

Welcome to a New Way to Teach!

BestQuest Teaching Systems has conceived a revolutionary advancement in mathematics curriculum resources for middle and high schools. Based on the belief that all children can learn mathematics when provided with the appropriate tools, effective instruction, and a supportive environment, BestQuest's founder had a vision of creating a product that would help students learn using today's technology. With this vision as the guiding force, BestQuest's two-fold mission to assist teachers and parents was developed: (1) To produce educational curricula in a creative and understandable way utilizing technology, print materials, and manipulatives; and (2) To engage students in the educational process while attaining the goals of enhanced learning and increased achievement.

The initial product developed by BestQuest to fulfill its mission is an Algebra I supplemental program entitled, *algebra'scool*. A unique product delivered via state-of-the-art DVD format presents mathematics curriculum through entertaining animation, dynamic graphics, concrete examples, and real-world explanations. With visual, auditory and kinesthetic instruction provided, students' senses are engaged and their interests aroused, thereby promoting life-long learning. BestQuest wants to impress upon students the importance of mathematics and to open doors to advanced degrees and rewarding careers.

This courseware program consists of six units: (Unit A) Operations and Expressions; (Unit B) Equations and Inequalities of One Variable; (Unit C) Equations and Inequalities of Two Variables and Functions; (Unit D) Polynomials and Quadratic Equations; (Unit E) Rational and Radical Equations; and (Unit F) Data Analysis, Probability, and Statistics. These units are divided into 20 modules with each module containing 3 to 7 lessons. The program, representing a full year of instruction, is comprised of 21 DVD discs containing 99 lessons and is augmented by an Instructor's Manual. The Instructor's Manual contains the following sections: Teacher Notes, Guided Notes, Guided Practice, Independent Practice, Additional Practice, and Module Tests, with the answers to all questions conveniently provided. Blackline masters are provided for each of the sections in the Instructor's Manual to be used in the reproduction of student materials.

The program is designed to be used as a supplement to mathematics textbooks but can be used independently in the appropriate settings. This classroom-friendly course complements the talents of any teacher,



novice or veteran, and promotes equality in algebra instruction. The math instructional content is written and designed to conform to the highest standards, including those published by the National Council of Teachers of Mathematics (NCTM) and state departments of education. The scope and sequence instructional guide of this product does not address every state standard or assessment benchmark; however, it does provide the core topics which are common to most 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.

The DVD format provides the ideal blend of content and technology for teacher-guided whole group classroom use or one-on-one learning. DVDs can be easily played in both DVD-equipped computers and DVD players. The DVD format allows for superior classroom management relative to other products because of the teacher's ability to move around the room as the lesson is being presented. A choice of delivery platforms (TV or PC); ease of lesson navigation; the ability to pause on segments requiring more exploration; and the inclusion of lesson and subtopic menus, which can be selected with an easy click of the hand-held remote, all are features of DVD that other delivery platforms lack in their entirety.

Unit A

Operations and Expressions

Module 1

Getting Ready for Algebra

- 1.1 Defining Sets and Real Numbers
- 1.2 Simplifying Expressions with Integers
- 1.3 Simplifying Expressions with Rational Numbers
- 1.4 Simplifying Expressions with Exponents and Roots
- 1.5 Applying the Order of Operations

Unit B

Equations and Inequalities of One Variable

Module 3

Solving Linear Equations of One Variable

- 3.1 Identifying Properties of Equality
- 3.2 Solving Equations by Inspection
- 3.3 Solving One-Step Linear Equations
- 3.4 Solving Two-Step Linear Equations
- 3.5 Solving Multi-Step Linear Equations
- 3.6 Rewriting Formulas

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
- 7.2 Graphing Linear Equations of Two Variables
- 7.3 Graphing Linear Inequalities of Two Variables
- 7.4 Solving Consumer/Business Problems Using Linear Equations and Inequalities of Two Variables

Module 2

Writing and Simplifying Algebraic Expressions

- 2.1 Using the Language of Algebra
- 2.2 Translating Word Phrases into Algebraic Expressions
- 2.3 Identifying Algebraic Properties
- 2.4 Combining Like Terms
- 2.5 Evaluating Expressions

Module 4

Solving Problems Using Linear Equations of One Variable

- 4.1 Translating Sentences into Algebraic Equations
- 4.2 Solving Consumer/Business Problems Using Equations of One Variable
- 4.3 Solving Geometry Problems Using Equations of One Variable
- 4.4 Solving Mixture and Rate Problems Using Equations of One Variable

Module 5

Solving Linear Inequalities of One Variable

- 5.1 Solving Linear Inequalities by Inspection
- 5.2 Solving One-Step Linear Inequalities
- 5.3 Solving Two-Step Linear Inequalities
- 5.4 Solving Multi-Step Linear Inequalities
- 5.5 Solving Conjunction Inequalities
- 5.6 Solving Disjunction Inequalities
- 5.7 Solving Problems Using Inequalities of One Variable

Module 6

Solving Absolute Value Equations and Inequalities

- 6.1 Solving Basic Absolute Value Equations
- 6.2 Solving Advanced Absolute Value Equations
- 6.3 Solving Inequalities Using “Absolute Value Is Less Than”
- 6.4 Solving Inequalities Using “Absolute Value Is Greater Than”
- 6.5 Solving Problems Using Absolute Value Equations and Inequalities

