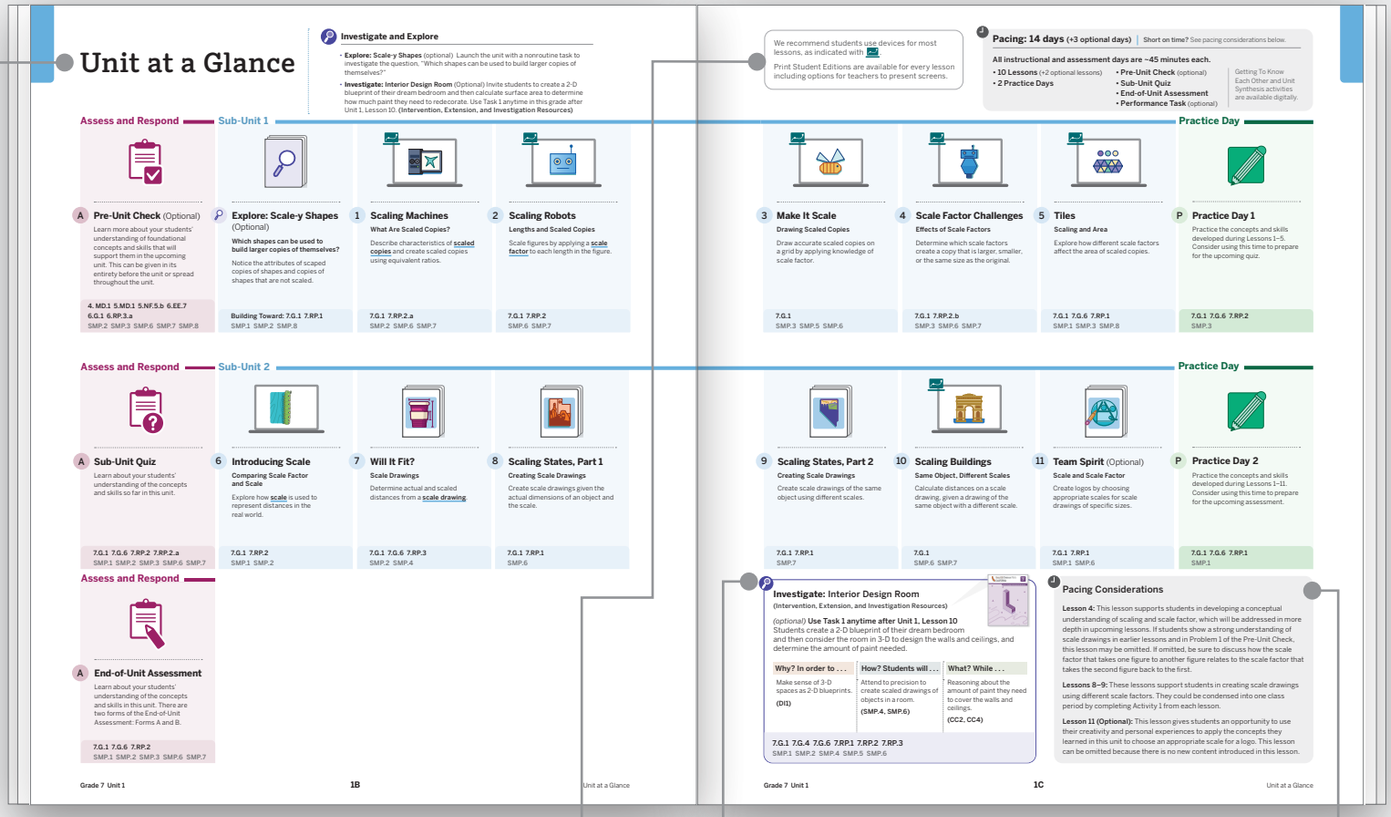
Navigating This Program

Once you have logged into the digital program, you can launch a guided tour with helpful navigation tips.

Unit & Sub-Unit Resources

Each unit includes a range of resources designed to support teachers in thinking through the progression of mathematics that students will engage with over the course of the unit. These resources can support teachers in their unit planning, as well as choices they make in response to students' thinking, strengths, and needs that arise over the course of the unit.



Every unit has a **Unit at a Glance** page that shows teachers everything they need to know to get started planning out their upcoming unit.

While all lessons can be taught using the Student Edition as the teacher projects Presentation Screens, we recommend students use **devices** to interact with most lessons.

