Amplify Desmos Math

Differentiation and intervention planning guide

About Amplify

Amplify creates K–12 core and supplemental curriculum, assessment, and intervention programs for today's students.

A pioneer in K–12 education since 2000, Amplify is dedicated to collaborating with educators to create learning experiences that are rigorous and riveting for all students. And, Amplify is leading the way in next-generation curriculum, assessment, and intervention. All of our programs provide teachers with powerful tools that help them understand and respond to the needs of every student.

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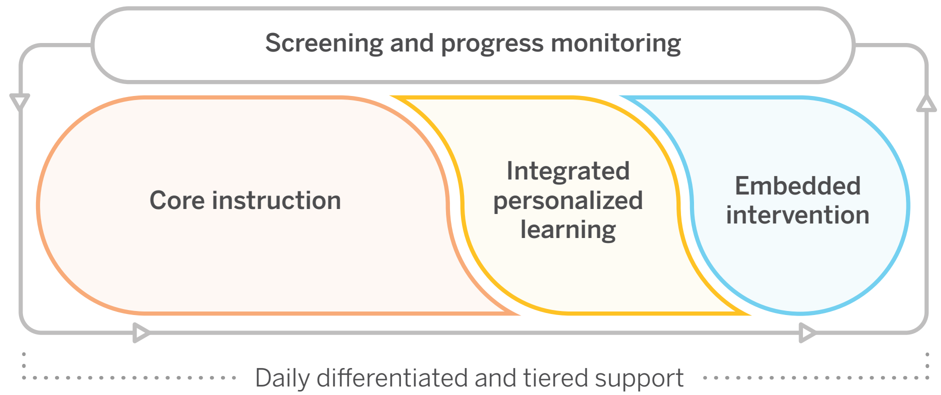
A comprehensive experience for every math classroom

Intervention is a crucial component to high-quality math instruction—daily differentiation is non-negotiable.

With Amplify Desmos Math, differentiation is tied into every activity of instruction. Screening and progress monitoring, core lessons, personalized learning, and intervention work together to create the coherent math solution that is Amplify Desmos Math.



Screening and progress monitoring

mCLASS® Assessments, along with daily formative checks, measure what students know and how they think. The asset-based assessment system provides teachers with targeted, actionable insights, linked to core instruction and intervention resources.

Core instruction

Amplify Desmos Math lessons provide a structured approach to problem-based learning, helping teachers create a collaborative math community with students at its center. Each lesson systematically builds on students' curiosity to develop lasting grade-level understanding for all students.

Integrated personalized learning

Boost™ Personalized Learning activities help students access grade-level math through engaging, independent digital practice. Responsive Feedback™ adjusts to students' work, providing item-level adaptivity to further support their learning.

Embedded intervention

Integrated resources like Mini-Lessons, Math Fluency, and Math Adventures provide targeted intervention connected to the daily lesson. Extensions are available to stretch students' understanding.

Our approach to intervention

Students catch up while keeping up with grade-level math.

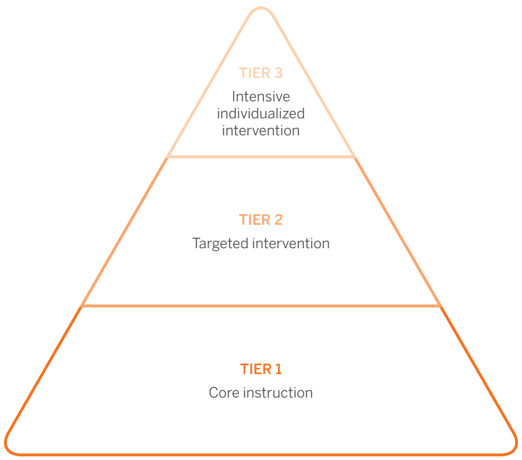
The most effective intervention is directly aligned with core instruction. By following a Multi-Tiered System of Supports (MTSS) framework, Amplify Desmos Math advances student growth while ensuring all students can experience success with grade-level math, every day.

As a holistic, research-backed solution for every math classroom, Amplify Desmos Math meets students where they are, while recognizing the diverse range of strengths and needs of all learners. Differentiation embedded into every lesson—and beyond

All students come to the classroom with unique experiences. By acknowledging and accommodating students' individual strengths, understandings, and strategies—or assets, as we collectively refer to them—to inform instruction, students are further motivated and learning is accelerated.

Amplify Desmos Math views differentiation as an ongoing process where teachers are both reactive—and proactive—to student needs, ensuring that all students have clear pathways to proficiency. Rather than forcing students into rigid groupings for support, Amplify Desmos Math uses flexible categories of intervention and enrichment that adjust daily from student thinking.

The flexible differentiation groupings are:



The differentiation of Amplify Desmos Math supports Tiers 1 & 2 of the MTSS framework and identifies students for Tier 2 & Tier 3 intervention.

Support

Provide targeted intervention for students by using these resources.

Strengthen

Reinforce students' understanding of the concepts assessed by using these resources.

Stretch

Challenge students and extend their learning with these resources.

Differentiation in Amplify Desmos Math

In-lesson teacher moves

The structured approach to problem-based learning of Amplify Desmos Math gives students multiple opportunities to collaborate and solve complex problems every lesson. Supporting students to achieve mathematical proficiency requires both a deep understanding of student thinking and the mathematical concept and skills across grade levels. Following the Support, Strengthen, and Stretch structure, every activity presents clear next steps to help teachers with in-the-moment decision-making.

Teachers can use the Differentiation table to help anticipate and respond to student thinking. These clear student actions are matched with immediately usable suggestions for how to respond to the student's thinking.

