



MathLight

Pre-Algebra

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.*

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 created book, resources, and online courses for teachers.

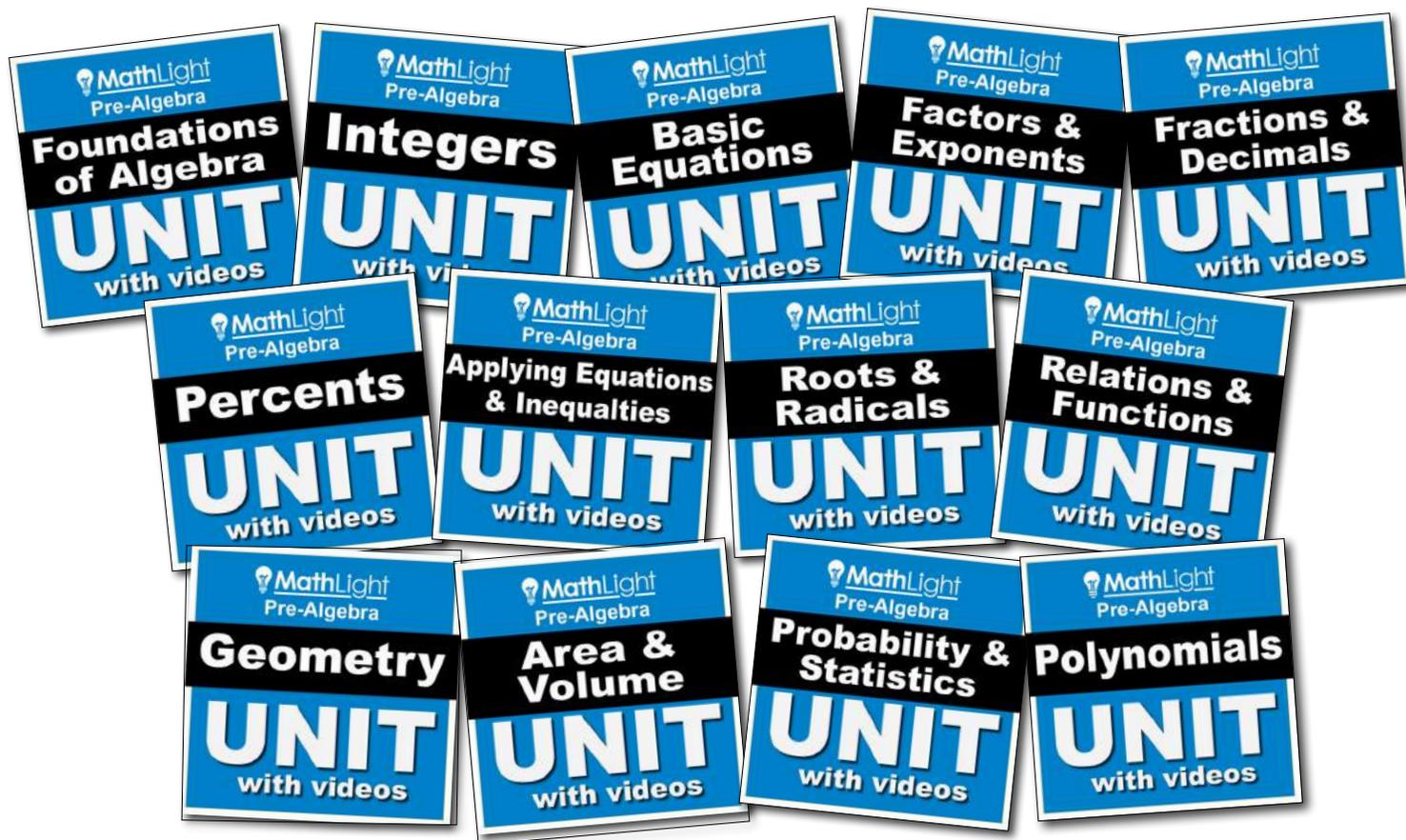
Linda shares the same passion and skill for teaching math and is thrilled to partner with Rick to create engaging & helpful curriculum that students and teachers will both enjoy.

Pre-Algebra Curriculum

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

**Not all of these units are currently available, as we are currently in the process of creating them. We plan to release each unit in time to be used during the 2016-17 school year. Go to mymathlight.com/updates to sign up to be notified when each new unit available.





MathLight Features

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 math.

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 assess 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.