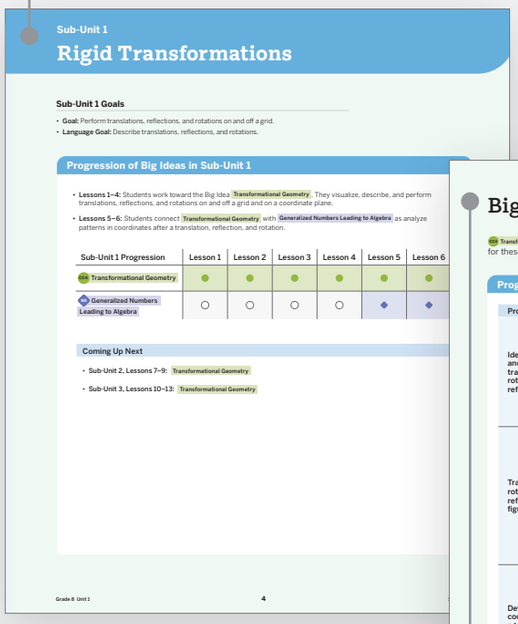
Each grade is accompanied by two course-level **investigations**. These investigations can be used after the content standards have been addressed in corresponding units.

Teachers are provided with thoughtful **pacing considerations** for how they can adjust the pacing of the unit as needed without compromising unit learning goals.

Unit Overview pages

Teachers will find a comprehensive set of resources for each unit, including an overview of the math of the unit, a visual summary of the Unit at a Glance, a preview of each of the unit assessments, and guidance about differentiation, supporting math identity and community, accessibility, language development, materials, technology, and connections to future learning. Each Unit Overview also includes a professional development activity and a formative Pre-Unit Check that teachers can use to learn more about students' understanding of foundational concepts and skills that will support them in the upcoming unit.

The **Sub-Unit Overview** clearly shows the goals and student-facing essential questions for the sub-unit. The progression of the development of the Big Ideas and their connections are provided for each sub-unit


Sub-Unit 1

Rigid Transformations

Sub-Unit 1 Goals

- **Goal:** Perform translations, reflections, and rotations on and off a grid.
- **Language Goal:** Describe translations, reflections, and rotations.

Progression of Big Ideas in Sub-Unit 1

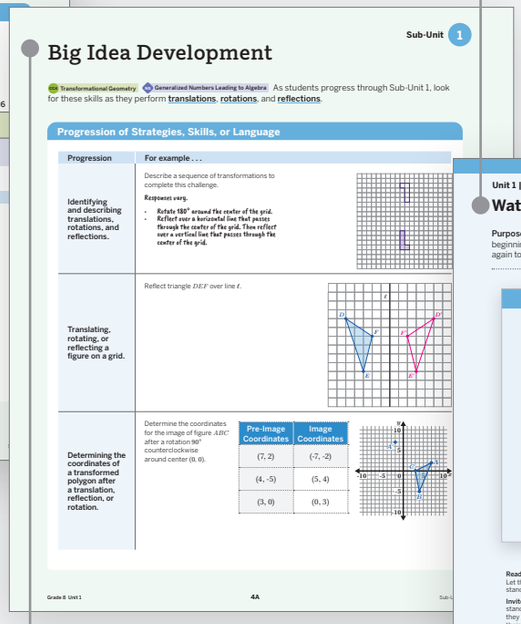
- **Lessons 1–4:** Students work toward the Big Idea Transformational Geometry. They visualize, describe, and perform translations, reflections, and rotations on and off a grid and on a coordinate plane.
- **Lessons 5–6:** Students connect Transformational Geometry with Generalized Numbers Leading to Algebra as analyze patterns in coordinates after a translation, reflection, and rotation.

Sub-Unit 1 Progression	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6
Transformational Geometry	●	●	●	●	●	●
Generalized Numbers Leading to Algebra	○	○	○	○	◆	◆

Coming Up Next

- Sub-Unit 2, Lessons 7–9: Transformational Geometry
- Sub-Unit 3, Lessons 10–13: Transformational Geometry

Grade 8 Unit 1 4


Sub-Unit 1

Big Idea Development

Transformational Geometry Generalized Numbers Leading to Algebra As students progress through Sub-Unit 1, look for these skills as they perform translations, rotations, and reflections.

