Pre-Calculus
Overview
2026-2027

This document is designed to provide parents/guardians/community an overview of the curriculum taught in the FBISD classroom. This document supports families in understanding the learning goals for the course, and how students will demonstrate what they know and are able to do. The overview offers suggestions or possibilities to reinforce learning at home.

Included at the end of this document, you will find:

- A glossary of curriculum components
- The content area instructional model
- Parent resources for this content area

To advance to a particular grading period, click on a link below.

- Grading Period 1
- Grading Period 2
- Grading Period 3
- Grading Period 4

At Home Connections

The following are suggestions for reinforcing number sense and mathematical reasoning at home. These ideas can be used throughout the school year. You will find additional ideas to reinforce learning at home within each unit below.

- Ask questions that require students to describe and elaborate on their thinking and reasoning. Topics can be about everyday things as well as mathematics.
- Engage students in situations that challenge them to inquire and persevere through questioning.
- Play card games with students
- Play games with students such as Mancala, Yahtzee, Blokus, Rack-O, Mastemind, etc.
- Work number puzzles such as Sudoku, KenKen, Kakuro, or Numbrix.

Process Standards

The process standards describe ways in which students are expected to engage in the content. The process standards weave the other knowledge and skills together so that students may be successful problem solvers and use knowledge learned efficiently and effectively in daily life.

P.1A Apply mathematics to problems arising in everyday life, society, and the workplace
P.1B Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution
P.1C Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems
P.1D Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate
P.1E Create and use representations to organize, record, and communicate mathematical ideas
P.1F Analyze mathematical relationships to connect and communicate mathematical ideas
P.1G Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication

Grading Period 1

Unit 1: Polynomial Function Analysis

Estimated Date Range: Aug. 11 – Sept. 11 (23 total school days)
Instructional & Re-engagement Days in Unit: 23 days

Assessments

STATE/NATIONAL ASSESSMENTS	DISTRICT ASSESSMENTS	COMMON FORMATIVE ASSESSMENTS (CFAs)
N/A	N/A	N/A

Unit Overview: In this unit, students will graph and analyze key features of power, piecewise and polynomial functions. Students will connect their knowledge of solutions of power, piecewise, and polynomial functions across multiple representations of one function or across multiple functions in comparison. Students should also be able to explain and interpret their analysis of key features of power, piecewise and polynomial functions through detailed explorations and examinations. In addition, students will apply a variety of techniques (including composition of functions) to solve polynomial equations and inequalities in both mathematical and real-world problems.

At home connections:

- Discuss and research real-world applications of polynomial functions.
- Discuss similarities and differences between the different types of functions – power, piecewise and polynomial.

Concepts within Unit #1 Link to TEKS	Success Criteria for this concept
Establishing a Positive Mathematics Community TEKS: P.1A, P.1B, P.1C, P.1D, P.1E, P.1F, P.1G	• Demonstrate active listening skills while sharing in the community circle. • Make positive and supportive connections with my peers. • Engage in circle dialogues using the circle guidelines. • Share my math ideas and strategies when given a problem during the number sense routine. • Explain what a Respect Agreement is and why it is created. • Work in a group to solve a mathematical problem. • Describe strategies that I can use to solve math problems. • Provide feedback to my peers using guidelines and a protocol.
Concept #1: Graph and Analyze Key Features of Power Functions TEKS: P.2I, P.2N, P.2D, P.2F, P.2G, P.2J	• Graph power functions with and without technology. • Demonstrate understanding of the direct and inverse variation both graphically and algebraically. (Review from Algebra II) • Identify key features from • a graph. • a table. • an equation. • a verbal description. • Analyze key features from multiple representations. (Such as compare/contrast, make generalizations, explore behavior around, etc.) • Analyze key features in context of real-world applications. • Analyze a situation through key features to determine a function model in mathematical and real-world problems. • Solve for values from a function model. • Justify solutions in relation to a problem (mathematical and real-world)
Concept #2: Graph and Analyze Key Features of Piecewise Functions TEKS: P.2I, P.2F	• Graph piecewise functions with and without technology. • Identify key features from • a graph. • a table. • an equation.

