



Training Guide

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Algebra'scool is...

... Algebra I curriculum for middle and high school students

... a revolutionary advancement in mathematics resources

...wacky characters with high level student-appeal

...meeting the needs of all learning modalities

...entertaining and engaging animation

...dynamic lesson graphics

FUN!

... interactive learning

...teacher and student-friendly

...step-by-step solutions for problems

.. a pleasurable way to learn challenging math

...real-world examples, experiences and applications

...state-of-the-art DVD production with superb print materials

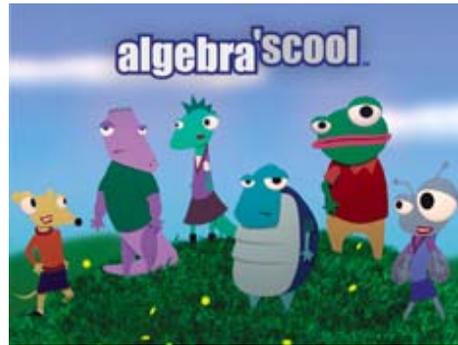
Why try Algebra'scool?

- Students interact more with the content and with their teacher.
- Teachers can more easily monitor the students' work, which leads to greater classroom management and control.
- DVD presentation allows the teacher to control the speed at which the students work.
- With the push of a button, the teacher can interject ideas and to clarify concepts as the need arises.
- *Algebra'scool* frees the teacher to walk around the classroom during the lesson to monitor students' progress.
- It brings an additional teacher into the classroom.
- It's easy to use.
- Students love it!



The Complete Program

20 DVDs Instructional Modules (99 Lessons in all)
Instructor's Manual
Blackline Masters Binder



Features

Three to seven lessons on each DVD
Introductory character animation
Frogan's Heroes on each disc
Guided Notes problems and Guided Practice problems
Independent Practice Problems
Additional Practice problems
Glossary for each Unit
Module test (two versions for each Module)
Math manipulatives animation
Blackline Masters for student worksheet replication

Cast of Characters



Mr. Frogan is the Zen-like instructor. He is a frog who will appear anywhere and everywhere to offer advice, wisdom, and apply algebra to EVERY situation.



Ms. Fleigle is a housefly who co-teaches algebra with Mr. Frogan. Her two feet firmly planted on the ground, she has an incredible sweet tooth, perfect 20-20-20-20-20-20 vision, and a mathematical answer for everything.



Roxy is a transfer student from New York City. Roxy sees Newt as a rival and tries to outwit him at every possible turn. She is a rodent with an attitude.



Newt is the smart, sensible, straight arrow member of *Algebra'scool*. He is a star athlete, considered very handsome for a lizard, and admired by all.



Lizzie is a female lizard and an A+ student. Lizzie is a bookworm who enjoys being at the head of the class. She's taking this course for fun.



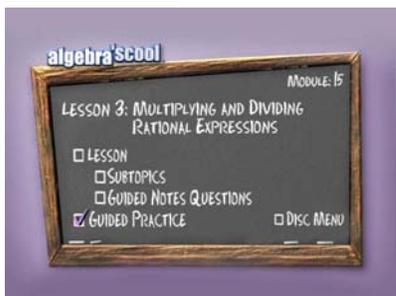
Ferd is a turtle that makes connections with math in a strange, comic way. Ferd is a collector of odds and ends. Even among friends, he is seen as peculiar.

What comes with Algebra'scool?

DVD Instructional Modules

Each instructional module is placed on a DVD disc and contains:

Core Lesson



Following a brief introductory animation, the characters continue with the **Lesson**. The informative and often amusing interaction of the characters provides a lesson that teaches terminology, concepts, and skills necessary for success in algebra. Formatted worksheets called **Guided Notes** are provided to guide students as they work along with the characters, taking notes and working problems as the lesson progresses. At the end of each lesson section, the teacher has the

opportunity to continue the **Lesson** presentation or begin a **Guided Practice** set of questions to review the skills covered in that section.

Manipulatives Instruction

In addition to the core **Lesson**, each **Lesson** may include additional components to be used at the discretion of the teacher. The first of these components is a **Manipulatives** section. NCTM (National Council of Teachers of Mathematics) recommends students use mathematical models to represent and understand quantitative relationships. The **Manipulatives** section incorporates the use of algebra tiles or cups and beans, which can be used to model algebraic relationships. These concrete items help students understand the processes, not simply the manipulation of symbols.

Frogan's Heroes



Each DVD includes at least one **Frogan's Heroes** feature. In this section, real people discuss how algebra prepared them to do the jobs they now perform as adults. High-quality film footage and stimulating graphics depict how people apply mathematics in their everyday lives. The following professionals are just a few of the professions highlighted in the **Frogan's Heroes** series: firefighters, forestry service personnel, video game designers, pyrotechnicians, zookeepers, and astronomers.

Navigation Tips

Another special feature of the DVD is a section entitled, **Navigation Tips**. This segment provides useful information for the teacher or presenter when using the DVD lesson.

Instructor's Manual

Program Notes

Program Notes provide an overview of the program and can at a quick glance give interested persons a glimpse into BestQuest's Algebra'scool.

Scope and Sequence

In the front of each *Instructor's Manual* is a scope and sequence chart that identifies the topics for each module and every lesson. The chart does not address every state standard or assessment benchmark; however, it does provide the core topics that are common to the majority of Algebra I standards and courses. The lessons included in the program provide in-depth coverage of the topics taught and offer a strong instructional foundation for further learning as dictated by state, district, or school standards and requirements.

Teacher Notes

Objectives - Both the *Teacher Notes* and the *Blackline Masters* contain the same list of objectives for each lesson. By following these objectives, both teacher and student work toward a common goal of mastering identified concepts in the lesson.

Prerequisites - This lists necessary skills that students should have mastered before beginning the lesson.

Vocabulary - The *Teacher Notes* contain a list of the vocabulary terms for each lesson. A lesson reference is provided for vocabulary words previously introduced.

Get Started - This suggests an opening activity that requires student involvement, or provides a list of questions the teacher can use to launch the discussion of lesson content.