Progression of Strategies, Skills, or Language

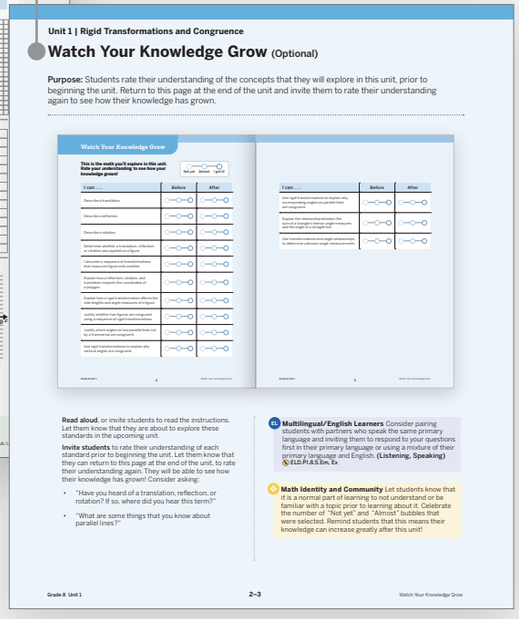
Progression	For example . . .
Identifying and describing translations, rotations, and reflections.	Describe a sequence of transformations to complete this challenge. Responses vary. • Rotate 180° around the center of the grid. • Reflect over a horizontal line that passes through the center of the grid. Then reflect over a vertical line that passes through the center of the grid.
Translating, rotating, or reflecting a figure on a grid.	Reflect triangle DEF over line ℓ.
Determining the coordinates of a transformed polygon after a translation, reflection, or rotation.	Determine the coordinates for the image of figure ABC after a rotation 90° counterclockwise around center (0, 0).

Pre-Image Coordinates	Image Coordinates
(7, 2)	(-7, -2)
(4, -5)	(5, 4)
(3, 0)	(0, 3)

Grade 8 Unit 1 4A

The **Big Idea Development** page illustrates for teachers the progression of strategies, skills, or language that students engage in as they work toward the Big Ideas in that sub-unit.

The mathematical concepts of the unit are presented in student-friendly language on the **Watch Your Knowledge Grow** page, allowing students to monitor their own progress.


Unit 1 | Rigid Transformations and Congruence

Watch Your Knowledge Grow (Optional)

Purpose: Students rate their understanding of the concepts that they will explore in this unit, prior to beginning the unit. Return to this page at the end of the unit and invite them to rate their understanding again to see how their knowledge has grown.

Watch Your Knowledge Grow

This is the math you'll explore in this unit. Rate your understanding to see how your knowledge grows!

Not yet · Almost · I get it

I can . . .	Before	After
Describe a translation.		
Describe a reflection.		
Describe a rotation.		
Determine whether a translation, reflection, or rotation was applied to a figure.		
Describe a sequence of 3 transformations that maps a preimage figure onto an image.		
Explain how a reflection, rotation, and translation impacts the coordinates of a polygon.		
Explain how a rigid transformation affects the side lengths and angle measures of a figure.		
Justify whether two figures are congruent using a sequence of rigid transformations.		
Justify which angles are two parallel lines cut by a transversal are congruent.		
Use rigid transformations to explain why vertical angles are congruent.		

I can . . .	Before	After
Use rigid transformations to explain why corresponding angles on parallel lines are congruent.		
Explain the relationship between the interior angle measures of a triangle and the angle of a straight line.		
Use transformations and angle relationships to determine unknown angle measurements.		

Read aloud, or invite students to read the instructions. Let them know that they are about to explore these standards in the upcoming unit.

Invite students to rate their understanding of each standard prior to beginning the unit. Let them know that they can return to this page at the end of the unit, to rate their understanding again. They will be able to see how their knowledge has grown! Consider asking:

- "Have you heard of a translation, reflection, or rotation? If so, where did you hear this term?"
- "What are some things that you know about parallel lines?"

Multilingual/English Learners Consider pairing students with partners who speak the same primary language and inviting them to respond to your questions first in their primary language or using a mixture of their primary language and English. **(Listening, Speaking)** ELD.PI.8.5.Em. Ex

Math Identity and Community Let students know that it is a normal part of learning to not understand or be familiar with a topic prior to learning about it. Celebrate the number of "Not yet" and "Almost" bubbles that were selected. Remind students that this means their knowledge can increase greatly after this unit!

Grade 8 Unit 1 2–3 Watch Your Knowledge Grow

Sub-Unit Overview pages

The lessons within each unit are grouped into sub-units that address a related group of concepts. All sub-units include lesson practice and Show What You Know formative assessments, and targeted sub-units include a practice day and quiz.