	• a verbal description. • Analyze key features from multiple representations. (Such as compare/contrast, make generalizations, explore behavior around, etc.) • Analyze key features in context of real-world applications. • Analyze a situation through key features to determine a function model in mathematical and real-world problems. • Solve for values from a function model. • Justify solutions in relation to a problem (mathematical and real-world)
Concept #3: Graph and Analyze Key Features of Polynomial Functions TEKS: P.2N, P.2I, P.2D, P.2F, P.2G, P.2J	• Graph polynomial functions with and without technology. • Identify key features from • a graph. • a table. • an equation. • a verbal description. • Analyze key features from multiple representations. (Such as compare/contrast, make generalizations, explore behavior around, etc.) • Analyze key features in context of real-world applications. • Analyze a situation through key features to determine a function model in mathematical and real-world problems. • Solve for values from a function model. • Justify solutions in relation to a problem (mathematical and real-world)
Concept #4: Solving Polynomial Equations TEKS: P.2N, P.2I, P.2A, P.2B, P.2C, P.5J	• use composition of functions to model and solve real-world problems. • Identify key features from • a graph. • a table. • an equation. • a verbal description. • Solve for values from a function model. • Justify solutions in relation to a problem (mathematical and real-world)
Concept #5: Solving Polynomial Inequalities TEKS: P.2N, P.2I, P.5K	• Identify key features of a polynomial inequality from • a graph. • a table. • an equation. • a verbal description. • Solve polynomial inequalities from a function model. • Represent solutions sets of polynomial inequalities in interval notation. • Justify solutions of polynomial inequalities in relation to a problem (mathematical and real-world)

Unit 2: Rational Function Analysis

Estimated Date Range: Sept. 14 –Oct. 2 (13 total school days)

Instructional & Re-engagement Days in Unit: 13 days

Assessments

STATE/NATIONAL ASSESSMENTS	DISTRICT ASSESSMENTS	COMMON FORMATIVE ASSESSMENTS (CFAs)
N/A	N/A	N/A

Unit Overview: In this unit, students will graph and analyze key features of rational functions. Students will connect their knowledge of graphing transformations on the rational parent function to rational functions in any form and across multiple representations of functions in comparison. Students should also be able to interpret and explain their analysis of key features of rational functions through detailed explorations and examinations. Also, within this unit, students will apply a variety of techniques

(including PNI charts, factoring, synthetic division and long division) to solve rational equations and inequalities in both mathematical and real-world problems. The concepts in this unit include the following: Graph and Analyze Key Features of Rational Functions and Solving Rational Inequalities.

At home connections:

- Discuss and research real-world applications of rational functions.

Concepts within Unit # 2 Link to TEKS	**Success Criteria for this concept**
Concept #1: Graph and Analyze Key Features of Rational Functions TEKS: P.2I, P.2N, P.2D, P.2F, P.2G, P.2J, P.2K	• Define rational functions as a quotient of polynomials. • Graph rational functions with and without technology. • Identify key features from • a graph. • a table. • an equation. • a verbal description. • Analyze key features, including end behavior, from multiple representations. (Compare/contrast, make generalizations, explore behavior around, etc.) • Express end behavior using infinity notation. • Analyze behavior of rational function around discontinuities. • Analyze key features of rational functions in context of real-world applications. • Analyze a situation through key features to determine a function model in mathematical and real-world problems.
Concept #2: Solving Rational Inequalities TEKS: P.2N, P.2I, P.5J, P.5K, P.5L	• Interpret the meaning of key features in applications of rational inequalities. • Use descriptions of key features to write a rational inequality. • Identify solutions of a rational inequality from • a graph. • a table. • Solve rational inequalities from an equation. • Interpret and solve applications of rational inequalities. • Represent solutions sets of rational inequalities in interval notation. • Justify solutions of rational inequalities in relation to a problem (mathematical and real-world)

Unit 3: Exponential and Logarithmic Function Analysis (Continues in Grading Period 2)

Estimated Date Range: Estimated Date Range: Oct. 5 – Nov. 5 (18 total school days)

Instructional & Re-engagement Days in Unit: 17 days

For details, see Grading Period 2

Grading Period 2

Unit 3: Exponential and Logarithmic Function Analysis (Continued)

Estimated Date Range: Estimated Date Range: Oct. 5 – Nov. 5 (18 total school days)