Module 8

Writing Linear Equations of Two Variables

- 8.1 Finding Slope
- 8.2 Writing Equations of Lines, Given the Slope and y -Intercept
- 8.3 Writing Equations of Lines, Given a Point and the Slope or Two Points
- 8.4 Solving Linear Equations in Two Variables When Parameters Are Changed

Module 9

Using Functions

- 9.1 Defining Relations and Functions
- 9.2 Evaluating Functions
- 9.3 Writing Functions from Patterns
- 9.4 Graphing Functions
- 9.5 Solving Problems Using Functions
- 9.6 Evaluating Composite Functions

Module 10

Solving Systems of Linear Equations and Inequalities

- 10.1 Solving Systems of Linear Equations by Graphing
- 10.2 Solving Systems of Linear Equations by Elimination
- 10.3 Solving Systems of Linear Equations by Substitution
- 10.4 Solving Systems of Linear Inequalities by Graphing
- 10.5 Solving Problems Using Systems of Linear Equations and Inequalities



Unit **D**

Polynomials and Quadratic Equations

Module 11

Simplifying Algebraic Expressions with Polynomials

- 11.1** Applying Rules of Exponents
- 11.2** Using Scientific Notation
- 11.3** Adding and Subtracting Polynomials
- 11.4** Multiplying Monomials and Binomials
- 11.5** Multiplying Polynomials
- 11.6** Dividing Polynomials by Monomials
- 11.7** Dividing Polynomials Using Long Division

Unit **E**

Rational and Radical Equations

Module 15

Simplifying Rational Expressions

- 15.1** Finding Restricted Values of Rational Expressions
- 15.2** Simplifying Rational Expressions
- 15.3** Multiplying and Dividing Rational Expressions
- 15.4** Adding and Subtracting Rational Expressions

Unit **F**

Data Analysis, Probability, and Statistics

Module 19

Analyzing Data and Statistics

- 19.1** Finding Mean, Median, and Mode
- 19.2** Interpreting Graphs of Data
- 19.3** Analyzing and Describing Graphs
- 19.4** Finding a Line of Best Fit
- 19.5** Solving Statistics Problems

Module 12

Simplifying Algebraic Expressions by Factoring Polynomials

- 12.1 Factoring by Removing the Greatest Common Factor
- 12.2 Factoring by Grouping
- 12.3 Factoring the Difference of Two Squares
- 12.4 Factoring $x^2 + bx + c$
- 12.5 Factoring $ax^2 + bx + c$
- 12.6 Factoring Using Several Methods
- 12.7 Dividing Polynomials Using Factoring

Module 13

Solving Quadratic Equations of One Variable

- 13.1 Defining Quadratic Equations of One Variable
- 13.2 Solving Quadratic Equations by Evaluating Square Roots
- 13.3 Solving Quadratic Equations by Factoring
- 13.4 Solving Quadratic Equations by Completing the Square
- 13.5 Solving Quadratic Equations by the Quadratic Formula
- 13.6 Solving Problems Using Quadratic Equations of One Variable

Module 14

Graphing Quadratic Relations

- 14.1 Graphing Simple Quadratic Relations
- 14.2 Graphing Quadratic Relations by Analysis
- 14.3 Solving Problems Using Quadratic Graphs

Module 16

Solving Rational Equations

- 16.1 Solving Rational Equations
- 16.2 Solving Problems Using Direct Variation
- 16.3 Solving Problems Using Inverse Variation
- 16.4 Solving Various Types of Problems Using Rational Equations

Module 17

Simplifying Radical Expressions

- 17.1 Simplifying Radicals
- 17.2 Adding and Subtracting Radicals
- 17.3 Multiplying Radicals
- 17.4 Dividing Radicals

Module 18

Solving Radical Equations

- 18.1 Solving One-Step Radical Equations
- 18.2 Solving Multi-Step Radical Equations
- 18.3 Solving Problems Using Radical Equations
- 18.4 Solving Problems Using the Distance and Midpoint Formulas