Expand Their Horizons - This section is provided as scripted notes for each section of the core lesson to assist the teacher in reviewing the students' work and checking for understanding before moving on to *Guided Practice* or the next section of the lesson.

Additional Examples - Although multiple examples are provided for each concept on the DVD, sometimes students still need more help. For this reason, the *Teacher Notes* provide two additional examples and solutions

per lesson -- including alternative methods for the teacher to model on the board.

Common Error Alert - One of the most useful sections of the *Teacher Notes* is the Common Error Alert. Teachers have found common errors that are made by students year after year in their classrooms. For example, when evaluating expressions such as xy , with $x = 3$ and $y = 4$, students sometimes write, "34" instead of $3 \cdot 4$. Such common mistakes are pointed out in this section.

Connections - For years, students were asked to use mathematics simply for the sake of mathematics -- without the real-world applications of the mathematics that they are learning. The Connections section of the *Teacher Notes* gives the teacher real-world uses or historical context for each lesson in the course. When the student asks, "Where will I ever use this?" the teacher has a ready answer that is provided in this section.

Look Beyond - This section explains how the topic under study is used in more advanced mathematics courses and applications.

Answer Key - This section offers the answers to all *Guided Notes*, *Guided Practice*, *Independent Practice*, *Additional Practice*, and *Module Test* worksheets.

Guided Notes

Guided Notes problems are worked in detail on the DVD. Students can work right along with the video. The *Guided Notes* provide a format for taking notes during the lesson. Although most of the material is already present, there are blanks in the notes that must be filled in by the student. Therefore, the student is engaged and involved in the learning process while viewing the DVD lesson.

Guided Practice

Guided Practice problems are worked in their entirety on the DVD. Students can work on these problems independently and then view the DVD solutions to check their work. Autopauses are placed after the introduction of every *Guided Practice* problem to allow the teacher time to check student understanding, to give further explanations, to clarify, or to answer questions students may have. After the student has worked the problem, the DVD then explains step-by-step how the problem is solved and why.

Independent Practice

Each lesson contains comprehensive questions, arranged in order from least difficult to most difficult, which offer practice for skills presented in the lesson. Consecutive odd and even exercises are similar and of approximately the same level of difficulty. Within each *Independent Practice* set, the following components are included:

Journal Questions - In addition to skill practice questions, a journal is provided in the *Independent Practice* worksheets. This journal contains five questions about important areas of the lesson and requires higher order thinking skills: application, analysis, synthesis, or evaluation. These questions enable students to "judge the meaning, utility, and reasonableness of the results of symbol manipulations, including those carried out by technology", as required by the NCTM Standards.

Manipulative Problems - Lessons that have a *Manipulative Section* on the DVD may also have manipulative questions in the Independent Practice. Students are offered the opportunity to practice working with the manipulatives.

Calculator Problems - To be proficient in mathematics in the 21st century, students must be familiar with available technology. According to the NCTM Standards, the student must "write equivalent forms of equations, inequalities, and systems of equations and solve them with fluency mentally or with paper and pencil in simple cases and using technology in all cases." For these reasons calculator exercises are included with the Independent Practice exercises when appropriate. These exercises are designed for both the scientific and graphing calculators. The student is guided through the use of the calculator before being asked to perform exercises independently.

Cumulative Review - Each *Independent Practice* section includes a Cumulative Review, which provides a comprehensive review of all the concepts covered from the beginning of the course to the present point. Skills necessary for upcoming lessons may also be reviewed at this time. The teacher is strongly encouraged to use these reviews because each time a student reviews a concept, his or her knowledge of that concept is reinforced.

Additional Practice

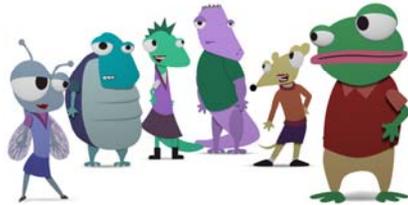
A second set of skill practice problems related directly to the lesson is available in the **Additional Practice** worksheet section. These worksheets can be used for students who need additional practice with skills taught in the lesson. These additional problems are especially useful with students learning algebra over a two-year period.

Glossary

Terminology is a large part of mathematics education, and vocabulary is presented in each lesson. All vocabulary terms are compiled into one list labeled as the **Glossary**. A blackline master for each unit's Glossary is included in the **Instructor's Manual**. These blackline masters provide a quick reference for students and teachers to find and use new mathematical terms as they are defined within this product.

Blackline Master Module Tests

The binders provide two **Blackline Master Module Tests** complete with answer keys for each module. These tests are designed to correlate with the lessons and with the independent practice exercises. These tests are developed as blackline masters. Assessment items, including multiple choice and open-ended response questions, are included in these comprehensive module tests.



Getting Ready: Before the school year begins

Align curriculum.

Using the Scope and Sequence provided, aligning the textbook and other resource materials is simple. Coordinating the curriculum makes the task of daily planning much more efficient. A record of the standards and objectives can be kept as they are taught by recording the standards from the list provided with *Algebra'scool* materials.

BestQuest has completed the state alignments for each of the 50 states and for most major textbooks; these alignments can be obtained on the BestQuest website at www.bestquest.com.

Know your students.

Become acquainted with the students and their special needs. Assess the academic needs of individual students by checking standardized test scores and cumulative records.

Develop a classroom management system.

Many teachers find it helpful to issue a notebook or 3-ring binder to each student who is directed to keep all *Algebra'scool* worksheets together. Other teachers incorporate the *Algebra'scool* worksheets into the regular algebra student notebooks. BestQuest publishes student workbooks to be used instead of the blackline masters to schools who want to avoid the duplication task.

Secure appropriate equipment.

- All that is necessary to use *Algebra'scool* is a DVD player and television set. It is also possible to set up the program in a computer lab on a server with a DVD drive or use a personal laptop in conjunction with a LCD projector, if desired.
- A remote control is required for the teacher to use during the lessons for flexibility and mobility. Extra batteries should be kept in the classroom for the remote control.
- Manipulatives need to be available for classroom use for some lessons.
- Check all equipment before school begins to be sure everything is working properly. Because of differences in players and remote controls, it is important to spend some time practicing the use of the equipment. Navigation tips are included on each disc.

