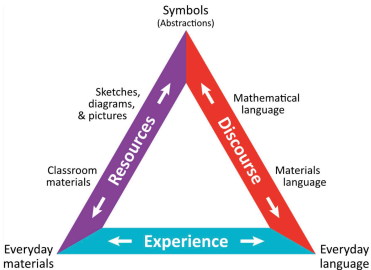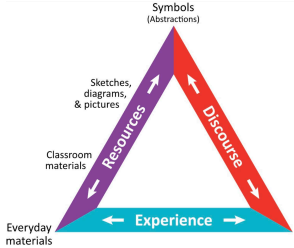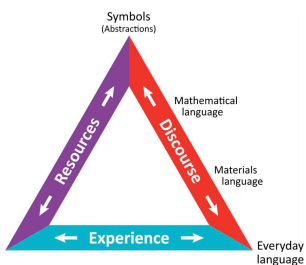# Appendix 3

Stepping Stones Implementation Tool Glossary

Appendix C: Glossary of Terms

Term	Description
ORIGO model for teaching concepts	*ORIGO Stepping Stones* introduces symbols gradually and after students have had many meaningful experiences with models, including real objects, classroom materials, and 2D pictures, as shown on the left side of the diagram. Symbols are also abstract representations of spoken words, so students move through distinct language stages as depicted on the right side of the diagram. **Additional Resource:** https://youtu.be/pyZ0sO5W_XE
Concrete-pictorial-symbolic approach	The concrete-pictorial-symbolic approach that *ORIGO* promotes is shown on the left side of the model left. *ORIGO Stepping Stones* introduces symbols gradually, after students have had many meaningful experiences with models, including real objects, classroom materials, and 2D pictures. **Additional Resource:** https://youtu.be/pyZ0sO5W_XE

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Appendix C: Glossary of Terms

Term	Description
Language stages 	Language is essential in helping students build an understanding of mathematical concepts. There are four stages of language development, and each is crucial to the development of deep understanding. The stages shown on the right side of the *ORIGO* model for teaching concepts and are detailed below. Student language In the first stage, the program is designed to leverage students' existing natural language to describe concepts. For example, students may use the words *eat*, *break*, *jump away*, *swim away*, or *spend* to describe situations involving subtraction. Teachers should use real-world stories and illustrations to encourage the use of this rich and meaningful language to help students build connections between their existing ideas and new concepts. Materials language In the second stage, the students' language broadens as they begin to act out stories and problems using classroom resources. This stage includes language that is exclusive to the resources being used. For example, new language such as *cover up* or *take away* may be introduced when using concrete, hands-on resources to act out subtraction stories. Similarly, if pictures are being used, the students may say *cross out* or *erase* in the context of subtraction. Mathematical language In the third stage, students begin to exhibit mathematical precision in their language. For example, in the context of subtraction, students will use the term *subtract*. In reference to two-dimensional shapes, they will start to say *vertex* to describe what they may have once called a pointy corner. At this stage, the language is often considered to be unique to mathematics. Symbolic language In the final stage, students are introduced to the symbols or notation of that concept. With subtraction, they learn that the subtraction symbol is an abbreviation for all the language used in the previous stages. It is important to note that students do not simply move through the stages. Rather, they begin by using their own natural language, then as the stories are acted out in the classroom, students add to their language and mental picture of the concept. More mathematical and, eventually, symbolic language is added to build a more comprehensive understanding of the concept. **Additional Resource:** https://youtu.be/6dmcQ1Z1FPo

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Appendix C: Glossary of Terms

