



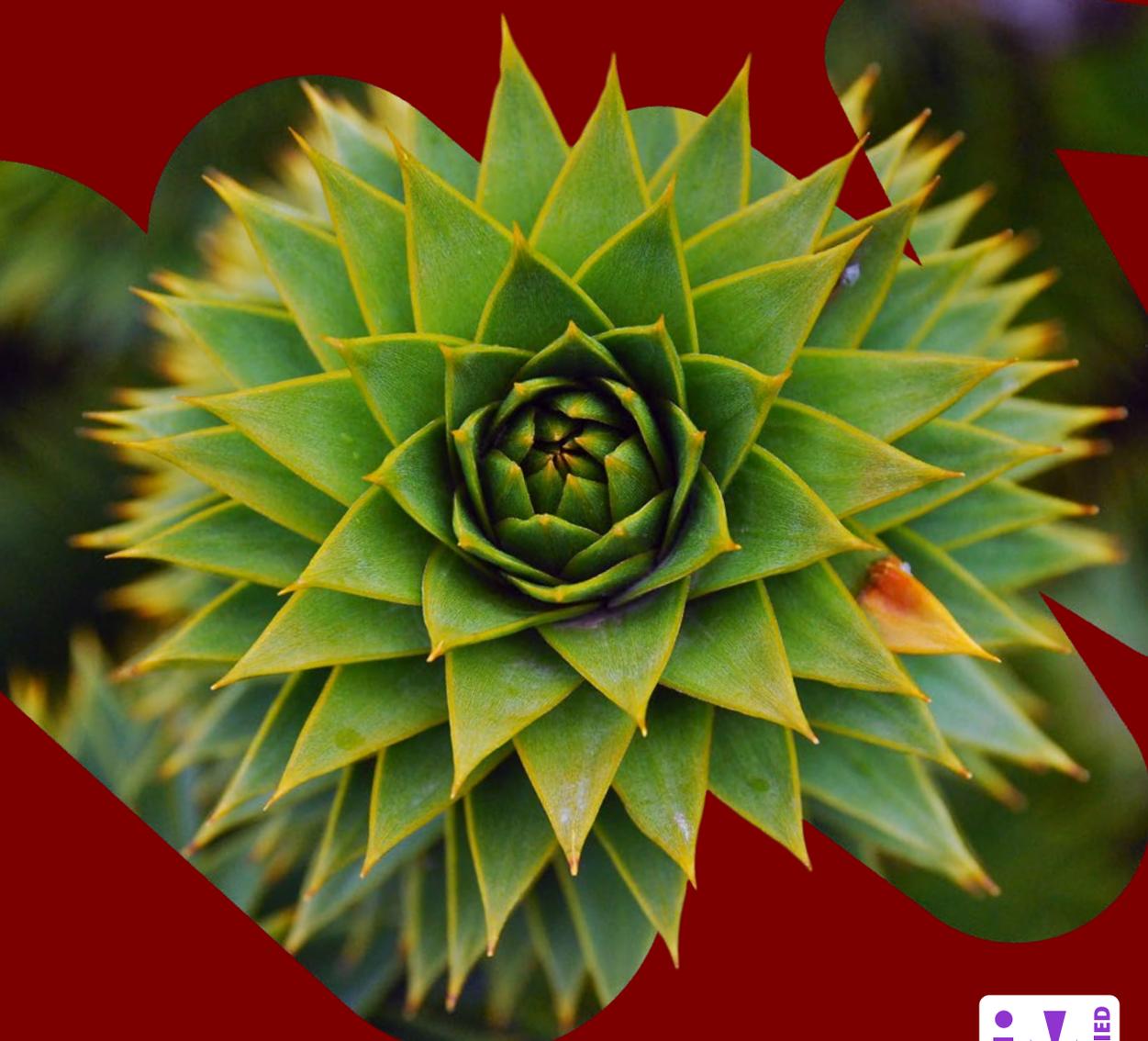
✓ All Greens on EdReports

IM 9-12
MATH  v.1

Illustrative Mathematics

Program Overview

Algebra 1, Geometry, Algebra 2



Authors, Research, and Certified Partnership

Dr. Bill McCallum and a team of math leaders authored Illustrative Mathematics (IM) to improve student outcomes in mathematics. The problem-based curriculum is built on best practices and research principles from NCTM, National Research Council, Smith & Stein, and others. The new IM K–5 Math completes the K–12 series.

Certified Partnership

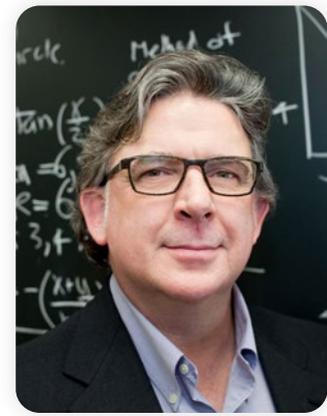
Imagine Learning is one of Illustrative Mathematics' Certified Partners.

The IM Certified designation assures that materials adhere to IM's philosophy and were developed, reviewed, and approved by Illustrative Mathematics.



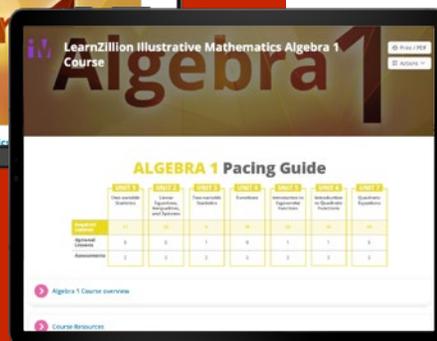
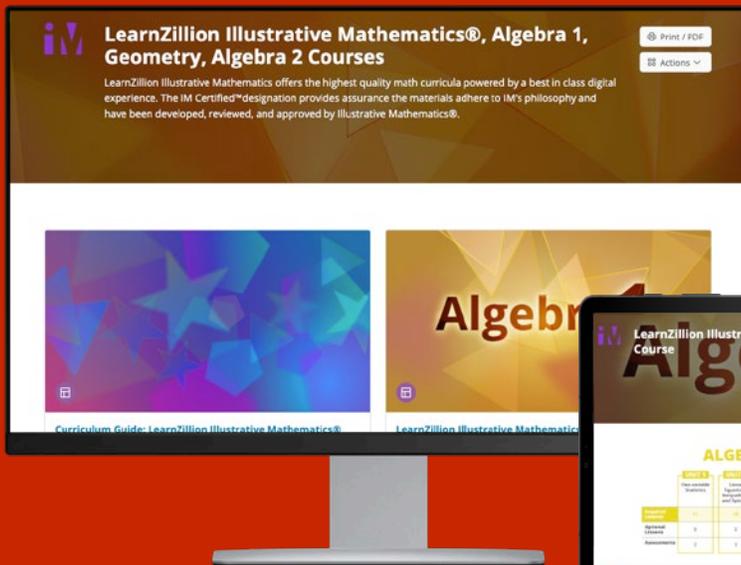
The Imagine Learning IM instructional experience aligns with the Every Student Succeeds Act (ESSA) Theory of Change for effective, evidence-based programs. The goal is to deliver an engaging and easy-to-implement instructional solution that leverages the power of high-quality curricula.

The result? Comprehensive support for teachers and positive learning outcomes for students.



“The IM 9–12 Math curriculum is our teacher-tested, standards-aligned curriculum, designed with high school learners in mind. The curriculum nurtures a comprehensive proficiency with functions, algebra, geometry, modeling, and statistics, and it encourages problem-solving skills students need to make use of mathematics in their future education and careers.”

...
Dr. William McCallum



Imagine Learning Illustrative Mathematics



For Algebra 1, Geometry, Algebra 2

A dynamic, engaging instructional experience that leverages the power of high-quality curricula:



Students enjoy mathematics, make mathematical connections, and develop conceptual understanding.