Navigating This Program

Lesson Supports

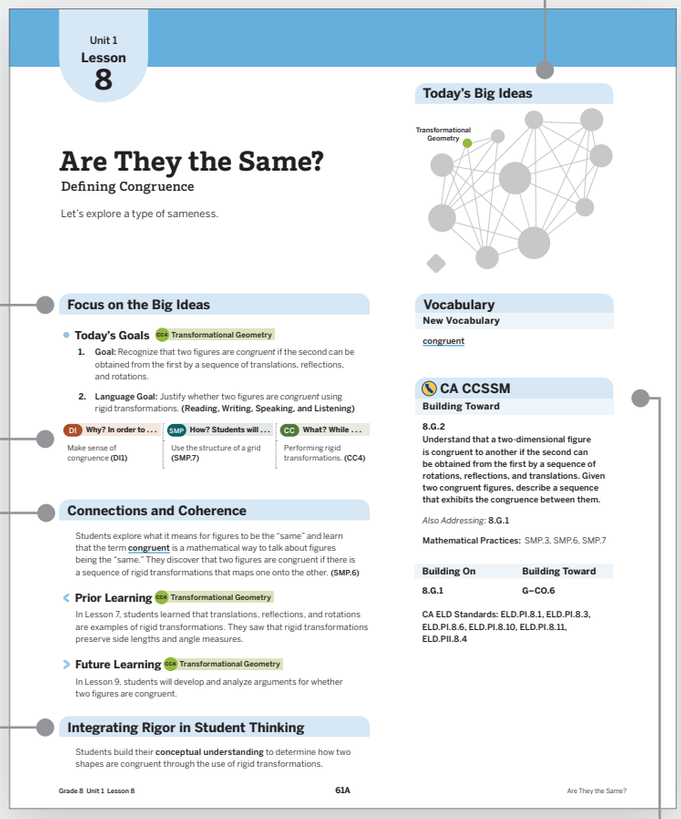
Throughout this Teacher Edition, lesson guidance for teachers is organized clearly and consistently so that they have all of the information they need at their fingertips.

Teachers can quickly visualize the **Big Ideas** engaged in each lesson, as well as the connections between those Big Ideas.

The **content goals and language goals** are clearly stated at the beginning of each lesson and aligned to the Big Ideas.

Each lesson clearly identifies the **Driver of Investigation** (Why), **Standard for Mathematical Practice** (How), and **Content Connection** (What) of focus.

In the **Connections and Coherence** section, teachers will find prior learning that has built to the math in this lesson, as well as future learning that this lesson is helping build to.



The **Integrating Rigor in Student Thinking** section explains how students develop conceptual understanding, procedural fluency, application, strategic competence, adaptive reasoning, and productive disposition in this lesson.

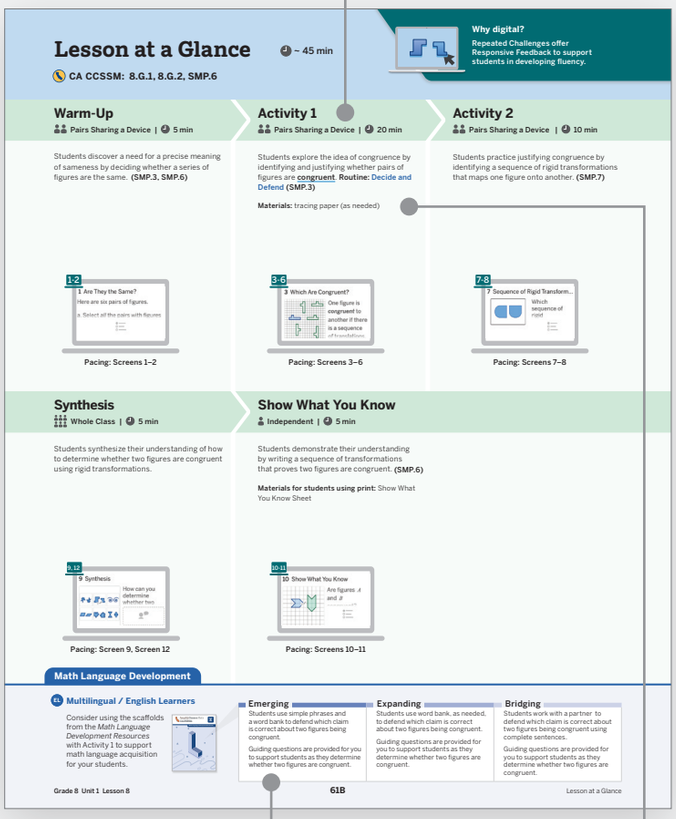
The **Standards** section lists all applicable standards addressed in this lesson, including standards the lesson builds on and build towards. The **bolded** words indicate which parts of part of the primary standard described are covered in the lesson. Applicable **English Language Development Standards** and **Environmental Principles and Concepts** are also noted.

