

ALGEBRA 1

UNITS with videos

Answers & Information

💡 Intro to MathLight

Thank you for taking a closer look at our resources here at MathLight. We think you & your students will quickly grow to love them as much as we do.

What is MathLight?



MathLight is all about making math easier for students to understand - and for you to teach.

As veteran math teachers, we've learned firsthand how to explain complex topics in a way that makes sense to students. We absolutely love those light bulb moments and are committed to bringing more of them to your students as well. Hence our name - MathLight!

We're here to provide you with awesome resources to enhance your math classroom. But what makes our program uniquely amazing is that it's fully integrated with video lessons. That means you can flip your classroom, provide remedial help for those who are struggling or absent, supplement your own in-class lessons, and much more!

We can't wait to show you what's in store for your class with the MathLight program.

Who is MathLight?

MathLight is created by two veteran math teachers. And you may be interested to know we're actually a father-daughter team.



Rick Scarfi, the voice & genius behind MathLight's teaching videos, is a veteran math teacher of over 30 years. One of his biggest strengths (as you will soon see) is his uncanny ability to explain complex mathematical topics in a way that students easily understand.

Not only does Rick have the intangible ability to make challenging concepts appear simple, but he also pioneered the concept of math notes, another fantastic feature you'll experience in MathLight.



Linda Kardamis taught middle school math for four years before stepping away from the classroom to raise her young children (that's Rick's grandkids if you're following closely.) Since then Linda has founded Teach 4 the Heart which offers

Linda shares the same passion and skill for teaching math and is thrilled to partner with Rick to create engaging & helpful curriculum that students and teachers will both enjoy.





Each MathLight Unit is designed to make math easier for your students to understand. These elements work together to create an engaging learning experience for your students.

Each MathLight Unit Contains:



Video Lessons that help students actually understand algebra.

Expert math teacher Rick Scarfi explains each concept step-by-step in the accompanying teaching videos. His explanations have helped hundreds of students grasp even the most complex mathematical concepts & now they're here to enlighten your students as well.

You'll be amazed how many different ways these videos will come in handy. Here's a few ideas...



Flip your classroom.

Instead of teaching during class and sending kids home with homework, try flipping the model. Ask your students to watch the videos at home, then use class time to practice together, in small groups, or individually. This allows you to guide students as they practice, correct their misconceptions, informally access for mastery, and more easily differentiate based on students' needs.



Easily catch up absent students.

Two students were absent for Tuesday's lecture? No problem! They can watch the lessons online and receive the same top-notch explanations they would have heard in class.



Provide extra support for struggling students.

Sometimes students need to see an explanation again (and again), but there's only one of you and only so much class time. That's why MathLight's teaching videos are so handy. Students can access the videos anytime online and re-watch any lesson they're still confused about.



Supplement or replace your own lectures.

If you find your students aren't really understanding your explanations, why not take advantage of the expert teaching provided by MathLight? Show the teaching videos during class and then follow up by answering questions and practicing together. You may even find that your own explanations improve as you learn clear & concise ways to explain challenging topics.

We know you'll fall in love with our videos, but we don't want you to take our word for it. That's why you can check out all of our pre-algebra videos for free for a limited time at mathlight.teachable.com.

Once you get a taste of what MathLight videos offer, you'll be even more excited about all the amazing resources that integrate seamlessly with them.







Each MathLight Unit Contains:



Student Notes that increase retention.

The notes are our secret weapon here at MathLight. Not that we intend to keep them secret... It's just that you have to experience their power for yourself before you can fully appreciate them.

Here's a few reasons you'll love the accompanying student notes.



Students comprehend the material better & are more engaged.

Students work through the explanations and examples with the video, filling out the notes as they go and practicing the example problems along with the video. This helps student better engage with and comprehend the material.



Students remember concepts better & gain confidence.