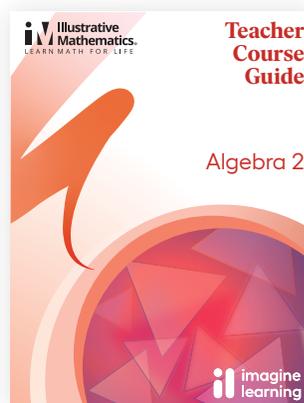
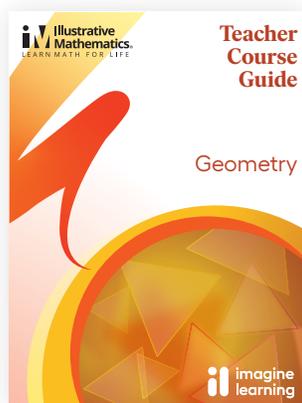
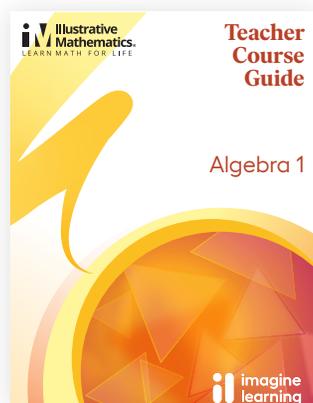
Teachers orchestrate discussions, synthesize understanding, and facilitate interactive lessons with confidence.



Imagine Learning partners with schools and districts for seamless integration and implementation.

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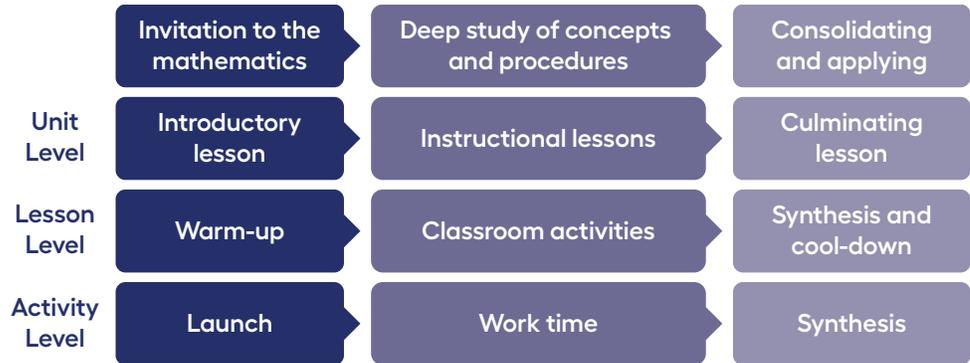
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Instructional Design

The instructional design of the materials supports all students through a coherent progression of mathematics based on the standards and research-based learning trajectories.

Each activity and lesson are part of a mathematical story across the units. This coherence allows students to view mathematics as a connected set of ideas that makes sense.



The overarching design structure at each level is as follows:

Units

Each unit starts with an invitation to mathematics. The first few lessons provide an accessible entry point for all students and allow teachers to observe students' prior understandings. Next, they move toward a deep study of concepts with time for consolidating and applying.

6 1.1 Warm-up Synthesis

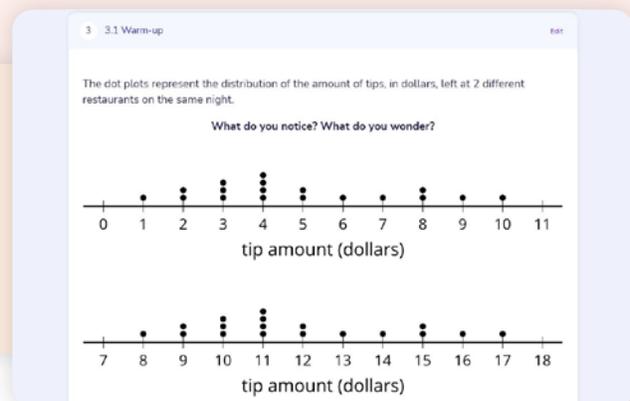
	prefer pens	prefer pencils	total
prefer lined paper	10	45	55
prefer unlined paper	30	15	45
total	40	60	100

- Why is this table an effective method for solving this question?
- Was using a table the only way to solve the questions?
- What does the word 'two' in two-way table refer to?
- How is it seen in the example from the task?

A two-way table can be used to organize data from two different categorical variables.

Lessons

Each lesson starts with a warm-up to set up the day's work or strengthen number sense and procedural fluency.



Instructional Activities

Next, instructional activities introduce students to new concepts, procedures, contexts, and representations — and help them make connections between them.

Synthesis

Each lesson ends with a synthesis to consolidate understanding and make the learning goals of the lesson explicit, followed by a cool-down to apply their learning.

Practice Problems

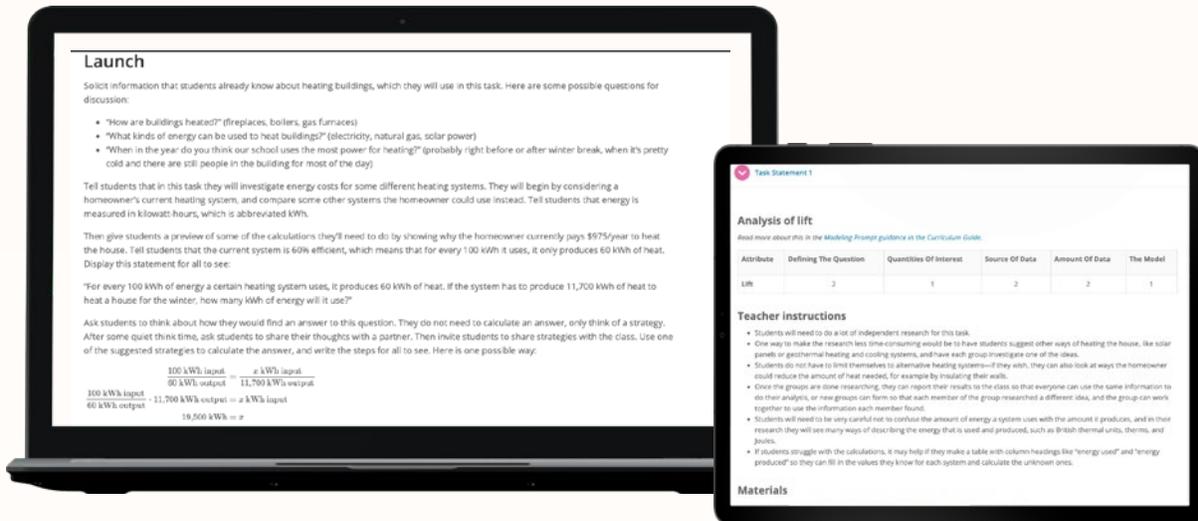
Practice problems are included with each lesson for independent work in class or homework. Teachers have the option to assign work by paper and pencil or digitally through the Imagine Learning (IL) Classroom. There is also another digital set of problems that teachers can assign for additional practice opportunities.

Lesson	Original	Additional
1	Practice Problems	Additional Practice Problems
2	Practice Problems	Additional Practice Problems
3	Practice Problems	Additional Practice Problems
4	Practice Problems	Additional Practice Problems
5	Practice Problems	Additional Practice Problems
6	Practice Problems	Additional Practice Problems
7	Practice Problems	Additional Practice Problems
8	Practice Problems	Additional Practice Problems
9	Practice Problems	Additional Practice Problems
10	Practice Problems	Additional Practice Problems
11	Practice Problems	Additional Practice Problems
12	Practice Problems	Additional Practice Problems

The practice problem set includes lesson-specific questions and distributed practice from earlier in the unit or previous units to ensure fluency.

