Kendall Hunt

Background information for Discovering Mathematics

Kendall Hunt Publishing is the premiere publisher of innovative, hands-on, inquiry-based science, mathematics and gifted curricula for grades PreK-12. Our award-winning research and standards-based programs are available in both print and digital components that fully engage students, teachers and parents.

Discovering Mathematics content and pedagogy are supported by scientific research and are written to the Common Core State Standards of Mathematics, with the Common Core Standards of Mathematical Practice at its core. Discovering Mathematics has a successful track record to helping teachers bring all students to mastery. Each lesson integrates a core principle that research supports and the Common Core State Standards embrace: Students learn new material by connecting it to what they already know and by developing their own understanding. Through discovery-based investigations, students build mathematical proficiency and become active problem solvers and strategic thinkers.

Students using the Discovering Mathematics curriculum gain proficiency in analyzing problems, trying different solution methods and evaluating their answers. Because rich, non-routine problems are integral to the textbooks, students develop their own understanding and build solid problem-solving skills. The lessons in Discovering Mathematics help students develop higher-order thinking and communication skills. They are built around investigations, where students gather data, make conjectures, explain the reasoning behind their conjectures, and share their ideas verbally and in writing. Through collaboration and group work, they both consider and critique the perspectives of their classmates.

Discovering Mathematics provides relatable, real-world exercises that deepen students understanding of concepts. Students become proficient at expressing abstract ideas by graphing relationships, making and verify conjectures, and solving equations. Students create models using technology that dynamically represent math concepts, and solve real-world problems using abstract representations. There are a wide variety of hands-on and technology tools fully integrated into Discovering Mathematics, more than any other textbook series, which include: compass-and-straightedge, patty paper, graphing calculators, motion sensors and dynamic software. These tools help to clearly illustrate key mathematical concepts, engage students and bring mathematics to life.

The investigative approach used within Discovering Mathematics leads students to look for patterns and structure in mathematics. Students cultivate precision and attention to details and learn the importance of giving accurate definitions by exploring counter examples. They learn to extend their knowledge of simple properties to more advanced applications.

Discovering Mathematics aligns completely to the Common Core State Standards for Mathematics. Each lesson identifies the CCSS standards and the progression of learning by identifying standards that are being Applied, Developed and Introduced in that lesson. Each lesson in the Teacher Edition wraparound provides a careful balance of conceptual and procedural understanding, with supports built in for teachers to differentiate the lesson for ELLs, Struggling Learners, and Advanced Learners. There are multiple ways to modify the lessons, from whole class, collaborative groups, to the one-step. Each lesson incorporates the research-based four-step LISA (Launch, Investigate, Summarize, Apply) model, a framework for teaching content while cultivating mathematical practices.

The investigations, visual representations, and opportunities for discussion embedded in every lesson of this program enable teachers to integrate multiple teaching modes in their classroom so that visual, auditory, and kinesthetic learners all benefit. Students will be comfortable moving among representations, as concepts are developed numerically, algebraically, and graphically. Investigations at the beginning of each lesson give students, regardless of their mathematical backgrounds, a shared experience that grounds their learning. The investigations, examples, and exercises are designed to help students move from concrete experiences to abstract mathematical concepts. The structure of Discovering Mathematics moves students from conceptual understanding to procedural mastery.

Each course in the Discovering Mathematics series includes resources that enrich learning and make the teaching experience more rewarding. Along with the comprehensive Teacher's Edition, the curriculum provides a spectrum of evaluation and assessment tools that let all students demonstrate what they have learned. Available in print and eBook formats, the curriculum fully supports teachers with Common Core implementation using a variety of features that illustrate the standards focused upon in each lesson and reinforce standards that have been previously addressed. The eBook is accessible from iPads, tablets, and other Internet-enabled devices. Point-of-use links provide access to ancillary resources and teacher and student eBooks contain digital bookmarking, highlighting, and note-taking tools to support teaching and learning. Additionally, the eBooks contain Dynamic Explorations that provide interactive models for key mathematical algebraic and geometric concepts.