Instructional & Re-engagement Days in Unit: 17

Assessments

STATE/NATIONAL ASSESSMENTS	**DISTRICT ASSESSMENTS**	**COMMON FORMATIVE ASSESSMENTS (CFAs)**
PSAT (1 day) Testing Window Oct. 29	N/A	N/A

Unit Overview: In this unit, students will graph and analyze key features of exponential and logarithmic functions. Students will build on their previous knowledge of inverses and apply to exponential and logarithmic functions. Students should be able to explain and interpret their analysis of key features of exponential and logarithmic functions through detailed explorations and examinations between multiple representations. In addition, students will develop and apply properties of logarithms to solve exponential and logarithmic equations in both mathematical and real-world problems. Concepts in this unit include the following: Exponential and Logarithmic Functions as Inverses, Graph and Analyze Key Features of Exponential and Logarithmic Functions, Properties of Logarithms and Solving Exponential and Logarithmic Equations.

At home connections:

- Discuss and research real-world applications of polynomial functions.
- Discuss similarities and differences between exponential and logarithmic functions.
- Discuss what the word inverse means (not just mathematically) and how to verify that exponential functions and logarithmic functions are inverses.

Concepts within Unit # 3 **Link to TEKS**	**Success Criteria for this concept**
Concept #1: Exponential and Logarithmic Functions as Inverses TEKS: P.2I, P.2B, P.2E, P.2F	• Make generalizations about the inverse relationships of exponential and logarithmic function graphs and tables. • Apply function composition to determine if exponential and logarithmic functions with the same base are inverses. • Use the graphs of logarithmic and exponential functions to formalize generalizations about the properties of inverse functions. • Prove exponential and logarithmic functions are inverse of each other through graphs and tables. • Use composition of functions to prove exponential and logarithmic functions are inverses of each other. • Write inverse functions of exponential or logarithmic functions over its domain or a subset of its domain.
Concept #2: Graph and Analyze Key Features of Exponential and Logarithmic Functions TEKS:P.2I, P.2F, P.2G, P.2J	• Graph exponential and logarithmic functions with and without technology. • Identify key features of exponential and logarithmic functions from • a graph. • a table. • an equation. • a verbal description. • Analyze key features from multiple representations. (Such as compare/contrast, make generalizations, explore behavior around, etc.) • Analyze key features in context of real-world applications. • Analyze a situation through key features to determine an exponential or logarithmic function model in mathematical and real-world problems.
Concept #3: Properties of Logarithms TEKS: P.2N, P.5G	• Develop and understand the properties of logarithms through exploration. • Use the properties of logarithms to rewrite expressions by condensing to a single logarithm and by expanding to sums or differences of logarithms. • Verify that two expressions are equivalent.
Concept #4: Solving Exponential and Logarithmic Equations TEKS: P.2N, P.2I, P.2C, P.5G, P.5H, P.5I	• Analyze important information to write an exponential or logarithmic equation to model an application. • Use properties of logarithms to solve exponential equations. • Solve exponential equations written in a variety of forms both algebraically and graphically with and without technology. • Use properties of logarithms to solve logarithmic equations algebraically • Solve logarithmic equations written in a variety of forms graphically with and without technology.

	• Solve exponential and logarithmic equations in real world problems such as growth and decay, compound interest (both continuously and non-continuously), newton's law of cooling, logistic growth models and others. • Justify solutions in relation to a problem (mathematical and real-world).

Unit 4: Introduction of Periodic Functions
Estimated Date Range: Nov. 6 – Nov. 20 (11 total school days)
Instructional & Re-engagement Days in Unit: 11 days

Assessments

STATE/NATIONAL ASSESSMENTS	DISTRICT ASSESSMENTS	COMMON FORMATIVE ASSESSMENTS (CFAs)
N/A	N/A	N/A

Unit Overview: In this unit, students will develop an understanding of the periodic nature of trigonometric functions. Students will build on their previous knowledge of special right triangles and trigonometry as they develop a conceptual understanding of the relationship between angle positions on a unit circle. Students will work in both radians and degrees to evaluate trigonometric functions at various angles on the unit circle as well as co-terminal values. This understanding will be essential when solving problems involving trigonometric ratios in mathematical and real-world problems. Concepts in this unit include Angle measures and Positions in Degrees and Radians and Unit Circle and Evaluating Trigonometric Functions

At home connections:

- Discuss and research real-world applications of periodic functions.