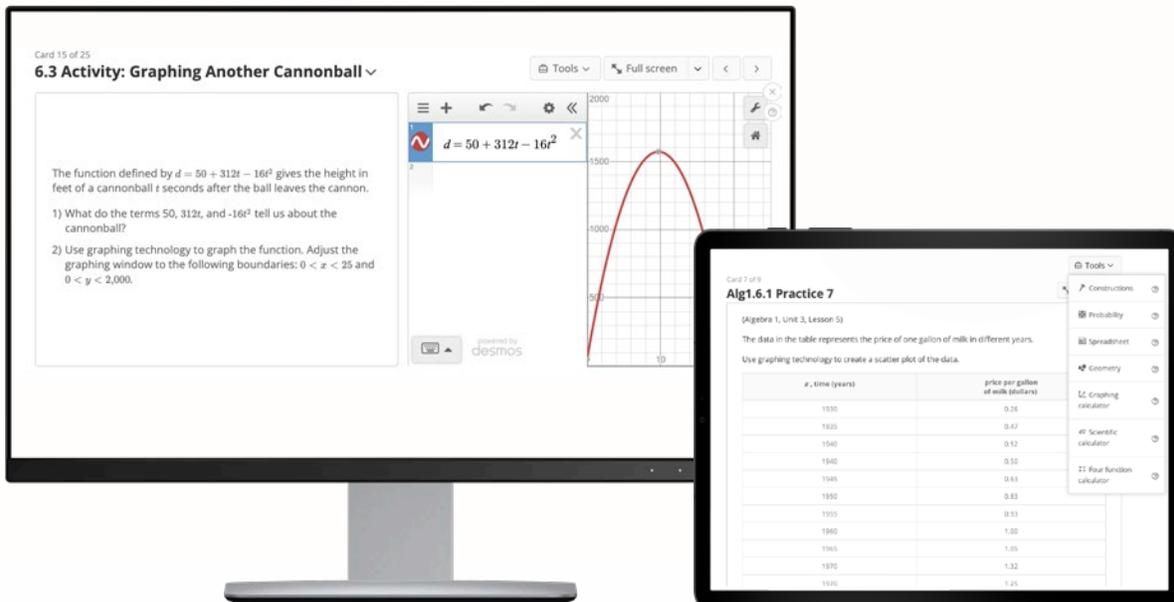
Mathematical Modeling

Mathematical modeling is the process of choosing and using appropriate mathematics and statistics to analyze empirical situations, understand them better, and improve decisions. The program offers modeling prompts and guidance to support students in making inferences, evaluating choices, and validating outcomes.



Use of Digital Tools

The curriculum empowers students to become fluent in using digital tools to produce representations, solve problems, and communicate their reasoning. The Imagine Learning (IL) Classroom embeds Desmos, GeoGebra, and other interactive tools at point-of-use to amplify understanding and engagement.



Teacher Experience

The program's resources are specially tuned to support teachers in planning and facilitating lessons across the various instructional models, including face-to-face, hybrid, and distance learning.

Print versions of Teacher's Editions and Student Workbooks mirror digital offerings, ensuring that the integrity of the rich Illustrative Mathematics content is maintained in any environment or instructional model.

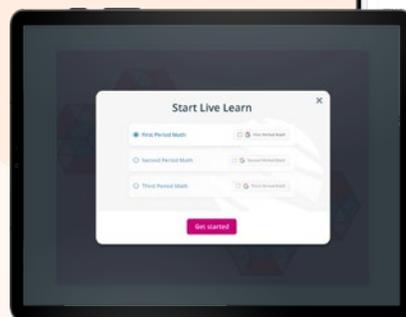
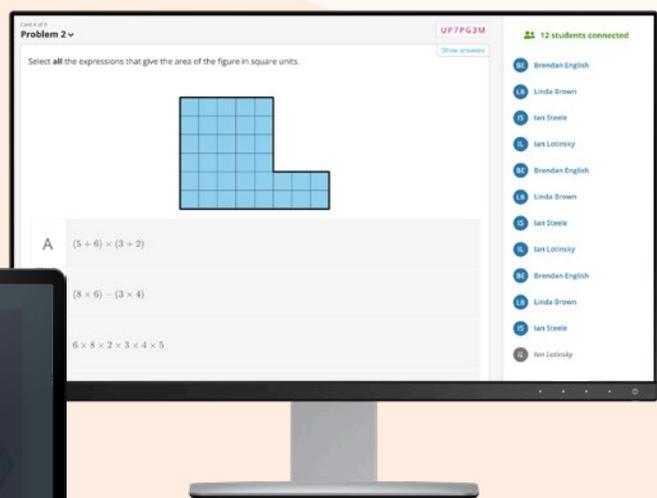
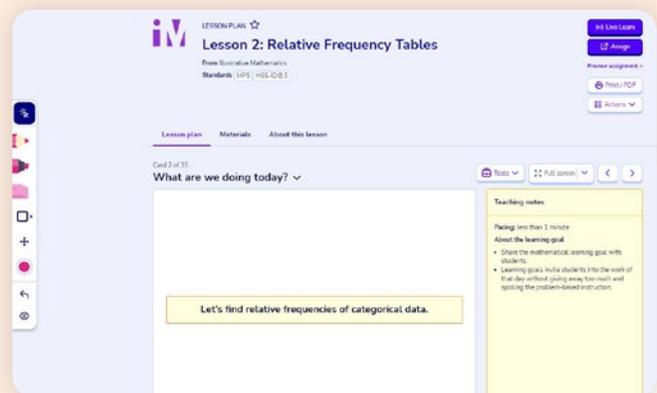


Flexibility and Personalization

Lesson cards can be projected or assigned to students, which allows flexibility for synchronous and asynchronous instruction. Lesson plans can be copied, edited, and customized as needed.

Daily instruction comes alive through the **annotation tool**, with the ability to write, draw, model, and share student work directly on the lesson cards. Teachers can annotate in lesson plan and fullscreen views.

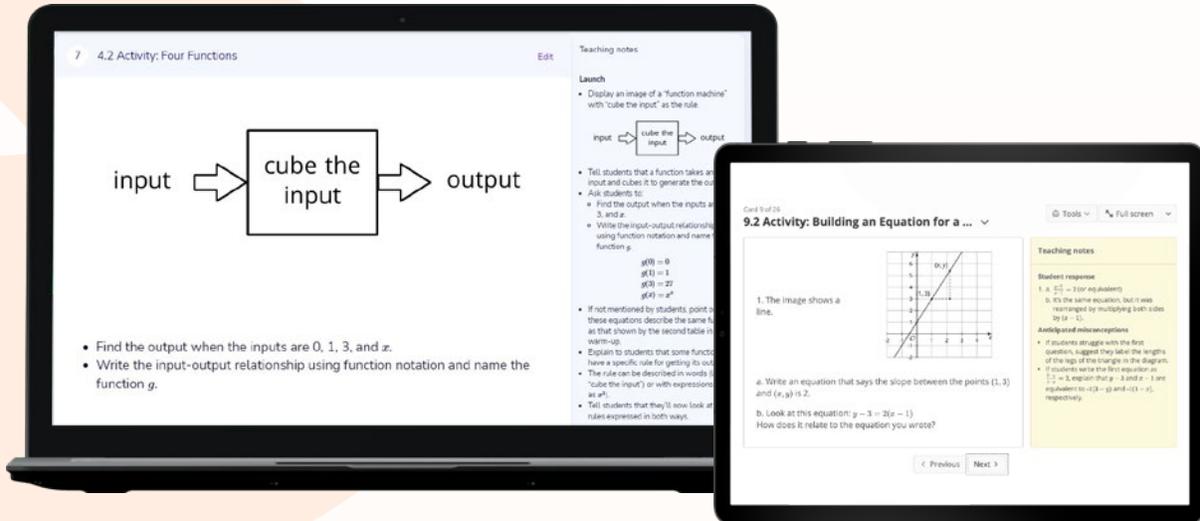
Live Learn allows for synchronous instruction virtually within the platform. Teachers can transition from asynchronous work time to a live session with one click.