When you provide your students with MathLight's detailed math notes, you give them the tools and information they need to be successful. If they can't remember how to work a problem, they have their notes to look back on for help and guidance. And when it comes time for assessments, they've got everything they need to know in one place

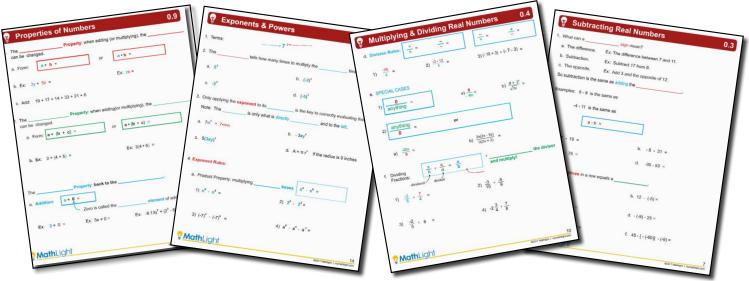


You can hold your students accountable.

Ever assign students to watch a video but have no idea if they actually did? By requiring them to complete the notes along with the video, you dramatically increase the probability that they will actually watch it. And, in worst case, you know they at least filled out all the information by hand.

The notes & videos even use different colors to help students more easily track & remember the various steps. Remember those super cool 4-color pens? They're perfect for your students to use while taking notes.

BONUS!! Teacher versions of the notes are also included, which provide the completed notes with all problems worked out. Yes, we did try to think of everything.







Each MathLight Unit Contains:



Quick Review Videos that reinforce each concept.

Each MathLight unit contains quick review videos for each lesson that quickly summarize the main concepts and remind students how to work the problems.

With an average playtime of 2-3 minutes, these videos are so versatile you'll soon be using them everywhere. And we won't be too surprised if you find yourself pretty much falling in love with them.

Here's a few ideas:



Review previously learned concepts in class.

Show a quick review video at the start of class to review yesterday's concept. Or, if you're flipping your class, show the guick review video of the concept you'll be practicing that day.



Provide students with a quick refresher when they are stumped.

Often students sit down to practice and just can't remember what to do. The full teaching videos are always available, but sometimes that's overkill. That's where the quick reviews shine. They'll quickly remind students of the main concepts and steps and get them back on track to continue working.



Prepare with confidence for assessments.

Whether you're showing them in class or your students are watching them at home, these quick review videos are the perfect way to review and refresh concepts in preparation for quizzes, tests, and even standardized assessments.







Each MathLight Unit Contains:



Versatile Practice Exercises that build skills & allow for differentiation.

Each MathLight lesson includes 3 differentiated practice exercises that can be used in a variety of ways.

- Practice A is designed to practice basic skills and is often the best choice for remedial help.
- Practice B focuses on intermediate-level understanding and is geared towards the average student.
- Practice C contains advanced skills and is designed to challenge students.

You may choose to assign just one exercise per lesson or multiple ones, depending on the particular lesson and the students' needs.

You may also want to try allowing students to choose which version (A, B, or C) is best for them. You'll need to explain the choice and set the right culture, but the payoff can be huge. Read more about how to do this (and why) under point #1 in this article here.

These practice exercises work great as homework, and of course they can be done in class as worksheets. But we're hoping you'll use them a little more creatively than that. Here's a few ideas....



Have students coach each other (reciprocal learning)

This awesome activity helps students not only comprehend the material more deeply but also develop a more positive attitude towards math, become less dependent on the teacher, and spend more time on-task. Click here to watch a video that explains this activity in detail.

We recommend giving one of the practice forms (A, B, or C) to each student & the corresponding answer key to the partner. Students then coach each other to help them complete their problems. If someone gets stuck, you as the teacher help the coach explain the problem instead of directly helping the student working the problem.



Conduct a reverse treasure hunt.

