AQR
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.

AQ.1A Apply mathematics to problems arising in everyday life, society, and the workplace
AQ.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
AQ.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
AQ.1D Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate
AQ.1E Create and use representations to organize, record, and communicate mathematical ideas
AQ.1F Analyze mathematical relationships to connect and communicate mathematical ideas
AQ.1G Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication

Grading Period 1

Unit 1: Numerical Reasoning

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

Assessments

STATE/NATIONAL ASSESSMENT(S)	DISTRICT ASSESSMENT(S)	COMMON FORMATIVE ASSESSMENTS (CFAs) *(administered within designated concept)*
N/A	N/A	N/A

Unit Overview:
In this unit, students will focus on proportional reasoning and basic numerical calculations such as ratios, rates, and percents, by applying them to settings in business, media, consumer, and other areas. Working with familiar mathematical tools and learning some new ones, students improve their ability to solve problems by applying appropriate strategies.

Concepts within Unit #1 Link to TEKS	Success Criteria for this concept
Establishing a Positive Math Community TEKS: AQ.1A, AQ.1B, AQ.1C, AQ.1D, AQ.1E, AQ.1G, AQ.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: Measurement and Indirect Measurement TEKS: AQ.2A, AQ.2C, AQ.2D	• Use proportions and the fundamental counting principle to estimate large • numbers. • Make simplifying assumptions about a real-world situation to formulate • and solve a hypothetical mathematical problem. • Understand and interpret aspect ratio in various settings.
Concept #2: Ratios and Proportionality TEKS: AQ.2A, AQ.2C, AQ.2D	• Understand and interpret aspect ratio in various settings. • Use proportional reasoning to solve problems involving ratios, such as changing tires and selecting televisions.
Concept #3: Ratings, Weighted Averages, Indices TEKS: AQ.2B, AQ.2H	• Calculate and interpret weighted averages and weighted sums. • Use and calculate indices to understand and compare data. • Make decisions, predictions, and critical judgments based on data and numerical summaries such as weighted averages and weighted sums.

Unit 2: Probability (Continues in Grading Period 2) Estimated Date Range: Sept. 14 - Oct. 23 (22 total school days) Instructional & Re-engagement Days in Unit: 22 days (22 days)		
Assessments		
STATE/NATIONAL ASSESSMENT(S) N/A	**DISTRICT ASSESSMENT(S)** N/A	**COMMON FORMATIVE ASSESSMENTS (CFAs)** *(administered within designated concept)* N/A

Unit Overview:
In this unit, students will focus on the analysis of information using probability to make decisions about everyday situations. After determining the probability of various events, students expand their knowledge toward making decisions about the risks and mathematical fairness of these events.

Concepts within Unit # 2 Link to TEKS	Success Criteria for this concept
Concept #1: Calculate and Represent Probabilities TEKS: AQ.4A, AQ.4B, AQ.4C, AQ.4D	• Students analyze and construct representations of events, including tree diagrams, to determine conditional probabilities. • Students construct Venn diagrams • Students analyze and construct area models to determine the probabilities of events to make decisions about the risks involved in problem situations.
Concept #2: Probability Applications TEKS: AQ.4A, AQ.4B, AQ.4C, AQ.4D, AQ.4E, AQ.4F, AQ.4G	• Students analyze and construct representations of events, including tree diagrams, to determine conditional probabilities. • Students construct Venn diagrams and determine probabilities of compound events to make decisions about the risks involved in the situation. • Students analyze and construct area models to determine the probabilities of events to make decisions about the risks involved in problem situations.
Concept #3: Combinatorics TEKS: AQ.2E	• Students explore the use of probabilities in everyday situations such as playing computer games or selecting classes. • Students explore and make decisions and justify their decisions about the risk involved in the situation.