The screenshot shows the MathLight website interface. On the left, there is a navigation menu with a progress indicator showing '10% COMPLETE'. The menu lists various lessons, including '1.3 Order of Operations (18:36)', '1.4 Exponents (10:58)', '1.5 Fractions & Decimals (11:11)', '1.6 Writing Algebraic Expressions (12:05)', '1.7 Properties of Numbers (12:54)', and 'Quick Review Foundations Video (22:51)'. Below this, 'Chapter 2: Integers' is listed with '2.1 Opposite Numbers (10:31)' and '2.2 Adding Integers (2 Negative Numbers) (7:08)'. The main content area features a video player for '1.3 Order of Operations'. The video player has a play button and a progress bar. The video title is '1.3 Order of Operations' and the subtitle is 'Main Lesson'. The MathLight logo is visible in the top right corner of the video player.

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 them out 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.



MathLight Features

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

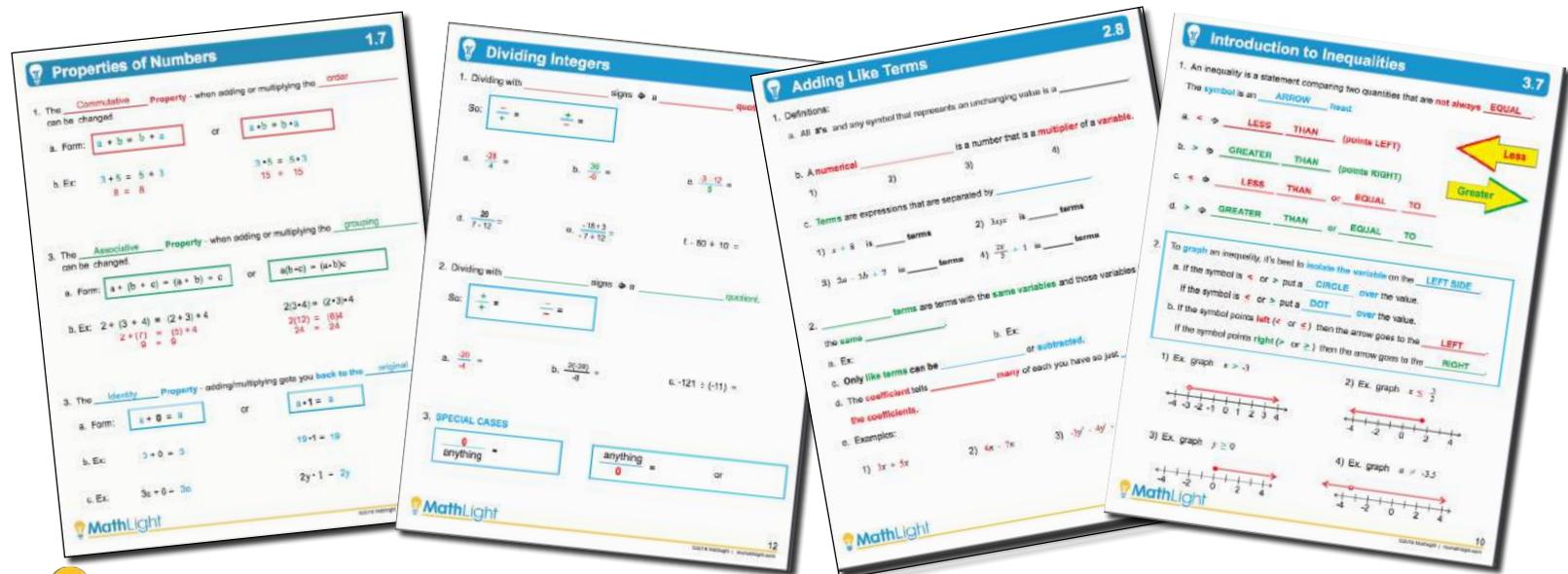


You can hold your students accountable.

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.





MathLight Features

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 quick 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.





MathLight Features

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.](#)



MathLight Features



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.

The image displays five overlapping MathLight practice worksheets. Each worksheet includes a header for 'Name' and 'Date', followed by a title and a practice section. The worksheets are:

- Algebraic Expressions (1.2) Practice A:** 'Evaluate' section with problems like $n + 6$ when $n = 9$ and $2(x) - 3$ when $x = 8$.
- Dividing Integers (2.7) Practice B:** 'Solve' section with problems like $-66 \div (-3)$ and $-100 \div 5$.
- Adding Two Negative Numbers (2.2) Practice C:** 'Add the Numbers' section with problems like $-3 + (-2)$ and $-2 + (-3)$.
- Exponents (1.4) Practice B:** 'Write in exponential form' and 'Write in expanded form, then evaluate' sections with problems like $2y \cdot 2y \cdot 2y$ and $5n^3$ when $n = 3$.
- Adding Like Terms (2.8) Practice A:** 'Simplify' section with problems like $3x + 5x$ and $-8x + 15x$.

