MathLinks offers both formative assessments (FOR learning) and summative assessments (OF learning).



*Tests, Quizzes, and Extra Problems are available as editable documents so that problems can be altered to customize assessments.

ASSESSMENT, FOLLOW-UP, AND FEEDBACK

Specific Assessment, Follow-Up, and Feedback Charts (UR → OR-A) are on the Teacher Portal for every unit. These charts offer targeted suggestions for teachers to:

- Determine if students are ready for lessons, along with intervention ideas if they are not.
- Determine if students met grade level goals, along with reteaching ideas if they did not.
- Identify future lessons where topics will reappear, as a heads-up for reteaching opportunities.
- Provide written feedback ideas for teachers and suggestions for students to give peer feedback.
- Identify potential errors or misconceptions in student work (these “Watch-Fors” are also included in the TE).

The following sections provide more detail about the various assessments.

Are Students Ready for Lessons?

MathLinks includes multiple tools for pre-assessment and the pre-teaching of important skills and concepts necessary for success on grade-level work.

THE 6-6 ASSESSMENT, FOLLOW-UP, AND FEEDBACK CHART, PART 1 (UR → OR-A)

Standards / Lessons / Goals		Are Students Ready for the Lessons?	
		Diagnostic (formative)	Intervention
6.1 Numerical Expressions			
6.NS.4 6.EE.1 6.EE.3	<ul style="list-style-type: none"> • Rewrite expressions using the distributive property • Define exponential notation and use exponents • Use order of operations to evaluate expressions 	Student Packet <ul style="list-style-type: none"> • pg 2 Getting Started General Resources <ul style="list-style-type: none"> • 6-6, 6-7, 6-8 Pre-Assessment / 1, 2, 4 (numerical expressions / equations, including entry level distributive property, order of operations) 	Unit Resources Essential Skills <ul style="list-style-type: none"> • pg 1 Picturing the Distributive Property

Diagnostic Ideas

MathLinks Pre-Assessments (GR) give a snapshot of some of the important prerequisite skills for units. They are not intended to be comprehensive. Each pre-assessment is in a multiple-choice format. If used, it should be given prior to embarking on the referenced unit(s) and give an indication if some “just-in-time” remediation is useful. Getting Started (TE-AK) at the beginning of each lesson includes exercises to pre-assess, refresh, and preview important concepts in the lesson.

Intervention Ideas

To reteach or practice skills and concepts needed for success in a specific lesson, consider Essential Skills (OR-S). They are typically in puzzle, game, and problem formats. For students struggling with below-grade-level computation, consider incorporating a 5-10 minute per day routine using Skill Boosters (LP).

Differentiation Ideas

For students who do not need intervention, consider Enrichment and Challenges for Advanced Learners (TE-UPI-Teaching Tips) or Nonroutine Problems (OR-S)

Unit Planning Information (TE-UPI),
Annotated Answer Key including Student Packet and Lesson Notes (TE-AK),
Portal Landing Page (LP), Unit Resources (UR), Other Resources for Adults (OR-A),
Other Resources for Students (OR-S), General Resources (GR)

Did Students Meet Grade Level Goals?

MathLinks includes multiple tools for formative and summative assessment of grade-level work, along with specific follow-up ideas.

THE 6-6 ASSESSMENT, FOLLOW-UP, AND FEEDBACK CHART, PART 2 (UR→OR-A)

Standards / Lessons / Goals		Did Students Meet Grade Level Goals?	
		Evidence	Reteaching
6.1 Numerical Expressions			
6.NS.4 6.EE.1 6.EE.3	<ul style="list-style-type: none"> Rewrite expressions using the distributive property Define exponential notation and use exponents Use order of operations to evaluate expressions 	<p>Formative</p> <p>Teacher Edition</p> <ul style="list-style-type: none"> pg 4 Journal pg 9 Monitor Your Progress <p>Summative (at end of the Unit)</p> <p>Unit Resources</p> <ul style="list-style-type: none"> Quiz A / 1, 2 Quiz B / 1 Tasks: One Grain of Rice 	<p>Unit Resources</p> <ul style="list-style-type: none"> pgs 1-2 Extra Problems <p>Future Student Packets Heads up: These topics will appear again.</p> <ul style="list-style-type: none"> Lesson 7.2 Spiral Review Unit 6, 7, 9
Review			
6.NS.3 6.NS.4 6.EE.2abc 6.EE.1 6.EE.3 6.EE.4 6.EE.6	Goals from Lessons 6.1, 6.2, 6.3 above	<p>Formative</p> <p>Student Packet</p> <ul style="list-style-type: none"> pg 23 Match 'Em Up (translating words to numbers); Big Square Puzzle (distributive property with variables) pg 24 Poster Problems pg 25 Vocabulary Review pg 28 Unit Reflection <p>Summative (typically part of a periodic assessment)</p> <p>General Resources</p> <ul style="list-style-type: none"> Cumulative Test 6 	<p>Unit Resources</p> <ul style="list-style-type: none"> pgs 1-6 Extra Problems <p>Student Packet</p> <ul style="list-style-type: none"> Revisit Lessons 1 – 3 pgs 0, 29-30 revisit My Word Bank and Definitions

