Curriculum Planning Document – Math			
Content Area/Grade Level: Math/High School – Pre-Calculus			
Course Description: Pre-Calculus builds on algebraic concepts to prepare students for calculus. The course begins with a review of basic algebraic concepts and moves into operations with functions, where students manipulate functions and their graphs. Pre-Calculus also provides a detailed look at trigonometric functions, their graphs, the trigonometric identities, and the unit circle. Finally, students are introduced to polar coordinates, parametric equations, and limits.			
	Educational Delivery Methodologies	**Evidence of Mastery**	**Comments**
Domain: Counting and Cardinality			
Cluster 1: Know number names and the count sequence.	The Edmentum LMS (PLATO Courseware) as detailed in the narrative, includes a diverse set of instructional methodologies integrated into each course. These instructional methods include: computer assisted learning systems, virtual classrooms, virtual labs, electronic field trips, electronic mail and messaging, virtual tutoring, online help desk, a wide array of formative assessments and non-computer activities. The common design elements and activities combined with a thorough initial orientation video lecture support a student's quick understanding of the delivery system. This immediate understanding enables a student to focus on the content right from the beginning of the first lesson. Each course utilizes a variety of methods and has the flexibility to allow teachers to modify the program to suit individual student learning needs. The Edmentum LMS (PLATO	Mastery for each course will be based on the student meeting the prescribed Performance, Participation, and Progress requirements. The Fifth Arrow Online Instruction Program is designed to foster high expectations for staff and students. The goal for all students is to meet 100% of the expected progress and 100% of the expected weekly participation. The desired performance goal for all students is to attain a score of 100% on all assignments. The minimum that will be accepted on each assignment and assessment is 70%. ***<u>Assessment and Testing</u>*** Best practices in assessment and testing call for a variety of activities to evaluate student learning. Multiple data points present a more accurate evaluation of student strengths and needs. **Formative and Summative Assessments** contained in the	Continues Throughout Course

	Courseware) enables the teacher to employ numerous educational delivery options for each online course. The ability to modify delivery methods empowers teachers to efficiently and effectively support differentiation of instruction, customized assessments, and supplementation of course material for different learning styles. Providing online students a choice in how they absorb content is considered a key to supporting different learning styles. The primary delivery method for the proposed Fifth Arrow Online Instruction (FAOI) AOI Program's content, is web-based online delivery. Based on needs identified by teacher monitoring, formative and summative assessment, or student request, the delivery method can be modified in numerous ways. **<u>Flexible deliverability</u>** **All online materials are printable.** The interface and font of the content can be adjusted to minimize the amount of ink used in printing. **eNotes**: In lieu of paper notes, the students have the option to take eNotes while listening to & interacting with the tutorials or while studying the online readings and content. These	web-delivered content, which include authentic learning and objective assessments are used to show mastery: • Unit pretests (typically designed for credit recovery use) • Mastery tests • Lesson Activities • Unit Activities • Online Threaded Discussions • Unit Post-Tests • End-of-Semester Exam **<u>Authentic Learning Assessments</u>**: Of the assessment tools available in this course, three are designed specifically to address higher-level thinking skills and operations: Lesson activities, unit activities, and discussions. These authentic learning activities allow students to develop deep understanding and provide data for the teacher to assess knowledge development. They also provide a tool for assessing identified Common Core mathematical practices, inquiry skills, STEM skills, and 21st century skills. The following comments address their use for assessment. • **Lesson Activities** immerse the student into one or more in-depth problems that center on developing a deep understanding of	