Module 20

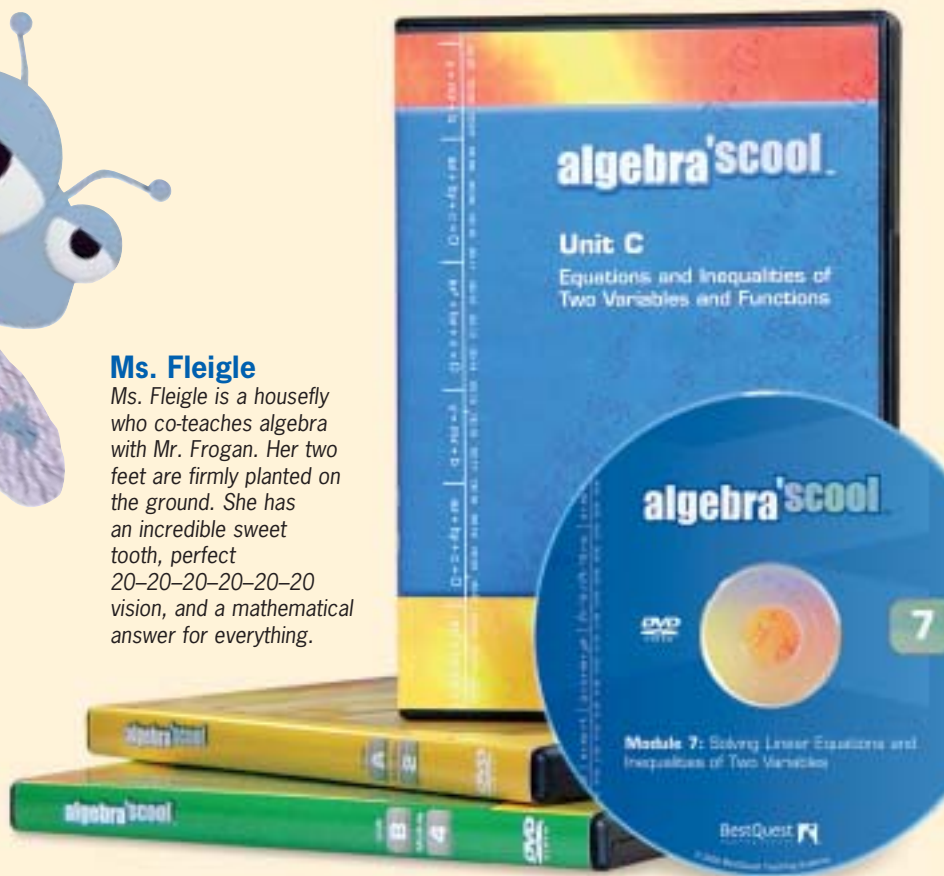
Solving Problems Using Probability, Statistics, and Discrete Math

- 20.1 Finding Permutations and Combinations
- 20.2 Solving Basic Probability Problems
- 20.3 Solving Advanced Probability Problems
- 20.4 Solving Discrete Mathematics Problems



Ms. Fleigle

Ms. Fleigle is a housefly who co-teaches algebra with Mr. Frogan. Her two feet are 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.



DVD by Module

Lesson

Each lesson begins with introductory animation that will engage the students' minds for the upcoming lesson. During this animation you will be introduced to Mr. Frogan, Ms. Fleigle, and the algebra class students: Ferd, Newt, Lizzie, and Roxy. These characters will present a scenario related to the content of the lesson.

Core Lesson

Following the introductory animation, the characters will continue with the actual lesson. The informative and often amusing interaction of the characters will provide a lesson that teaches both the terminology and skills necessary for success in the algebra classroom. Worksheets are provided to allow students to work along with the characters, taking notes and working problems as the lesson progresses. At the end of each lesson section, the teacher will have the opportunity to continue the lesson presentation or begin a Guided Practice set to review the skills covered in that section.

Guided Practice

All of the Guided Practice problems are worked in their entirety on the DVD. Autopauses are placed throughout the lesson to allow the teacher time to check student progress, to give further explanations, or to answer questions students may have.

Manipulative Instruction

In addition to the core lesson, each lesson may include additional components as needed that can be used at the discretion of the classroom teacher. The first of these components is a Manipulative section. NCTM recommends students use mathematical models to represent and understand quantitative relationships. The Manipulative section incorporates the use of algebra tiles and other more common materials, such as 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 module DVD will also include a special feature called Frogan's Heroes. 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 list of professionals identifies a few that are highlighted in the entire series: forestry service personnel, video game designers, pyrotechnicians, zookeepers, and astronomers.

Cast of Characters

Roxy

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

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

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

Ferd is a turtle who 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.

Frogan

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

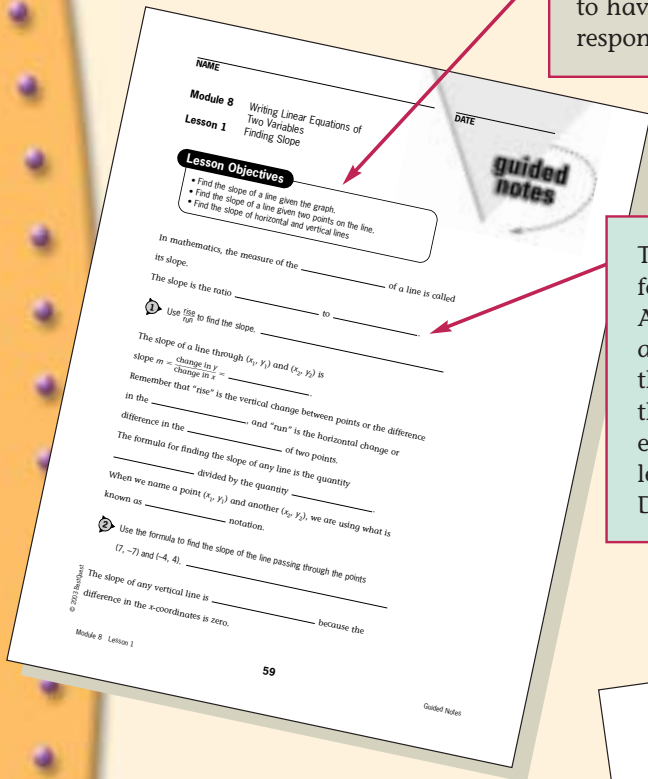


By Lesson

The following worksheets are available as blackline masters for every lesson.