Grading Period 2

Unit 2: Probability (Continued) Estimated Date Range: Sept. 14 - Oct. 23 (23 total school days) Instructional & Re-engagement Days in Unit: 22 days (22 days) See Grading Period 1 for details		
Unit 3: Algebraic Reasoning with Mathematical Models Estimated Date Range: Oct. 26 – Dec. 2 (23 total school days) Instructional and Re-engagement Days in Unit: 22 days		
Assessments		
STATE/NATIONAL ASSESSMENT(S) PSAT (10/29) 1 day	**DISTRICT ASSESSMENT(S)** N/A	**COMMON FORMATIVE ASSESSMENTS (CFAs)** *(administered within designated concept)* N/A

Unit Overview:
In this unit, students will focus on analyzing data and finding rules to model the data. By looking at recursive models for bivariate data and relationships, students expand their set of tools for data analysis. Students have previously found modeled linear and quadratic functions using regression in Algebra 1. In Algebra 2, students further studied using regression to model data situations for linear, quadratic and exponential models.

Concepts within Unit # 3 **Link to TEKS**	**Success Criteria for this concept**
Concept #1: Linear Models TEKS: AQ.3A, AQ.3B, AQ.3C	• Students identify the variables of interest in a bivariate situation. • Students analyze the form, direction, and strength of scatterplots. • Students identify the uses and misuses of bivariate statistics. • Students prepare appropriate statistical reports. • Students analyze data that follow a linear pattern using recursively defined rules. • Students make connections between the recursive rule and the functional form of the linear rule.
Concept #2: Exponential Models TEKS: AQ.3A, AQ.3B, AQ.3C	• Collect data that follow an exponential pattern and use recursively defined rules. • Make connections between the recursive rule and the exponential function rule that models a data set. • Use the rules they develop to make predictions about the situation being modeled. • Explore both exponential growth and exponential decay problems and make connections between the two models. • Explore a situation in which a recursive rule is easier to find and use than a function rule. • Make connections between an exponential function rule that models a • data set and the recursive rule for the data. • Compare and contrast recursive and explicit function models using regression. • Analyze data to develop a concept of a functional relationship where the rate of change demonstrates logistical growth.
Concept #3: Logistic Models TEKS: AQ.3A, AQ.3C	• Compare and contrast recursive and explicit function models using regression. • Analyze data to develop a concept of a functional relationship where the rate of change demonstrates logistical growth.
Concept #4: Piecewise Functions TEKS: AQ.3A, AQ.3E	• Students model real-world data using step functions. • Students develop and apply the notion of piecewise functions. • Students use step functions to model concentrations of medicine in the • bloodstream over time.
Concept #5: Cyclical Functions TEKS: AQ.3A, AQ.3D	• Create a mathematical model of a periodic situation. • Understand and apply terms associated with periodic functions, including period and amplitude. • Model real-world data using cyclical or sinusoidal models. • Interpret cyclical models in the context of the situation.

	• Use cyclical models to make predictions and draw conclusions. • Discuss various types of limitations that occur in models, including problems with extrapolating outside the data with models that fit the data but do not adhere to known principles or natural laws.

Unit 4: Data and Statistics (Continues in Grading Period 3)
Estimated Date Range: Dec. 3 – Feb. 16 (38 total school days)
Instructional & Re-engagement Days in Unit: 34 days (9 days)

Assessments

STATE/NATIONAL ASSESSMENT(S)	**DISTRICT ASSESSMENT(S)**	**COMMON FORMATIVE ASSESSMENTS (CFAs)**	**Semester Exams**
N/A	N/A	*(administered within designated concept)* N/A	(4 days) Testing Window (12/15 – 12/18)

Unit Overview:
In this unit, students will focus on the statistical problem-solving process that includes designing a study, collecting data, representing data and analyzing the data. Students will be building on their statistical understanding from middle school math.
Students will examine strengths and weaknesses of studies in order to make appropriate decisions and understand relationships.