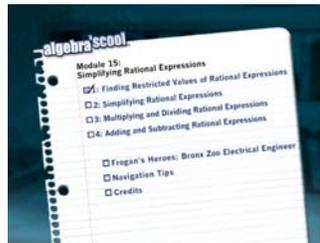
Getting Ready: Teaching a lesson

Plan the Lesson

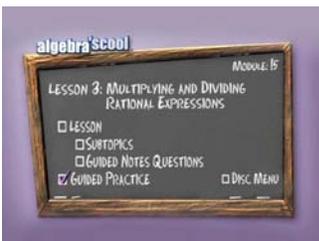
- Choose the appropriate unit, module and lesson for the students in the class.
- Plan the daily lesson using the program in conjunction with a textbook or as a stand-alone program. During planning time, review the teacher notes and preview the DVD lesson. The subtopic menu provides a quick way to preview the lesson.
- Decide if a Frogan's Heroes segment is appropriate for a motivational start or ending to the lesson.
- Decide if a Getting Started activity from Teacher's Notes is appropriate for the daily lesson.
- Provide manipulatives if manipulatives are to be used with the lesson. The manipulatives needed for lessons can be found in the Expand the Horizons section of the Instructor's Manual.
- Copy the appropriate materials from Blackline Masters Notebook before class begins.
- Set up the classroom to enable the students to view the television monitor or computer. Be especially aware of the glare on the viewing screen at different times of the day and adjust window blinds or shades as needed. Make sure the volume is adjusted for the appropriate setting.

Teach the Lesson

- Before beginning the lesson, use the Get Started ideas found in Teachers Notes to build student interest and set the stage for the lesson by showing relevancy.
- Start the DVD.
- The Algebra'scool menu will appear after the copyright notice and title screen. The module number and title are at the top. Underneath is a list of the lessons in the module with a box before each one. A check mark appears in the top box. Move the directional arrow on the remote control to navigate the check mark up and down or sideways on the menu. The Frogan's Heroes segment selection boxes are below the numbers.
- If a Frogan's Heroes segment is planned, navigate to the appropriate box on the screen. At the conclusion of the segment or if the segment is not being used, press the number of the day's



lesson, or using the up and down arrows on the remote, move to the desired lesson, and press enter.

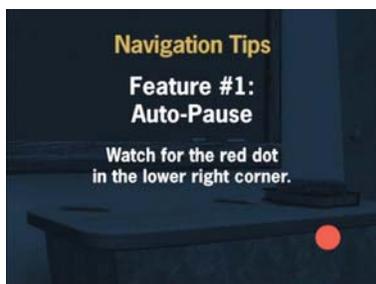


- The lesson menu will appear. The name of the lesson is also on the top of the menu. The choices are Lesson, Subtopics, Guided Notes Questions, Guided Practice, Manipulatives, and Disc Menu.

• While the Core Lesson is taught on the screen, walk around the classroom checking student responses and helping individuals who need clarifying and assistance. The DVD provides the opportunity to monitor student work and answer individual questions.

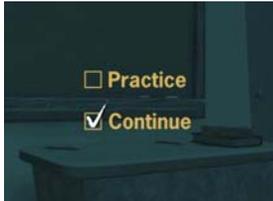
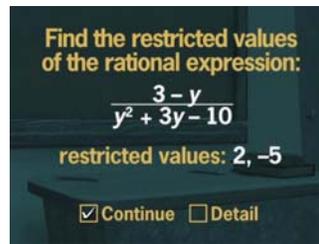
- If a Manipulatives segment is planned for the lesson, navigate by using the up and down arrow keys. Click on Enter or Play and work through this section with the students to provide concrete examples of the algebraic concepts. Then, allow the students to work the Manipulatives set in the Guided Practice. (Students need the Guided Practice worksheet from the blackline masters or workbook.) If using transparencies instead of a blackline master or workbook, students complete exercises on notebook paper. The Manipulatives Section can also be used for re-teaching a lesson if it was omitted at the beginning of the lesson.

- At the conclusion of the Manipulatives section, the screen will return to the lesson menu. Push the play or enter button and the lesson will begin with a dilemma that the characters must solve using algebra. (The students should have the Guided Notes worksheet, workbook, or notebook paper and pencil to begin the lesson.)



- Periodically, a red dot will appear in the lower right hand screen to signal an autopause. **The lesson will not continue until "enter" (or "play") is selected on the remote.** The autopause is an excellent time for student response and reflection, teacher clarification, or review. It is also a time students can add to Guided Notes or take additional notes on the white portion of the Guided Notes.

- At the end of some problems, a Continue\Detail option is available. Choosing "Detail" will show a single screen with no narrative revealing the previous problem worked out in its entirety. Push play to exit the Detail screen and return to the lesson.



- At the end of a Guided Notes set, there is a Practice\Continue screen. Choose "Practice" for additional practice or "Continue" to continue with the lesson. Choosing "Practice" will take the DVD directly to a Guided Practice problem set. The teacher may have students work through all of the Guided Practice problems. Teachers also have an option to work only part of the Guided Practice problems by pressing the skip forward button on the remote control. After each Guided Practice problem, continue the DVD so the students can compare their answers to the characters' answers. The teacher can decide how many Guided Practice examples to use during the lesson. At the end of a Guided Practice set the DVD automatically returns to the lesson. Having the students actually work these examples during the presentation requires them to immediately practice these new skills.
- Each lesson ends with a Conclusion that gives the students a wrap-up of the lesson and reviews the major objectives of the lesson.
- If students are struggling upon completion of the DVD portion of the lesson, re-teach or present additional instruction then assign problems from the Additional Examples in the Teacher Notes for additional practice.
- Before beginning the Independent Practice, review the Common Error Alert in the Teacher Notes with your students.
- Have students complete the Journal Questions in the Independent Practice, either individually or in groups. Some questions are more difficult than others. A small group discussion of the journal questions provides an opportunity for mathematical discourse, which will help the students understand the abstract concepts and develop improved mathematical reasoning and communication skills.
- After the journal is complete, assign the Independent Practice problems in the student worksheets. These problems are designed so either the odd numbered questions or even numbered questions can be assigned and still address all skills.
- The Calculator section may be completed with the Independent Practice problems. Review the explanation and example portion of this lesson with the students, and then assign the problems.