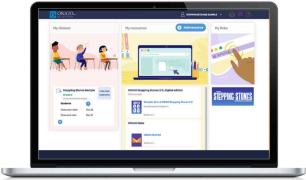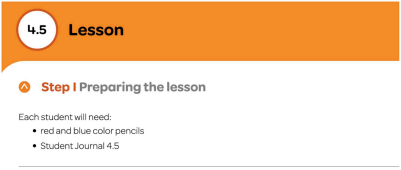| Term	Description
ORIGO model for teaching skills 	*ORIGO* believes that students acquire skills over time as they engage in four distinctly different types of activities. Introducing In the first stage, students are introduced to the skill using contextual situations, concrete materials, and pictorial representations to help them make sense of the mathematics. Reinforcing In the second stage, the concept or skill is reinforced through activities or games. This stage provides the opportunity for students to understand the concepts and skills as it connects the concrete and pictorial models of the introductory stage to the abstract symbols of the practice stage. Practicing When students are confident with a concept or skill, they move to the third stage where visual models are no longer used. This stage develops accuracy and speed of recall. Written and oral activities are used to practice the skill to develop fluency. Extending As the name suggests, the fourth stage sees students extend their understanding of the concept or skill. For example, the use-tens thinking strategy for multiplication can be extended beyond the number fact range to include computation with greater whole numbers and eventually to decimal fractions. **Additional Resource:** https://youtu.be/UE0iaY5XMKk
Stages of strategy development 	The stages of strategy development are Introduce, Reinforce, Practice, and Extend, and are described above. **Additional Resource:** https://youtu.be/UE0iaY5XMKk

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Appendix C: Glossary of Terms

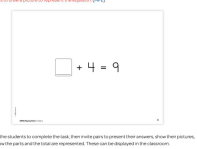| Term	Description
Spaced teaching and practice Spaced Learning	The scope and sequence of learning experiences within *Stepping Stones 2.0* have been carefully designed to promote deep understanding of mathematical concepts and fluency of skills. Mathematics contains many concepts and skills that are closely interconnected. In *Stepping Stones 2.0*, the key ideas and skills within these topics have been identified and placed in smaller blocks to be learned over time. In the lessons, work is included to help students fully comprehend what is being taught alongside the other content development. Consequently, when students come to a new topic, it can be easily connected to previous work. Each of these learning experiences builds on what has been learned previously. It is during the interim, between the experiences, that students are engaged in appropriate practice to maintain concepts and skills. Because of this spaced learning approach, and the opportunity for practice in between, students exhibit better preparation and retention. This means they are better prepared to build on a topic when it is revisited. **Additional Resources:** https://www.youtube.com/watch?v=d2l1JVQfkko https://www.origoeducation.com/research-and-case-studies/
Learning target(s) 	Standards are markers for student learning at the end of a given school year. During that time, assessment of more specific learning targets ensures students are progressing as required. Each lesson in *Stepping Stones 2.0* includes specific standards-driven learning targets to help teachers monitor how students are progressing toward the standard. The left-hand side of that continuum is where early learning takes place. As students progress in their development, they will move up and to the right on that continuum, as shown on the staircase illustration.

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Term	Description
Standards for Mathematical Practice (SMPs) 	The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should strive to develop in their students. These practices rest on important *processes* and *proficiencies* that have longstanding importance in mathematics education. First are the NCTM process standards of problem-solving, reasoning and proof, communication, representation, and connections. The second are the strands of mathematical proficiency specified in the National Research Council's report *Adding It Up*. The strands are: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy.)

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Appendix C: Glossary of Terms
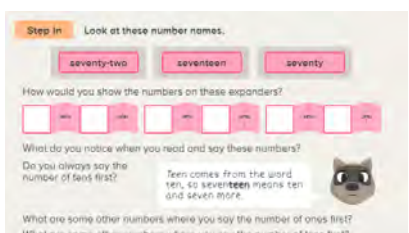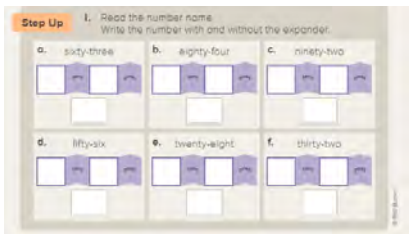
Term	Description
Digital Teacher Edition 	The Digital Teacher Edition is delivered online to give teachers one central location to access all their lesson plans, student activity pages, and teaching tools. The Digital Teacher Edition gives instant access to all content for Grades K–6. One of the great benefits of a digital delivery platform is the ease with which *ORIGO Education* can immediately update content, offer updates, and/or provide enhancements.
Print Teachers Edition 	There are two printed teacher editions for each grade level. One book covers modules 1–6 and the other covers module 7–12.
Lesson Step 1: Preparing the lesson 	Step 1 lists the materials needed to teach the lesson.

