



# Summit Math

Introducing  
a New Math Experience  
for 21<sup>st</sup> Century Learners

**EdReports**

**Publisher Background**

## Table of Contents

<b>Table of Contents</b> .....	<b>1</b>
<b>Background</b> .....	<b>2</b>
<b>Design</b> .....	<b>2</b>
Clear, concise and measurable learning objectives .....	5
Assessments and Standards Alignments.....	6
Intentional Implementation.....	6
<b>Evidence of Efficacy</b> .....	<b>7</b>
<b>Supplemental Services</b> .....	<b>7</b>

## Background

Fuel Education is a wholly owned subsidiary of K12 Inc., an expert in the field of distance education for nearly 20 years. Founded in 1999, K12 is committed to delivering the ultimate education experience to help students reach their highest potential to grow and succeed in school and beyond. Fuel Education was founded to support school and district partners, with solutions that are based on tried and true practices of nearly two decades of working with schools and districts to create modern, 21<sup>st</sup> century learning environments.

## Design

[\*BESSIE Award-winning Summit Math Curriculum\*](#) is a digital-first curriculum that is highly engaging and mobile. At Fuel Education, we believe in the cognitive science of how brains work, how learning happens, and we believe in using 21st-century tools to prepare 21st-century students.

Summit Math Florida for grades 6 – 11 was built to have an **intentional design, integrated instructional approach** and an **expansive intuitive path**. Courses are organized into activities that are grouped to make lessons, units and two semesters of content to cover MFAS across the school year. Courses adapt and personalize the learning needs of each student. Florida standards are displayed throughout the curriculum and tied to real-time reports for teachers to further differentiate learning.

FuelEd<sup>®</sup> Summit math courses are carefully **designed with attention to all the major pedagogical shifts, including a balanced approach to building conceptual and procedural understanding**. Each activity used for direct instruction within the curriculum includes a “key concept” section, targeted at building deep conceptual knowledge, coupled with carefully stepped-out, fully worked examples to scaffold procedural understanding.

## Key Concept

Suppose a friend asked you to create a rectangle with an area of 12 square units. How many different rectangles could you create? What would your rectangles look like? Create as many rectangles as you can with an area of 12 square units by shading the grid.

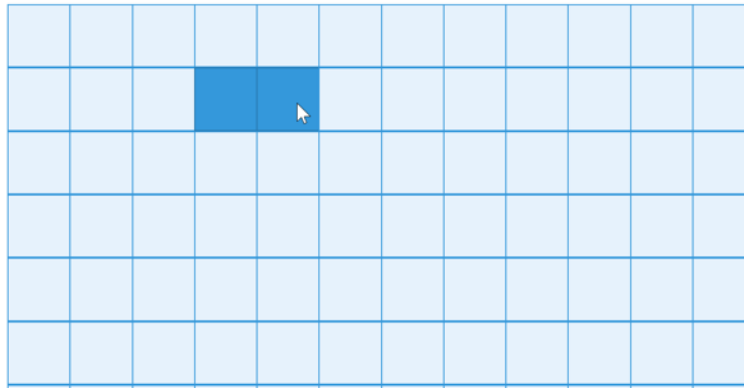


Figure 1 - Key Concept – Exploratory Concept-Building in Summit Math 6, Semester A, Lesson 1.06

To fully reap the benefits of online learning, Summit Math is carefully designed based on research-backed principles of cognitive science to match the interactivity level to the cognitive level of the task at hand. The component strategy is used to balance cognitive load with cognitive processing to align objectives with the appropriate cognitive domains. Interwoven throughout every course is an attention to the appropriate depth of knowledge, and problem-solving steps are both explicitly taught and modeled.

The Summit Math learning experience follows a consistent, predictable learning model to ground students in what to expect. Extending one to three lesson days, each learning cycle includes five step organizational principles to serve as signposts in a student’s learning (Get Ready, Learn, Practice, Review, and Assess).

Predictable five-part instructional model to ground students in what to expect	Clear concise, and measurable learning objectives
Consistent experience from instruction to assessment reduces the cognitive load during exams	Conceptual explanations and exploratory interactions support the shaping of deep conceptual understanding

Carefully thought-out progression of vanishing scaffolding to move students from guided to independent practice	Compelling design made for digital consumption on any device
Sophisticated machine scoring and automated, instant feedback with suggested tips to guide students to mastery	Multimedia accessibility features that provide multiple ways to engage with the curriculum
Technology-enhanced item types embedded throughout the learning cycle challenge students to use higher order thinking skills and prepare them for high stakes exams.	Individualized and personalized pathways enable differentiated instruction and remediation

To ensure accurate progress monitoring, **Summit Math begins with a branching, computer-scored readiness diagnostic assessment.** Students are served sets of questions and based on their response to the first question in a set are presented with an item at an increased or decreased level of difficulty. The Readiness Checkpoint results place the student on either an on-level or supportive path based on the individual student's comprehension of course prerequisites.

As students practice what they have learned, **worked examples include vanishing scaffolding** and lead a student to work on their own without the support. As students work through practice questions, the system identifies common misconceptions based on specific distractors students select to then deliver appropriate content to remediate on the spot and get the student back on track. We offer this within practice opportunities in every single lesson, not just assessments.

EBooks, problem- sets delivered online and available within a consumable worktext offline, and reference guides further support the Summit Math courses for grades 6 - 8. Reference guides provide a textual description of a visual math equation and courses include alt-text supports for screen-reader functionality for non-sighted users.