D Differentiation | Teacher Moves — 3-5 Presentation Screens

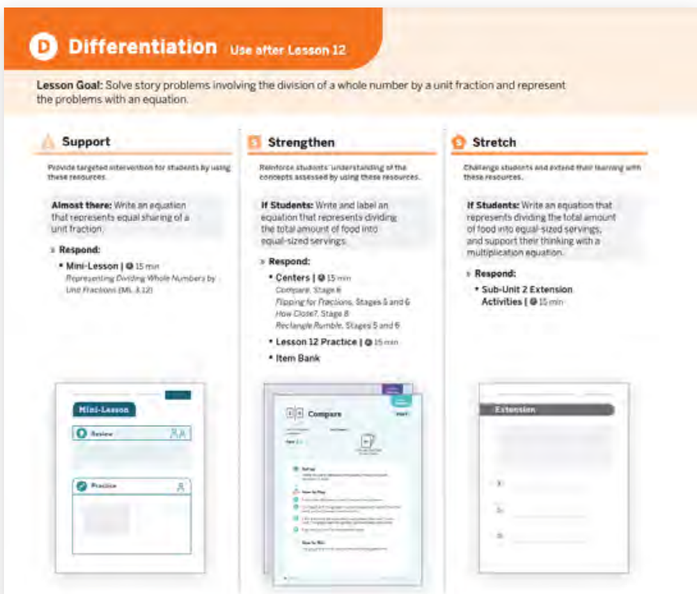
Look for students who . . .	For example . . .	Provide support . . .
Almost there Write a story problem in which $\frac{8}{5}$ is the quotient.	5 gallons of water are being shared equally by 8 friends. How many gallons of water will each friend receive?	**Support** Ask, "What do you know about the fraction $\frac{8}{5}$? Does your story problem result in a quotient of $\frac{8}{5}$?"
Write a story problem in which the fraction represents the answer to the question asked.	8 gallons of water are being shared equally by 5 friends. How many gallons of water will each friend receive?	**Strengthen** Ask, "How could you write a story problem in which $\frac{8}{5}$ is given information and not the answer to the question you ask?"
Write a story problem in which the question asks for a missing dividend or divisor.	A group of friends is sharing 8 gallons of water. If each friend receives $\frac{8}{5}$ gallons of water, how many friends shared the water?	**Stretch** Ask, "What part of the division expression did you ask for? How could you write another story problem that asks for the other part of the division expression?"

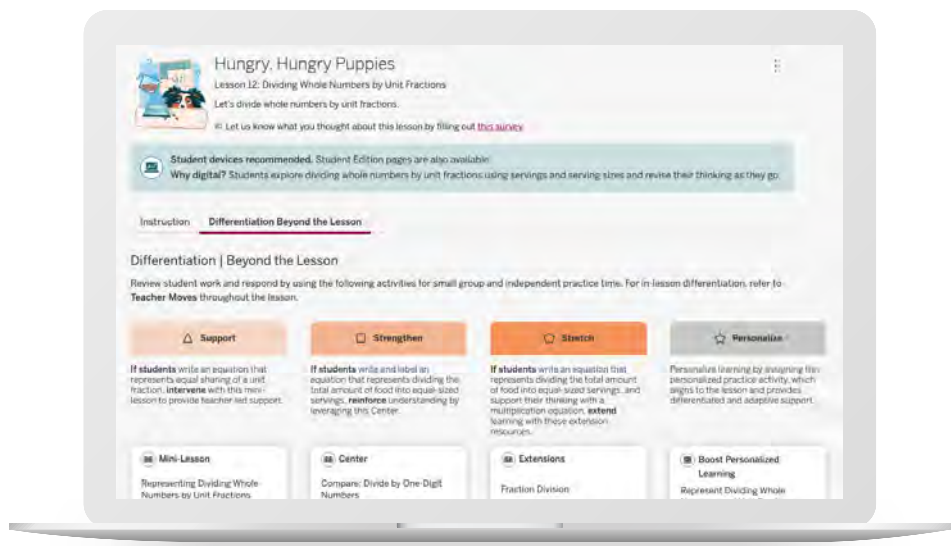
Point of use guidance helps teacher know what student thinking to look for, an example of what it may look like, and how to provide support.

Differentiation beyond the lesson

Worthwhile differentiation requires continually monitoring student progress, and Amplify Desmos Math pinpoints student needs with a robust set of intervention and differentiation resources to use as needed after each lesson. These whole-group and small-group strategies to increase student thinking and reasoning can effectively increase students' proficiency.

The Support, Strengthen, and Stretch groupings can change daily depending on student needs based on mCLASS Assessment and unit data, plus formative checks like Show What You Know assessments.





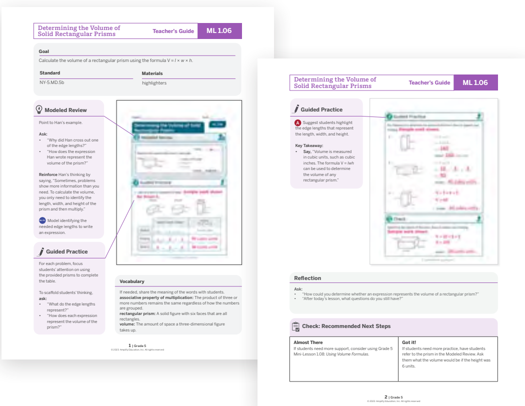
Recommendations for differentiation beyond the lesson are available in the print Teacher Edition and digitally on each lesson's landing page.

Intervention resources designed to work for your classroom

Support

Mini-Lessons

Mini-Lessons are a 15-minute, teacher-led intervention aligned to the most critical topics throughout a unit. Mini-Lessons are used to address critical prerequisite skills for upcoming lessons or to engage students in grade-level math.


Determining the Volume of Solid Rectangular Prisms
Teacher's Guide
ML 1.06

Strengthen

Centers (K–5)

Collaborative learning environments deepen students' understanding of complex mathematical concepts and skills. Centers are student-led, small-group activities and games for students to play collaboratively, providing active problem-solving experiences that promote conceptual understanding and procedural fluency.

Lesson Practice

Lesson Practice gives students opportunities for spiral review and fluency practice in preparation for state assessments during additional math blocks.