Conclude the Lesson

- The Cumulative Review section of the Independent Practice can be assigned along with or after the lesson problems. This section is designed to prepare the students for upcoming lessons and allows for a spiral review of previous skills.
- If students need additional reinforcement, Additional Practice problems are available in the blackline masters or student workbook.
- Conclude the lesson by sharing interesting details that can be found in the Look Beyond and Connections sections in the Teacher Notes.

Teacher's Options

- The program has been constructed for maximum flexibility. The teacher's professional judgment, teaching style and awareness of student needs dictate that Algebra'scool materials be used in a wide variety of ways. Personalizing the lessons for teacher comfort and student needs always results in improved success.
- The teacher may choose to teach only portions of a lesson. The Subtopics Menu can be used to quickly scan the lesson. The DVD will go directly to a type of problem when it is selected from the Subtopics Menu.
- The Guided Notes questions and Guided Practice questions may be used without the lesson as a review for tests or an individualized assessment of student knowledge.
- The lessons may be used with or without manipulatives.
- The lessons may be used with or without the Guided Practice questions.
- The lessons may be used with or without the Detail Screens.
- The teacher may choose to use the DVD for instruction, but use an additional text for practice and testing materials.

Accommodating Special Students and Situations

- Home-school students/home-bound students: In home school environments, Algebra'scool may be used as a curriculum guide. Although it was designed to supplement a year-long algebra program, the pace of the program can be personalized to the student.
- In-school suspension/alternatives schools: Designated in-school suspension teachers or Alternative School teachers can use Algebra'scool as a teaching supplement to keep students from falling behind the pace of learning in the traditional classroom.
- Tutoring/after-school programs: Students who need extra help on a topic can receive targeted assistance on the topic using Algebra'scool DVD's and Guided Notes.
- Computer lab (at school): Students can work independently in the computer lab during study halls, before or after school, during breaks or lunch time by simply inserting a DVD into a computer. The program can also be networked into the computer lab.
- Summer School (remedial): Algebra'scool can be integrated to meet the needs of students who have fallen behind or failed the previous year of school. Algebra'scool allows students to work daily with a teacher in a classroom or in a computer lab to finish daily lessons. Additional Practice and Independent Practice problems may be used along with the textbook as homework.

Complementing Classroom Instruction

- Standardized Test Preparation: Quickly previewing the Guided Notes questions from the DVD will give students a review of material that has been covered in the course. The Journal questions will provide students practice answering open-ended questions and questions requiring higher order thinking skills.
- Re-teaching: Sometimes students have the willingness to learn but just do not understand. Algebra'scool can give a whole new perspective on a lesson. The different voices and animation will help hold students' attention while the DVD provides the opportunity to take as many pauses as necessary for students to understand the concepts. It is like having a second teacher in the classroom.
- Remedial Work: Without Algebra'scool, teachers spend a great deal of time teaching students who have been absent from class. With Algebra'scool these students can play a DVD and have the entire lesson presented to them. No longer will they rely solely on notes taken by fellow classmates or on a hurried explanation given by the teacher. The DVD is ready for use before school, after school and at breaks in the day, not just during valuable class time.
- Helping Students Catch Up: Sometimes students will move during the school year from another school district that has not covered the same concepts. Algebra'scool can help these students by providing them with the lessons that they have missed.
- Change of Pace: Some teachers may not want to use Algebra'scool every day. These teachers can use Algebra'scool to provide a lively change of pace. On days when it seems as if students are losing interest and something new is needed, Algebra'scool provides a way to keep their attention and spice up the class.
- Advanced student/independent learning: Advanced students often complain of boredom when forced to proceed at the same pace as the rest of the class. Algebra'scool can give these students the opportunity to work ahead of the class. The DVD lessons are comprehensive enough to teach these gifted students the new concepts. The Independent Practice and Additional Practice pages give the students ample opportunity to practice their new skills. Math will once again become exciting for these students as they are challenged by new concepts that are presented as fast as the students can learn them.
- Substitute Teacher Days: On days when the teacher cannot be at school, the students can still be focused on their math lessons. Algebra'scool can be used to review previously learned lessons or to present new material. When the teacher returns to the classroom, student work can easily be checked by using the Guided Practice problems on the DVD.
- Remediation: Many school districts require remediation for students who do not meet the proficiency requirements in algebra. Algebra'scool can be used as a tool with these students. Algebra'scool can be used by individuals or in small groups. The DVD presents the material in a fresh, new way. The Guided Practice and Guided Notes problems help students gain added confidence.

- Extra Practice: Many students complain that their algebra classes move too quickly. Algebra'scool will allow the student the option of viewing any lesson at times other than the designated class period. A student who needs extra help on a lesson can view the lesson as many times as needed. Algebra'scool allows the individual the freedom to move through a lesson at his or her own pace. The student can study a particular screen and can take as much time as is needed to work through the Guided Notes and Guided Practice problems.
- Home-to-School Companion Set: Parents have the option of purchasing a companion set of DVDs to be used at home to present, reinforce, and/or review algebraic concepts that are being learned in the classroom.

Regardless of how this program is used, whether on its own or in conjunction with a textbook, BestQuest's Algebra'scool is sure to enhance existing programs and provide an engaging, fun way to learn for both teachers and students.

Lesson Plan Guide

Lesson _____

Class _____ Date _____

NCTM Objective/Standards _____

| Resources Used | In Class... | Homework Assigned... |
|--|---|---------------------------|
| Quiz planned _____ | | |
| Test planned _____ | | |
| Algebra'scool materials → | Getting Started activity from Teacher's Notes _____ | |
| DVD Module/Lesson _____ | Guided Notes _____ | Guided Notes _____ |
| | GP Set 1 _____ | GP Set 1 _____ |
| | GP Set 2 _____ | GP Set 2 _____ |
| | Individual Practice _____ | Individual Practice _____ |
| | Additional Practice _____ | Additional Practice _____ |
| | Journal _____ | Journal _____ |
| | Frogan's Heroes _____ | |
| Textbook → | Page _____ | Page _____ |
| | Example Problems _____ | Practice Problems _____ |
| | Practice Problems _____ | Other assignment: _____ |
| Other Resources Manipulatives Calculator Overhead projector _____ _____ | | |

Comment [A1]: What are these abbreviations? They need to be spelled out.