Each Summit Math course offers 4-5 interim checkpoint assessments designed to track students' readiness for summative exams. These assessments are closely tied to the content covered in the curriculum, to provide teachers clear touchpoints to monitor how students are tracking towards mastery of standards. These two-part assessments contain a computer-scored section, as well as a teacher-scored written component. Additionally, teachers have the flexibility of offering an end-of-semester exam or combining these semester exams into a lengthier end-of-course exam covering content from both semesters.

## EdReports

Many practice activities in our courses have the ability for the student to check their answers and receive feedback immediately. Content developers have used coding not only to read the text but also to decipher math and science symbols which can be read by synthetic speech software such as screen readers used by the blind or text to speech that is utilized by those with reading difficulties or English Language Learners.

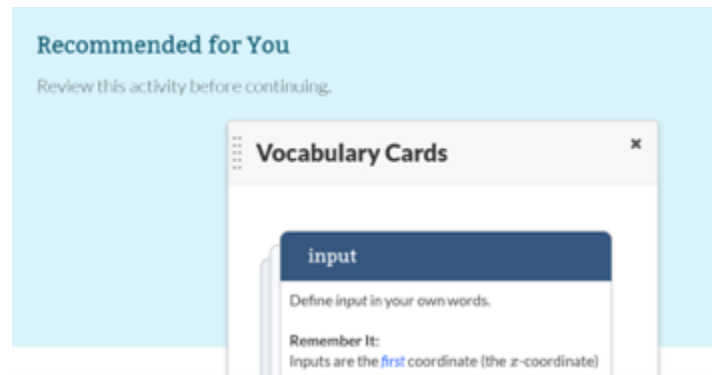


Figure 2 - students who need a little extra help can get a quick hit of instruction that may be a video, sample problem or vocabulary support.

### Clear, concise and measurable learning objectives

Summit Math is structured around learning objectives that are unpacked from standards language, paying close attention to the cognitive verb and the level of Bloom's taxonomy implied by that verb. The curriculum uses these master objectives as a skill spine for both instruction and assessment. This ensures not only that the content meets the standards in a granular, precise way, but also that instruction and assessment are synchronized to support students in the tasks involved with demonstrating their knowledge.

Standard	Description of standard	Depth of Knowledge (DOK)
MAFS.K.MD.1	Describe and compare measurable attributes.	This standard asks students to demonstrate basic <b>understanding</b> .
MAFS.2.MD.1.1	Measure the length of an object to the nearest inch, foot, centimeter, or meter by selecting and using appropriate tools such as	This standard requires <b>application</b> , so requires a greater depth of knowledge.

	rulers, yardsticks, meter sticks, and measuring tapes.	
MAFS.3.MD.1	Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.	This standard asks students to <b>analyze</b> .

Figure 3 - Sample standard showing breadth in Bloom's Taxonomy

## Assessments and Standards Alignments

To prepare students to meet today's standards, carefully crafted learning progressions that foster a true depth of knowledge are critical. The need to assess students' ability to perform measurable, complex tasks has pushed state leaders to select assessment vendors, or to create their own robust assessments. These are not designed simply to administer the same test questions online as could be administered in print, but to use technology-enhanced item types that offer ways to challenge students to use higher order thinking skills, and empower them to demonstrate their knowledge, while still capitalizing on machine-scored results. Drag and Drop, Multiple Choice, Multiple-Select, Choice Matrices, and Fill-in-the-blank are just a few of the interaction types of items that students may experience in today's high-stakes exams. Summit Math seamlessly weaves these technology-enhanced item types into practice throughout the learning cycle, as well as on quizzes and tests.

## Intentional Implementation

Summit Math was intentionally designed to be implemented in a variety of classroom models spanning the spectrum of classroom types including traditional with limited access, traditional with 1:1 access, and flipped with 1:1 access.



Teachers have full autonomy to customize schedules to accommodate a variety of schedules and implementation models.

## Evidence of Efficacy

Comparing the percent proficiency of 2017-2018 FuelEd Full Academic Year Florida students taking Summit Courses with Fuel Education teachers to all Florida students, Florida students taking Summit Courses with Fuel Education teachers outperformed the State in 6 courses.

**Full Academic Year Florida Students Taking Summit Courses with FuelEd Teachers**

SY 17-18					
Course Subject and Grade		Florida Students with FuelEd Teachers Taking Summit Courses		All Florida Students	Difference Between FL FE Students Taking Summit Courses and State Average
Subject	Grade	Student Count	% AAP	State %AAP	% AAP
English Language Arts	9	47	74%	53%	21%
English Language Arts	10	31	84%	53%	31%
Mathematics	7	38	74%	54%	20%
Mathematics	8	38	68%	45%	23%
Algebra 1	EOC	37	68%	61%	7%
Geometry	EOC	33	64%	56%	8%

Figure 4 - Comparison is between Full Academic Year FuelEd students who took Summit Courses and all Florida students who took the test (State) for non-Summit courses in the same subjects.

A case study conducted by Evergreen Research can be downloaded and viewed at any time [here](#). This study follows nine schools using FuelEd programs.

## Supplemental Services

Florida districts who adopt the Fuel Education Summit Math curriculum will be assigned a Professional Learning Manager and a Client Service Manager to support their blended learning programs or digital textbook adoption for the life of our partnership.

Fuel Education offers professional learning opportunities designed for instructors and administrators in both digital content training and professional development, both of which include ongoing support. Trainings can be customized to meet the unique needs of our Florida school and district partners, and most beneficial to our partners is our ability to scale programs to meet the unique needs of our school and district partners.