Concepts within Unit # 4 Link to TEKS	Success Criteria for this concept
Concept #1: Angle Measures and Positions in Degrees and Radians TEKS: P.4B, P.4C, P.4D	• Describe the unit circle. • Convert between degree measures of angles and radian measures of angles. • Use rotation to find the measure of angles co-terminal to a given angle in both degrees and radians • Find the measure of reference angles in degrees and radians for angles on the unit circle. • Solve mathematical and real-world problems based on the concept of rotations • Explain how rotation describes linear and angular velocity. • Solve problems involving linear and angular velocity.
Concept #2: Unit Circle and Evaluating Trigonometric Functions TEKS: P.2P, P.4A, P.4B, P.4E	• Determine the values of the trigonometric functions at the special angles in mathematical and real-world problems • Understand the patterns of trigonometric functions based off the unit circle and special right triangles. • Determine the relationship between the unit circle and the definition of a periodic functions • Use their knowledge of co-terminal angles to determine the values of trigonometric functions at angles whose reference angle measure is on the unit circle • Use technology and their knowledge of the definition of trigonometric ratios to determine the value of the ratios at angles that are not special angles

Unit 5: Graphing and Applications of Sine and Cosine
Estimated Date Range: Nov. 30 – Dec. 18 (15 total school days)
Instructional & Re-engagement Days in Unit: 11 days

Assessments

STATE/NATIONAL ASSESSMENTS	DISTRICT ASSESSMENTS	COMMON FORMATIVE ASSESSMENTS (CFAs)	Semester Exams
N/A	N/A	N/A	(4 days) Testing Window Dec. 15 – Dec. 18

Unit Overview: In this unit, students will graph sine and cosine as well as analyze the key features of the graphs of these functions. Students will also write sinusoidal models in order to solve problems.

At home connections:

- Discuss how graphing helps us solve problems and how we use graphing in our everyday lives.
- Have students explain their reasoning and method to solve a non-mathematical problem.

Concepts within Unit # 5 **Link to TEKS**	**Success Criteria for this concept**
Concept #1: Graphing Sine and Cosine TEKS: P.2I, P.2D, P.2F, P.2G, P.4A	• Explain the connection between the points on the unit circle and the points on the graphs of sine and cosine functions. • Graph the sine and cosine parent graph. • Graph sine and cosine functions using transformations. • Analyze the key features of the graph of a sine and cosine function. • Domain • Range • Symmetry • Relative minimums • Relative maximums • Intervals of increasing • Intervals of decreasing • Compare the graphs of sine and cosine functions
Concept #2: Sinusoidal Applications TEKS: P.5N, P.2O	• Write a sine or cosine function given a graph, data in verbal or tabular form. • Use sinusoidal regression to determine the function that represents given data. • Write a sinusoidal function given a real-world situation with periodic nature. • Use a sinusoidal function to solve a real-world problem with periodic nature. • Determine and explain the reasonableness of a solution to a real-world problem that can be modeled by a sinusoidal function.

Grading Period 3

Unit 6: Graphing and Applications of All Trigonometric Functions

Estimated Date Range: Jan. 6 – Jan. 21 (11 total school days)
Instructional & Re-engagement Days in Unit: 11 days

Assessments

STATE/NATIONAL ASSESSMENTS	**DISTRICT ASSESSMENTS**	**COMMON FORMATIVE ASSESSMENTS (CFAs)**
N/A	N/A	N/A

Unit Overview: In this unit, students will graph trig functions and inverse trig functions as well as analyze the key features of the graphs of these functions. Students will also write sinusoidal models in order to solve problems.

At home connections:

- Discuss how graphing helps us solve problems and how we use graphing in our everyday lives.
- Have students explain their reasoning and method to solve a non-mathematical problem.