Each worksheet features the MathLight logo and a copyright notice for 2016 Mathlight | mymathlight.com.



MathLight Features

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.

Name: _____ Date: _____

Foundations Chapter Review

CHECKLIST:
 Study your notes & use this checklist to help ensure that you don't miss anything. Check off each term or concept once you are confident you've mastered it.

Be prepared to explain & identify the following terms & concepts:

<input type="checkbox"/> Real numbers	<input type="checkbox"/> Base
<input type="checkbox"/> Rational numbers	<input type="checkbox"/> Commutative property
<input type="checkbox"/> Irrational numbers	<input type="checkbox"/> Associative property
<input type="checkbox"/> Identify element of addition	<input type="checkbox"/> Identity property
<input type="checkbox"/> Order of operations	<input type="checkbox"/> Inverse property
<input type="checkbox"/> Exponent	

Be prepared to solve the following problems:

<input type="checkbox"/> Match real numbers with a specific set	<input type="checkbox"/> Evaluate exponents
<input type="checkbox"/> Evaluate algebraic expressions	<input type="checkbox"/> Change fractions to decimals
<input type="checkbox"/> Use the order of operations	<input type="checkbox"/> Change decimals to fractions
<input type="checkbox"/> Expand exponents	<input type="checkbox"/> Write algebraic expressions
<input type="checkbox"/> Write in exponent form	<input type="checkbox"/> Identify properties of numbers

PRACTICE:
 Practice each type of problem below. If you are confident you are able to solve a type of problem correctly, check that topic off in the checklist above. If you need more help or practice, refer to your notes, watch the review videos (or rewatch the full lesson if needed), and/or practice additional problems from the notes or videos.

Matching Real Numbers with a Specific Set: Use the symbol of the set to indicate the most specific set for each (N, Z, Q, R, I, W, N)

1) $\frac{2}{3}$ _____ 2) 0 _____ 3) 38 _____

Evaluating Algebraic Expressions: Evaluate each expression.

4) $3a$ when $a = 7$ _____ 5) $20 - n$ when $n = 11$ _____ 6) $2xy + 1$ when $x = 3$ and $y = 5$ _____

Using the order of operations: Solve.

7) $4 + 12 \div 4$ _____ 8) $10 - 2^2$ _____ 9) $3[15 - (12 - 9) + 1]$ _____

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Name: _____ Date: _____

Equations Chapter Review

CHECKLIST:
 Study your notes & use this checklist to help ensure that you don't miss anything. Check off each term or concept once you are confident you've mastered it.

Be prepared to explain & identify the following terms & concepts:

<input type="checkbox"/> Goal of solving equations	<input type="checkbox"/> Inequality
<input type="checkbox"/> Moving quantities added to the variable	<input type="checkbox"/> Inequality symbols
<input type="checkbox"/> Moving quantities multiplied times the variable	<input type="checkbox"/> Solving inequalities exception
<input type="checkbox"/> Reciprocal	<input type="checkbox"/> NTV of consecutive numbers
<input type="checkbox"/> Quantity to move first	

Be prepared to solve the following problems:

<input type="checkbox"/> Solve equations by addition	<input type="checkbox"/> Graph inequalities
<input type="checkbox"/> Solve equations by multiplication or division	<input type="checkbox"/> Solve inequalities
<input type="checkbox"/> Solve two-step equations	<input type="checkbox"/> Write and solve equations
<input type="checkbox"/> Simplify and solve equations	<input type="checkbox"/> Write and solve inequalities

PRACTICE:
 Practice each type of problem below. If you are confident you are able to solve a type of problem correctly, check that topic off in the checklist above. If you need more help or practice, refer to your notes, watch the review videos (or rewatch the full lesson if needed), and/or practice additional problems from the notes or videos.

Solving Equations by Addition: Solve.

1) $x + 9 = 7$ _____ 2) $-5 + n = 8$ _____ 3) $-15 = x + 6$ _____

Solving Equations by Multiplication or Division: Solve.

4) $5n = -35$ _____ 5) $\frac{-2x}{3} = 10$ _____ 6) $\frac{-x}{4} = \frac{1}{8}$ _____

Solving Two-Step Equations: Solve.

7) $3n - 4 = 7$ _____ 8) $10 - \frac{x}{3} = 7$ _____ 9) $-4 = 5 + \frac{2n}{2}$ _____

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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.