This is a great way to add a little excitement and motivation to individual work. Choose 2 (or more) correct answers from the practices and write them on the board along with a small prize such as a bonus point, homework pass, or piece of candy. For example: "5x + 1 Bonus point 3x Candy." The students' goal is to be the first one to find which problem produces that answer. When they've found it, they write the number on an index card or sheet of paper and submit it to you. (Students are only allowed to submit one card to prevent guessing.) Hold onto the cards until at least the majority of students have submitted one before announcing the winners. (If students are doing different exercises, we recommend choosing at least one correct answer from each exercise.)



Have students present problems at the board.

This activity is a great way to go over homework or discuss problems students have worked in class. Choose one student for each problem and have them write their problems on the board then present them to the class. Not only does this allow you to quickly discuss each problem as a class, but it also deepens their understanding and improves their communication skills. See this article here for details about how to make this activity run smoothly.



Get more ideas

Check out this article from Linda for more ideas: 7 Easy Way to Turn Worksheets into Engaging **Activities**



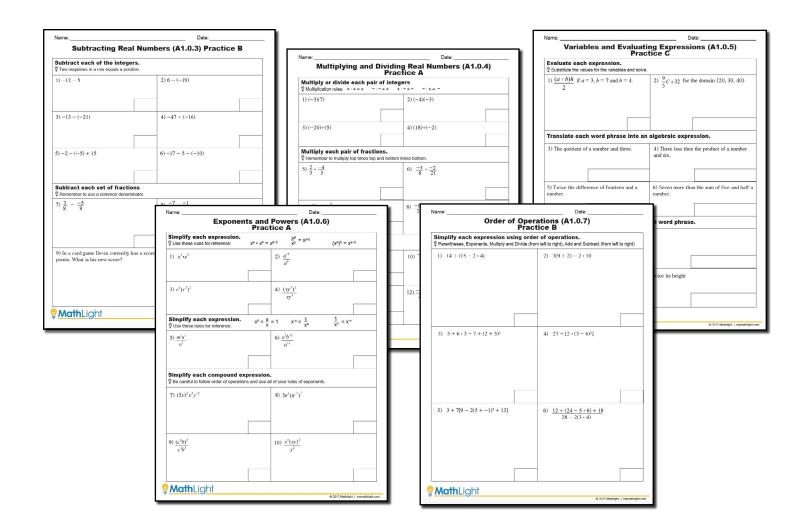




Try a Think-Pair-Share Activity.

This common strategy can be easily adapted for math practice. Group students in pairs, then assign each pair one or two problems that they are responsible to present to the class. Students should first work individually to solve the problems. Then they should pair up to discuss them and make sure they both have the correct solution. Finally, the students share their problems with the class by presenting them at the board (see previous activity) or in another format. You may want to have students complete all the problems before they are discussed or presented to the class.

Answer Keys are included for each exercise & contain not only the solution but also the steps taken to solve the problem. This gives you the option of providing the answer keys to your students to self-check and correct.







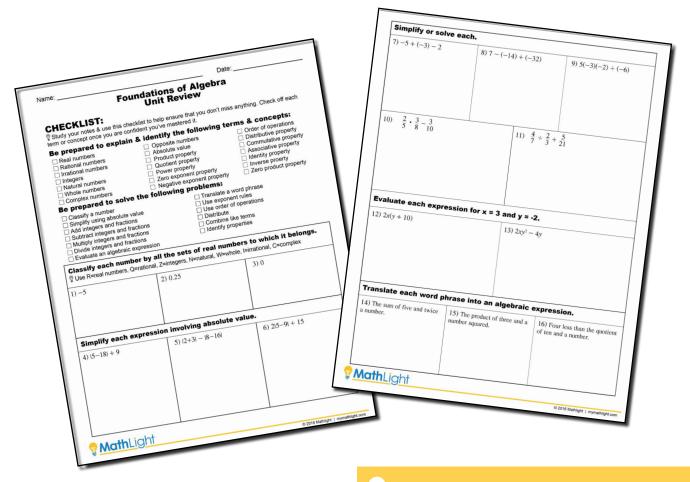
Each MathLight Unit Contains:

A Guided Unit Review that teaches study skills & improves test scores

The guided review not only gives students a checklist of concepts they need to know to prepare for the unit test, but it also provides practice problems for each topic.