Guided Notes

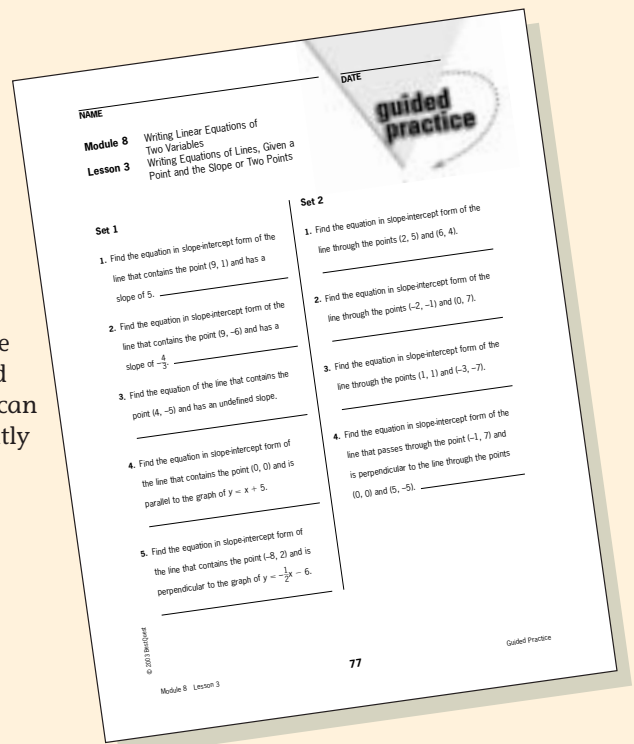
Lesson Objectives These notes begin with lesson objectives that will allow the student to have an idea of what he or she is responsible for learning during the lesson.



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 during the learning process while viewing the DVD lesson.

Guided Practice

Guided Practice examples that are solved on the DVD are also provided in the Guided Practice. The student can work on these problems independently and then view the DVD solutions to check their work.

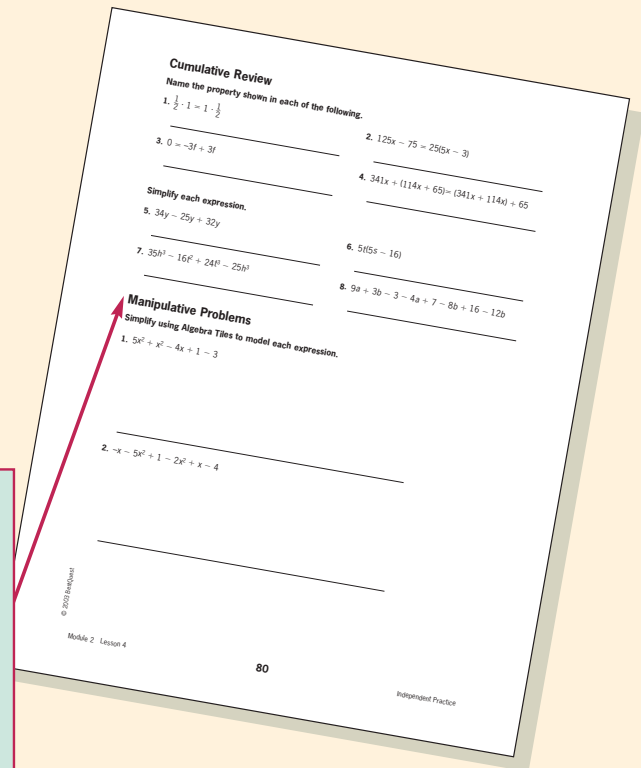
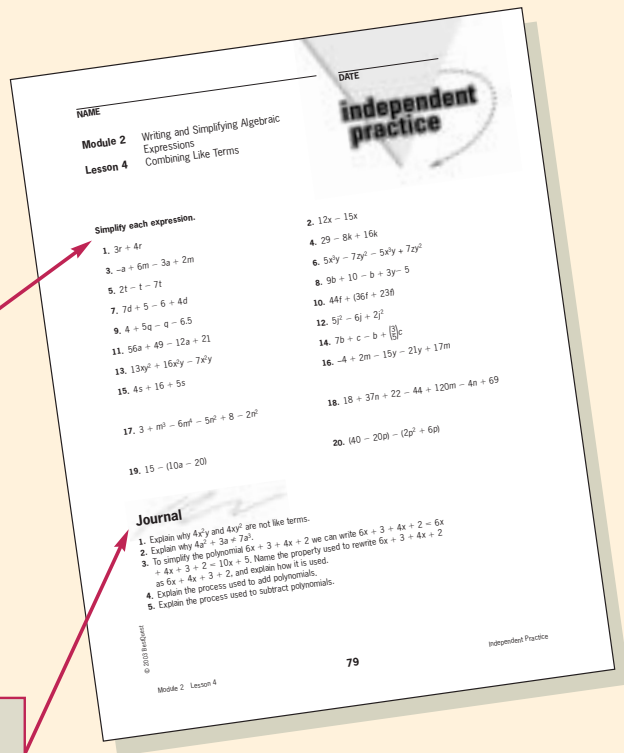


Independent Practice

Skill Practice Each lesson contains comprehensive questions that offer practice for the skills presented in the lesson. These problems are arranged in order from least difficult to most difficult. Consecutive odd and even exercises are similar and of approximately the same level of difficulty.

Journal In addition to skill practice questions, a journal is provided in the Independent Practice worksheets. This journal contains five questions about important or tricky areas of the lesson. The questions require higher order thinking skills on the part of the student: application, analysis, synthesis, or evaluation. These questions will 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 will be offered the opportunity to practice working with the manipulatives to become proficient with their use. Students will have the opportunity to relate the manipulatives to the higher order skills necessary to understand the algebraic properties that are presented.