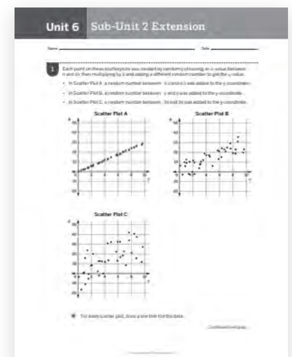
Item Bank

The Amplify Desmos Math Item Bank gives teachers the space to create customizable practice and assessments by using filters and searching for standards, summative-style items, and more.

Stretch

Extensions

Extensions are 10-to-15-minute activities aligned to the most critical topics in a sub-unit. Extensions can provide targeted, hands-on enrichment to small groups of students ready for an extra challenge or the whole class.

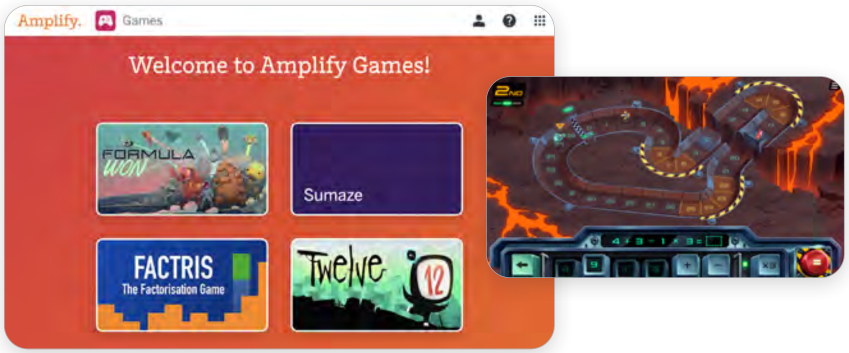

Unit 6 Sub-Unit 2 Extension

Anytime resources for all students

Math Adventures

Unlike simple, repetitive math games, Math Adventures give students a fun, engaging, and low-stakes way of practicing math skills through strategy-based digital math games.

Math Adventures are perfect for times when teachers need students to be independent after finishing classwork, an assessment, or group work.

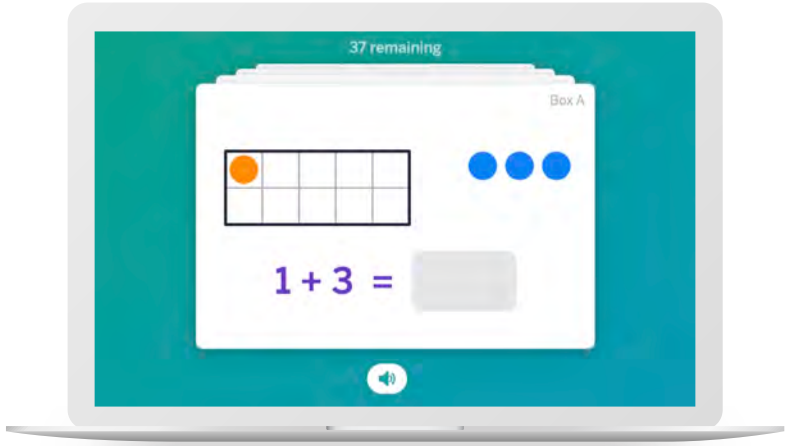


Fluency Practice

When basic facts and procedures are second nature, it's easier to figure out how to structure a multi-step word problem, model a solution, or puzzle out systems of equations. Created in partnership with Math for Love, The Fluency Practice of Amplify Desmos Math helps free up brainpower and working memory for students to do more complex mathematical work.

Fluency Practice uses the evidence-based approach to memory retention—spaced repetition—for basic facts. The adaptive nature of the practice allows students to focus less and less on the facts they already know. This approach builds fluency, providing further opportunity for students to reach mathematical proficiency.

We recommend that students spend 5 to 10 minutes practicing every day.



Boost Personalized Learning

The key to an effective intervention block

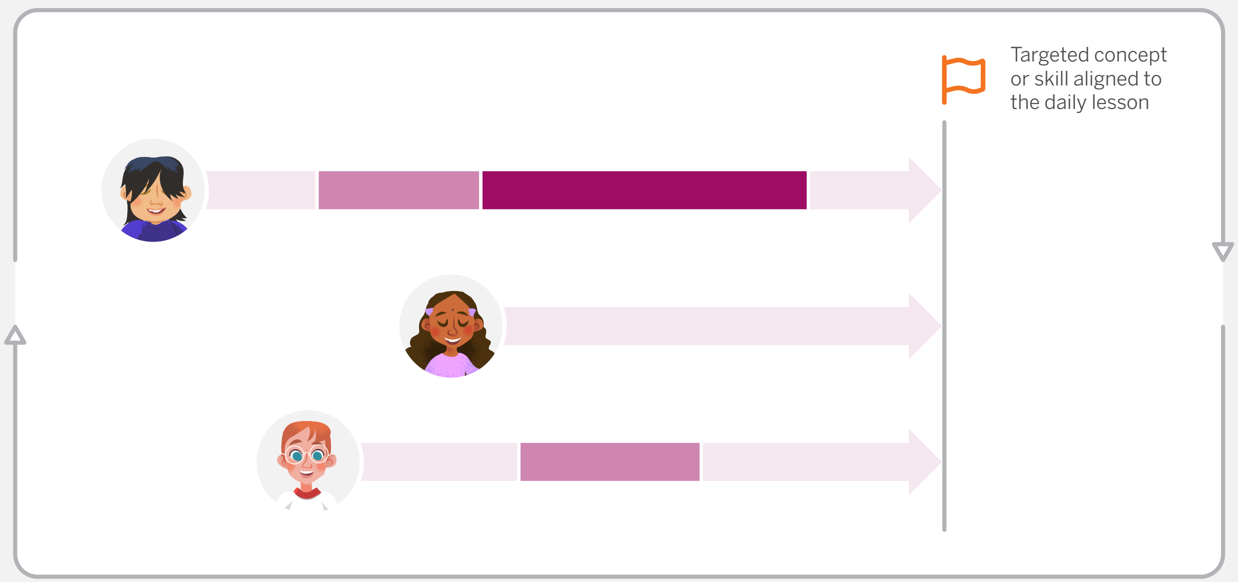
Boost Personalized Learning provides students with individualized, targeted support through engaging 15-minute independent digital activities every day. Activities adjust to individual needs by providing feedback that directly responds to student thinking. Teachers can ensure all students receive the differentiated support they need while leading small group intervention.