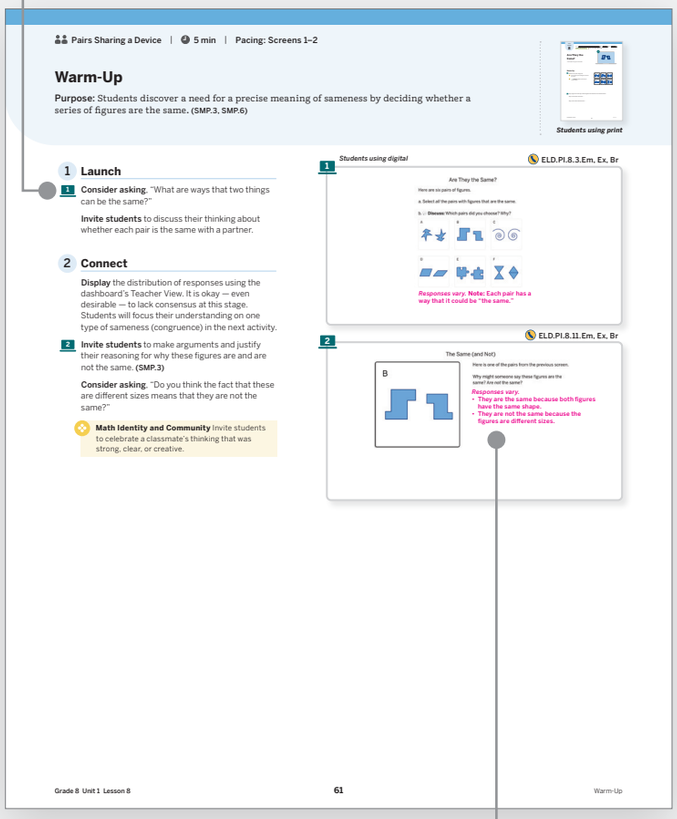
Lesson Overview

This introductory page orients teachers to the topic, standards, and key learning goals of the lesson, including any new vocabulary terms that will be introduced.

The **time frame** and suggested **student grouping** is listed for each part of the lesson.

The screen icon is used to show which **Presentation Screens** or **Digital Student Screens** align to each instructional moment.





Quickly preview the **English Learner proficiency-leveled supports** for this lesson. Refer to the *Math Language Development Resources* book for more information.

Materials needed for each activity are listed within each tile.

Sample student responses to the Warm-Up prompt are provided to help teachers prepare to facilitate the conversation.

Lesson at a Glance

The Lesson at a Glance page describes the purpose of the Warm-Up, Activities, Synthesis, and Show What You Know. Teachers will find suggested timing for each part of the lesson, as well as guidance on whether students should work individually, in pairs, in small groups, or with the whole class.

The page also lists which Student Edition pages, Presentation Screens, or Digital Student Screens can be used with each part of the lesson, as well as any hands-on materials that may be needed.

Warm-Up

Every Amplify Desmos Math California lesson begins with a Warm-Up to help draw students into the lesson. It might elicit information from their personal experience or intuition, remind them of a context they have seen before, invite them to think about the previous lesson, or preview a calculation that will appear in the current lesson.