Calculator Problems

The set of real numbers contains the set of rational numbers and the set of irrational numbers. A square root can be either rational or irrational.

A square root is **rational** if its radicand is a perfect square. For example, $\sqrt{9}$ is rational because 9 is a perfect square. $\sqrt{9} = \sqrt{3 \cdot 3} = \sqrt{3^2} = 3$.

$\sqrt{\frac{16}{25}}$ is rational because $\frac{16}{25}$ is a perfect square. $\sqrt{\frac{16}{25}} = \frac{\sqrt{16}}{\sqrt{25}} = \frac{4}{5}$.

A square root is **irrational** if its radicand is not a perfect square. For example, $\sqrt{7}$ is irrational because 7 is not a perfect square (there is no rational number that can be squared to get 7).

$\sqrt{\frac{11}{16}}$ is irrational because $\frac{11}{16}$ is not a perfect square (there is no rational number that can be squared to get $\frac{11}{16}$).

Use a calculator to find whole number or decimal representations for square roots. For example:

Rational square roots:
 $\sqrt{9} = 3$ (exact)
 $\sqrt{\frac{16}{25}} = \frac{4}{5} = 0.75$ (exact)
 $\sqrt{\frac{16}{25}} = \frac{4}{5} = 0.4444$ (an approximation for a repeating decimal, rounded to the nearest thousandth)
 $\sqrt{\frac{16}{25}} = \frac{4}{5} = 0.3636$ (an approximation for a nonrepeating, nonterminating decimal, rounded to the nearest ten thousandth)

Irrational square roots:
 $\sqrt{7} = 2.6458$ (an approximation for a nonrepeating, nonterminating decimal, rounded to the nearest ten thousandth)
 $\sqrt{\frac{11}{16}} = 0.8292$ (an approximation for a nonrepeating, nonterminating decimal, rounded to the nearest ten thousandth)

Use a calculator to find a decimal representation for each of the following rational numbers. Round to the nearest ten thousandth if rounding is necessary.

- $\sqrt{100}$
- $\sqrt{\frac{16}{25}}$
- $\sqrt{\frac{49}{121}}$
- $\sqrt{169}$
- $\sqrt{2329}$

Use a calculator to find a decimal representation for each of the following irrational numbers. Round to the nearest ten thousandth if rounding is necessary.

- $\sqrt{8}$
- $\sqrt{\frac{9}{11}}$
- $\sqrt{\frac{22}{11}}$
- $\sqrt{51}$
- $\sqrt{2329}$

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 pencil in simple cases and using technology in all cases.” For these reasons calculator exercises are included with the Independent Practice exercises as 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 on his or her own.

Cumulative Review Each Independent Practice section includes a Cumulative Review. This component provides a comprehensive review of all the concepts covered from the beginning of the course to the present point. Skills that are 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.

Journal

- What is different about multiplying and dividing integers and what is similar?
- How can you define subtraction using addition?
- What happens when you add opposites, subtract opposites, multiply opposites, and divide opposites?
- What is the easiest way to decide if the product of several factors is positive or negative?
- Write the rule for adding integers in your own words.

Cumulative Review

Are the following numbers rational or irrational?

- 7.236
- 23.6666...
- π
- $\sqrt{33}$
- 438
- $-\frac{4}{9}$
- $\sqrt{49}$
- $\sqrt{17}$
- $\sqrt{6}$
- $\frac{4}{9}$

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 in order to master the concepts and procedures taught in the lesson. These additional problems are especially useful with students learning algebra over two years instead of one.

NAME _____

DATE _____

Module 8 Writing Linear Equations of Two Variables

Lesson 2 Writing Equations of Lines Given Slope and Intercept

Use the given information to write the equation of the line in slope-intercept form.

- Slope: $\frac{2}{3}$ y-intercept: -3
- Slope: $-\frac{5}{2}$ y-intercept: 4
- Slope: $\frac{1}{3}$ y-intercept: 7
- Slope: Undefined passes through: (0, 4)
- Slope: $-\frac{1}{2}$ y-intercept: -1
- Slope: 4 y-intercept: 3
- Slope: $\frac{4}{5}$ y-intercept: $-\frac{1}{8}$
- Slope: $-\frac{1}{5}$ y-intercept: 1
- Slope: 0 passes through: (2, 5)

Write the slope-intercept form of the equation of the line described.

- The line is perpendicular to the line $y = \frac{3}{4}x - 2$ and passes through the point (0, -6).
- The line is parallel to the line $y = x + 3$ and passes through the point (0, 4).
- The line is perpendicular to the line $y = -3x - 2$ and passes through the point (0, 8).
- The line is parallel to the line $y = \frac{3}{2}x + 5$ and passes through the point (0, 1).
- The line is parallel to the line $y = \frac{1}{3}x - 4$ and passes through the origin.
- The line is perpendicular to the line $y = \frac{4}{5}x + 8$ and passes through the point (0, -2).
- The line is parallel to the line $y = \frac{1}{3}x - 3$ and passes through the point (0, -8).
- The line is perpendicular to the line $y = -6x + 1$ and passes through the point (0, 1).