Formative Assessment Ideas

Formative assessment refers to a wide variety of methods that teachers use to collect data, improve instruction, and evaluate student learning while it's happening. What makes an assessment “formative” is not necessarily its design, but the way the information is used. Furthermore, research (Stenger, 2014) indicates that students who are encouraged to take ownership of their own learning are better able to identify and work toward learning goals, believe that it is within their control to succeed in school, and demonstrate life skills such as initiative, self-direction, and productivity. *MathLinks* includes several features appropriate for formative assessment of grade-level work.

The Journal icon at the bottom of a page in the Teacher Edition indicates that a problem may be used as a journal prompt or “exit ticket.” These problems generally require students to explain their thinking related to an important concept in the lesson. Using them as journal prompts adds weight to their importance. Teachers may want students to keep a separate math notebook for journal prompts, notes, and other, non-packet work. (TE-AK)

Journal
Problem <number>

A Monitor Your Progress icon appears at the end of every lesson at the bottom of the page. This prompts teachers to ask students to assess their learning on the front cover of their Student Packet. There, a 3-2-1-0 scale gives students and teachers a quick measure of student confidence for each lesson goal. At the beginning of the year, teachers may want the class as a community to define the scale using growth mindset descriptors. (TE-AK)

Monitor Your
Progress

Annotated Answer Key including Student Packet and Lesson Notes (TE-AK), Unit Resources (UR)

Use the *MathLinks* Rubric Activity Routine to promote class discussions and shift some responsibility for feedback and reflection to students for some problems. In *MathLinks*, rubric-worthy problems typically have multiple parts that are built around a theme or context and include some of the following: (1) doing procedures, (2) creating or using representations (e.g., pictures, numbers, symbols, graphs), (3) interpreting data, (4) constructing responses, and (5) explaining reasoning. Here are some examples of rubric-worthy problems in Student Packets.

GRADE 6: RUBRIC-WORTHY PROBLEMS (TE-AK)

Domain	Unit	Lesson	Page Title	Choose from These Problems
SP	1	2	Practice 2	Any of 1 – 5
NS	2	1	Factor Game	Any of 2b – 2f
RP	3	3	The Grain Grocer	Any of 1 – 5
NS	4	3	Practice 8	1 and/or 8
		4	Practice 11	Any of 1 – 4
EE	6	2	Practice 4	Any of 6 – 8
EE	7	2	A Committee Decision	Any of 1 – 7
		3	Practice 9: Extend Your Thinking	Any of 1 – 4
EE	8	1	Practice 1	Any of 1 – 6
		1	Inequalities: Extend Your Thinking	Any of 2 and/or 3; 8 and/or 9
G	9	1	Practice 3: Extend Your Thinking	Any of 1 – 5
		3	The Food Drive	Any of 1 – 4

Proportional Reasoning

Number Sense

Expressions and Equations

Statistics and Probability

Geometry

The *MathLinks* Rubric describes elements of typically well-constructed mathematical ideas. Using it to critique student responses on a regular basis will help students improve mathematical communication. An introductory activity to introduce the routine is available under Activity Routines in the Portal. (GR)

THE MATHLINKS RUBRIC

Choose statements from M , A , and R that are appropriate to the task.		
M Math (SMP 6) 1. Math is done correctly (computations, procedures, diagrams). 2. Vocabulary is used properly.	A Applications / Modeling Context (SMP 1, 4) 1. Information and representations are used appropriately. 2. Solutions satisfy problem requirements, including quantities and units.	R Reasoning (SMP 3) 1. Solutions and strategies are justified. 2. Explanations are clear and flow logically.

Annotated Answer Key including Student Packet and Lesson Notes (TE-AK),
General Resources (GR)

The Review section (TE-AK) offers opportunities to observe and note student progress. Most activities are appropriate for partner work. For those designated as Activity Routines (e.g., Why Doesn't It Belong, Poster Problems, Match and Compare Sorts, The *MathLinks* Rubric), consider taking time to teach the routine protocols using introductory examples in the Portal (GR) prior to the students seeing them for the first time in a unit. The unit Reflection in this section allows students to revisit the Monitor Your Progress scale to assess growth and reflect on unifying themes of the unit (e.g., Big Ideas, Standards for Mathematical Practice, Drivers of Investigations, Content Connections).

Summative Assessment Ideas

Summative assessments are used to evaluate student learning, skill acquisition, and academic achievement after a defined instructional period. *MathLinks* includes four features that are appropriate for summative assessments.