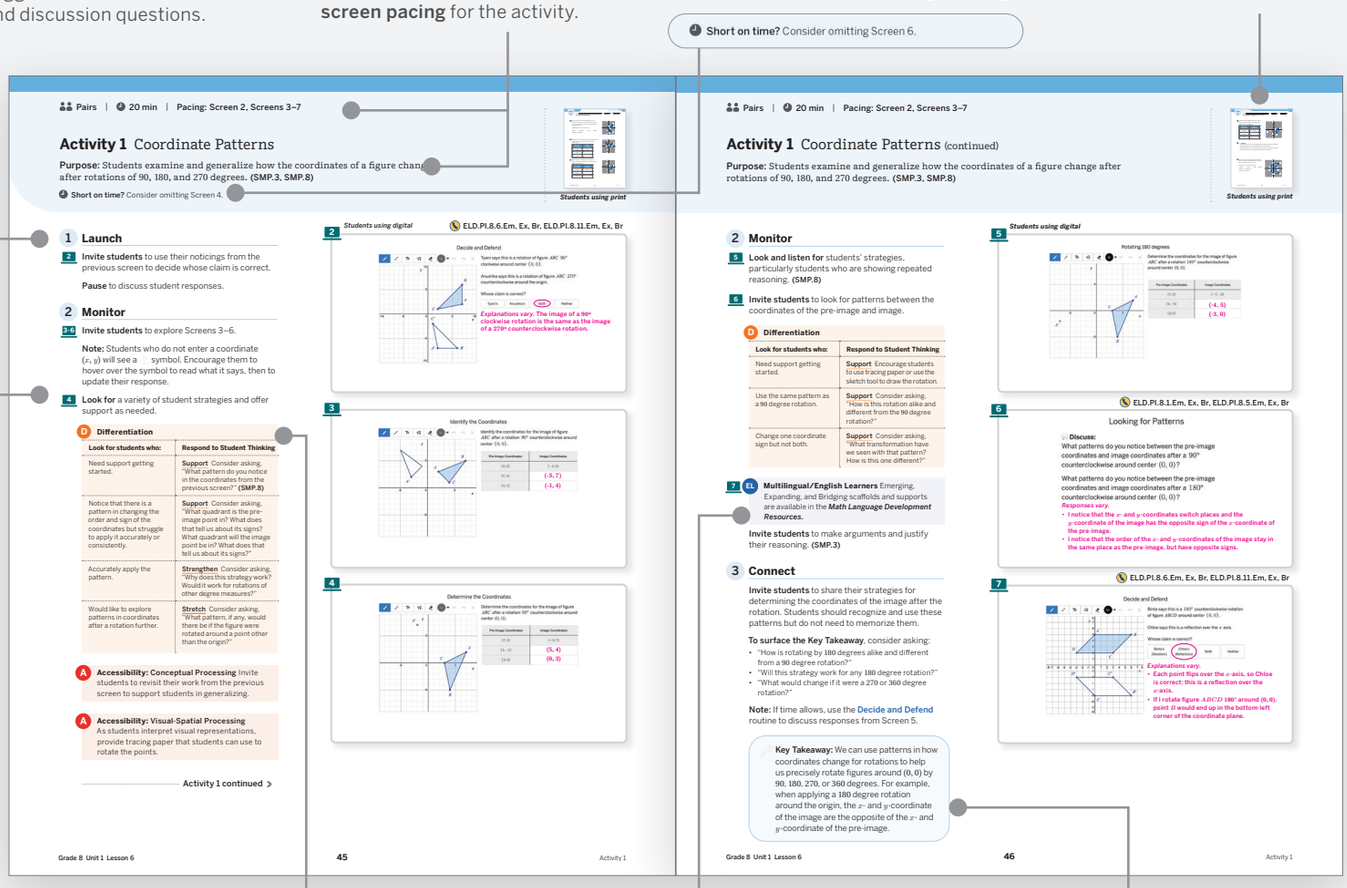
Navigating This Program

In the **Launch**, **Monitor**, **Connect** guidance, teachers will find ways to help students get started, suggested facilitation moves, and discussion questions.

The **Purpose** of each activity is highlighted here, as well as suggestions for the **student grouping**, **time frame**, and **screen pacing** for the activity.

Teachers are provided with thoughtful **Short on time?** suggestions for how they can adjust their facilitation of the lesson as needed without compromising lesson goals.

Each lesson notes the corresponding **Teacher Presentation Screens** or related **Student Edition** pages also available to support the lesson.



The guidance for every lesson includes a **Differentiation** table to support teachers in meeting the needs of all students during the activity. This table can help teachers anticipate the ways students may approach the activity, and provides prompts that they can use during the lesson to **Support**, **Strengthen**, and **Stretch** individual students in their thinking.

Math language development and English Learner supports are noted at point of use. Refer to the *Math Language Development Resources* for proficiency-leveled support.

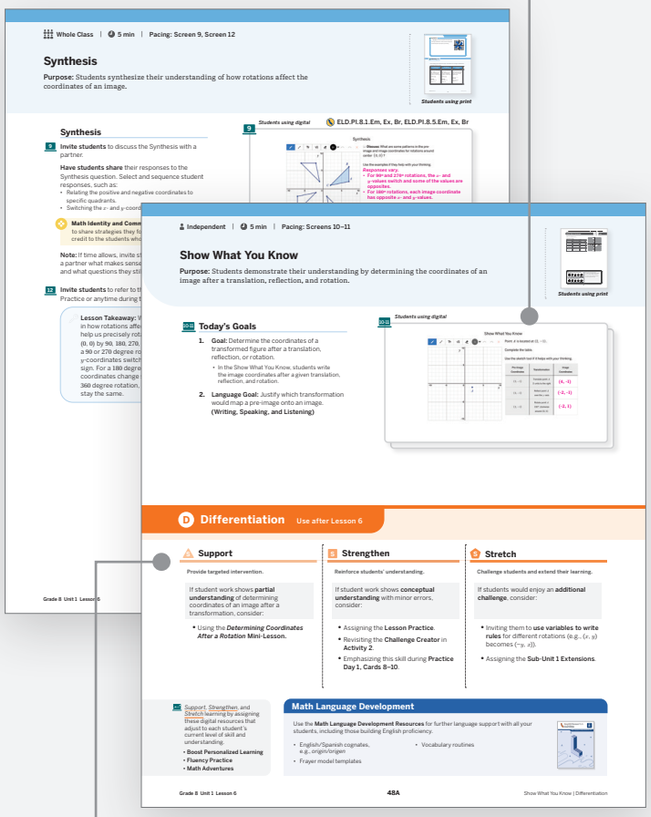
The **Key Takeaway** is called out to highlight the learning goal of the activity and provide teachers with an example of how to frame the big idea of the activity for students.