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Module 8 Lesson 2

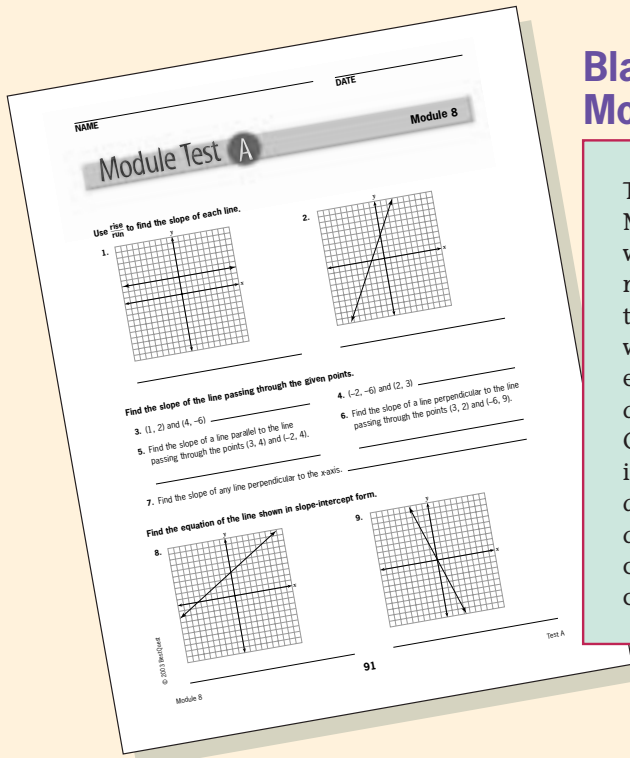
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Additional Practice

By Module and Unit

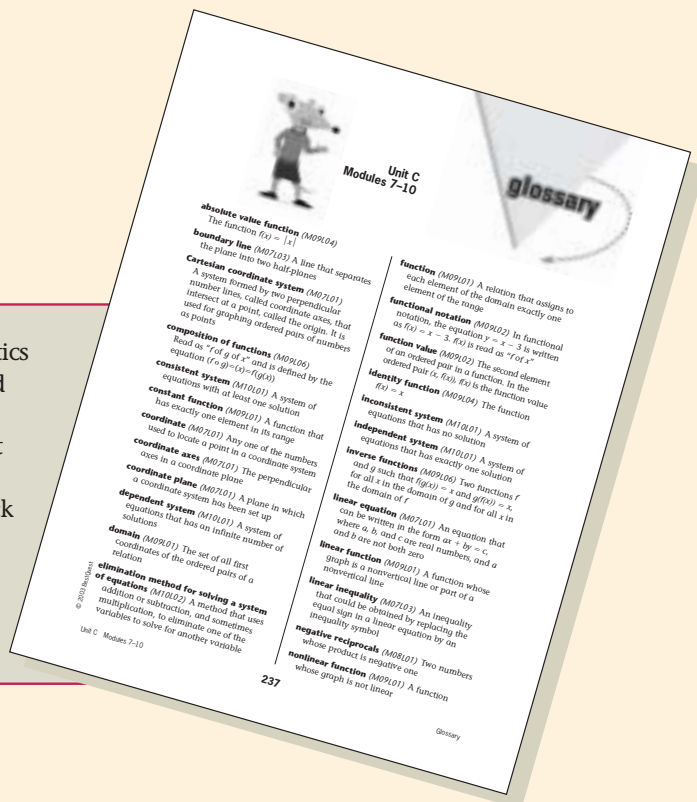
Blackline Master Module Test

The binders provide a Blackline Master Module Test complete with an answer key 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. One page of assessment-like items, including multiple choice and open-ended response questions, are an optional component of these comprehensive module tests.



Glossary Blackline Masters by Unit

Terminology is a large part of mathematics education. Glossary terms are provided in the student's Guided Notes, and a glossary blackline master for each unit 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.



Each lesson has a section in the Instructor's Manual. This section includes printed answers for the Guided Notes and Guided Practice worksheets for the teacher's convenience. In addition, a set of Teacher Notes are available to help guide the teacher through the lesson. The guide also includes keys for Practice Worksheets, the Module Tests, and a copy of the Unit Glossary.

Teacher Notes

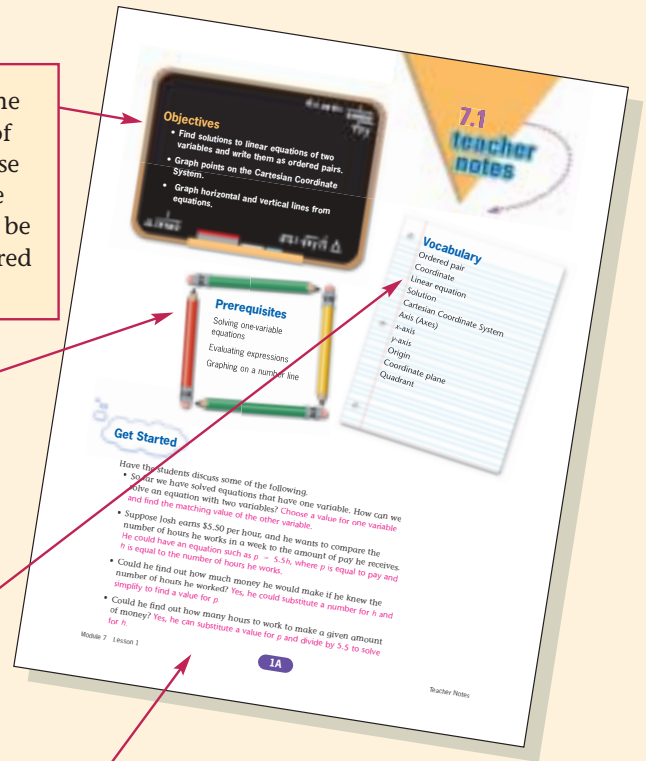
BestQuest's *algebra'scool*, unlike many programs, provides a comprehensive set of Teacher Notes for each lesson. Whether you are a seasoned veteran or a newcomer to the world of mathematics teaching, these notes will provide something for you. The notes include support materials, teaching suggestions, new ideas, real-world and career applications, and many other ancillary materials.