You can work through the review together as a class, ask students to study individually, or allow them to work together in small groups. You could also conduct your own in-class review and have the students use the checklist to note what they already understand and what they need to practice

And, of course, we've included an answer key with all the steps worked out that you can use yourself or provide to your students.





Don't forget about the quick review videos. You can incorporate them into your in-class review or remind students to use them as they study on their own.





Each MathLight Unit Contains:



Editable quizzes & tests that perfectly match the rest of the curriculum.

Few things frustrate students more than when the test doesn't match what they've learned in class. With MathLight, you'll never have that problem. The concepts tested in each assessment come directly from the videos and notes, and have been previously practiced in the practice exercises and unit reviews.

Quizzes:

Each unit contains multiple quizzes - most likely more than you need - to provide you with maximum flexibility. This means you can pick and choose which ones fit best with the timing of your schedule. The extras can be used informally as formative assessments, extra practice, or however you see fit. Quizzes are designed to be completed in 10-20 minutes.

Tests:

The unit test covers all the main topics in the unit and closely matches the unit review so that students know exactly what to expect. Tests are designed to take a full class period to complete.

And since we're real math teachers ourselves, we designed all of our assessments with both you and vour students in mind. Here's some of our favorite features...



All assessments are fully editable.

Each assessment comes in both PDF & Microsoft Word versions so that you can easily adapt them as needed. This also makes it a breeze to create alternate versions. We suggest downloading the free version of MathType to more easily edit equations and expressions.



We assess both terms and problem solving.

At MathLight we include not only problem solving but also terms recall on our assessments. Terms are the language of math, and without them, students are easily confused. Including terms and rules on assessments helps emphasize their importance to students, thus cementing their meaning and building a strong mathematics foundation.



Answer keys include worked-out solutions & suggested point values.

We know you have enough to worry about just grading the tests, so we've provided everything we can to make it go as smoothly as possible. No need to work out the problems or figure out the point values - we've done all of that for you. Please note that if you use our point values, you need to subtract from 100, not simply add up the total points. Often our point values intentionally total slightly less than 100 to give students a slight cushion and to allow you the ability to remove points for other issues such as not following directions.



Bonus problems provide an extra challenge.

The bonus problems included on most assessments are intentionally designed as an extra challenge. Students love bonus points, so why not use that motivation to push them to go further than they thought they could!





Lesson Plan Suggestions

Pacing suggestions are included in each unit. But how you arrange your plans will greatly depend on whether you plan to completely flip your class, partially flip your class, or keep a traditional format.



Completely Flipping Your Class

When you completely flip your class, students watch videos at home and you practice together in class. This means you'll need to assign the first lesson's videos the day before you start the new unit (normally the day of the previous unit's test). During class you can show the quick review videos, practice problems together, have students work individually, and/or have students practice in groups or complete skill-building activities. Remember that a huge advantage of flipping is that you are available to help students as they're working, so be actively moving around the room to assist students and correct misconceptions.



Partially Flipping Your Class

When you do a partial flip, you flip some days and hold a traditional class other days. This can be a great option if you're not quite ready for the full flip or if you still love teaching certain concepts.

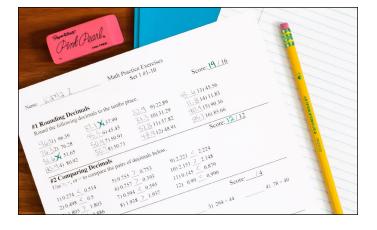
You'll just want to plan strategically so that you don't send students home with a set of homework problems AND orders to watch a video, too.



Keeping Your Class Traditional

If flipping is not going to work (or if you'd just rather keep things more traditional), the MathLight videos are still a tremendous asset. You can show the videos in class to supplement or replace your own lectures. Or, you can offer them as added help to students who are absent or could use further explanations.