On-Demand makes visibility of student work and timely feedback more efficient.

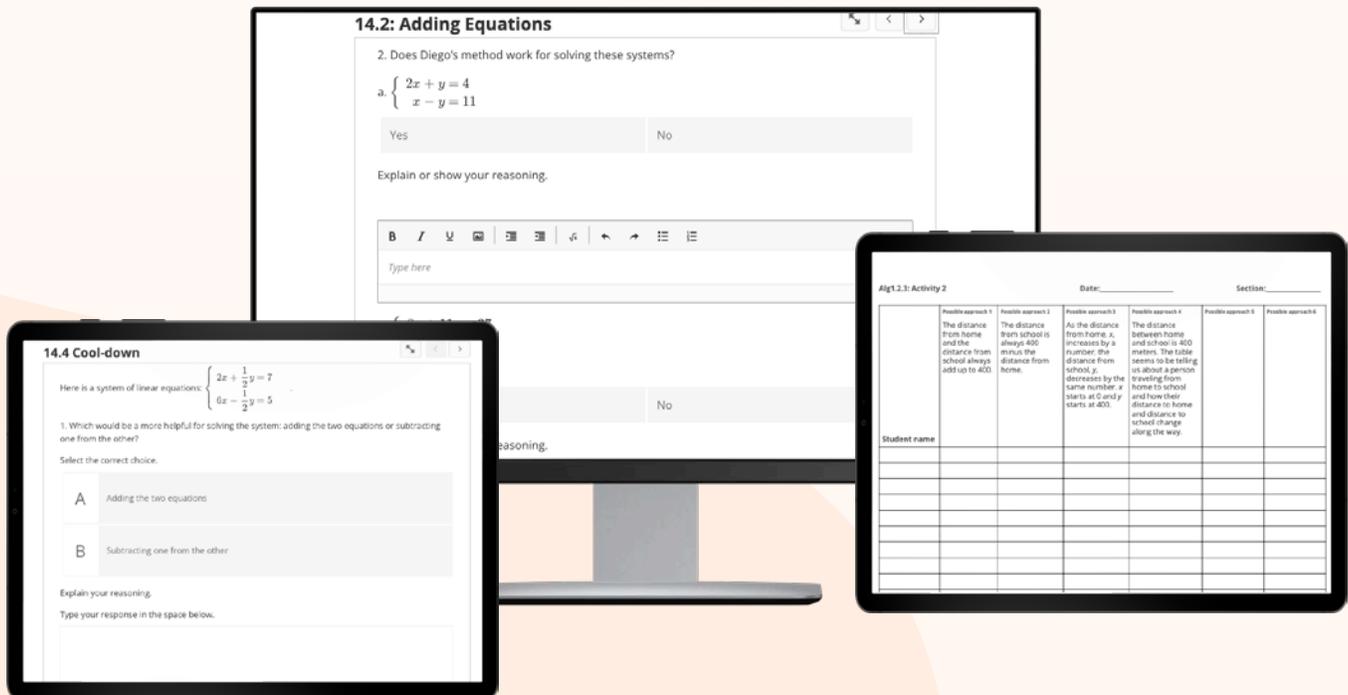
Embedded Teacher Support

Reflection questions, curriculum narratives, instructional strategies, common misconceptions, and digital tool integration are all at point-of-use in the teaching notes.



Formative Assessment Tools

Teachers can monitor student progress through diagnostic assessments, digital task statements, digital practice sets, cool-downs, and monitoring templates. These tools provide real-time feedback and data to inform instructional decisions.



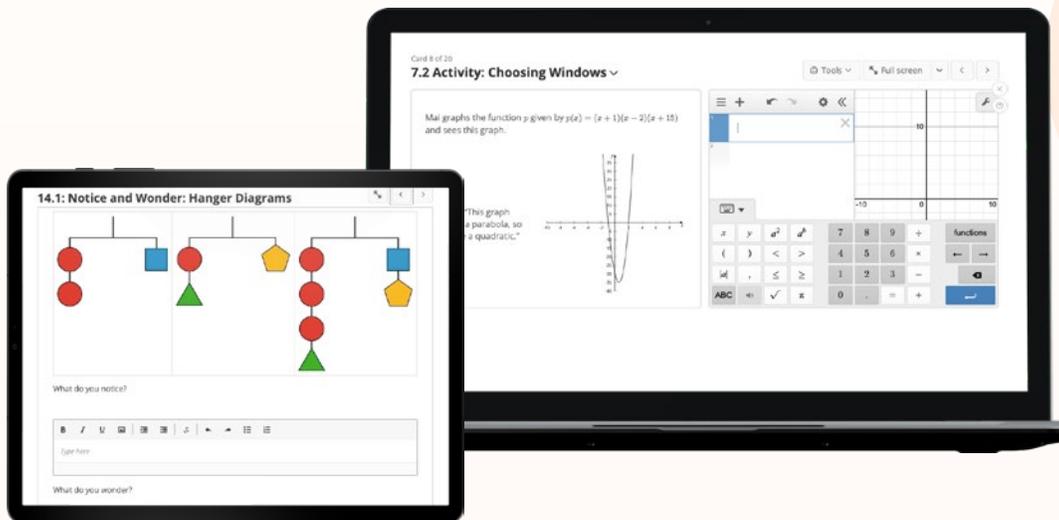
Student Experience

With Imagine Learning, students enjoy mathematics, make mathematical connections, and develop conceptual understanding.

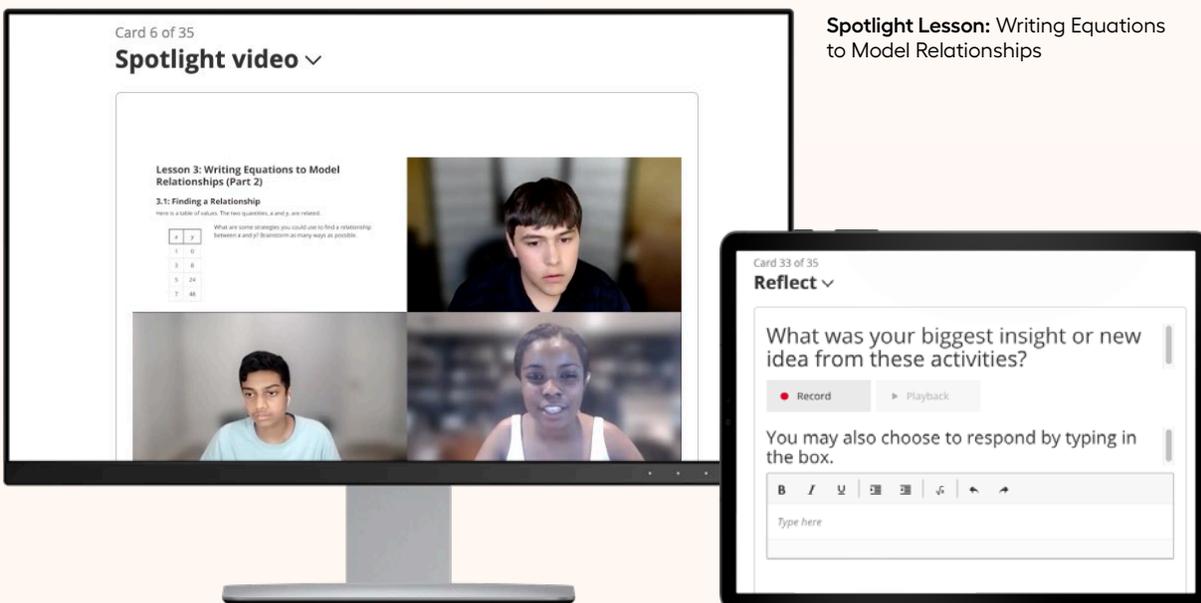
Students have access to print and interactive digital resources for optimal instruction and enrichment.