	notes can be made available at the end of lesson or course assessment at the discretion of the teacher and the individual student. **Secure internal messaging system:** provides the option for synchronous or asynchronous support of student learning. **Teacher online office hours:** Teachers provide four hours of online synchronous office hours. Additional synchronous time can be requested by students as needed. **Phone communication as required.** Teachers will have access to phone numbers and refer students and parents to a phone conference as required. **Supplemental assignments:** The content can be delivered by all lessons or one lesson at a time. Teachers may determine that an alternative assignment that covers the same objective may be appropriate. These alternative assignments will be approved by the FAOI AOI Administration and delivered electronically to the student. **Supplemental resource links:** Students may seek out additional information or guidance about a lesson objective by utilizing a personal search engine such as Google. Teachers will also collect and send out additional resource	the learning objective. All Lesson Activities in this course are self-checked by the student; however, it is possible to submit this work for teacher grading on paper, by email, or by creating a drop box activity in the course learning path. • **Unit Activities** are similar to Lesson Activities, but more time intensive and require a more integrative understanding of the unit's objectives. Unit activities are teacher graded and submitted through the drop box. These activities allow the instructor to score work on a scale of 0 to 100. A 10-point suggested rubric is provided to both the student and the teacher for this purpose. A minimum score of 70% is required. • **Discussions** encourage students to reflect on concepts, articulate their thoughts, and respond to the views of others. Thus, discussions help teachers assess students' critical-	

	links as the need arises. All links will be submitted for approval by the FAOI AOI administrator. **Practice exercises:** The teacher may assign practice exercises in addition to the online content. The teacher would have the opportunity to weight these additional assignments as part of the lesson performance score, as part of the participation grade, or as extra credit. Any editing or adjustment of the student's score requires a full justification in the notes section at the time the teacher makes the change. **Universal access:** The content is available at all times and on all days. Students will be able to access their online content as long as they have access to the Internet. Those that seek help from someone that may not have a computer or Internet may print the material and seek help while working on the paper version. **Learning Aids:** Learning aids within the courseware that are designed to assist students include: • eNotes • Resource Folder • Dictionary • Text to Speech (content reader) • Translator (16 languages) • Scientific Calculator • Math tools (graphing	thinking skills, communication skills, and overall facility with the unit concepts. Each unit in this course has one predefined discussion topic. Instructors can customize the course, however, to include additional discussion topics. Online discussions may use whatever rubric the instructor sets. A minimum score of 70% is required. **<u>Objective Assessments.</u>** There is a specific learning objective associated with each lesson, which is assessed through objective assessments at multiple points during the course: at the end of the specific lesson, at the end of the unit, and at the end of the semester. Additionally, there are optional unit pretests. • **Unit pretests** are optional multiple-choice assessments, typically designed for credit recovery use. If a student shows mastery of a lesson's objective (70% proficiency), the student will be automatically exempted from that module in the upcoming unit. • **Mastery tests** at the	

	tool, histogram, scatter plot, stem &leaf) Students will be guided to these tools at the time of enrollment, during the video orientation, and as the need is identified by the teacher.	end of each lesson provide the instructor and the student with clear indicators of areas of strength and weakness. These multiple-choice tests are taken online and contain randomly generated questions. A minimum score of 70% is required and a student may retake the mastery tests as many times as needed to demonstrate at least a 70% proficiency. • **Unit posttests** help instructors track how well students have mastered the unit's content. The tests are multiple-choice and are provided online. A minimum score of 70% is required. • **End-of-semester tests** assess the major objectives covered in the course. The End-of-Semester Test will be proctored (required) and a minimum score of 70% is required. Remediation assignment will be provided if a student does not meet the 70% requirement, and then a new End-of-Semester test will be administered.	

		By combining the unit pretest (if applicable) and unit posttest information with the end-of-semester test results, the instructor will gain a clear picture of student progress. The tests are multiple-choice (randomly generated questions) and are provided online. **Remediation:** Students that attain less than 70% on assignments will be required to complete a remediation assignment and make corrections to the assignments and eNotes. Teachers will work with the student to assist and reteach as needed. **Instructional Feedback:** Teachers will provide instructional feedback in teacher-graded assignments. Students will email the teacher with confirmation that the teacher's comments and instructional was read and understood. **A midterm project** is required. (Selected by the Teacher approved by FAOI administration) Examples include: • Virtual field trip • Group or individual service learning activities • Video presentation • Web portfolio • Book Report	