Concepts within Unit # 5 **Link to TEKS**	**Success Criteria for this concept**

Concept #1: Graphing All Trig Functions
TEKS: P.2I, P.2D, P.2F, P.2L, P.2M
	• Explain the relationship between the graph of the sine function and its reciprocal function, cosecant.
	• Explain the relationship between the graph of the cosine function and its reciprocal function, secant.
	• Explain the relationship between the graph of sine and cosine and the graph of tangent.
	• Explain the relationship between the graph of sine and cosine and the graph of cotangent.
	• Explain the relationship between the graph of the tangent function and its reciprocal function, cotangent
	• Graph secant and cosecant functions.
	• Analyze the key features of the graph of a secant and cosecant function.
	  • Domain
	  • Range
	  • Symmetry
	  • Asymptotes
	  • Relative minimums
	  • Relative maximums
	  • Intervals of increasing
	  • Intervals of decreasing
	• Describe the relationship between the discontinuities of a secant or cosecant graph and its phase shift and period.
	• Analyze the key features of the graph of a tangent or cotangent function.
	  • Domain
	  • Range
	  • Symmetry
	  • Asymptotes
	  • Relative minimums
	  • Relative maximums
	  • Intervals of increasing
	  • Intervals of decreasing
	• Describe the relationship between the discontinuities of a tangent or cotangent graph and its phase shift and period.
	• Graph a tangent or cotangent function by determining its phase shift, period, and altitude.
	• Evaluate secant, cosecant, tangent and cotangent functions.

Concept #2: Inverse Trig Functions and Their Graphs TEKS: P.2I, P.2D, P.2E, P.2F, P.2H, P.2P, P.4A	• Explain the relationship between the graph of sine and its inverse, arcsine including the restriction on the domain of arcsine. • Graph arcsine, arccosine and arctangent functions. • Analyze key features of the graphs of arcsine, arccosine and arctangent functions. • Explain the relationship between the graph of cosine and its inverse, arccosine including the restriction on the domain of arccosine. • Explain the relationship between the graph of tangent and its inverse, arctangent including the restriction on the domain of arctangent. • Evaluate inverse trig functions related to the special angles.

Unit 7: Analytical Trigonometry

Estimated Date Range: Jan. 22 – Feb. 10 (14 total school days)
Instructional & Re-engagement Days in Unit: 14 days

Assessments

STATE/NATIONAL ASSESSMENTS	DISTRICT ASSESSMENTS	COMMON FORMATIVE ASSESSMENTS (CFAs)
N/A	N/A	N/A

Unit Overview: In this unit, students will combine knowledge learned in previous trig units with knowledge of manipulating expressions and equations to simplify trig expressions, verify trig identities, and solve trig equations.

At home connections:

- Discuss how verifying trig identities relates to proofs.
- Discuss how simplifying trig expressions and solving trig equations relates to previous math courses.
- Explain how the process of verifying trig identities can be applied to something in the real-world.

Concepts within Unit # 6 Link to TEKS	Success Criteria for this concept

Concept #1: Verifying Trig Identities
TEKS: P.2D, P.5M
	• Simplify trig expression by applying operations of polynomial and rational expressions
	• Simplify trig expressions using algebraic properties and
	  • Quotient identities
	  • Reciprocal identities
	  • Pythagorean identities
	  • Sum and Difference identities
	  • Double angle identities
	• Verify trig identities graphically and algebraically.

Concept #2: Solving Trig Equations TEKS: P.5N, P.2A, P.2C, P.2E, P.2P, P.5M	• Solve trig equations on a specified interval. • Solve trig equations graphically and algebraically. • Solve trig equations algebraically by applying trig identities when needed. • Verify the reasonableness of the solution to a trig equations.

Unit 8: Vectors with Trigonometry Estimated Date Range: Feb. 16 – Mar. 4 (13 total school days) Instructional & Re-engagement days: 12 days		
Assessments		
STATE/NATIONAL ASSESSMENTS SAT (1 day) Mar. 4 TELPAS (1 day) Testing Window Feb. 15 – Mar. 26	**DISTRICT ASSESSMENTS** N/A	**COMMON FORMATIVE ASSESSMENTS (CFAs)** N/A
Unit Overview: In this unit, students will be introduced to vectors. Students will represent vectors graphically and algebraically. Students will use vectors to represent and solve real world problems that include current and wind speed. Students will also derive and use the Law of Sines and the Law of Cosines. **At home connections:** • Discuss how vectors can help solve real-world problems such as wind speed.		
Concepts within Unit # 7 **Link to TEKS**	**Success Criteria for this concept**	