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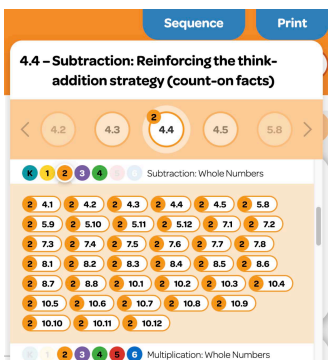
Term	Description
Lesson Step 2: Starting the lesson	Step 2 launches the lesson with the context of previous learning and appropriate questions to spark classroom discussion. This step often provides an activity that is appropriate for a number sense routine or number talk.
Lesson Step 3: Teaching the lesson	Step 3 builds conceptual understanding through language-rich learning, visual representations, and engaging student-centered activities.
Step In discussion	This step is in the last bullet of Step 3 in each lesson for grades 1–6. It provides discussion points to summarize the lesson as students transition to individual practice. The projectable Step In discussion slides can be found under the "Resource preview" on the right side of the Lesson Notes in the Digital Teacher Edition. Each point or question can be revealed and discussed in the class, one step at a time.
Lesson Step 4: Reflecting on the work	Step 4 consolidates student understanding and practice with intentional closure conversations.

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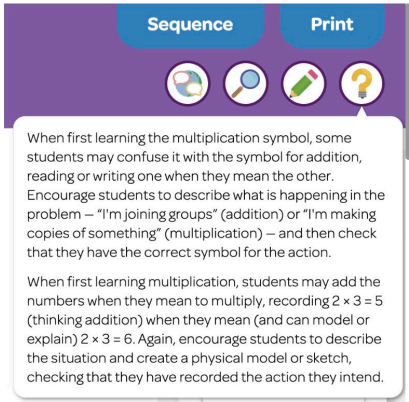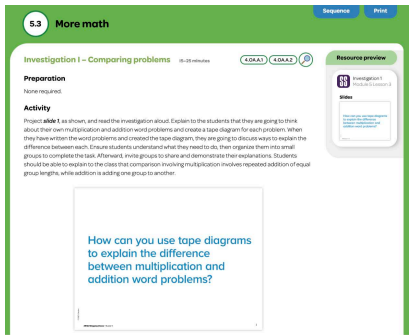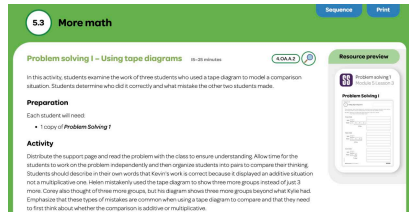
Appendix C: Glossary of Terms

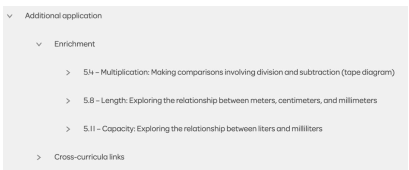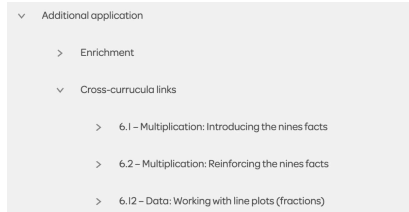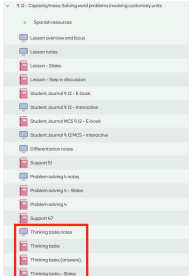| Term	Description
Student Journal	*Stepping Stones* resources come in both print and digital formats for students. The print student journals are colorful and carefully designed to be age-appropriate. Age-appropriate details include consideration given to font size, as well as the amount of space and scaffolding provided for answers. Additionally, the kindergarten print journal is printed single-sided with perforated pages for hands-on experiences that require students to cute out, arrange, and paste images. Each *ORIGO Stepping Stones* Grade K lesson is supported by one or two student journal pages. In Grades 1-6, there are two pages for each lesson. The online, interactive student journals have accessibility features to aid students in answering the questions. Text-to-speech is embedded into the interactive student journals for students who struggle with reading. The parts of the student journal are defined below.
Student Journal: Step in	The Step In provides teachers with guided discussion points to summarize the lesson. When the lesson is complete, it becomes a record of learning that students can access when they need help with future lessons.
Student Journal: Step Up	The Step Up provides work for students to complete independently or with guidance, based on the discussion generated in the Step In. When completed independently, the Step Up can provide a check for understanding, or an exit ticket to inform future instruction.