Quizzes are on-demand assessments to be used at the end of each unit. There are two forms of quizzes per unit (Form A, Form B). They assess work done with procedural problems and constructed responses similar to those found in Student Packets. All problems are correlated to the grade level CCSS-M Content Standards. (UR)

Tests / Cumulative Tests take the form of multiple-choice, selected response, and short-answer problems. They assess grade-level content standards, are organized into 10 unit-specific test files, and are intended to be combined to create cumulative assessments of some desired length. When possible, we encourage the administration of cumulative tests several weeks after completion of a unit because students continue to practice skills and concepts in Spiral Review (SP). Tests are available in both .PDF and .DOC formats to make customization convenient. All problems are correlated to the grade level CCSS-M Content Standards. (GR)

Tasks engage students in solving multi-part problems around a theme or context, and the *MathLinks* Rubric is often an appropriate tool for evaluating this work. All tasks are correlated to the grade level CCSS-M Content Domains (Big Ideas) and the Standards for Mathematical Practice. (UR)

Projects are authentic, multi-hour experiences involving skills, concepts, and problem-solving across one or more domains. They may incorporate research, require the collection and display of data, or the creation of a product. The instructions for the project typically also serve as the scoring guide. All projects are correlated to the grade level CCSS-M Content Domains (Big Ideas) and the Standards for Mathematical Practice. (UR)

Reteaching Ideas

Reteaching suggestions for each lesson appear in the Assessment, Follow-up, and Feedback Chart. Typical suggestions include revisiting tricky components of lessons, reviewing vocabulary and explanations in the Student Packet, or assigning Extra Problems from the Portal. In some cases, extensive reteaching may not be necessary because a “heads-up” for each lesson in the Assessment Chart alerts teachers to lessons or Spiral Reviews where the topic will reappear. Also see the Topic Analysis by Unit in the Indexes of Program Information. (UR, PI-Indexes)

In general, if students struggle with grade-level content, use Extra Problems for reteaching practice. Use Quiz B after reteaching as a follow-up to Quiz A as needed, or customize the Quiz or Test using .DOC formats. (UR)

Assign and discuss rubric-worthy problems frequently to mitigate students' struggle with Tasks. Continue to assign more rubric-worthy problems as formative assessments and Tasks as summative assessments as the year progresses. It is okay for students to do/redo Tasks from previous units after reteaching and Spiral Review experiences. (TE-AK, PI-Assessment Options)

Instructions on Projects typically serve as a scoring guide. If students struggle, return the Projects with written comments that outline expectations for improving the quality of the work, and invite students to improve the project if appropriate. (UR)

Annotated Answer Key including Student Packet and Lesson Notes (TE-AK),
Program Information (PI), Unit Resources (UR), General Resources (GR)

Formative and Summative Assessments: Feedback

Descriptive feedback can be more useful to students because it helps them improve the quality of their responses (Stenger, 2014). Specific teacher feedback suggestions, tailored to common mistakes and misconceptions for each unit, are included in the Teacher Edition (see “Watch-Fors” in red italics) and in the Portal.

THE 6-6 ASSESSMENT, FOLLOW-UP, AND FEEDBACK CHART, PART 3 (UR→OR-A)

Teacher Feedback: As time permits, provide written comments to students.

- Task (One Grain of Rice / 3): *I see you got that each day’s total had to be multiplied by 2, but had a hard time writing the expressions with exponents? How do you write 4 as 2 to a power? 8? 16? Etc.?*

PAGE # / PROBLEMS (excerpt)	WATCH-FORS
1 / all	Are students using exactly four 4’s, and no other digits?
2 / 5	Can students explain the difference between an expression and equation and stay consistent with it throughout the unit?
3 / all	Do students consistently apply the distributive property correctly? Note the common mistake: $6(4 + 1) = 6(4) + 1$.
5 / all	Are students correctly using the definition of exponential notation? For example, $2^3 = 2 \cdot 2 \cdot 2 = 8$, not $2 \cdot 3 = 6$.

Providing consistent descriptive feedback to students may be an unrealistic expectation for teachers with large classes, and peer feedback can shift some of this responsibility to students. Rubric-worthy problems and Journal ideas are good examples of appropriate times for peer feedback. Remind students each time to think about what kinds of respectful comments or questions might be helpful for their partner. The *MathLinks* Rubric synthesizes key elements of high-stakes assessment claims into concise and simple statements. It is a tool that can be used throughout the year by both students and teachers. (UR, TE-AK)

THE 6-6ASSESSMENT, FOLLOW-UP, AND FEEDBACK CHART, PART 4 (UR→OR-A)

Peer Feedback: Using the *MathLinks Rubric* (pg 12) and Journal Ideas (pgs 4, 12) in the Student Packet are good opportunities for written peer feedback. Remind students each time to think about what kinds of respectful comments or questions might be helpful for their partner.