		• Research Project **A final research paper** is required. (Assigned by the teacher, approved by FAOI administration) • It relates to or enriches course content • Students will have multiple topic options • Students may request an alternate subject (in a timely manner & appropriately) • MLA format is required • Six traits rubric used **<u>Scoring Rubric will vary based on type of activities in each course. Example:</u>** • Participation and Progress = 10% • Discussions = 10% • Drop Box (Unit/ Lesson Activities) = 20% • Post Unit Tests = 20% • Midterm Project = 10% • End-of-Semester Test = 20% • Final Research Paper = 10% Total=100% **<u>Curriculum Reports:</u>** Edmentum LMS (PLATO Courseware) provides a wide array of reports that provide useable data concerning mastery of each lesson and assignment. Reports include: • Learner Progress Report by Learner • Learner Progress Report	

		by Class • Learner Daily Usage by Learner • Learner Daily Usage by Class and Assignment • Curriculum Items Response Report Curriculum Strengths and Needs by Class	
Cluster 2: Count to tell the number of objects.	**(See Above)** **All online materials are printable** **Secure internal messaging system** **Teacher's provide online office hours** **Phone communication as required** **Supplemental assignments available** **Supplemental resource links provided** **Tutorials** **Discussion Threads** **Application Demonstrations** **Practice Exercises** **Universal Access** **Learning Aids** • eNotes • Resource Folder • Dictionary • Text to Speech (content reader) • Translator (16 languages) • Scientific Calculator • Math tools (graphing tool, histogram, scatter plot, stem &leaf)	(See Above) Lesson Activities Module Mastery Tests Unit Activities Post Unit Test End of Semester Test	Continues Throughout Course
Cluster 3: Compare numbers.	**(See Above)** **All online materials are printable** **Secure internal messaging**	(See Above) Lesson Activities Module Mastery Tests Unit Activities	Continues Throughout Course

	system **Teacher's provide online office hours** **Phone communication as required** **Supplemental assignments available** **Supplemental resource links provided** **Tutorials** **Discussion Threads** **Application Demonstrations** **Practice Exercises** **Universal Access** **Learning Aids** • eNotes • Resource Folder • Dictionary • Text to Speech (content reader) • Translator (16 languages) • Scientific Calculator • Math tools (graphing tool, histogram, scatter plot, stem &leaf)	Post Unit Test End of Semester Test	
Domain: Operations and Algebraic Thinking			
Cluster 1: Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.	**(See Above)** **All online materials are printable** **Secure internal messaging system** **Teacher's provide online office hours** **Phone communication as required** **Supplemental assignments available** **Supplemental resource links provided** **Tutorials** **Discussion Threads** **Application Demonstrations**	(See Above) Lesson Activities Module Mastery Tests Unit Activities Post Unit Test End of Semester Test	Continues Throughout Course

	Practice Exercises **Universal Access** **Learning Aids** • eNotes • Resource Folder • Dictionary • Text to Speech (content reader) • Translator (16 languages) • Scientific Calculator • Math tools (graphing tool, histogram, scatter plot, stem &leaf)		
Domain: Number and Operations in Base Ten			
Cluster 1: Work with numbers 11–19 to gain foundations for place value.	**(See Above)** **All online materials are printable** **Secure internal messaging system** **Teacher's provide online office hours** **Phone communication as required** **Supplemental assignments available** **Supplemental resource links provided** **Tutorials** **Discussion Threads** **Application Demonstrations** **Practice Exercises** **Universal Access** **Learning Aids** • eNotes • Resource Folder • Dictionary • Text to Speech (content reader) • Translator (16 languages) • Scientific Calculator • Math tools (graphing tool, histogram, scatter	(See Above) Lesson Activities Module Mastery Tests Unit Activities Post Unit Test End of Semester Test	Continues Throughout Course

	plot, stem &leaf)		
Domain: Measurement and Data			
Cluster 1: Describe and compare measurable attributes.	**(See Above)** **All online materials are printable** **Secure internal messaging system** **Teacher's provide online office hours** **Phone communication as required** **Supplemental assignments available** **Supplemental resource links provided** **Tutorials** **Discussion Threads** **Application Demonstrations** **Practice Exercises** **Universal Access** **Learning Aids** • eNotes • Resource Folder • Dictionary • Text to Speech (content reader) • Translator (16 languages) • Scientific Calculator • Math tools (graphing tool, histogram, scatter plot, stem &leaf)	(See Above) Lesson Activities Module Mastery Tests Unit Activities Post Unit Test End of Semester Test	Continues Throughout Course
Cluster 2: Classify objects and count the number of objects in categories.	**(See Above)** **All online materials are printable** **Secure internal messaging system** **Teacher's provide online office hours** **Phone communication as required** **Supplemental assignments available**	(See Above) Lesson Activities Module Mastery Tests Unit Activities Post Unit Test End of Semester Test	Continues Throughout Course