Directly aligned with core instruction

Research shows the most effective intervention is directly aligned with core instruction. Students that see more daily grade-level math accelerate their growth faster than their peers.

Supported by a virtual tutor, students work independently on daily tasks directly connected with the day's core lesson. Just-in-time supports help all students experience success with grade-level math.

Boost Personalized Learning activities can also be assigned based on assessment results to provide students with focused practice and instruction on identified topics and skills—always with built-in scaffolds tailored to student responses



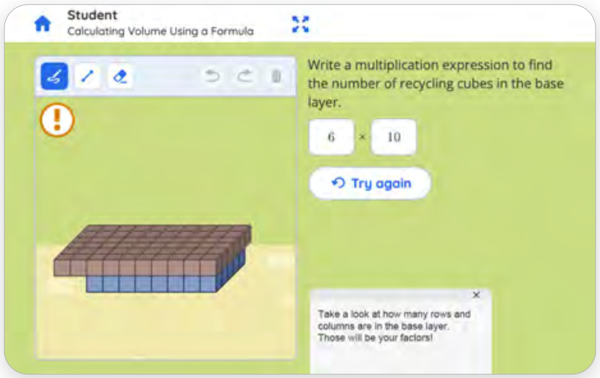
Instruction adjusts within each activity

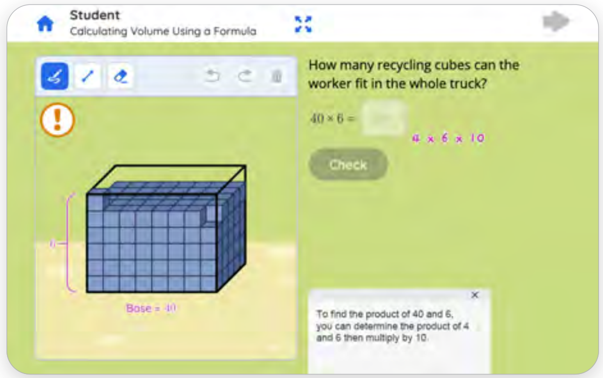
Personalized scaffolds support each learner's success

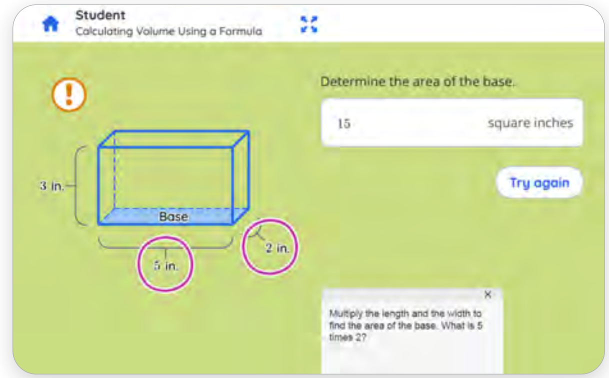
- Responsive Feedback™
- Guided Instruction
- Intervention Support

Instruction adapts within each activity based on student needs.

Let's look at Boost Personalized Learning from Grade 5, Unit 1, Activity 6: Calculating Volume Using a Formula:







Responsive Feedback™ responds to student thinking by showing the mathematical meaning behind their thinking. Student-friendly guidance helps learners get unstuck through visualization tools like tables, graphs, images, and animations.

Guided Instruction provides moments of explicit instruction to summarize key concepts and support sensemaking.

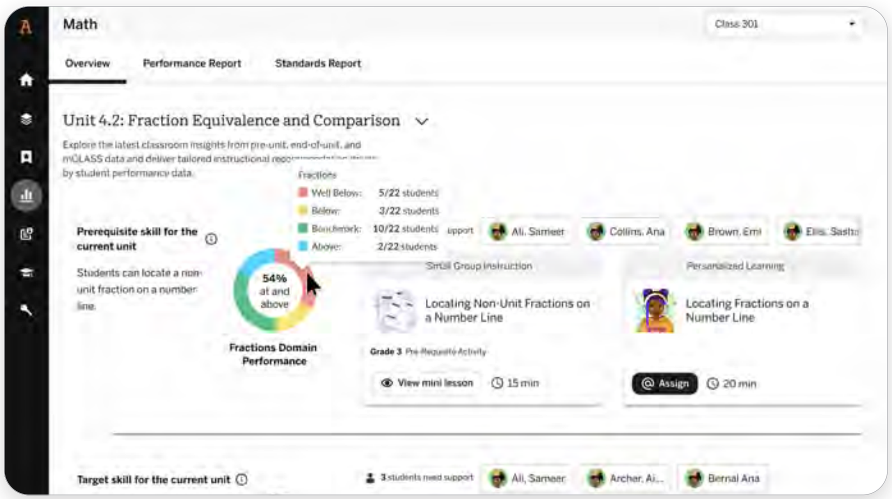
When needed, the tutor brings in key concepts and skills from previous grade-levels that activate prior knowledge to accelerate development of grade-level understanding.

Intervention Support is triggered when students still need more support after guided instruction. More intensive instruction is provided on key concepts and skills from previous grade levels that directly influence the development of grade-level understanding.