Objectives Both the Teacher Notes and the students worksheets contain the same list of objectives for each lesson. By following these objectives, both teacher and student will be working for a common goal. Everyone will be aware of the concepts that are to be mastered in each lesson.

Prerequisites A list of necessary skills that students should have mastered before beginning the lesson is provided. Lesson references for skills taught within the product can give you an idea of review materials that students may need to complete, before beginning the lesson, if they are deficient in these skills.

Vocabulary The Teacher Notes will also contain a list of the vocabulary terms for each lesson. A lesson reference is provided for vocabulary words previously introduced; a blackline master glossary is available by unit.

Get Started This opening activity will include an activity which requires student involvement or a list of questions that launch the discussion of the 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 will still need more help. For this reason, the Teacher Notes provide two additional examples per lesson section and solutions including alternative methods for the teacher to model on the board.

Common Error Alert

Many times when students are plotting ordered pairs (x, y) , they will go up or down first and then left or right. Point out to students that the variables in the parentheses are in alphabetical order, so x is the first coordinate. Because the horizontal line in a standard coordinate plane is the x -axis and runs left to right, go left or right first. Then go up or down.

Connections

Linear equations are used extensively in the real world. They can be used to graph expected income or expected weight loss and weight gain. In physics, linear graphs show distance traveled with respect to time when traveling at a constant rate.

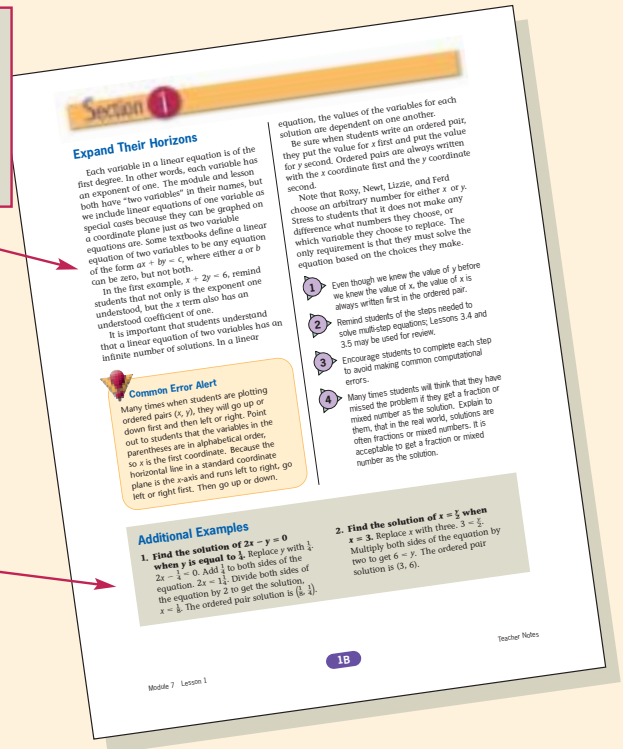
Look Beyond

René Descartes was one of the most influential mathematicians of all time. He was also a French philosopher and a scientist. He is often called the founder of analytical geometry because his use of the coordinate plane allowed for the integration of algebra and geometry. He made many contributions to algebra, such as the treatment of negative roots and the convention of exponent notation. He also studied the reflection and refraction of light, wrote a text on physiology, and worked in psychology. One of his best known philosophical statements is "I think, therefore, I am."

Look Beyond In the Look Beyond section, students are shown how the topic being studied is used in more advanced mathematics courses and applications. It is in this section that students often find the reasoning for why this topic is important and rationale for mastering the skills and procedures presented.

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 instance, when evaluating expressions such as xy , with $x = 3$ and $y = 4$, students will often write, "34" instead of $3 \cdot 4$. These common mistakes will be pointed out in this section when appropriate.

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 will have a ready answer that is provided in this Connections section.



Keys for Worksheets

A key offers the answers to all Guided Notes, Guided Practice, Independent Practice, Additional Practice, and Module Test worksheets. You can use these pages to check students' work and processes as they solve the problems presented in those components.

NAME _____ DATE _____

Module Test **Module 7**

Graph and label each point on the coordinate plane.

- (3, 4)
- (-2, 6)
- (-6, -4)

Name the quadrant in which each point lies.

- (-10, 2) **II**
- (-3, -1) **III**

Write an ordered pair solution.

- Find the solution to $x + 3y = 8$ when $x = 2$. **(2, 2)**
- Find the solution to $y = \frac{5}{3}$ when $y = 14$. **(42, 14)**

Find three solutions to each equation.

- $y = -2$ **Answers may vary.**
- $3x - y = 6$ **Answers may vary.**
- $-x = 4y$ **Answers may vary.**

Graph each of the following on the coordinate plane. Points may vary, but must lie on the line shown.