Deep Focus on Conceptual Understanding, Procedural Fluency, and Application

Instructional routines, representations, and digital tools help students develop an understanding of concepts and procedures.

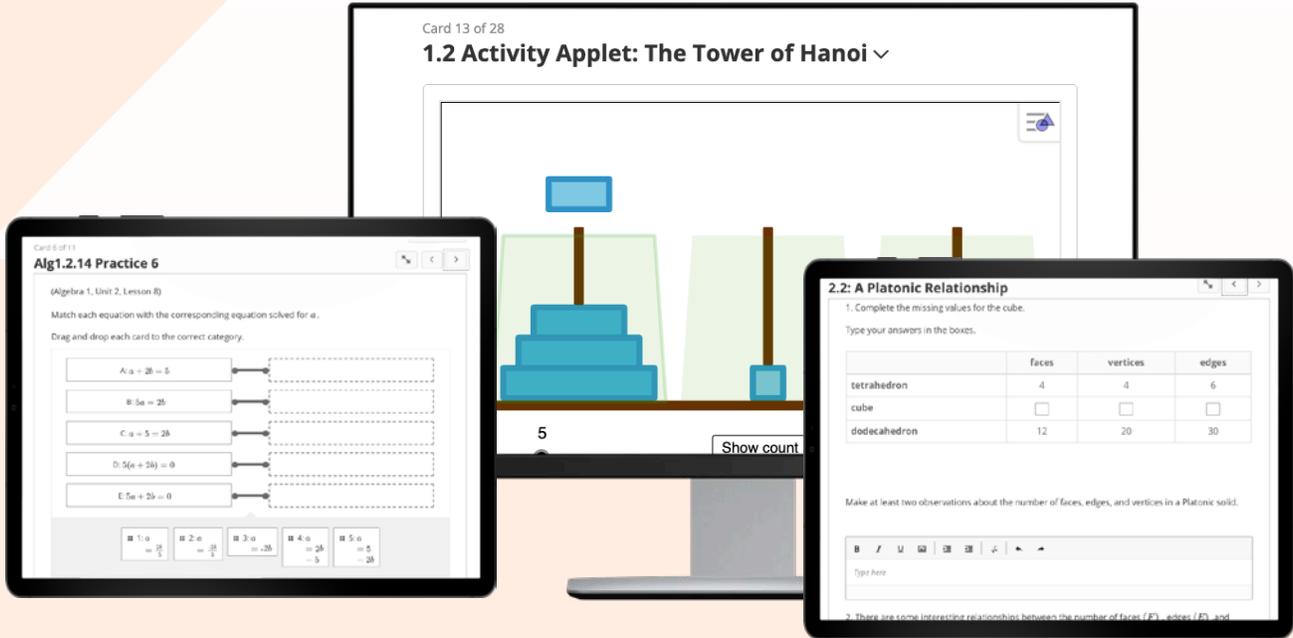


Embedded Opportunities for Active Discussion, Reflection, and Fostering Mathematical Practices



Spotlight Lesson: Writing Equations to Model Relationships

Students Engage with the Content via Digital, Print, and Interactive Resources



Illustrative Mathematics

Unit 2 Lesson 7 Curated Practice Problems

- Diego wrote $f(x) = (x + 2)(x - 4)$ as an example of a function whose graph has x -intercepts at $x = -4, 2$. What was his mistake?
- Write a possible equation for a polynomial whose graph has horizontal intercepts at $x = 2, \frac{1}{2}, -3$.
- Which polynomial function's graph is shown here?

 - A. $f(x) = (x + 1)(x + 3)(x + 4)$
 - B. $f(x) = (x + 1)(x - 3)(x + 4)$
 - C. $f(x) = (x - 1)(x + 3)(x - 4)$
 - D. $f(x) = (x - 1)(x - 3)(x - 4)$

Equity and Access

There are three major design principles to support all learners.

Provide access
for all

.....

Presume
competence

.....

Provide a
strength-based
approach

Embedded structures to foster endurance and perseverance

The curriculum gives careful attention to the complexity of contexts and students' potential familiarity with given contexts and representations.

Card 8 of 22
6.2 Activity: Falling and Falling

The value of some cell phones changes exponentially after initial release. Here are graphs showing the depreciation of two phones 1, 2, and 3 years after they were released.

Phone A

time (years)	value (dollars)
0	1000
1	600
2	360
3	216

Phone B

time (years)	value (dollars)
0	640
1	400
2	256
3	163.84

- To give students an overview of the context, consider sharing a news clip or advertisement on the latest release of a popular cell phone, or asking students to share what they know about the latest models of some phones.
- Solicit ideas from students about how they think the value of a phone changes after it is released.
- Students are likely to be familiar with the idea that phones decrease in value over time (especially as newer ones come along).
- Give an example of how a popular phone might have cost, for instance, \$400 when it was first available to the public, but the same type of phone (in new condition) might cost several hundred dollars less a couple of years later.
- Remind students of the meaning of the word depreciate or depreciation.

Algebra 1 extra support materials

Students who need extra preparation to succeed in Algebra 1 benefit from developing positive beliefs about mathematics. These give students opportunities to access grade-level mathematics in age-appropriate contexts.

Lesson plan | Additional materials | About this lesson
Card 4 of 17
12.1 Warm-up

Use the distributive property to mentally create equivalent expressions in standard form.

$$(x + 1)(x + 1)$$

Teaching notes

Instructional routine: Math Talk

Launch

- Display one problem at a time.
- Give students quiet think time for each problem and ask them to give a signal when they have an answer and a strategy.
- Keep all problems displayed throughout the talk.
- The activity synthesis happens throughout the activity as students share their responses and strategies. See the Activity Synthesis heading below.

Student response

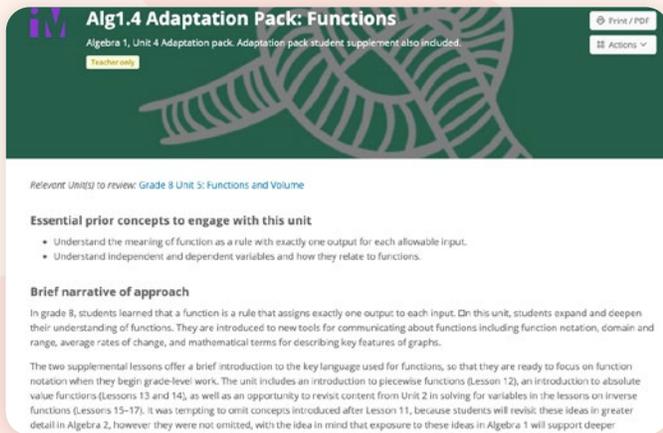
- $x^2 + 2x + 1$

Activity synthesis

- Ask students to share their strategies for each problem.
- Record and display their responses for all to see.
- To involve more students in the conversation, consider asking:

Algebra 1 Extra Support Materials utilize a few high-leverage instructional routines focused on number sense, precision of language, and mathematical reasoning that all students can access.

Resources to mitigate unfinished learning



Alg1.4 Adaptation Pack: Functions
Algebra 1, Unit 4 Adaptation pack. Adaptation pack student supplement also included.

Relevant **UNITs** to review: **Grade 8 Unit 5: Functions and Volume**

Essential prior concepts to engage with this unit

- Understand the meaning of function as a rule with exactly one output for each allowable input.
- Understand independent and dependent variables and how they relate to functions.