We suggest you follow the model of Explain > Practice Together > Practice Individually. This means you always want to explain the concept first, then work problems together with the students before you set them on their own to work individually. Make sure you plan time for students to work on their own or complete an activity so that you can walk around answering questions and helping students better comprehend the concepts.





Need a start-of-class activity? Try out these awesome bell ringers.

Click here to download your **free set** of bell ringers.



Algebra 1 Curriculum

Algebra 1 Units:

Review Unit: Foundations of Algebra

Unit 1: Equations

Unit 2: Inequalities

Unit 3: Introduction to Functions

Unit 4: Linear Functions

Unit 5: Percents & Exponents

Unit 6: Systems of Equations & Inequalities

Unit 7: Polynomials

Unit 8: Factoring Polynomials

Unit 9: Quadratic Equations & Functions

Unit 10: Radicals

Unit 11: Rational Expressions

Unit 12: Data Analysis & Probability

Get the complete Algebra 1 curriculum.





Unit Contents

Need to know what's in each MathLight Algebra 1 unit? We've got you covered....

Review Unit: Foundations of Algebra

- 0.1 Integers, Opposites & Absolute Value
- 0.2 Adding Real Numbers
- 0.3 Subtracting Real Numbers
- 0.4 Multiplying & Dividing Real Numbers
- 0.5 Variables & Evaluating Expressions
- 0.6 Exponents & Powers
- 0.7 Order of Operations
- 0.8 Distributing & Adding Like Terms

Unit 1: Equations

- 1.1 Solving One-Step Equations
- 1.2 Solving Two-Step Equations
- 1.3 Simplifying Equations
- 1.4 Equations with Variables on Both Sides
- 1.5 Literal Equations
- 1.6 Decimal Equations
- 1.7 Ratios & Conversion Factors
- 1.8 Writing Equations

Unit 2: Inequalities

- 2.1 Inequalities & Negation
- 2.2 Solving Inequalities
- 2.3 Writing Inequalities
- 2.4 Conjunctions
- 2.5 Disjunctions
- 2.6 Absolute Value Equations
- 2.7 Absolute Value Inequalities
- 2.8 Precision & Accuracy

Unit 3: Introduction to Functions

- 3.1 Graphing Relationships
- 3.2 Relations & Functions
- 3.3 Functional Notation
- 3.4 Graphing Linear Equations
- 3.5 Intercepts
- 3.6 Direct Variation
- 3.7 Scatter Plots

Unit 4: Linear Functions

- 4.1 The Slope of a Line
- 4.2 Graphing Using Slope-Intercept Form
- 4.3 Finding the Equation of a Line
- 4.4 More Finding the Equation of a Line
- 4.5 Parallel & Perpendicular Lines
- 4.6 Graphing Linear Inequalities

Unit 5: Percents & Exponents

- 5.1 Ratios, Rates & Conversion Factors
- 5.2 Proportions
- 5.3 Percents
- 5.4 Percent Change
- 5.5 Multiplication & Division with Exponents
- 5.6 Zero & Negative Exponents
- 5.7 Scientific Notation
- 5.8 Exponential Functions
- 5.9 Exponential Growth & Decay



Unit Contents

Unit 6: Systems of Equations & Inequalities

- 6.1 Solving Systems of Equations by Graphing
- 6.2 Solving Systems of Equations by Substitution
- 6.3 Solving Systems of Equations by Elimination
- 6.4 Special Systems of Equations
- 6.5 Applications of Systems
- 6.6 Systems of Linear Inequalities

Unit 7: Polynomials

- 7.1 Adding & Subtracting Polynomials
- 7.2 Multiplying Binomials
- 7.3 Multiplying Polynomials
- 7.4 Dividing Polynomials
- 7.5 Arithmetic Sequences
- 7.6 Geometric Sequences
- 7.7 Summation
- 7.8 Special Sequences (Fibonacci & the Golden Ratio)