Concept #1: Geometric and Symbolic Representations
TEKS: P.4I, P.4J, P.4K
	• Represent vectors on a coordinate plane
	• Graphically represent vector addition using:
	  • Head to tail representation
	  • Parallelogram representation
	• Graphically represent scalar multiplication
	• Find the magnitude and direction of vectors graphically and algebraically
	• Represent vectors in component form and using the standard unit vectors i and j
	• Resolve vectors into its components
	• Make connections between the graphical and symbolic representations	

Concept #2: Vector Applications TEKS: P.4, P.4G, P.4H, P.4K	• Derive the law of sines and the law of cosines • Apply the law of sines and the law of cosines to mathematical problems and real-world applications • Solve problems that require the use of a combination of law sines, law of cosines and right triangle trig in order to determine a solution. • Determine and explain both the direction (or bearing) and magnitude of the solution to a real-world application. • Justify the reasonableness of the solution to a real-world application	
Unit 9: Conic, Parametric, and Polar Function Analysis (Continues in Grading Period 4) Estimated Date Range: Mar. 15 – April 14 (22 total school days) Instructional & Re-engagement Days in Unit: 21 days		
Assessments		
STATE/NATIONAL ASSESSMENTS TELPAS (1 day)	**DISTRICT ASSESSMENTS** N/A	**COMMON FORMATIVE ASSESSMENTS (CFAs)** N/A

Unit Overview: In this unit, students will study conics, parametric equations, and polar equations. This will continue students' study of conics, circles in Geometry and parabolas in Algebra 2. In Pre-Calculus, students will study ellipses and hyperbolas. Students will apply trigonometry to their study of parametric equations and polar equations. Parametric equations allow us to express a set of quantities as explicit functions in terms of a parameter. For polar equations, students will be introduced to the polar coordinate system. For both parametric equations and polar equations, students will convert between the given equations and an equation in rectangular coordinates. Students will graph with and without technology.

At home connections:

- Discuss and research real-world applications of conic, parametric and polar functions.
- Discuss similarities and differences between conic, parametric and polar functions.

Concepts within Unit # 8 **Link to TEKS**	**Success Criteria for this concept**

Concept #1: Conics
TEKS: P.3F, P.3G, P.3H, P.3I
	• Define:
	  • a double napped cone.
	  • an ellipse using the locus definition
	  • a hyperbola using the locus definition
	• Examine and explain using models which conic section is formed when a plane intersects a double napped cone.
	• Make connections between the locus definition and the equation of the ellipse and the equation of a hyperbola.
	• From multiple representations, write equations of ellipses given characteristics such as: major axis length, major axis endpoints, minor axis length, minor axis endpoints, foci, center, vertices.
	• Write equations ellipses that have real world context, including orbits of planetary objects.
	• From multiple representations, write equations of hyperbola given characteristics such as: transverse axis length, transverse axis endpoints, conjugate axis length, conjugate axis endpoints, horizontal focal axis, vertical focal axis, foci, center, slope of asymptotes, equation of asymptotes.
	• Write equations for hyperbolas that have real world context.

Concept #2: Parametric Equations TEKS: P.3C, P.3A, P.3B, P.2P, P.5M	• Graph parametric equations. • Convert a parametric equation to a rectangular relation by applying algebraic methods and trig identities when needed. • Convert a rectangular relation to a parametric equation by applying graphical and algebraic methods including vectors. • Use multiple representations, including graphing parametric equations and writing parametric equations to solve problems that can be modeled parametrically.
Concept #3: Polar Equations TEKS: P.3D, P.3E, P.2P, P.5M	• Graph points in the polar coordinate system when given polar coordinate. • Find all polar coordinates for a given point. • Convert polar coordinates to rectangular coordinates by utilizing values of trigonometric functions. • Convert rectangular coordinate to polar coordinates using the polar conversion equations. • Graph polar equations by plotting points and using technology.

	• Explain which graphing technique (plotting points or using technology) is more appropriate for a given situation.