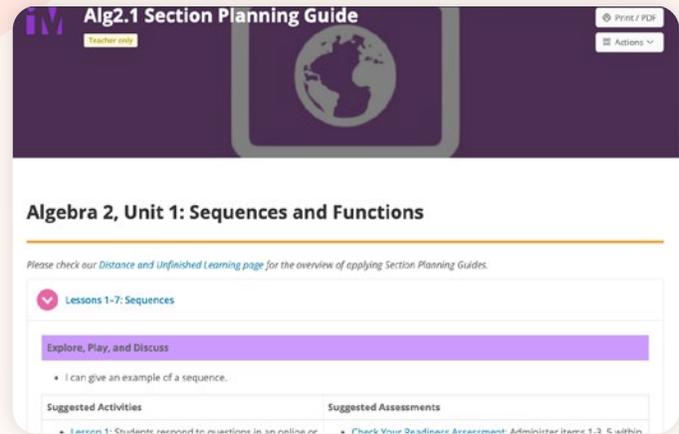
Brief narrative of approach

In grade 8, students learned that a function is a rule that assigns exactly one output to each input. On this unit, students expand and deepen their understanding of functions. They are introduced to new tools for communicating about functions including function notation, domain and range, average rates of change, and mathematical terms for describing key features of graphs.

The two supplemental lessons offer a brief introduction to the key language used for functions, so that they are ready to focus on function notation when they begin grade-level work. The unit includes an introduction to piecewise functions (Lesson 12), an introduction to absolute value functions (Lessons 13 and 14), as well as an opportunity to revisit content from Unit 2 in solving for variables in the lessons on inverse functions (Lessons 15–17). It was tempting to omit concepts introduced after Lesson 11, because students will revisit these ideas in greater detail in Algebra 2, however they were not omitted, with the idea in mind that exposure to these ideas in Algebra 1 will support deeper

Curriculum Adaptation Packs target unfinished learning and gaps in understanding that students may have from previous experiences.

Section Level Planning Guides identify essential lessons and activities that address major work of the grade or prerequisites and provide distance learning activities that support each lesson or activity.



Alg2.1 Section Planning Guide

Algebra 2, Unit 1: Sequences and Functions

Please check our [Distance and Unfinished Learning](#) page for the overview of applying Section Planning Guides.

Lessons 1-7: Sequences

Explore, Play, and Discuss

- I can give an example of a sequence.

Suggested Activities | **Suggested Assessments**

- Lesson 1: Students respond to questions in an online or ...
- Check Your Readiness Assessment: Administer Items 1, 3, 5, within

Cool-down Guidance

Lesson	Support Level	Notes
Algebra 1 Unit 1		
Alg1.1.1	1. More Chances	Students will have more opportunities to explore these ideas. If students struggle with what qualifies as a statistical question, highlight the distinction again when students use the data they collected in Lesson 3.
Alg1.1.2	1. More Chances	Students will have more opportunities to develop language to describe the shape of a distribution and interpret data displays. Lesson 4 explicitly teaches distribution shapes, so students who are not yet describing data sets as having a shape will have lots of opportunities to explore this idea in Lesson 4.
Alg1.1.3	2. Points to emphasize	Look carefully at cool-downs to ensure students are able to create histograms and box plots. Select student work to share to highlight and correct common errors at the start of the next lesson.
Alg1.1.4	1. More Chances	There will be more opportunities for students to practice this language throughout the unit. These terms may be new to students. Use visual displays and refer back to the shape of distributions, pushing for precise language. Students need to have internalized this language by Lesson 10.
Alg1.1.5	3. Press pause	Use the results from the Check Your Readiness Assessment to anticipate student struggle with MAD. Consider using Algebra 1 Supports Lesson 5 before this lesson if students need substantial support calculating MAD. Students will have more opportunities with IQR and the concept of variability.
Alg1.1.6	1. More Chances	Students have lots of opportunities in the next several lessons to gain experience with spreadsheets.
Alg1.1.7	1. More Chances	Students have lots of opportunities in the next several lessons to gain experience with spreadsheets.

Cool-down support guidance addresses newly discovered unfinished learning and identifies opportunities to revisit content in future lessons without stopping to re-teach a concept.

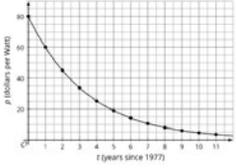
Equity and Access, continued

Access for Students with Disabilities

There are embedded supports for students with disabilities in the teaching notes. Each support aligns to one of the three principles of UDL (Universal Design for Learning): engagement, representation, and action and expression.

10.3 Activity: Revisiting Cost of Solar Cells

Here is a graph you saw in an earlier lesson. It represents the exponential function p , which models the cost $p(t)$, in dollars, of producing 1 watt of solar energy, from 1977 to 1988 where t is years since 1977.



In similar ones on their graph or used the same points in calculations, provide 2-3 minutes of quiet think time for students to read and interpret each other's work. This will help students make connections between different representations of finding the average rate of change that produce similar results.
Design Principle(s): Cultivate conversation; Maximize meta-awareness

Support for students with disabilities

- **Representation: Internalize Comprehension.** Demonstrate and encourage students to use color coding and annotations to highlight connections between representations in a problem. For example, students may use highlighters to color code each 5-year section a unique color.
Supports accessibility for: Visual-spatial processing

Advanced Learners

Lessons include **Try This** problems to challenge students. These problems go deeper into grade-level mathematics and often connect the topic at hand with other concepts.



Card 18 of 31

9.3 Are you ready for more?

Try This!

- 1) Using the model in this task, how many folds would be needed to get 1 meter in thickness? 1 kilometer in thickness?
- 2) Do some research: what is the current world record for the number of times humans were able to fold a sheet of paper?

About "Are you ready for more?" problems

- This problem goes deeper into grade-level mathematics. It is intended to be used on an opt-in basis by students if they finish the main class activity early or want to do more mathematics on their own.
- It is not expected that the entire class engages in the Are You Ready For More? problems but, when appropriate, teachers may use them as fodder for a Problem of the Week or similar structure.
- The problem appears in the student workbooks.

Student response:

1. 15 times; 25 times
2. As of this writing, the world record is 12 folds, with the help of a hydraulic press.

English Language Learners

Embedded supports for English learners are found in the Teaching Notes. Mathematical Language Routines are based on the UL/SCALE framework developed at Stanford University. The eight consistent routines simultaneously support students' learning of mathematical practices, content, and language.

Support for English Language Learners

- **Representing, Conversing: MLR7 Compare and Connect.** Use this routine to prepare students for the whole-class discussion. At the appropriate time, invite students to create a visual display that shows their strategy for the last question. Allow students time to quietly circulate and analyze the strategies in at least 2 other displays in the room. Give students quiet think time to consider how the strategies are alike and how they are different. Next, ask students to find a partner to discuss what they noticed. This will help students make connections between the strategies used to solve for an unknown input value.
Design Principle(s): Optimize output; Cultivate conversation

Culturally Responsive Teaching and Learning



The materials are inclusive of a variety of cultures and ethnicities and are free from bias in the portrayal of ethnic groups, gender, age, class, cultures, religion, and people with disabilities.

1.2 Activity: The Tower of Hanoi

In the Tower of Hanoi puzzle, a set of discs sits on a peg, while there are 2 other empty pegs.



A *move* in the Tower of Hanoi puzzle involves taking a disc and moving it to another peg. There are two rules:

- Only move 1 disc at a time.
- Never put a larger disc on top of a smaller one.

You complete the puzzle by building the complete tower on a different peg than the starting peg.

Viral Marketing Modeling Prompt Task Statement #1

Viral Marketing

An animal rescue organization, which relies mainly on donations to support their work, is deciding between two campaign strategies to raise funds. The organization has a stable group of supporters—people who adopted the rescued animals or those who had donated money to the cause. These options are under consideration:

- Send the fundraising message to their most loyal supporters. Ask them to each pass the message to a certain number of their animal-loving friends, along with the same request of relaying it to a certain number of their friends, and so on.
- Send the message to all supporters on their list. Ask them to share the message with everyone in their network of friends, along with the request to continue passing the message to everyone on their friends' list. With this strategy, the organization recognizes that only a fraction of the recipients are likely to read the message or pass it along.
- Broadcast the message by buying a commercial that will air on the local news.