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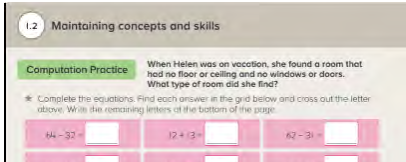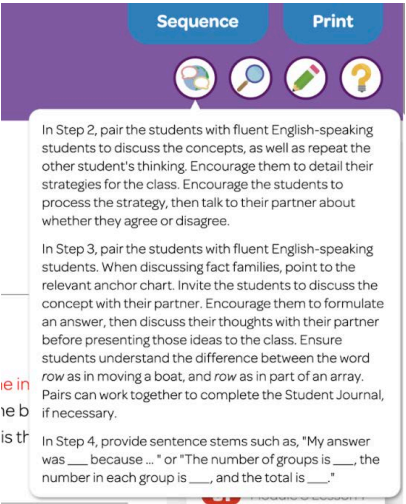| Term	Description
MathEd	*ORIGO MathEd* is a library of professional learning videos for contemporary Grades K–6 math methods, presented by respected mathematics educators. Hosted by James Burnett, these dynamic sessions provide practical skills to help develop deep understanding of mathematics concepts. Short videos are embedded at the start of modules to assist teachers acquire the content and pedagogical knowledge they need to be effective. Easy-to-follow facilitator notes accompany each *ORIGO MathEd* session. These notes can be used to help plan and present professional learning activities for groups of teachers.
Coherence: **Coherence chart** **Sequence navigator**	ORIGO Education believes that content taught conceptually, in a logical, learner-friendly sequence develops deep understanding and success. A coherent curriculum is a part of this method of sequencing content and is demonstrated in *Stepping Stones* lessons in a number of ways. Coherence occurs when students make connections from lesson to lesson, across math topics, and from grade to grade, so that each learning target is an extension of previous learning. *Stepping Stones* lessons are designed to ensure these connections. There are two major supports to help teachers understand coherence and provide differentiation for their students: The Coherence page found in "Preparing for the module", and the Sequence navigator. The Coherence page identifies prerequisite skills and content for the learning targets in the module, and guides teachers to lessons that build those skills and content. The Sequence navigator is found in the Lesson and Differentiation Notes in the Digital Teacher Edition. It provides quick access to mathematical topics, making it easy for teachers to jump forward and back to provide coherent instruction for students, no matter what their level of understanding.

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Term	Description
Common errors and misconceptions 	Information about common errors and misconceptions can be found at two levels inside the Digital Teacher Edition. Each lesson has a section on Common errors and misconceptions in the Overview and focus found in "Teaching the lesson". Additionally, hovering over the question mark icon within the Lesson notes provides ideas about possible common errors and misconceptions and how to avoid them.
Investigations 	Lessons 3, 7, and 11 in each *ORIGO Stepping Stones* module within Grades 1 – 6 include micro investigations. These give the students the opportunity to apply the mathematics they have learned. These activities are open–ended in nature and often require the students to collect, represent, and analyze data.
Problem solving 	Lessons 3, 7, and 11 in each *ORIGO Stepping Stones* module within Grades 1 – 6 include problem solving activities. Teachers can use these when they deem appropriate.