Activities

Each lesson includes one, two, or three activities. These activities are the heart of each lesson. Students notice, wonder, explore, calculate, predict, measure, explain their thinking, settle disputes, create challenges for their classmates, and more.

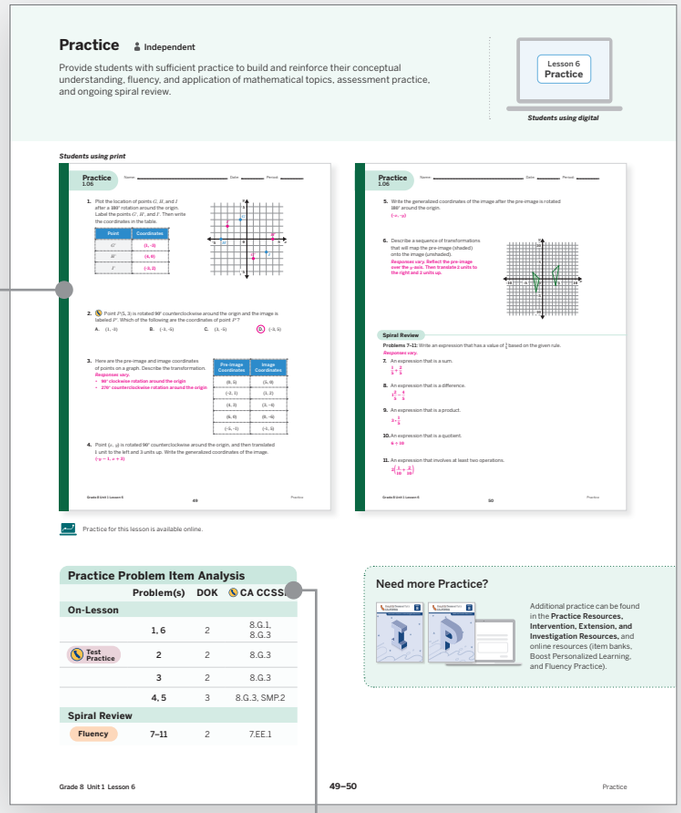
Guidance is provided to help teachers Launch, Monitor, and Connect students' thinking over the course of each activity. Teachers will also find suggestions for pacing, facilitation moves, discussion questions, examples of early student thinking, ideas for students who may enjoy a challenge, ways to increase access to the language and content, as well as opportunities to build and develop the math community in your classroom. The suggestions for facilitation provide comprehensive support for teachers as they prepare for and teach lessons.

Lessons conclude with the **Show What You Know**, which presents an opportunity for students to reflect on the main learning goals of the lesson. This is a great way for both students and teachers to access a formative check for understanding.



Each Show What You Know is accompanied by a table with suggestions in three categories: students who need **support**, would benefit from more practice to **strengthen** their understanding, or are interested in a **stretch** to deepen or extend their thinking.

Each **Lesson Practice** begins with a **Summary** of the big ideas in the lesson, often including a worked example. Students can highlight parts of the summary or share it with a caregiver or classmate.



A **Practice Problem Item Analysis** table breaks down the problems by type, Depth of Knowledge (DOK), and corresponding standards.