Which strategy would likely yield the better outcome for the organization?

6.3 Activity: The Jump

In a bungee jump, the height of the jumper is a function of time since the jump begins.

Function h defines the height, in meters, of a jumper above a river, t seconds since leaving the platform.

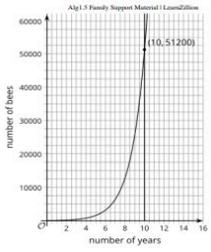


Home Connections



Each unit includes Family Support Materials that explain the key ideas and concepts in family-friendly language. There are also tasks to create a stronger school-home connection and empower parents and caregivers in supporting students outside the classroom.

Alg 1.5 Family Support Material | LearnZillion



Graphing is especially helpful when looking a long way into the future or when you want to know when something will happen, like when the bee population will reach 1 million.

Here is a task to try with your student:

Florida is having a problem with a toxic green algae that is floating on their waterways, contaminating the water and killing the marine life. Kiran lives on a small lake in south Florida. One day he noticed the algae floating on a 3 square meter area of the lake. A month later, the algae had doubled in size, growing to 6 square meters.

Alg 1.5 Family Support Material | LearnZillion

time (months)	area (square meters)
0	3
1	6
2	12
3	24
4	48

You could write an exponential equation to represent the situation. Let x represent the time in months and y represent the area in square meters.

Algebra 1 Video Lesson Summaries

Algebra 1 includes lesson summary videos for checking understanding and reviewing important concepts and vocabulary. Parents and caregivers can use these as a resource for homework help.

Statistics and Data Displays

Data Displays



Statistic a quantity that is calculated from sample data as a measure of a distribution

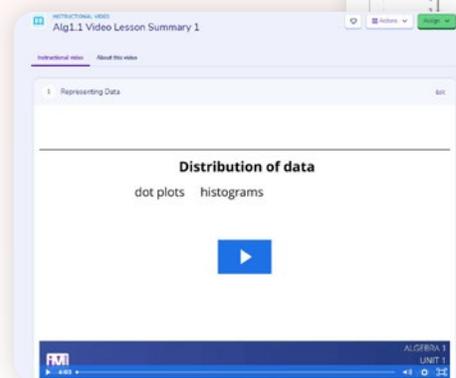
ALGEBRA 1
UNIT 1
VIDEO 3

Alg 1.1 Video Lesson Summary 1

1 Representing Data

Distribution of data

dot plots histograms



ALGEBRA 1
UNIT 1
VIDEO 3

Assessment

Measure understanding and meet learning goals

Illustrative Mathematics offers opportunities for both formative and summative assessment that empower teachers to measure student understanding and progress against learning goals.

Digital assessment resources include new generation item types including multiple choice, multiple select, and other tech-enhanced item types.

Formative Assessment

The Illustrative Mathematics instructional design offers regular, embedded options for monitoring student progress and providing constructive feedback.

Card 5 of 10
Tools

Problem 4

The graphs represent a system of equations: $\begin{cases} -2x + 3y = 12 \\ 2x + 3y = 0 \end{cases}$

Solve the system of equations.

Each unit begins with a **Check Your Readiness diagnostic assessment** of concepts and skills that are prerequisite to the unit. Teachers can use these to identify students with particular below-grade needs or topics to carefully address during the unit.

Card 20 of 20
Tools Full screen

Learning targets

I can use division to rewrite a polynomial in factored form starting from a known factor and then sketch what it looks like.

Teaching notes

OPTIONAL

Pacing: ~3 minutes

- Share the learning target(s) with students.
- Ask students to reflect on whether or not they achieved the learning targets for today.
- You may want to use the "My Reflections" sheets for this unit to capture student responses.
- Questions to consider for this self-

Let's put together what we've learned about polynomials so far.

Teachers and students can use **learning targets** as formative assessment prompts for a reflection or self-assessment as part of a lesson synthesis.

Learning Goals invite students into the work of that day.

15 3.3 Cool-down
Edit Teaching notes

2. Create a histogram that shows this information.

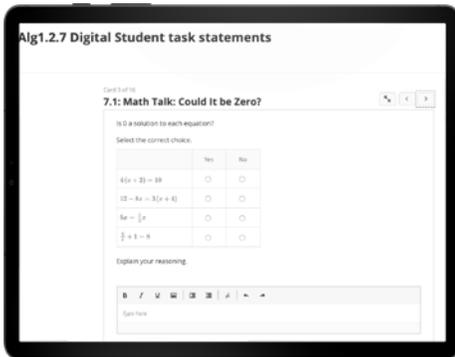
20-30	5
30-40	7
40-50	5
50-60	6
60-70	6
70-80	4
80-90	2
90-100	7
100-110	8
110-120	1

Student response

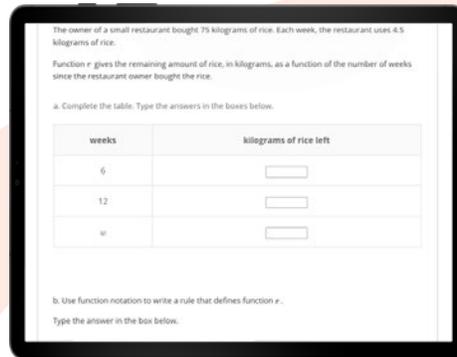
Each lesson includes a **Cool-Down** to assess that day's lesson.

Summative Assessment

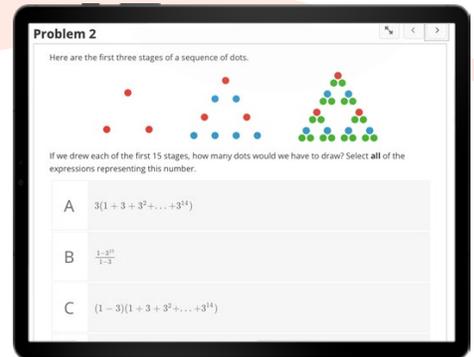
Each unit includes an end-of-unit **written and digital assessment** to assess what students have learned at the conclusion of the unit.



Digital assessments allow students to access, record, and submit their questions and answers for a variety of technology-enhanced item types including multiple choice, multiple select, drag-and-drop, cloze, graphing, labeling, constructed response, short essay, and drawing types.



In longer units, a **mid-unit assessment** is also available.



All **summative assessment** problems include a complete solution and standard alignment. Multiple-choice and multiple response problems often include a reason for potential errors.

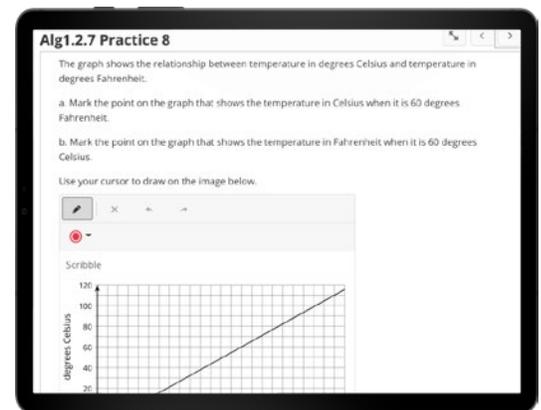
Digital Practice

Additionally, a set of cumulative practice problems is provided for each lesson that can be used for homework or practice.