Algebra'scool Scope and Sequence

| | |
|-----------------|---|
| Unit A | Operations and Expressions |
| Module 1 | Getting Ready for Algebra |
| 1.1 | Defining Sets and Real Numbers <ul style="list-style-type: none">• Elements of a Set• Subsets• Disjoint Sets• Intersection of Two Sets• Empty Set• Union of Sets• Natural Numbers, Whole Numbers, Integers• Rational Numbers• Irrational Numbers• Number Line• Conclusion |
| 1.2 | Simplifying Expressions with Integers <ul style="list-style-type: none">• Adding Integers• Subtracting Integers• Multiplying Integers• Dividing Integers• Conclusion |
| 1.3 | Simplifying Expressions with Rational Numbers <ul style="list-style-type: none">• Operations with Fractions• Multiplying Fractions• LCD• Adding Fractions• Subtracting Fractions• Dividing Fractions• Adding Decimals• Subtracting Decimals• Multiplying Decimals• Conclusion |
| 1.4 | Simplifying Expressions with Exponents and Roots <ul style="list-style-type: none">• Exponential Expressions• Zero Exponent• Positive Bases• Negative Bases to Even Powers• Negative Bases to Odd Powers• Square Roots and Cube Roots• Conclusion |
| 1.5 | Applying the Order of Operations <ul style="list-style-type: none">• Order of Operations without Grouping Symbols or Exponents• Order of Operations without Grouping Symbols• Order of Operations Using All Steps• Order of Operations with Two Levels of Nested Grouping Symbols• Conclusion |
| Module 2 | Writing and Simplifying Algebraic Expressions |
| 2.1 | Using the Language of Algebra <ul style="list-style-type: none">• Variable• Algebraic Expression• Term• Monomials• Coefficients• Polynomials• Special Polynomials• Degree of a Monomial• Degree of a Polynomial• Conclusion |
| 2.2 | Translating Word Phrases into Algebraic Expressions |

- Expressions with One Operation
 - Exponents
 - More Than One Operation
 - Conclusion
- 2.3 Identifying Algebraic Properties
- Commutative Property of Addition
 - Associative Property of Addition
 - Commutative Property of Multiplication
 - Associative Property of Multiplication
 - Identity Property of Addition
 - Zero Property of Multiplication
 - Identity Property of Multiplication
 - Multiplicative Inverse
 - Additive Inverse
 - Distributive Property
 - Conclusion
- 2.4 Combining Like Terms
- Term and Coefficient
 - Adding Polynomials
 - Subtracting Polynomials
 - Conclusion
- 2.5 Evaluating Expressions
- Algebraic Expression
 - Baseball Application Problem
 - Evaluating Exponential Expressions
 - Evaluating Expressions with Roots
 - Evaluating Formulas
 - Conclusion

Unit B **Equations and Inequalities of One Variable**

Module 3 **Solving Linear Equations of One Variable**

- 3.1 Identifying Properties of Equality
- Equality
 - Reflexive Property of Equality
 - Symmetric Property of Equality
 - Transitive Property of Equality
 - Addition Property of Equality
 - Subtraction Property of Equality
 - Multiplication Property of Equality
 - Division Property of Equality
 - Algebraic Proof
 - Conclusion
- 3.2 Solving Equations by Inspection
- Solving Addition Equations by Inspection
 - Solving Subtraction Equations by Inspection
 - Solving Multiplication Equations by Inspection
 - Solving Division Equations by Inspection
 - Conclusion
- 3.3 Solving One-Step Linear Equations
- Solving One-Step Equations Using Division
 - Solving One-Step Equations Using Multiplication
 - Solving One-Step Equations Using Addition
 - Solving One-Step Equations Using Subtraction
 - Conclusion
- 3.4 Solving Two-Step Linear Equations
- Working Backwards
 - Solving Two-Step Equations
 - Conclusion
- 3.5 Solving Multi-Step Linear Equations
- Solving Multi-Step Equations - Combining Like Terms
 - Solving Multi-Step Equations - Variable Terms on Both Sides of the Equation
 - Identify Equation
 - Solving Multi-Step Equations - No Solution
-

- Solving Multi-Step Equations - Distributive Property
 - Solving Multi-Step Equations - Fractions
 - Conclusion
- 3.6 Rewriting Formulas
- Defining Formula
 - Using the Area Formula
 - Rewriting the Area Formula
 - Rewriting the Perimeter Formula
 - Rewriting Temperature Formulas
 - Conclusion

Module 4 Solving Problems Using Linear Equations of One Variable

- 4.1 Translating Sentences into Algebraic Equations
- Writing a Sentence as an Equation
 - Writing a Sentence as an Equation with Parentheses
 - Writing a Sentence as an Equation for Real-World Situations
 - Conclusion
- 4.2 Solving Consumer/Business Problems Using Equations of One Variable
- Steps to Solving Consumer/Business Problems
 - Consecutive Integers
 - Finding Percent in Consumer/Business Problems
 - Percent Increase and Percent Decrease
 - Conclusion
- 4.3 Solving Geometry Problems Using Equations of One Variable
- Perimeter Problems
 - Angle Sum Problems
 - Conclusion
- 4.4 Solving Mixture and Rate Problems Using Equations of One Variable
- Mixture Problems without Percents
 - Mixture Problems with Percents
 - Distance Problems
 - Conclusion