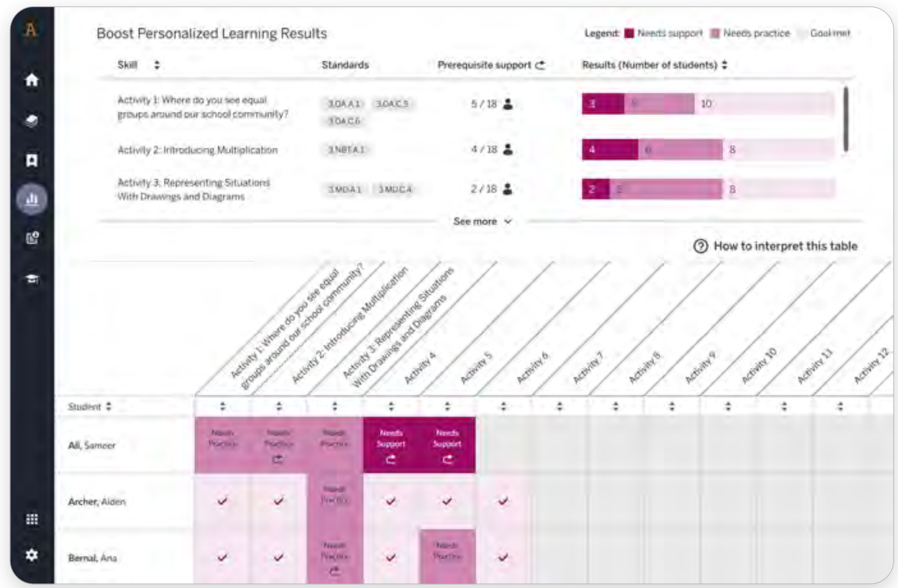
Data-informed intervention

Analytics to guide and differentiate instruction

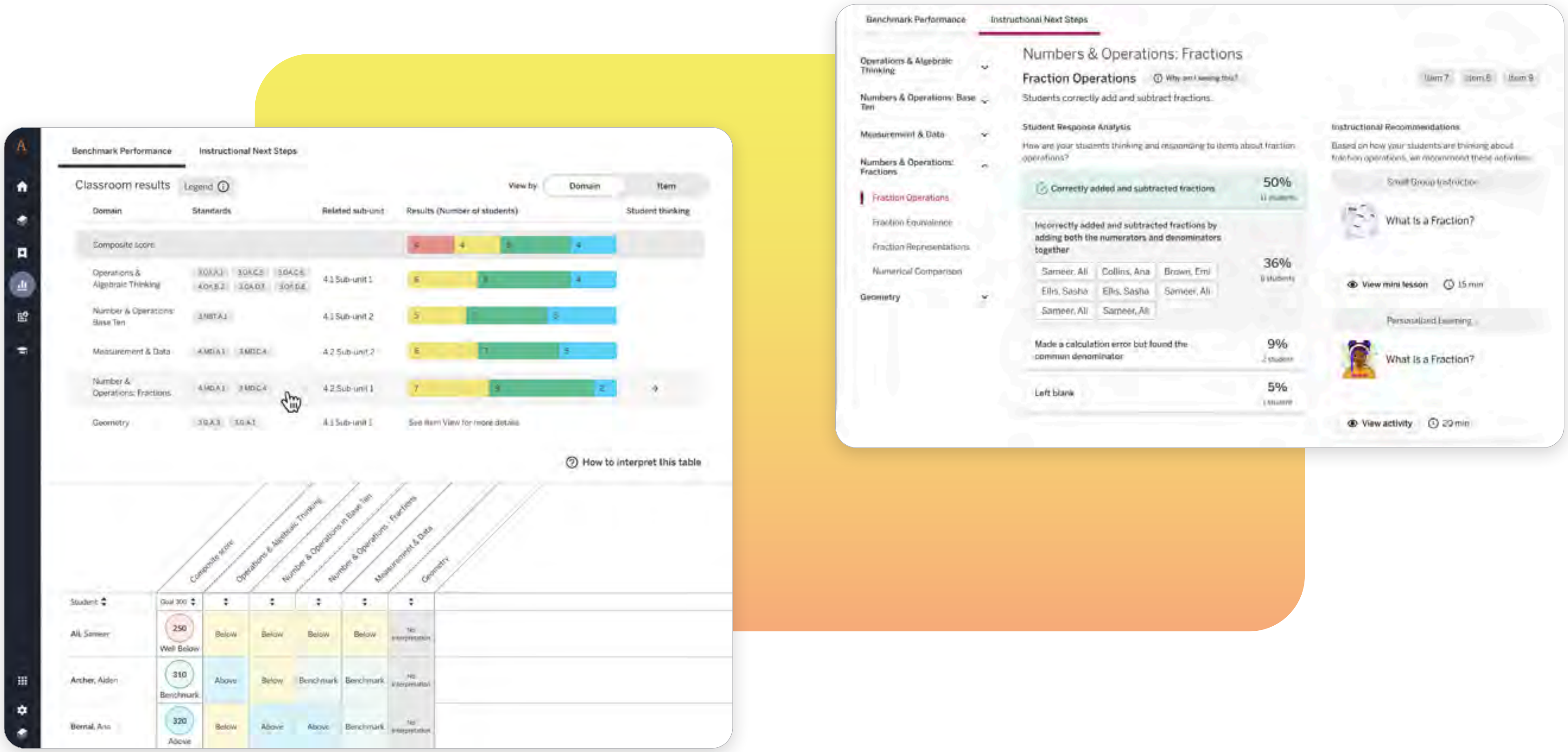
Reliable data is essential to any effective intervention model like an MTSS. Amplify Desmos Math Reporting provides teachers and administrators with unified data insights so that educators have visibility into what students know about grade-level math. This data is a driving force to help plan instruction for the whole class, small groups, and individual students.



The Overview page provides teachers with insights on key skills and recommends differentiation activities for specific students.



The Boost Personalized Learning report enables teachers to monitor student progress and identify students who need additional practice or teacher-led intervention.



mCLASS Benchmark and Progress Monitoring Assessments data gives teachers the data they need to identify students for Tier 2 and Tier 3 intervention.

Instructional Next Steps inform resources and activities for tiered instruction. Teachers can access deeper insights into student thinking, identifying trends on how students approach problems.