- Journal (pg 12): *I agree. Both expressions do equal 60, and for the second one the GCF, 10 is factored out.*

Differentiation Ideas

For students who do not need reteaching, consider Enrichment and Challenges for Advanced Learners (TE-UPI-Teaching Tips). Nonroutine Problems (UR), Technology Activities (UR), Projects (UR), and Puzzles and Games (LP) may also be appropriate for differentiation.

Unit Planning Information (TE-UPI),
Annotated Answer Key including Student Packet and Lesson Notes (TE-AK),
Portal Landing Page (LP), Unit Resources (UR)

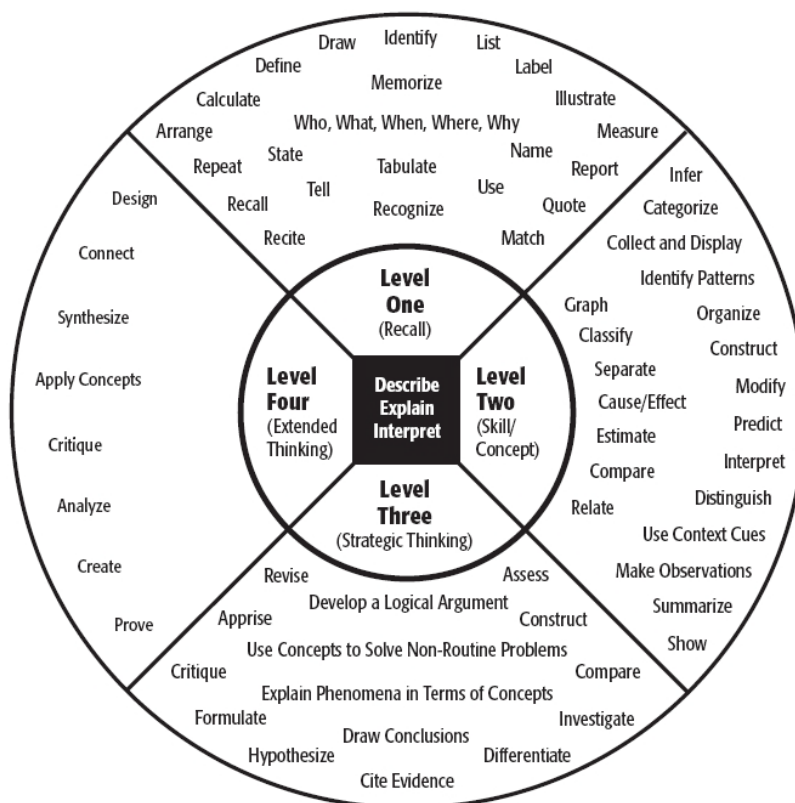
THE IMPORTANCE OF RUBRIC-WORTHY PROBLEMS AND TASKS

Depth of Knowledge (DoK) classifies student work according to the complexity of thinking required to successfully complete it. This wheel summarizes key words often used to describe DoK. (Webb, 2005).

MathLinks Quizzes and Tests align to specific Common Core Standards for Mathematical Content (CCSS-M). These typically focus on specific concepts and procedures (DoK levels 1-3). Rubric-worthy problems, Tasks, and Projects align to content domains (*MathLinks* Big Ideas) and the Standards for Mathematical Practice (DoK 2-4). They typically require the application of concepts and procedures in nonroutine ways as students communicate reasoning. This is why it is important for students to experience rubric-worthy problems. (TE-AK, UR)

Regular practice with rubric-worthy problems and Tasks will also help prepare students for high-stakes assessments such as those created by the Smarter Balanced Assessment Consortium (SBAC) and Partnership for Assessment of Readiness for College and Careers (PARCC). Both organizations publish similar “Claims” for their assessments. (TE-AK, UR)

A DEPTH OF KNOWLEDGE WHEEL



SBAC	PARCC
	Master Claim: On track for college and career readiness.
Claim #1: Concepts and Procedures	Sub-Claim A: Problem solving involving Major content for the grade*
Claim #2: Problem Solving	Sub-Claim B: Problem solving involving Additional and Supporting Content of the grade*
Claim #3: Communicating Reasoning	Sub-Claim C: Express Mathematical Reasoning (highlights SMP3, 6)
Claim #4: Modeling and Data Analysis	Sub-Claim D: Modeling/Applications (highlights MP4)

*As defined by Achieve the Core.

By using The *MathLinks* Rubric as an activity routine a few times each month in class, students will learn to create more complete responses through class discussions, self-reflection, peer review, and feedback. Students may also see more beauty and utility in mathematics, and they will be prepared for greater success on summative high-stakes assessment tasks. (TE-AK)

Annotated Answer Key including Student Packet and Lesson Notes (TE-AK),
Unit Resources (UR)