Module 5 Solving linear Inequalities of One Variable

- 5.1 Solving Linear Inequalities by Inspection
- Inequality Symbols
 - Solution of an Inequality
 - Graphing Linear Inequalities
 - Conclusion
- 5.2 Solving One-Step Linear Inequalities
- Solving One-Step Inequalities by Addition or Subtraction
 - Solving One-Step Inequalities by Multiplying or Dividing by a Positive Number
 - Solving One-Step Inequalities by Multiplying or Dividing by a Negative Number
 - Conclusion
- 5.3 Solving Two-Step Linear Inequalities
- Solving Two-Step Inequalities - Inequality Symbol Does Not Reverse
 - Solving Two-Step Inequalities - Inequality Symbol Reverses
 - Conclusion
- 5.4 Solving Multi-Step Linear Inequalities
- Solving Inequalities with Variables on Both Sides
 - Solving Multi-Step Inequalities Involving Simplifying Expressions
 - Conclusion
- 5.5 Solving Conjunction Inequalities
- Defining and Graphing Conjunctions
 - Solving Multi-Step Conjunctions
 - Conclusion
- 5.6 Solving Disjunction Inequalities
- Defining Disjunctions
 - Solving Multi-Step Disjunctions
 - Conclusion
- 5.7 Solving Problems Using Inequalities of One Variable
- Solving Problems with One-Step Inequalities
 - Solving Problems with Two-Step Inequalities
 - Solving Problems with Multi-Step Inequalities

- Conclusion

Module 6 Solving Absolute Value Equations and Inequalities

- 6.1 Solving Basic Absolute Value Equations
- Absolute Value Defined
 - Solve the Absolute Value of $x=a$, $a \geq 0$
 - Solve the Absolute Value of $ax + b =k$, $k \geq 0$
 - Solving Basic Absolute Value Equations with One or No Solution
 - Conclusion
- 6.2 Solving Advanced Absolute Value Equations
- Isolating the Absolute Value One-Step
 - Isolating the Absolute Value Two-Step
 - Conclusion
- 6.3 Solving Inequalities Using "Absolute Value Is Less Than"
- Solving One-Step Inequalities Containing Absolute Value is Less Than
 - Solving Two-Step Inequalities Containing Absolute Value is Less Than
 - Isolating the Absolute Value Expression when Solving Inequalities with Absolute Value is Less Than
 - Conclusion
- 6.4 Solving Inequalities Using "Absolute Value Is Greater Than"
- Explaining the Steps of Solving Inequalities Containing Absolute Value is Greater Than
 - Solving "Two-Step" Inequalities Containing Absolute Value is Greater Than
 - Isolating the Absolute Value Before Solving Inequalities with Greater Than
 - Conclusion
- 6.5 Solving Problems Using Absolute Value Equations and Inequalities
- Modeling with Inequalities Using Absolute Value Less Than
 - Modeling Using Absolute Value Equations
 - Modeling with Inequalities Using Absolute Value Greater Than
 - Conclusion

Unit C Equations and Inequalities of Two Variables and Functions

Module 7 Solving Linear Equations and Inequalities of Two Variables

- 7.1 Defining Linear Equations of Two Variables and Their Solutions
- Solutions of a Linear Equation
 - Cartesian Coordinate System
 - Plotting Points
 - Graph of the Solutions of a Linear Equation
 - Showing All Solutions of a Linear Equation
 - Special Case-Horizontal Lines
 - Special Case-Vertical Lines
 - Conclusion
- 7.2 Graphing Linear Equations of Two Variables
- Graphing Linear Equations Using Tables
 - Graphing Linear Equations Using Intercepts
 - Graphing Linear Equations Using Slope-Intercept
 - Negative Slope
 - Positive Slope
 - Conclusion
- 7.3 Graphing Linear Inequalities of Two Variables
- Graphing an Inequality with One Variable on a Number Line
 - Graphing an Inequality with One Variable on a Coordinate Plane
 - Boundary Line
 - Test Point
 - Conclusion
- 7.4 Solving Consumer/Business Problems Using Linear Equations and Inequalities of Two Variables
- Concession Stand Application Problem
 - Football Tickets Application Problem
 - DJ Service Application Problem
 - School Dance Application Problem
 - Conclusion

Module 8 Writing Linear Equations of Two Variables

- 8.1 Finding Slope
- Slope of a Line
 - Comparing Slopes of Lines
-

-
- Negative Slopes
 - Opposite Slopes
 - Discovering the Slope Formula
 - Slope Formula
 - Horizontal Lines
 - Vertical Lines
 - Parallel Lines
 - Perpendicular Lines
 - Conclusion
- 8.2 Writing Equations of Lines, Given the Slope and y-Intercept
- Equations and Lines
 - Slope-Intercept Form
 - Graphs and Slope-Intercept Form
 - Determining Slope and y-intercept
 - Writing Equations
 - Parallel and Perpendicular Lines
 - Reciprocals
 - Conclusion
- 8.3 Writing Equations of Lines, Given a Point and the Slope or Two Points
- Defining Point-Slope Form
 - Using Point-Slope Form
 - Application Problem
 - Parallel and Perpendicular Lines
 - Finding the Equation
 - Conclusion
- 8.4 Solving Linear Equations in Two Variables When Parameters Are Changed
- Parameters
 - Using Parameters to Determine an Equation
 - Changing the Parameter m
 - Perpendicular Lines
 - Parameter Changes
 - Linear Equations
 - Converting from Standard Form to Slope-Intercept Form
 - Conclusion
-

Module 9

Using Functions

- 9.1 Defining Relations and Functions
- Introduction to Function Machine
 - Relations
 - Domain and Range of a Relation
 - Mapping Diagram
 - Table
 - Graph of a Relation
 - Set-Builder Notation
 - Ways to Represent a Relation
 - Function
 - Constant Function
 - Linear Function
 - Vertical Line Test
 - Nonlinear Function
 - Function Machine
 - Conclusion
- 9.2 Evaluating Functions
- Functions
 - Domain and Range
 - Function Notation
 - Evaluating a Function
 - Functions on the Coordinate Plane
 - Conclusion
- 9.3 Writing Functions from Patterns
- Input-Output Table
 - Writing a Function from a Pattern
 - Application Problem - Job
-