Concepts within Unit # 4 **Link to TEKS**	**Success Criteria for this concept**
Concept #1: Questions and Study Design TEKS: AQ.4H, AQ.4I, AQ.4J, AQ.4L, AQ.4O, AQ.4R, AQ.4T	• Identify the components of the research cycle. • Determine whether statistical studies are observational or experimental and consider the strengths and weaknesses in the studies. • Identify the appropriate treatment for study participants and interpret margin of error. • Identify variables and populations of interest as well as data sources. • Choose and apply the appropriate sampling design for given situations • identify the sampling techniques used in studies.
Concept #2: Collection of Data TEKS: AQ.4K, AQ.4M, AQ.4O, AQ.2G	• Identify the components of the research cycle. • Determine whether statistical studies are observational or experimental and consider the strengths and weaknesses in the studies. • Identify the appropriate treatment for study participants and interpret margin of error. • Identify variables and populations of interest as well as data sources. • Choose and apply the appropriate sampling design for given situations • identify the sampling techniques used in studies.
Concept #3: Representation of Data TEKS: AQ.4K, AQ.4O, AQ.4P, AQ.4R, AQ.4T	• Interpret a variety of graphical displays of statistical information. • Estimate center, shape, spread, and unusual features of graphical • displays and use these characteristics to describe distributions. • Analyze the appropriateness and usefulness of statistical graphical • displays. • Prepare appropriate statistical reports and communicate in oral and

	• written form. • Collect sets of data and create a variety of displays. • Compare and contrast multiple data sets.
Concept #4: Analysis of Data TEKS: AQ,.4K, AQ.4H, AQ.4J, AQ.4L, AQ.4H, AQ.4O, AQ.4S	• Build on the skills practiced and information gathered during the three two sections of this unit to investigate possible sources of variability in the data, including biased sampling methods (such as nonrepresentative sampling and under-coverage) and biased statistics, as well as natural and induced variability. • Search for various possible sources of statistical bias (such as response bias, nonresponse bias, and observer effect) and examine the effects of statistical bias on the generalizability of results. • Explore the importance of designing surveys and/or observation instruments as they finalize their own study and presentation of their results.

Grading Period 3

Unit 4: Data and Statistics (Continued)
Estimated Date Range: Dec. 3 – Feb. 16 (38 total school days)
Instructional & Re-engagement Days in Unit: 33 days
See Details in Grading Period 2

Unit 5: Large Collections of Data
Estimated Date Range: Feb. 17 – Mar. 22 (18 total school days)
Instructional & Re-engagement Days in Unit: 17 days

Assessments

STATE/NATIONAL ASSESSMENT(S)	DISTRICT ASSESSMENT(S)	COMMON FORMATIVE ASSESSMENTS (CFAs) *(administered within designated concept)*
K-12 TELPAS WINDOW (2/15 – 3/26) SAT (3/4) 1 day	N/A	N/A

Unit Overview:
In this unit, students will apply arrays and matrices in order to solve problems including product distribution and sales, geometric transformations, and code encryption.

Concepts within Unit # 5 Link to TEKS	Success Criteria for this concept
Concept #1: Arrays and Matrices TEKS: AQ.4F	• Create a matrix from a problem • Perform matrix operations to solve a problem • Solve applied problems using the matrix I created. • Analyze the reasonableness of the solution to the problem.

Grading Period 4

Unit 6: Mathematical Models in Finance
Estimated Date Range: Mar. 23 – Apr. 28 (26 total school days)
Instructional & Re-engagement Days in Unit: 26 days

Assessments

STATE/NATIONAL ASSESSMENT(S)	DISTRICT ASSESSMENT(S)	COMMON FORMATIVE ASSESSMENTS (CFAs) *(administered within designated concept)*
K-12 TELPAS WINDOW (2/15 – 3/26)	N/A	N/A

Unit Overview:
The Mathematical Models in Finance unit focuses on the financial decisions that surround borrowing, loaning, and investing money and how the time value of money affects such decisions. While some of these topics may be familiar to teachers and students, the mathematics behind them can be challenging. Thus, these contexts provide rich opportunities for critical thinking and problem solving. This unit goes well beyond typical "consumer math" skills that might be addressed in middle school or high school. It asks students to use sophisticated mathematical models to deal with problems in these familiar situations. In earlier units, students studied the mathematical structure involved in such decision making: $f(t) = ab^t$, the general exponential function. They use this function as the basis for more complex functions that model change in a variety of financial situations. The overall goal of this unit is to provide future citizens with mathematical and financial tools they can use to plan wisely and use credit knowledgeably.