Grading Period 4

Unit 9: Conic, Parametric, and Polar Function Analysis (Continued)
Estimated Date Range: Mar. 15 – April 14 (22 total school days)
Instructional & Re-engagement Days in Unit: 22 days
See Grading Period 3 for Details

Unit 10: Sequences and Series
Estimated Date Range: April 15– May 27 (30 total school days)
Instructional & Re-engagement Days in Unit: 26 days

Assessments

STATE/NATIONAL ASSESSMENTS	DISTRICT ASSESSMENTS	COMMON FORMATIVE ASSESSMENTS (CFAs)	Semester Exams
N/A	N/A	N/A	(4 days) Testing Window May 24 – May 27

Unit Overview: In this unit, students will extend their knowledge of sequences to the study of series. Students were introduced to arithmetic and geometric sequences in Algebra 1. In this unit, students will calculate the *n*th term and *n*th partial sum of arithmetic and geometric sequences for both real world and mathematical situations. Students will represent series using sigma notation. In this unit, students will also apply the Binomial Theorem to expand *(a + b)n*.

At home connections:

- Have your student research sequences that occur in the real-world.
- Have your students explain the difference between different arithmetic and geometric sequences.

Concepts within Unit # 9 Link to TEKS	Success Criteria for this concept
Concept #1: Arithmetic and Geometric Sequences TEKS: P.5B	• Determine if a sequence is arithmetic or geometric by identifying the common ratio or common difference. • Identify or find the first term of a sequence. • Write an equation for an arithmetic sequence and a geometric sequence from multiple representations in recursive form.
Concept #2: Arithmetic Sequences TEKS: P.5C, P.5A, P.5D	• Use sigma notation to represent an arithmetic series. • Find the finite sum of a series. • Calculate the nth term of an arithmetic series. • Calculate the nth partial sum of an arithmetic series. • Solve problems using partial sums of series.
Concept #3: Geometric Sequences TEKS: A.5E, P.5A, P.5D	• Use sigma notation to represent a geometric series. • Find the finite sum of a series. • Calculate the nth term of a geometric series. • Calculate the nth partial sum of a geometric series. • Calculate the sum of an infinite geometric series. • Solve problems using partial sums of series.
Concept #4: Binomial Theorem TEKS: P.5F	• Explain how the binomial theorem is developed from Pascal's Triangle • Use the Binomial Theorem to expand binomials.

Glossary of Curriculum Components

Overview– The content in this document provides an overview of the pacing and concepts covered in a subject for the year.
TEKS – Texas Essential Knowledge and Skills (TEKS) are the state standards for what students should know and be able to do.
Unit Overview – The unit overview provides a brief description of the concepts covered in each unit.
Concept – A subtopic of the main topic of the unit.
Success Criteria—a description of what it looks like to be successful in this concept.

Parent Resources

The following resources provide parents with ideas to support students' understanding. For sites that are password protected, your child will receive log-in information through their campus.

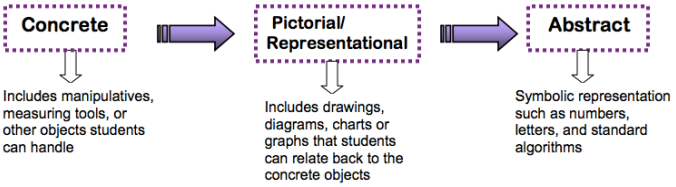
Resource	How it supports parent and students
Pearson – PreCalculus – Graphical Numerical, Algebraic Texas Ed.	This is the state adopted textbook for Pre-Calculus. Students will receive login information from their teacher.
Didax Virtual Manipulatives Math Learning Center Math Apps Polypad: Mathigon – Virtual Manipulatives	These online resources provide access to virtual manipulatives.
Parent Resources from youcubed.org	This resource from youcubed.org includes articles for parents on ways to support their students in learning and understanding mathematics.
Student Resources from youcubed.org	This resource from youcubed.org includes videos concerning growth mindset in mathematics.
Math: Why Doesn't Yours Look Like Mine?	This resource provides an explanation of why math looks different now as opposed to how parents learned mathematics and how to support students in learning mathematics.

Supplemental Resource and Tool Designation:

- The TI Nspire CX calculator is a standardized technology integration tool used for Mathematics and Science in FBISD.

Instructional Model

The structures, guidelines or model in which students engage in a particular content that ensures understanding of that content.



The instructional model for mathematics is the Concrete-Representational-Abstract Model (CRA).

The CRA model allows students to access mathematics content first through a concrete approach ("doing" stage) then representational ("seeing" stage) and then finally abstract ("symbolic" stage). The CRA model allows students to conceptually develop concepts so they have a deeper understanding of the mathematics and are able to apply and transfer their understanding across concepts and contents. The CRA model is implemented in grades K-12 in FBISD.