	Supplemental resource links provided **Tutorials** **Discussion Threads** **Application Demonstrations** **Practice Exercises** **Universal Access** **Learning Aids** • eNotes • Resource Folder • Dictionary • Text to Speech (content reader) • Translator (16 languages) • Scientific Calculator • Math tools (graphing tool, histogram, scatter plot, stem &leaf)		
Domain: Geometry			
Cluster 1: Identify and describe shapes.	**(See Above)** **All online materials are printable** **Secure internal messaging system** **Teacher's provide online office hours** **Phone communication as required** **Supplemental assignments available** **Supplemental resource links provided** **Tutorials** **Discussion Threads** **Application Demonstrations** **Practice Exercises** **Universal Access** **Learning Aids** • eNotes • Resource Folder • Dictionary • Text to Speech (content	(See Above) Lesson Activities Module Mastery Tests Unit Activities Post Unit Test End of Semester Test	Continues Throughout Course

	reader) • Translator (16 languages) • Scientific Calculator • Math tools (graphing tool, histogram, scatter plot, stem &leaf)		
Cluster 2: Analyze, compare, create, and compose shapes.	**(See Above)** **All online materials are printable** **Secure internal messaging system** **Teacher's provide online office hours** **Phone communication as required** **Supplemental assignments available** **Supplemental resource links provided** **Tutorials** **Discussion Threads** **Application Demonstrations** **Practice Exercises** **Universal Access** **Learning Aids** • eNotes • Resource Folder • Dictionary • Text to Speech (content reader) • Translator (16 languages) • Scientific Calculator • Math tools (graphing tool, histogram, scatter plot, stem &leaf)	(See Above) Lesson Activities Module Mastery Tests Unit Activities Post Unit Test End of Semester Test	Continues Throughout Course
Strand: Language Standards			
Cluster 1: Conventions of Standard English	**(See Above)** **All online materials are printable** **Secure internal messaging system**	(See Above) Lesson Activities Module Mastery Tests Unit Activities Post Unit Test	Continues Throughout Course

	Teacher's provide online office hours **Phone communication as required** **Supplemental assignments available** **Supplemental resource links provided** **Tutorials** **Discussion Threads** **Application Demonstrations** **Practice Exercises** **Universal Access** **Learning Aids** • eNotes • Resource Folder • Dictionary • Text to Speech (content reader) • Translator (16 languages) • Scientific Calculator • Math tools (graphing tool, histogram, scatter plot, stem &leaf)	End of Semester Test	
Cluster 1: Knowledge of Language	**(See Above)** **All online materials are printable** **Secure internal messaging system** **Teacher's provide online office hours** **Phone communication as required** **Supplemental assignments available** **Supplemental resource links provided** **Tutorials** **Discussion Threads** **Application Demonstrations** **Practice Exercises** **Universal Access**	(See Above) Lesson Activities Module Mastery Tests Unit Activities Post Unit Test End of Semester Test	Continues Throughout Course

	Learning Aids • eNotes • Resource Folder • Dictionary • Text to Speech (content reader) • Translator (16 languages) • Scientific Calculator • Math tools (graphing tool, histogram, scatter plot, stem &leaf)		
Cluster 1: Vocabulary Acquisition and Use	**(See Above)** **All online materials are printable** **Secure internal messaging system** **Teacher's provide online office hours** **Phone communication as required** **Supplemental assignments available** **Supplemental resource links provided** **Tutorials** **Discussion Threads** **Application Demonstrations** **Practice Exercises** **Universal Access** **Learning Aids** • eNotes • Resource Folder • Dictionary • Text to Speech (content reader) • Translator (16 languages) • Scientific Calculator • Math tools (graphing tool, histogram, scatter plot, stem &leaf)	(See Above) Lesson Activities Module Mastery Tests Unit Activities Post Unit Test End of Semester Test	Continues Throughout Course