Designed for every learner

Amplify is committed to building products that address the needs of all learners, including those with disabilities. We do so by methodically integrating accessibility considerations into our product development lifecycle and implementing training and vendor management programs that support compliance with applicable legal standards, guidelines, and best practices relating to accessibility.

Amplify works with external experts in digital accessibility to ensure that we build our products according to the WCAG 2.1 AA guidelines. This includes engaging accessibility experts to conduct assessments and committing to a remediation plan for identified deficiencies. Our teams also participate in WCAG 2.1 training programs to support the integration of accessibility concerns into the decision-making process of our product design and development teams.

Students have the ability to control accessibility tools so that each learning experience is customized to their individual needs. In many instances, these tools can be turned on or off at any point of instruction.

	mCLASS Assessments	Core lessons	Boost Personalized Learning
Audio Support or Text-to-Speech Reads text instructions to students.	✓	✓	✓
Color Contrast Helps ensure that text stands out and is easy to read.	✓	✓	✓
Keyboard Navigation Ensures that all content can be accessed using only a keyboard.	✓	✓	✓
Enlarged font Increases the size of all text on screen.	✓	✓	✓
Braille mode Includes narration of digital interactions.	✓	✓	✓
Language selection Toggles between languages, including read alouds.	Coming soon!	✓	Coming soon!

Universal Design for Learning

The differentiation of Amplify Desmos Math addresses academic differences and variations in student motivation, interests, and identity. Understanding and addressing these aspects are essential for creating inclusive learning environments where all students feel valued and empowered to succeed. We incorporated Universal Design for Learning Guidelines (Engagement, Representation, Action, and Expression) into each lesson and developed a platform that is intuitive and easy-to-use for all learners.

Multiple Means of Engagement

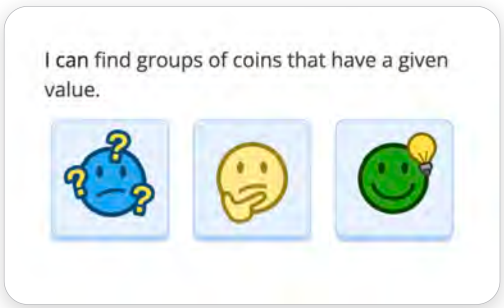
Individuals are motivated in different ways, at different times, and in different contexts. Lessons provide learners a variety of options to engage their interest, support sustained effort and persistence, and support self-regulation.

Multiple Means of Representation

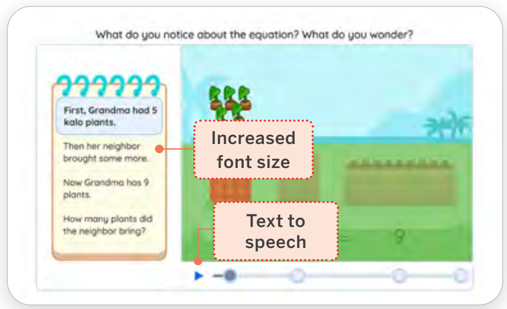
Learners make sense of information differently. Amplify Desmos Math includes options for presenting information in multiple ways to support comprehension and understanding of language.

Multiple Means of Action and Expression

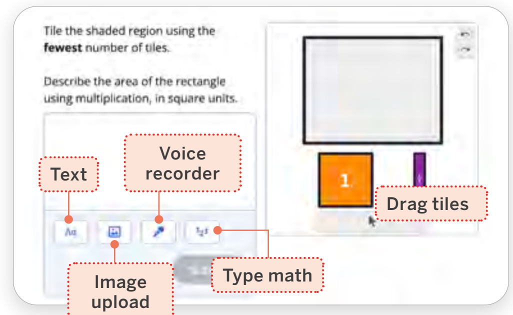
Learners differ in how they navigate learning environments and express what they know. Materials are accessible, support multiple means of students' expression and communication, and scaffold executive functioning.



Support Self-Regulation: Students reflect on their learning.



Present Information in Multiple Ways: Students and teachers can use digital tools, such as text-to-speech, enlarged font, and dynamic visuals.



Support Multiple Means of Student Expression and Communication: Students can communicate their ideas in multiple ways, including sketching, uploading photos, or recording an audio response.

Starting out with Amplify Desmos Math differentiation

Implementing tailored, just-in-time intervention and instruction better supports students' academic growth. Boost Personalized Learning and Mini-Lessons provide the resources you need to get intervention started in your classroom.

Mini-Lessons for small group intervention

Amplify Desmos Math leaned on the research of faded worked examples to create the low-prep Mini-Lessons aligned with the critical precursor skills students need to access grade-level content. This proven approach perfectly complements core lessons through guided practice for students that need additional support. Mini-Lessons are as easy as 1–2–3:

1 **Modeled review**

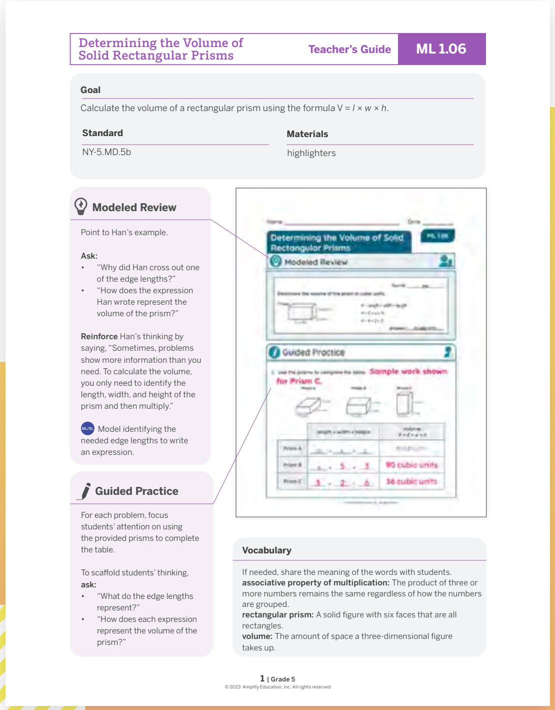
Teachers work through an example with students.