- Scatterplot
 - Slope
 - Function Mapping and Scatter plots
 - Conclusion
- 9.4 Graphing Functions
- Definition of Linear Function
 - Graphing the Linear Function
 - Graphing the Constant Function
 - Absolute Value Function
 - Absolute Value Function Family
 - Translating Parent Graph
 - Graphing Piecewise Functions
 - Conclusion
- 9.5 Solving Problems Using Functions
- Real-World Application
 - Formulas as Functions
 - Real-World Application #2
 - Mowing Service
 - Pizza Sharing Function
 - Health-Related Function
 - Conclusion
- 9.6 Evaluating Composite Functions
- Sale Price Function
 - Defining Composition of Two Functions
 - Evaluating
 - Example
 - Real-World Application - Finding the Original Price
 - Determining Inverses
 - Conclusion

Module 10 Solving Systems of Linear Equations and Inequalities

- 10.1 Solving Systems of Linear Equations by Graphing
- System of Linear Equations
 - Determine Whether an Ordered Pair is a Solution
 - Solving Systems of Linear Equations by Graphing
 - Consistent, Inconsistent, Dependent, or Independent
 - Conclusion
- 10.2 Solving Systems of Linear Equations by Elimination
- Solution to a System of Equations
 - Elimination by Addition of a System
 - Elimination by Multiplication of One Equation in a System
 - Elimination by Multiplication of Both Equations
 - Overview of Elimination Method
 - Systems With No Solution
 - Systems With Infinitely Many Solutions
 - Conclusion
- 10.3 Solving Systems of Linear Equations by Substitution
- Methods of Solving Systems of Linear Equations
 - Solving a System of Linear Equations Using the Substitution Method
 - Checking a Solution to a System of Linear Equations
 - Solving a System of Linear Equations of Two Variables
 - Solving a System of linear Equations with Infinitely Many Solutions by Substitution
 - Solving a System of linear Equations with No Solution by Substitution
 - Conclusion
- 10.4 Solving Systems of Linear Inequalities by Graphing
- Solving Linear Inequalities of Two Variables
 - Graphing a System of Linear Inequalities of Two Variables
 - Systems of Linear Inequalities Whose Graphs Have Horizontal and Vertical Boundaries
 - Graphing a System of Three Linear Inequalities
 - Systems of Linear Inequalities Whose Graphs Have Parallel Boundaries
 - Conclusion
- 10.5 Solving Problems Using Systems of Linear Equations and Inequalities
- Money Saving Problem - No Interest
-

- Problem-Solving Tips
- Money Saving Problem - with Interest
- Rate/Time/Distance Problem
- Polygon Dimension Problem
- Mixture Problem
- Hours Worked/Salary Inequality Problem
- Mixture Inequality Problem
- Conclusion

Unit D Polynomials and Quadratic Equations

Module 11 Simplifying Algebraic Expressions with Polynomials

- 11.1 Applying Rules of Exponents
- Multiplying Powers with Like Bases
 - Dividing Powers with Like Bases
 - Power-of-a-Power Rule
 - Power-of-a-Product Rule
 - Conclusion
- 11.2 Using Scientific Notation
- Understanding Scientific Notation
 - Converting a Number from Scientific Notation to Standard Form
 - Converting a Number from Standard Form to Scientific Notation
 - Calculating Using Scientific Notation
 - Conclusion
- 11.3 Adding and Subtracting Polynomials
- Understanding Polynomials
 - Subtracting Polynomials
 - Conclusion
- 11.4 Multiplying Monomials and Binomials
- Multiplying Monomials
 - Multiplying a Binomial by a Monomial
 - Multiplying a Binomial by a Binomial
 - Conclusion
- 11.5 Multiplying Polynomials
- Special Products
 - Multiplying General Polynomials
 - Conclusion
- 11.6 Dividing Polynomials by Monomials
- Dividing Monomials by Monomials
 - Dividing Polynomials by Monomials
 - Conclusion
- 11.7 Dividing Polynomials Using Long Division
- Dividing Polynomials using Long Division
 - Conclusion

Module 12 Simplifying Algebraic Expressions by Factoring Polynomials

- 12.1 Factoring by Removing the Greatest Common Factor
- Introducing Factoring
 - Greatest Common Monomial Factor
 - Factoring Polynomials Containing More Than One Variable
 - Conclusion
- 12.2 Factoring by Grouping
- Common Binomial Factors
 - Factoring by Grouping
 - Conclusion
- 12.3 Factoring the Difference of Two Squares
- How to Factor the Difference of Two Squares
 - Recognizing Perfect Squares
 - Factoring the Difference of Two Squares
 - Factoring the Difference of Two Squares with a Leading Coefficient Other Than One
 - Using the Difference of Squares Rule Twice
 - Conclusion
- 12.4 Factoring $x^2 + b x + c$
- Factoring Trinomials of the Form $x^2 + b x + c$, $b > 0$, $c > 0$
 - Factoring $x^2 + b x + c$, $b < 0$ and/or $c < 0$
-