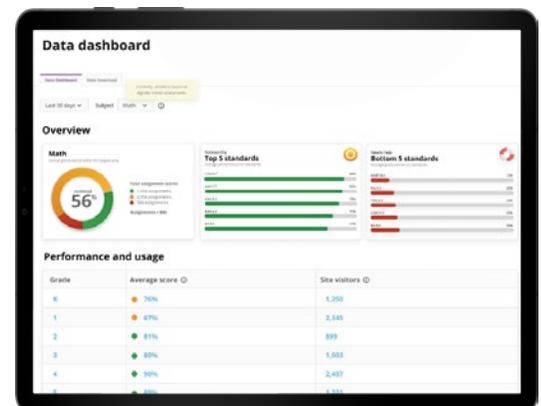
Most units have culminating lessons with **performance tasks** where students have an opportunity to show off their problem-solving skills or apply the mathematics they have learned to a real-world problem.

Data and Reporting allows for real-time reporting is available for teachers to give them actionable data. Class Performance Reports show assignment scores item analysis and year over year retention data.

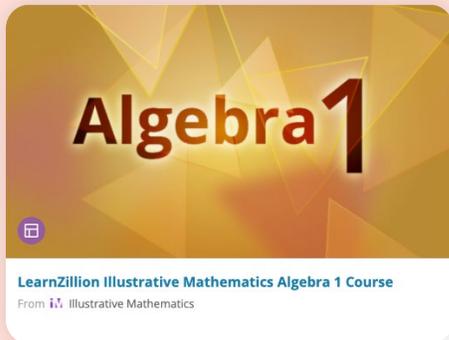
Drill downs allow teachers to analyze student work for open-ended item type.



● Digital Practice

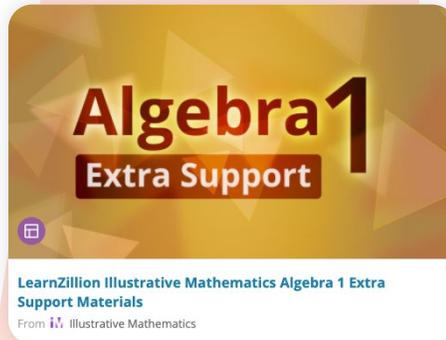


Program Components



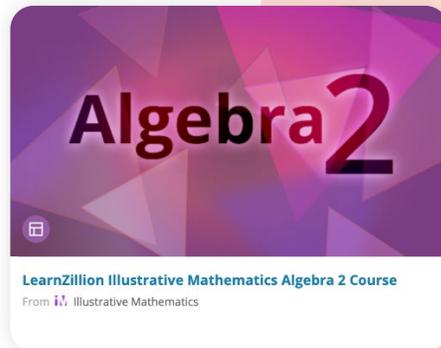
Algebra 1

LearnZillion Illustrative Mathematics Algebra 1 Course
From  Illustrative Mathematics



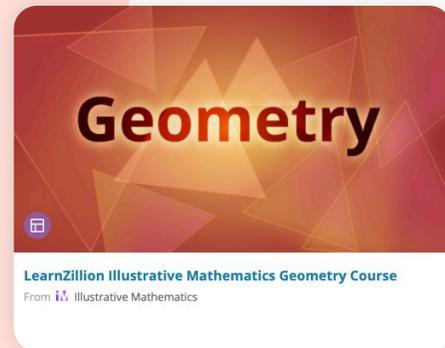
Algebra 1
Extra Support

LearnZillion Illustrative Mathematics Algebra 1 Extra Support Materials
From  Illustrative Mathematics



Algebra 2

LearnZillion Illustrative Mathematics Algebra 2 Course
From  Illustrative Mathematics



Geometry

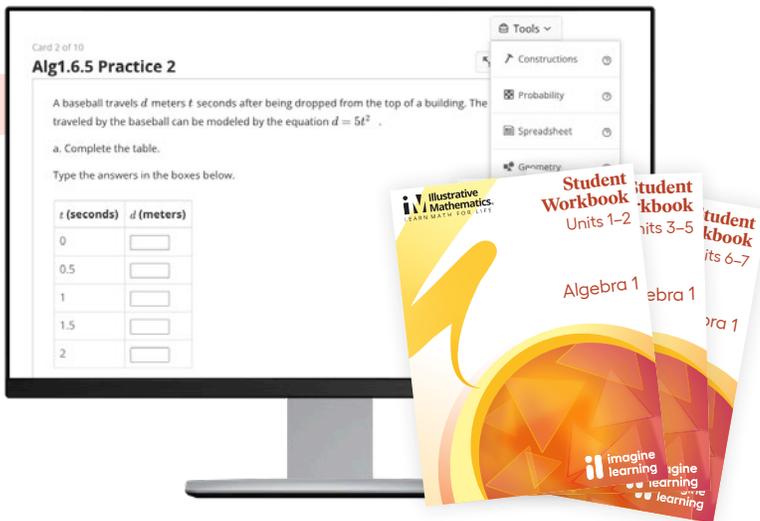
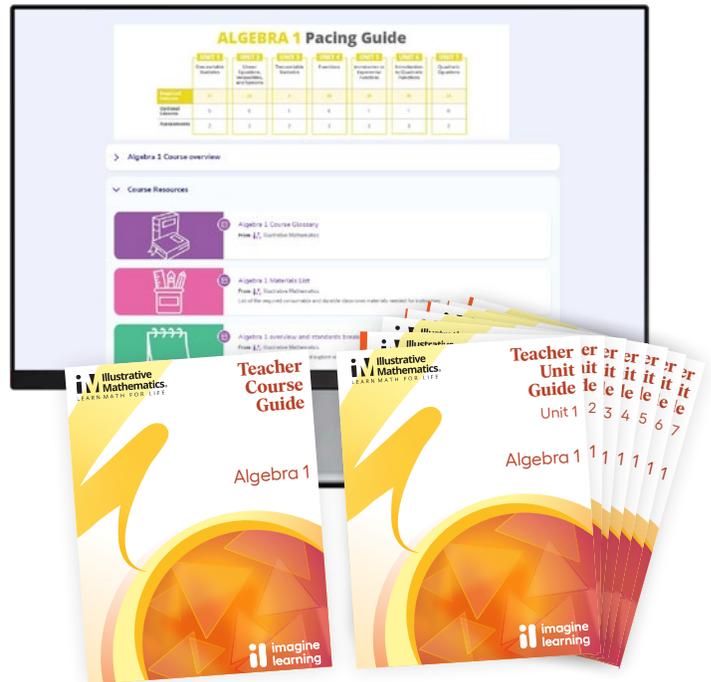
LearnZillion Illustrative Mathematics Geometry Course
From  Illustrative Mathematics



Teacher Components*

- Teacher Course Guide (print)
- Teacher Unit Guides (units 1–7 or 8 depending on course) (print)
- Imagine Learning (IL) Classroom Teacher License (digital)

Imagine Learning (IL) Classroom includes access to all print components, teacher notes, pacing guides, materials lists, glossary, classroom and distance learning-ready lesson cards with annotation functionality, assignable lessons and assessments, Algebra 1 extra support materials, Algebra 1 Student Spotlight lessons, modeling prompts, family materials, extension problems, digital interactives (including Desmos and GeoGebra), videos, digital assessments, digital practice sets, Live Learn, adaptation packs, data dashboard, reports, and more.



Student Components*

- Student Workbooks (units 1–7 or 8 depending on course) (print)
- Imagine Learning (IL) Classroom Student License (digital)

Imagine Learning (IL) Classroom Includes access to student workbook content in English and Spanish, interactive lessons, Algebra 1 extra support materials, Algebra 1 Student Spotlight lessons, glossary, Lesson Summary videos, Digital interactives (including Desmos and GeoGebra), digital student task statements, digital assessments, digital practice sets, and more.



Professional Services

The Imagine Learning IM professional development offerings support teachers, coaches, and administrators in effectively implementing the curriculum and platform with integrity throughout their program adoption.

There are virtual and in-person options to support the unique needs of your school or district. The workshop modules allow participants to learn, apply, and synthesize their understandings.



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