2 **Guided practice**

Teachers guide students through faded examples, where scaffolds are heavier early on and are gradually removed.

3 **Check for understanding**

Teachers provide students an opportunity to show what they have learned.



Determining the Volume of Solid Rectangular Prisms | Teacher's Guide | ML 1.06

Goal

Calculate the volume of a rectangular prism using the formula $V = l \times w \times h$.

Standard

NY-5.MD.5b

Materials

highlighters

Modeled Review

Point to Han's example.

Ask:
- "Why did Han cross out one of the edge lengths?"
- "How does the expression Han wrote represent the volume of the prism?"

Reinforce Han's thinking by saying, "Sometimes, problems show more information than you need. To calculate the volume, you only need to identify the length, width, and height of the prism and then multiply."

ML/EL Model identifying the needed edge lengths to write an expression.

Guided Practice

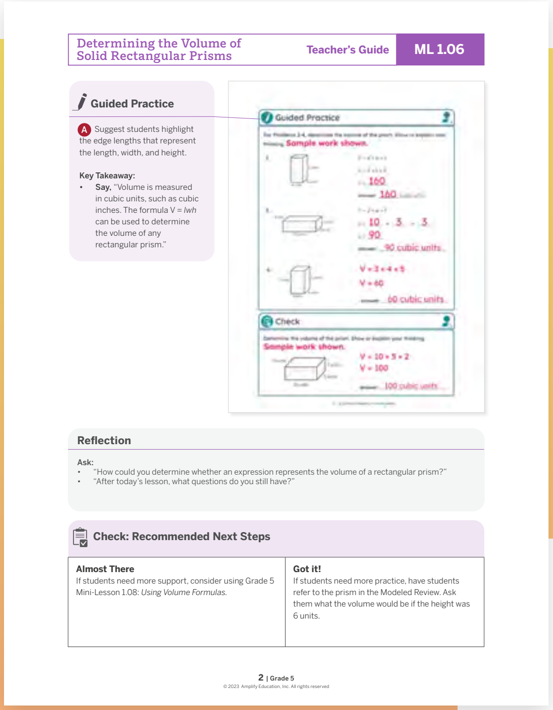
For each problem, focus students' attention on using the provided prisms to complete the table.

To scaffold students' thinking, **ask:**
- "What do the edge lengths represent?"
- "How does each expression represent the volume of the prism?"

Vocabulary

If needed, share the meaning of the words with students.
associative property of multiplication: The product of three or more numbers remains the same regardless of how the numbers are grouped.
rectangular prism: A solid figure with six faces that are all rectangles.
volume: The amount of space a three-dimensional figure takes up.

1 | Grade 5



Determining the Volume of Solid Rectangular Prisms | Teacher's Guide | ML 1.06

Guided Practice

A Suggest students highlight the edge lengths that represent the length, width, and height.

Key Takeaway:
- **Say,** "Volume is measured in cubic units, such as cubic inches. The formula $V = lwh$ can be used to determine the volume of any rectangular prism."

Reflection

Ask:
- "How could you determine whether an expression represents the volume of a rectangular prism?"
- "After today's lesson, what questions do you still have?"

Check: Recommended Next Steps

Almost There	Got it!
If students need more support, consider using Grade 5 Mini-Lesson 1.08: *Using Volume Formulas.*	If students need more practice, have students refer to the prism in the Modeled Review. Ask them what the volume would be if the height was 6 units.

2 | Grade 5

What it can look like in your classroom

The flexible instructional model of Amplify Desmos Math differentiation is designed around teacher and student needs, empowering teachers as they implement effective daily differentiation and intervention—minimal planning time required.

With resources searchable by topic and skills for teachers to easily see recommended activities and intervention, teachers can implement preventative intervention that works for their classroom and accelerate student growth.

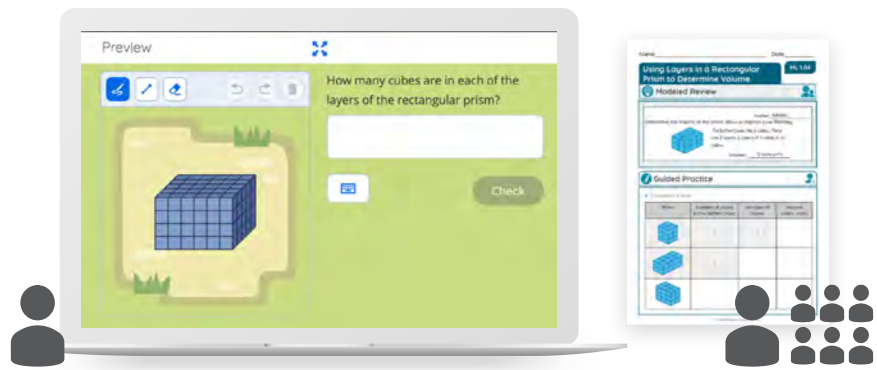
Independent

Group without teacher

Group with teacher

Some approaches on how to manage these intervention resources in your classroom, include:

1. Following core instruction, all students independently complete the Boost Personalized Learning activity aligned to the core lesson.
2. Teacher pulls a small-group Mini-Lesson ***sometimes***.



1. Following core instruction, all students complete the Boost Personalized Learning activity, aligned to the core lesson.
2. Teacher pulls a small group for a Mini-Lesson ***daily***.
3. Centers, Fluency Practice, and Math Adventures ***sometimes***.

Planning for intervention

Cohesive differentiation and intervention resources provide the necessary support to prevent students from falling behind—and empowers students extend their thinking.