Discovering Mathematics includes all the resources needed for classroom success including the Cohesive Assessment System (CAS) tool. This assessment component is available from any Web browser and can be used to manage assessment content, create and assign test through a secure online test center, provide immediate feedback to students, and analyze data about student performance.

Additionally, Kendall Hunt offers support that ensures successful implementation of the standards. We offer a large variety of professional learning options and will partner with you to create a professional development program that tailored to achieve your objectives.

Discovering Algebra

Discovering Algebra (2014) was developed based on the premise that when students are given the opportunity to be actively involved in their own learning of mathematics, they become better problem solvers and develop a deeper understanding of mathematical concepts.

The rigorous Algebra I curriculum incorporates problem solving, real-world applications, conceptual understanding, and mathematics as sense making to ensure that students develop algebra skills in a meaningful and retrievable way.

The latest edition of *Discovering Algebra* is written to the Common Core State Standards and its strength lies in the connection of mathematical content and practices that is called for by the CCSS. Its careful balance of conceptual and procedural understanding supports the notion that students should not only know a mathematical procedure, but be able to justify why it works.

Comprehensive lesson plans incorporate the four-step LISA (Launch, Investigate, Summarize, and Apply) model, a research-based framework for teaching content while cultivating mathematical practices.

Lessons also include differentiated instruction recommendations to meet the needs of struggling and advanced students as well as English language learners.

The digital version of *Discovering Algebr*a includes an embedded graphing calculator through our partnership with ClassPad.net. The partnership with ClassPad.net allows students to complete the investigations digitally.

Discovering Geometry

With the most recent edition of *Discovering Geometry* (2015) and its investigative approach, students will create conjectures through investigations and use inductive and deductive reasoning to justify their response.

The program embraces the CCSS and the Standards for Mathematical Practice. Lessons do not simply address a standard and move on, but revisit them in various contexts to show connections within the mathematics.

Discovering Geometry encourages students to learn by doing, working both individually and in cooperative groups. Students will reason abstractly to justify and prove geometric properties by performing constructions, measuring figures, relating patterns and properties, and discussing their findings.

The *Discovering Geometry* curriculum asks students to create models using technology that dynamically represents math concepts, algebraic equations, and graphs. They also learn to solve real-world problems by investigating mathematical models, objects, figures, and diagrams.

The digital version of Discovering Geometry includes embedded ClassPad.net experiences. The partnership with ClassPad.net allows students to complete the investigations digitally.

Discovering Advanced Algebra

Discovering Advanced Algebra will keep students engaged as they tackle challenging topics. Real data, real-life situations, and real-world applications will help you motivate students and show them the importance of what they're learning.

This text uses data to model pure-algebra concepts, derive functions, solve problems, and build skills, giving students daily experience with modeling, problem solving, and the use of mathematical tools–all emphasized in the Common Core State Standards. Your students will develop and practice skills such as multiplying and factoring polynomials and solving many kinds of equations in a wide variety of mathematical settings. Likewise, they'll become familiar with multiple representations of concepts.

Investigations, visual representations, and opportunities for discussion will enable you to integrate multiple teaching modes into your classroom so that visual, auditory, and kinesthetic learners all benefit. You can be certain this diverse approach to teaching will also strengthen students' ability to justify their thinking as well as increase their understanding and retention of advanced algebra concepts and skills.

Discovering Advanced Algebra can now be customized to the content you need for you class. You can select the core book with content covering traditional CCSS Common Core standards or add to your print and digital book from a library of lessons for schools/classes needing review content from Algebra 1 or advanced content for those classes teaching the optional STEM CCSS standards.

The digital version of *Discovering Advanced Algebra* includes an embedded graphing calculator through our partnership with ClassPad.net. The partnership with ClassPad.net allows students to complete the investigations digitally.

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