MathLight Features

Each MathLight Unit Contains:

 **Editable quizzes & test** 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 your 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

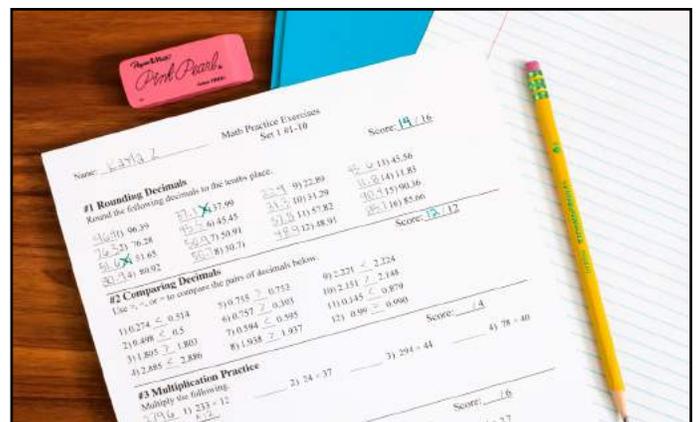
If flipping is not going to work (or if you'd just rather keep things more traditional), the MathLight videos are still a tremendous asset. You can show the videos in class to supplement or replace your own lectures. Or, you can offer them as added help to students who are absent or could use further 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 by our sister website, Teach 4 the Heart.

[Click here to download your free set of bell ringers.](#)



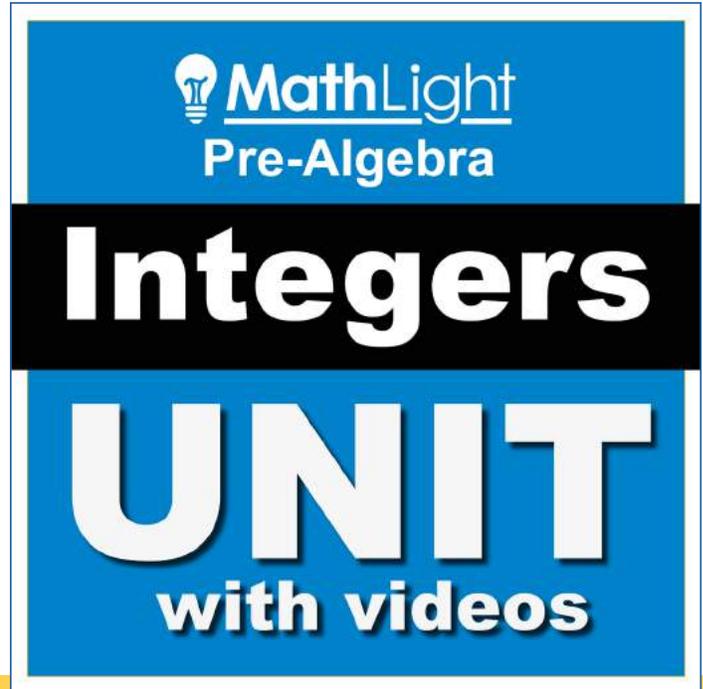


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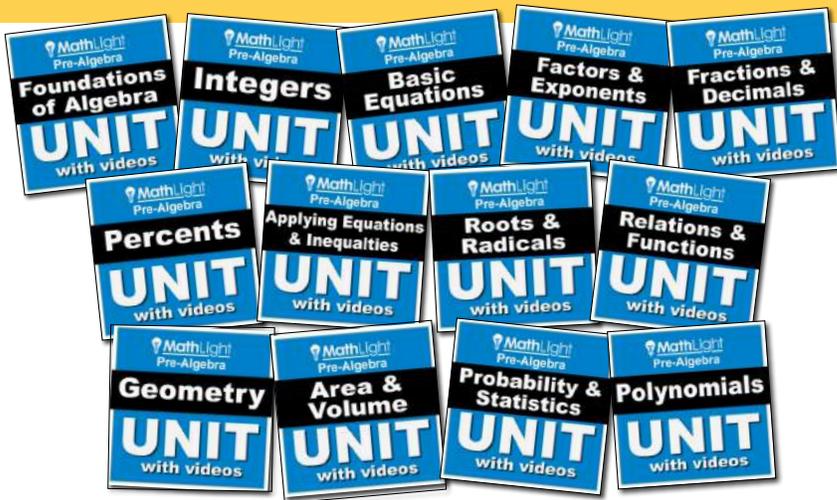
We know you're going to love MathLight, but we don't want you to take our word for it. That's why we're giving away our Integers Unit 100% free for a limited time.

[Click here to download our Integers Unit 100% FREE.](#)

FREE!!



Sign up to be notified when each new unit is released at mymathlight.com/updates.



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Please note that we do NOT have formal release dates for each unit, but we are planning to have each unit ready in time for normal use in the 2016-17 school year.



Contact Us

Still have questions?

We'd love to help. Just drop us a line at

contact@mymathlight.com