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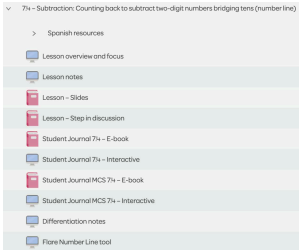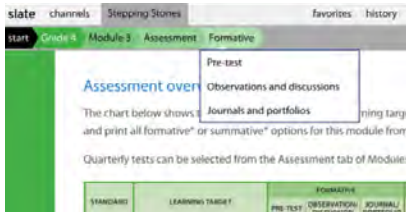
Appendix C: Glossary of Terms

Term	Description
Enrichment 	Each *ORIGO Stepping Stones* module in Grades K – 6 contains enrichment activities to enrich student learning. These are found under "Additional application" in each module.
Cross-curricula 	Each *ORIGO Stepping Stones* module in Grades K – 6 also contains Cross-curricula activities where the mathematics of each module can be used or explored further in science, history, or English. These are found under "Additional application" in each module.
Thinking tasks 	Thinking tasks pose real-world problems that engage students' thinking in all grades. Each task increases in difficulty as students progress through the questions. The tasks are available in Modules 3, 6, 9, and 12, and are found in "Teaching the lesson" within Lesson 12. They are designed to create a culture that engages and inspires learners while developing their confidence and perseverance in the face of challenging problems. Thinking task rubrics provide depth of knowledge levels for each question.

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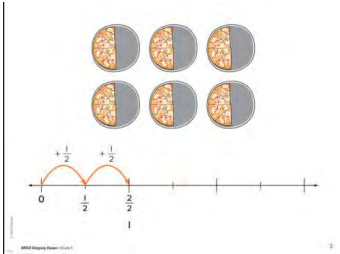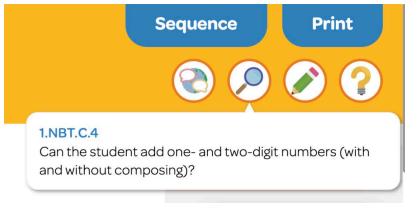| Term	Description
Maintaining concepts and skills 	Ongoing practice is an essential element of the scope and sequence of *Stepping Stones 2.0*. It is an integral part of the learning experiences students need to meet the expected standards by the end of the school year. Opportunities for practice are provided after every lesson. In Kindergarten, daily practice opportunities are provided in the Practice Book. A projectable fluency tool in Lessons 1, 3, and 5 of each module provides additional practice. These are found in the Resource preview of the Whole group Lesson notes. In Grades 1 – 6, Lessons 1, 5, and 9 provide a projectable fluency practice tool in the Resources preview of the Lesson notes. The even numbered lessons in Grades 1 – 6 include two additional journal pages for maintaining concepts and skills. These pages offer practice opportunities for previously learned concepts and skills, as well as activities to prepare for the upcoming module.
ELL supports 	*ORIGO Stepping Stones* provides a language–rich curriculum where English Language Learners (ELL) can acquire mathematics in a natural second–language progression by listening, speaking, reading, and writing. Each lesson includes accommodations to be aware of when teaching the lesson to ensure scaffolding of content, and misconceptions of language are addressed. Since there may be several stages of language development in your classroom, you will need to use your professional judgment to select which accommodations are best suited to each learner. ELL advice is provided for each lesson in the Digital Teacher Edition. Find these supports by hovering over the ELL icon (two speech bubbles).