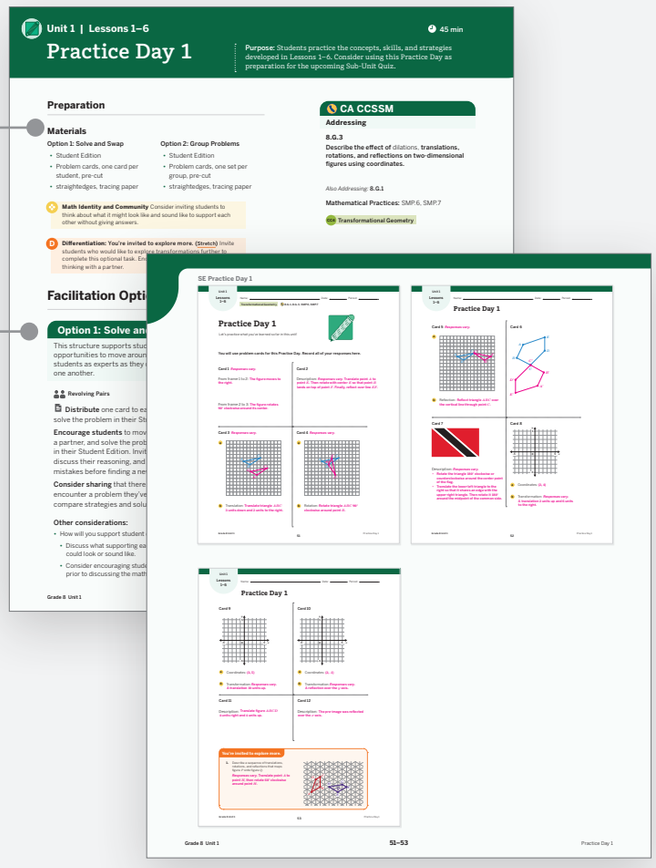
Synthesis

The Synthesis is an opportunity for students to put the key ideas from the lesson into their own words. There is typically an open-ended prompt followed by a discussion for students to consolidate and refine their ideas about the learning goals. If time allows, it is also an opportunity for students to revise their responses after the discussion.

Lesson Practice

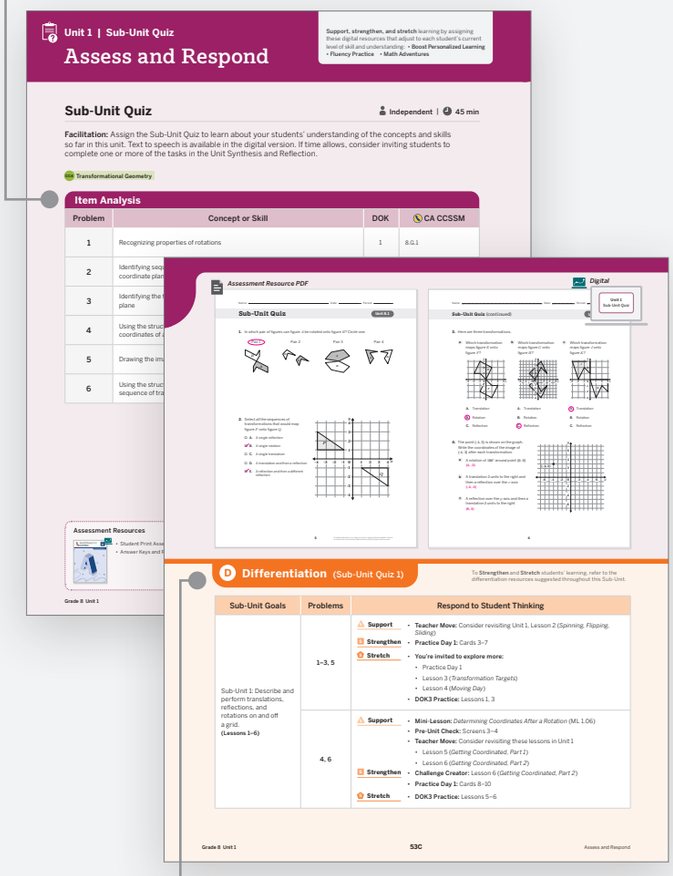
Daily practice problems for the day's lesson are included both online and in the print Student Edition, including Fluency, Test Practice, and Spiral Review.

Practice Days are always **print-based** and may involve **materials** like Problem Cards.



The Teacher Guide typically provides **two different approaches for facilitating** Practice Day activities.

An **Item Analysis** is provided to show what concepts and skills are assessed in each problem.



A **Differentiation** table suggests specific materials from the unit to **Support**, **Strengthen**, or **Stretch** students' understanding based on their responses to different assessment problems.

Practice Day

Practice Days are included before each Sub-Unit Quiz and End-of-Unit Assessment. These lessons provide an opportunity for students to consolidate and apply their knowledge and skills from the preceding lessons. Practice Days often incorporate student movement and collaboration.

Assess and Respond

Each unit typically includes one or two Sub-Unit Quizzes. Quizzes are designed for students to show what they know and can do based on what they have learned so far in the unit. Each unit includes Assess and Respond guidance for the Pre-Unit Check, Sub-Unit Quizzes, and End-of-Unit Assessment.