- $-x + 4y = 8$
- $x = -3$

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Module 7
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Test A

NAME _____

Module 7 Solving Linear Equations and Inequalities of Two Variables
Lesson 1 Defining Linear Equations of Two Variables and Their Solutions

independent practice

Graph the following ordered pairs.

- (2, 0), (-1, -5), (2, -3)
- (1, 6), (2, -2), (4, 0)
- (0, 3), (-9, -1), (3, -1)
- (-3, 1), (3, 4), (3, -8)

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Module 7 Lesson 1
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Independent Practice

NAME _____

Module 7 Solving Linear Equations and Inequalities of Two Variables
Lesson 1 Defining Linear Equations of Two Variables and Their Solutions

guided notes

Lesson Objectives

- Find solutions to linear equations of two variables and write them as ordered pairs.
- Graph points on the Cartesian coordinate system.
- Graph horizontal and vertical lines from equations.

Because (x, y) has a first number x and a second number y it is called an **ordered pair**.

- Find the solution to $x + 2y = 6$ when y is equal to zero. **(6, 0)**
- Find the solution to $x + 2y = 6$ when x is equal to eight. **(8, -1)**
- Find the solution to $x + 2y = 6$ when y is equal to one. **(4, 1)**
- Find the solution to $x + 2y = 6$ when x is equal to negative one. **(-1, 3.5)**

In the Cartesian coordinate system the horizontal axis is called the **x-axis**.
The vertical axis is called the **y-axis**.
The axes intersect at a point called the **origin**.
The axes are called **coordinate** axes and they form the **coordinate** plane.

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Module 7 Lesson 1
1
Guided Notes





Using this Product

This product can be used in many different ways. Here are a few we recommend.

1. Follow the complete program

- Before beginning the lesson, grab the students' attention by using Get Started ideas found in the Teacher Notes.
- If a manipulative section is available for the lesson, 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. You may also choose to show the Manipulatives section after the core lesson.
- Next, begin the lesson portion of the DVD. Have the students fill out the Guided Notes as the DVD plays. As students complete each section of the core lesson, take a few minutes to discuss the content using the scripted notes. You can also use this time to check the students' Guided Notes.
- Have students work through all of the Guided Practice problems and then continue the DVD so the students can compare their answers to the characters' solutions. You can decide how many Guided Practice examples to use during the lesson. Having the students actually work these examples during the presentation requires students to immediately practice these new skills.
- After finishing the lesson, have students complete the journal questions in the Independent Practice, either individually or in groups. Some questions will be more difficult. Completing the journal, however, will help the students understand the abstract concepts and develop improved mathematical reasoning and communication skills.
- Before beginning the Independent Practice, make students aware of any of the common errors that are found in the Common Error Alert in the Teacher Notes.
- If students are still struggling, work the Additional Examples in the Teacher Notes.
- After the lesson is complete, assign the Independent Practice problems in the student worksheets. These problems are designed so odds or evens can be assigned and still address all skills.
- If a calculator section is available, students can work this section with the Independent Practice problems. Walk them through the explanation and example portion of this lesson, and then assign the problems.
- 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 still need additional reinforcement, Additional Practice problems are available.
- Finish the lesson by telling students interesting details that can be found in the Look Beyond and Connections sections of your Teacher Notes.
- The test-taking skills may be used with individual lessons or may be used as a group to prepare students for standardized tests.
- Upon completion of each module, check students' understanding by administering the blackline master Module Tests.

2. Follow the program, but omit extra Guided Practice problems

- Occasionally, you will come to a lesson that students grasp more quickly. As you walk around checking their Guided Notes, you notice that they understand the concepts based solely upon the examples provided in the core script of the DVD.
- When this happens, you may want to skip the additional Guided Practice Exercises. When the DVD prompts you to either Practice or Continue, simply click on Continue.
- Then, finish the lesson and other components as you normally would.

3. Follow the entire teaching program, but use an additional text for practice and testing materials

- Begin with the recommended sequence of Get Started, Manipulatives, Lesson, and Guided Practice as if you were using the complete program.
- Use the materials available in the Teacher Notes as with the other models.

- If you have other texts and materials available, you may sometimes want to use these for your practice and testing materials. Because *algebra'scool* is aligned with major textbooks, you can use these other materials with ease.
- Students will have the notes from the Guided Notes. They will also have the explanation that is provided in your classroom textbook to use as a resource.
- The next day you will be prepared to continue with the next *algebra'scool* lesson.

4. Use only the DVD as a supplement for other teaching materials

- The DVD and Instructor's Manual may be used independently or in conjunction with a mathematics textbook. The DVD lessons provide a dynamic visual presentation that is more engaging than instructions provided in the textbook. Algebra will come alive before your students' eyes.
- Using the DVD lesson allows mobility in the room, allowing the monitoring of students' responses and involvement.
- Once the DVD lesson is complete, review the important concepts.
- Use other materials when appropriate. Use manipulative ideas from other sources for additional support.
- Check other texts for ideas for further presentations and optional activities.
- Use practice and testing materials from various sources when needed.

Regardless of how you decide to use this program, whether on its own or in conjunction with a textbook, BestQuest's *algebra'scool* is sure to enhance your existing program and provide an engaging, fun way to learn for both you and your students.