Unit 8: Factoring Polynomials

- 8.1 Factoring Out Common Factors
- 8.2 Factoring Trinomials of $x^2 + bx + c$
- 8.2s Algebra Tiles (optional extra lesson)
- 8.3 Factoring Trinomials of $ax^2 + bx + c$
- 8.4 Factoring A Difference of Two Squares
- 8.5 Factoring Special Polynomials
- 8.6 The Zero Product Property
- 8.7 Factoring Applications

Unit 9: Quadratic Equations & Functions

- 9.0 Introduction to Quadratics
- 9.1 Solving Quadratics Using Roots
- 9.2 Completing the Square
- 9.3 The Quadratic Equation
- 9.4 The Discriminant
- 9.5 Graphing Quadratic Functions
- 9.6 Transforming Quadratic Functions
- 9.7 Modeling Linear, Exponential & Quadratic Functions

Unit 10: Radicals

- 10.1 Simplifying Radicals
- 10.2 Multiplying & Dividing Radicals
- 10.3 Using Conjugates
- 10.4 Radical Equations
- 10.5 Exponential Equations
- 10.6 The Pythagorean Theorem
- 10.7 Graphing Radical Functions

Unit 11: Rational Expressions

- 11.1 Simplifying Rational Expressions
- 11.2 Multiplying & Dividing Rational Expressions
- 11.3 Adding Rational Expressions
- 11.4 Complex Rational Expressions
- 11.5 Rational Equations
- 11.6 Inverse Variation
- 11.7 Rational Functions

Unit 12: Data Analysis & Probability

- 12.1 Organizing Data with Matrices
- 12.2 Multiplying Matrices & Determinants
- 12.3 Inverse Matrices
- 12.4 Interpreting Statistical Data
- 12.5 Fundamentals of Counting
- 12.6 The Binomial Expansion Theorem
- 12.7 Compound Event Probability
- 12.8 Normal Distribution



1

Pre-Algebra Curriculum

You may also be interested in our complete pre-algebra curriculum with all the same great features & benefits.

Pre-Algebra Units:

Unit 1: Foundations of Algebra

Unit 2: Integers

Unit 3: Basic Equations

Unit 4: Factors and Exponents

Unit 5: Fractions and Decimals

Unit 6: Percents

Unit 7: Applying Equations and Inequalities

Unit 8: Roots and Radicals

Unit 9: Relations and Functions

Unit 10: Relationships in Geometry

Unit 11: Area and Volume

Unit 12: Probability and Statistics

Unit 13: Polynomials

Get the full pre-algebra curriculum.





© Contact Us

Still have questions?
We'd love to help. Just drop us a line at contact@mymathlight.com

License Information:

This downloadable teaching resource includes one single-teacher classroom license. This means....

- Photocopying of this copyrighted downloadable product is permitted only for one teacher (or teaching team) for his/her own classroom use.
- Reproduction of this product (in whole or in part) for more than one teacher, classroom, or department, school, or school system, by for-profit tutoring centers and like institutions, or for commercial sale, is strictly prohibited.
- Multiple licenses can be purchased at a reduced rate on your "My Purchases" page at any time.
 After purchasing multiple licenses, you may distribute copies to your colleagues.
- You may upload these resources to your classroom website <u>only if your website is</u> <u>password protected</u>. These resources or accompanying videos may <u>not</u> be shared on a public website.

And just to cover all our bases: This product may not be distributed, posted, stored, displayed, or shared electronically, digitally, or otherwise, without the express written permission of Rick Scarfi or MathLight.





Get MathLight Now!

We know you're going to love MathLight, but we don't want you to take our word for it. That's why we're giving away our Pre-Algebra Integers Unit 100% free for a limited time.

Click here to download our Pre-Algebra Integers Unit 100% FREE.







Sign up to be notified when new units or activities are released at mymathlight.com/updates.

Click here to order more MathLight units.