Through this deep alignment with core instruction, the structure and recommendations of Amplify Desmos Math differentiation empowers teachers to quickly plan intervention that works in their math classroom. With all intervention resources together, effective intervention blocks can look like:

S Support

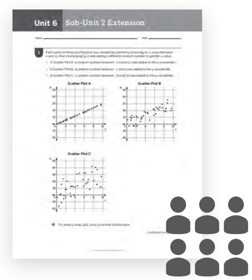
Provide targeted intervention with a Mini-Lesson.

S Strengthen

Reinforce understanding with collaborative Centers.

S Stretch

Provide enrichment for students with Extensions.



P Personalize

Assign personalized learning practice aligned to the core lesson with Boost Personalized Learning.

Below is an example of how a teacher might facilitate rotations. Use the template on the following page to plan intervention and differentiation in your classroom!

Differentiation planning guide template

	Group 1 Students who need more **SUPPORT** with today's skill	**Group 2** Students who need to **STRENGTHEN** today's skill	**Group 3** Students who are ready to **STRETCH** today's skill
Rotation 1 15 Mins	Mini-Lesson	Boost Personalized Learning	Center
Rotation 2 15 Mins	Boost Personalized Learning	Center	Extension
Rotation 3 15 Mins	Center	Fluency Practice	Boost Personalized Learning

Differentiation planning guide template

	Group 1 Students who need more **SUPPORT** with today's skill	**Group 2** Students who need to **STRENGTHEN** today's skill	**Group 3** Students who are ready to **STRETCH** today's skill
Rotation 1 15 Mins			
Rotation 2 15 Mins			
Rotation 3 15 Mins			

If students finish early, encourage them to jump onto Math Adventures for additional engagement and challenge.

Teachers can split or add **SUPPORT**, **STRENGTHEN**, and **STRETCH** groups if needed due to student needs or class size.

References

Gersten, R. (2016). What we are learning about mathematics interventions and conducting research on mathematics interventions. *Journal of Research on Educational Effectiveness*, 9(4), 684–688.

Multi-Tiered System of Supports (formerly RTI). (n.d.) American Institutes for Research. **https://www.air.org/our-work/education/multi-tiered-system-supports-formerly-rti**

Pozas, M. & Schneider, C. (2019). Shedding light into the convoluted terrain of differentiated instruction (DI): Proposal of a taxonomy of differentiated instruction in the heterogeneous classroom. Open Education Studies, 1, 73–90.

Tomlinson, C. A. (2014). *The Differentiated Classroom: Responding to the Needs of All Learners.* Association for Supervision and Curriculum Development

Bondie, R. S., Dahnke, C., & Zusho, A. (2019). How does changing "one-size-fits-all" to differentiated instruction affect teaching? *Review of Research in Education*, 43(1), 336–362.

Moschkovich, J. N. (2013). Principles and guidelines for Equitable Mathematics teaching practices and materials for English language learners. *Journal of Urban Mathematics Education*, 6(1). **https://doi.org/10.21423/jume-v6i1a204**

Kooloos, C., Oolbekkink-Marchand, H., van Boven, S., Kaenders, R., & Heckman, G. (2022). Making sense of student mathematical thinking: The role of teacher mathematical thinking. Educational Studies in Mathematics, 110(3), 503–524. **https://doi.org/10.1007/s10649-021-10124-2**

Deunk, M. I., Smale-Jacobse, A. E., de Boer, H., Doolaard, S., & Bosker, R. J. (2018). Effective differentiation practices: A systematic review and meta-analysis of studies on the cognitive effects of differentiation practices in primary education. *Educational Research Review*, 24, 31–54.

Fuchs, L. S., Fuchs, D., Craddock, C., Hollenbeck, K. N., Hamlett, C. L., & Schatschneider, C. (2008). Effects of small-group tutoring with and without validated classroom instruction on at-risk students' math problem solving: Are two tiers of prevention better than one? *Journal of Educational Psychology*, 100(3), 491–509. **https://doi.org/10.1037/0022-0663.100.3.491**

Resnick, L. B., Asterhan, C. S. C., & Clarke, S. N. (2015). Socializing intelligence through academic talk and dialogue. American Educational Research Association.

Harden, R. M. (1999). What is a spiral curriculum? *Medical Teacher*, 21(2), 141–143. **https://doi.org/10.1080/01421599979752**

Kang, S. H. (2016). Spaced repetition promotes efficient and effective learning. Policy Insights from the Behavioral and Brain Sciences, 3(1), 12–19. **https://doi.org/10.1177/2372732215624708**

National Research Council. (2001). *Adding It Up: Helping Children Learn Mathematics.* National Academy Press. **https://doi.org/10.17226/9822**.

Vygotsky, L. S. (1978). *Mind in Society: Development of Higher Psychological Processes.* Harvard University Press.

Rogoff, B. (1990). *Apprenticeship in Thinking. Cognitive Development in Social Context.* New York: Oxford University Press.

The opportunity myth. (n.d.). **https://tntp.org/wp-content/uploads/2023/02/TNTP_The-Opportunity-Myth_Web.pdf**

CAST. (2024, April 3). CAST. **https://udlguidelines.cast.org**

U.S. Department of Education. (2016). Every Student Succeeds Act (ESSA) Implementation. U.S .Department of Education. Retrieved from **https://www.ed.gov/essa**

Schaffer, G. (2023). Multi-Tiered Systems of Support: A Practical Guide to Preventative Practice. Sage Publications, Inc. SAGE

Shinn, M. R., & Walker, H. M. (2010). Interventions for achievement and behavior problems in a three-tier model including RTI. National Association of School Psychologists.

Flores, R. and Inan, F. (2014). Examining the impact of adaptively faded worked examples on student learning outcomes. *Journal of Interactive Learning Research*, 467–485.

Booth, J. L., McGinn, K. M., Young, L. K., & Barbieri, C. (2015). Simple practice doesn't always make perfect: Evidence from the worked example effect. *Policy Insights from the Behavioral and Brain Sciences* 2(1), 24–32.

National Council of Teachers of Mathematics (NCTM). (2014). Principles to actions: Ensuring mathematical success for all. Reston: VA: NCTM.

Notes

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