| | |
|------------------|---|
| 12.5 | <ul style="list-style-type: none"> • Conclusion Factoring $ax^2 + bx + c$ <ul style="list-style-type: none"> • Factoring $ax^2 + bx + c$; Guess and Check • Factoring $ax^2 + bx + c$; Factoring by Grouping • Conclusion |
| 12.6 | Factoring Using Several Methods <ul style="list-style-type: none"> • Review of Factoring Methods • Factoring Using Several Methods • Conclusion |
| 12.7 | Dividing Polynomials Using Factoring <ul style="list-style-type: none"> • Dividing Polynomials by Factoring; Factoring Numerator Only • Dividing Polynomials Using Factoring; Factoring Numerator and Denominator • Conclusion |
| Module 13 | Solving Quadratic Equations of One Variable |
| 13.1 | Defining Quadratic Equations of One Variable <ul style="list-style-type: none"> • Identifying Quadratic Equations • Conclusion |
| 13.2 | Solving Quadratic Equations by Evaluating Square Roots <ul style="list-style-type: none"> • Solving Equations of the Form $ax^2 = k$ • Solving Equations of the Form $ax^2 - b = k$ • Solving Quadratic Equations of the Form $a(x + b)^2 = k$ • Solving Quadratic Equations of the Form $a(x + b)^2 + c = k$ • Conclusion |
| 13.3 | Solving Quadratic Equations by Factoring <ul style="list-style-type: none"> • Solving Quadratic Equations by Factoring • Conclusion |
| 13.4 | Solving Quadratic Equations by Completing the Square <ul style="list-style-type: none"> • Completing the Square and Factoring Perfect Square Trinomials • Solving Quadratic Equations by Completing the Square • Conclusion |
| 13.5 | Solving Quadratic Equations by the Quadratic Formula |
| 13.6 | Solving Problems Using Quadratic Equations of One Variable <ul style="list-style-type: none"> • Rectangular Area Applications • Vertical Motion Applications • Conclusion |
| Module 14 | Graphing Quadratic Relations |
| 14.1 | Graphing Simple Quadratic Relations <ul style="list-style-type: none"> • Defining Parabola • Graphing Relations of the Form $y = ax^2 + bx + c$ • Conclusion |
| 14.2 | Graphing Quadratic Relations by Analysis <ul style="list-style-type: none"> • Graphing $y = ax^2$ • Review of Graphing $y = ax^2$ • Graphing Equations of the Form $y = x^2 + k$ • Graphing Equations of the Form $y = a(x - h)^2 = k$ • Graphing Equations of the Form $y = (x - h)^2$ • Conclusion |
| 14.3 | Solving Problems Using Quadratic Graphs <ul style="list-style-type: none"> • Vertical Motion Application • Sports Applications • Conclusion |
| Unit E | Rational and Radical Equations |
| Module 15 | Simplifying Rational Expressions |
| 15.1 | Finding Restricted Values of Rational Expressions <ul style="list-style-type: none"> • Rational Expression Restrictions Degree 1 • Rational Expressions with More Than 1 Restricted Value • Conclusion |
| 15.2 | Simplifying Rational Expressions <ul style="list-style-type: none"> • Simplifying Rational Expressions • Negative One Technique • Simplifying Rational Expressions Containing Trinomials • Conclusion |

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- 15.3 Multiplying and Dividing Rational Expressions
- Multiplying Rational Expressions with Monomials
 - Multiplying Rational Expressions with Binomials and Trinomials
 - Dividing Rational Expressions
 - Conclusion
- 15.4 Adding and Subtracting Rational Expressions
- Adding and Subtracting Rational Expressions with Like Denominators
 - Adding and Subtracting Rational Expressions with Unlike Denominators
 - Conclusion
-

Module 16 Solving Rational Equations

- 16.1 Solving Rational Equations
- Solving Rational Equations
 - Conclusion
- 16.2 Solving Problems Using Direct Variation
- Direct Variation
 - Applications of Direct Variation
 - Conclusion
- 16.3 Solving Problems Using Inverse Variation
- Inverse Variation
 - Applications of Inverse Variation
 - Conclusion
- 16.4 Solving Various Types of Problems Using Rational Equations
- Solving Work Problems
 - Solving Uniform Motion Problems
 - Conclusion
-

Module 17 Simplifying Radical Expressions

- 17.1 Simplifying Radicals
- Square Roots
 - Product Property of Square Roots
 - Square Roots and Negatives
 - Cube Roots
 - Product Property of Cube Roots
 - Roots of Variable Expressions
 - Conclusion
- 17.2 Adding and Subtracting Radicals
- Adding and Subtracting Simplified Radicals
 - Simplify Before Adding and Subtracting Radicals
 - Adding and Subtracting Radicals with Variables
 - Conclusion
- 17.3 Multiplying Radicals
- Monomial Times Monomial
 - Monomial Times Binomial
 - Binomial Times Binomial
 - Conclusion
- 17.4 Dividing Radicals
- Quotient Property of Square Roots
 - Rationalizing the Denominator
 - Conclusion
-

Module 18 Solving Radical Equations

- 18.1 Solving One-Step Radical Equations
- Solving Radical Equations of the form $\sqrt{x} = a$, $a \geq 0$
 - Solving Radical Equations of the Form $-\sqrt{x} = a$, $a < 0$
 - Solving Radical Equations Containing Negative Signs
 - Solving Cube Root and 4th Root Equations
 - Conclusion
- 18.2 Solving Multi-Step Radical Equations
- Solving Two-Step Radical Equations
 - Solving Multi-Step Radical Equations
 - Conclusion
- 18.3 Solving Problems Using Radical Equations
- Length of a Skid Mark
 - Distance to Horizon
-

- Speed of Sound
 - Pythagorean Theorem Application
 - Conclusion
- 18.4 Solving Problems Using the Distance and Midpoint Formulas
- Pythagorean Theorem
 - Distance on a Number Line
 - Distance Formula
 - Using the Distance Formula to Solve Problems
 - Using the Distance Formula to Solve Problems
 - The Midpoint Formula
 - Conclusion

Unit F **Data Analysis, Probability, Statistics**
Module 19 **Analyzing Data and Statistics**

- 19.1 Finding Mean, Median, and Mode
- Calculating Mean, Median, and Mode
 - Stem-and-Leaf Plot
 - Conclusion
- 19.2 Interpreting Graphs of Data
- Line Graphs
 - Bar Graphs
 - Circle Graphs
 - Conclusion
- 19.3 Analyzing and Describing Graphs
- Stem-and-Leaf Plot and Five-Number Summary
 - Making Comparisons Using Box-and-Whisker Plots
 - Histograms
 - Conclusion
- 19.4 Finding a Line of Best Fit
- Interpret Points on a Scatter Plot
 - Writing Equations for Lines of Best Fit
 - Conclusion
- 19.5 Solving Statistics Problems
- Deviation from the Mean
 - Mean Absolute Deviation
 - Deviation from the Mean as a Measure of Dispersion
 - Conclusion

Module 20 **Solving Problems Using Probability, Statistics And Discrete Math**

- 20.1 Finding Permutations and Combinations
- Fundamental Counting Principle and Factorial Rule
 - Factorial
 - Permutations
 - Combinations
 - Conclusion
- 20.2 Solving Basic Probability Problems
- Line Graphs
 - Bar Graphs
 - Circle Graphs
 - Conclusion
- 20.3 Solving Advanced Probability Problems
- Independent Events
 - Dependent Events
 - Conclusion
- 20.4 Solving Discrete Mathematics Problems
- Traversable Paths
 - Equivalent Graphs
 - Conclusion

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