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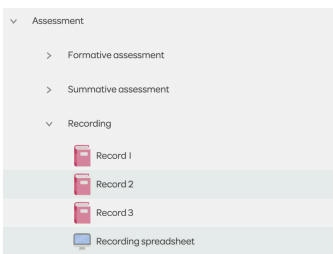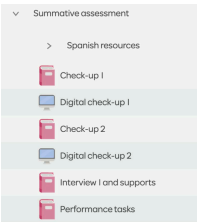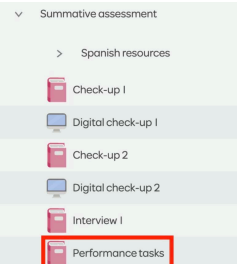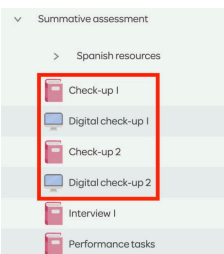
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Term	Description
Differentiation	Each lesson in the *ORIGO Stepping Stones* program also includes differentiation activities up to three levels: Extra Help, Extra Practice, and Extra Challenge.
Formative assessment	Formative assessment is used to make informed decisions to guide instruction. These decisions could range from reviewing content, reteaching concepts, or providing additional work for students who require extra assistance or challenges. Formative assessment can occur informally during lessons with observations of students working and their discourse, or formally with written instruments such as pre-tests or journal entries.

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Appendix C: Glossary of Terms

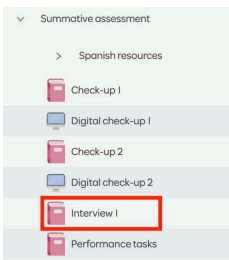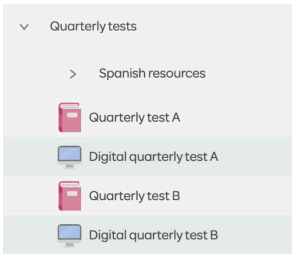| Term	Description
Projectables 	Instead of drawing images or writing problems on the board, the Digital Teacher Edition includes projectable resources, embedded where they are needed. A wide variety of projectables can be found under the Resource preview within each Lesson notes, as well as in other areas such as Differentiation notes, Investigation notes, or Problem solving notes.
Journals and portfolios 	Lessons and activities help to identify learning, as is evidenced by work samples or through observation and discussions or other student behaviors. Two icons within lessons offer suggestions for assessing formatively through journals and portfolios. The magnifying glass icon has suggestion for observations and discussions, while the pencil icon provides suggestions for journals and portfolios. Ideas for journals and portfolios can be found in the Module assessment overview in every "Preparing for the module".
Digital Student Assessment (DSA) **Digital assessment reporting tools** 	*ORIGO Stepping Stones 2.0* provides online student assessments for each instructional quarter in Grades 1 – 6. Each assessment offers a variety of technology – enhanced item types, such as open response and multiselect. Digital Pre-tests and Check-ups are available for each module, Grade 1 – 6. Digital Assessment reports are downloadable and can be viewed in various formats. There is a whole-class report designed with a traffic light reporting format so teachers can quickly see which question each student responded to correctly or not. Reports can be sorted by standard, by domain, or by cluster. Teachers can also view individual student reports and see how long it took a student to respond to each question.

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Appendix C: Glossary of Terms

Term	Description
Print assessment reporting tools 	*Stepping Stones 2.0* provides options for recording student progress in each module. There is also a downloadable spreadsheet for teacher to digitally record student progress by standard over the course of a year.
Summative assessment 	Summative assessment generally takes place at planned intervals after instruction. It is used to sum up what students know. Used wisely, summative assessments can also serve as formative role and help guide instruction. Formal *ORIGO Stepping Stones* print summative assessments include check–ups, performance tasks, and interviews. The check–ups are available for teachers to assign digitally to students in Grades 1 – 6.
Performance tasks 	These tasks offer a deeper measure of understanding of one or two learning targets in Grades K – 6.
Check-ups 	These provide questions that require the student to select the correct answer, or to write a short response. These assessments can be used to determine what the student has retained from a lesson, and will usually parallel the pre-test.

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Appendix C: Glossary of Terms

Term	Description
Interviews 	Interviews are used to assess a student's understanding of certain concepts and skills, such as the fluency of rote counting, or mental computation, which are more difficult to assess solely from paper-and-pencil methods.
Quarterly tests 	Quarterly tests are provided with modules 3, 6, 9, and 12. They assess key learning targets taught in the three modules of that quarter. The information can show how well students are maintaining concepts and skills.

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