Concepts within Unit # 6 **Link to TEKS**	**Success Criteria for this concept**
Concept #1: Income TEKS: AQ.3F	• Analyze which income opportunities are best for a given situation based on type of income, type of employment, taxes, benefits, and financial goals. • Calculate and graph simple and compound interest problems and identify the appropriate model based on their respective scatterplots. • Calculate how the cost of living reduces the earnings of investments and raises in income. • Generate the exponential formula for the future value of an investment using a regression equation, identify the key properties, and analyze the reasonableness of the model in the real world. • Analyze and adjust the future-value formula to account for compound interest. • Apply current interest rates on bank investments.
Concept #2: Expenditures TEKS: AQ.3G	• Analyze the parts of a credit card statement and derive how the • calculations are made. • Calculate the minimum payment on a credit card balance and the • length of repayment based on that minimum and recommend an alternate debt repayment plan. • Explain the difference between annual percentage rate and effective annual rate with respect to credit card costs. • Create an amortization model based on a set debt plan and analyze the behavior of principal and interest with a constant payment. • Analyze real-world scenarios involving credit card debt, present and discuss their conclusions, and synthesize the results into solutions to life problems.

	• Calculate the monthly payment for financing a new vehicle and analyze the costs of financing an asset that is scheduled to lose value. • Evaluate the tangible and intangible costs associated with leasing a vehicle and calculate the monthly payment for financing a new vehicle through a purchase option. • Compare the three methods of financing a new vehicle and analyze affordability based on budgetary constraints.
Concept #3: Loans and Investments TEKS: AQ.3H	• Generate the exponential present-value formula using the future-value formula, identify the key properties, and analyze the reasonableness of the model in the real world. • Explain the present value of an investment in terms of a timeline and connect the present-value formula to sequences. • Analyze and adjust the present-value formula to account for compounded interest periods other than annual. • Confirm the time value of money calculator results with the future-value and present-value formulas and analyze the parameters and effects of rounding to real-world applications. • Analyze given real-world scenarios dealing with the future value and • present value of an investment, present and discuss their conclusions, and synthesize the results into solutions to life lessons. • Generate the finite geometric series for the future value of an annuity. • Explain the relationship between the present value of an investment • security and interest rates, risk ratings, and/or the present value of another investment security. • Determine the portfolio of an investment based on interest rates, risk ratings, and investor needs. • Calculate the expected value of an investment based on the probability of future value. • Explain the standard of living at retirement, calculate the future value of a retirement investment, and determine the monthly payments needed to save for retirement.

Unit 7: Paths and Circuits Estimated Date Range: April 29 – May 27 (20 total school days) Instructional & Re-engagement Days in Unit: 16 days			
Assessments			
STATE/NATIONAL ASSESSMENT(S) N/A	**DISTRICT ASSESSMENT(S)** N/A	**COMMON FORMATIVE ASSESSMENTS (CFAs)** *(administered within designated concept)* N/A	**Semester Exams** (4 days) Testing Window (5/24 – 5/27)

Unit Overview:

The Paths and Circuits unit focuses on the creation of models that represent real-world contexts involving networks and graphs and the use of these networks and graphs to investigate real-world scheduling problems. In this unit, students extend their ability to solve
abstract and concrete problems.
Although networks and graphs have geometrical connections (in that they are drawn in two dimensions with points, lines, and curves), the mathematical reasoning required to create, understand, and use them is new to most students.

Concepts within Unit # 7 **Link to TEKS**	**Success Criteria for this concept**
Concept #1: Paths and Circuits TEKS: AQ.2H	• Use graphs and the definitions of circuits and paths to study the • Königsberg Bridge problem. • Devise and use algorithms to locate Euler circuits. • Make conjectures and use theorems to determine whether graphs have Euler or Hamiltonian circuits. • Create graph structures to model two different scenarios. • Make connections between previous graph models. •
Concept #2: Minimal Spanning Trees TEKS: AQ.2H	• Represent situations with graphs and then look at ways of determining the spanning trees that solve questions arising from the situation. • Devise, test, and use algorithms for finding spanning trees and minimal spanning trees.
Concept #3: Graph Coloring TEKS: AQ.2H	• Create maps conforming to specific coloring properties. • Create graphs associated with maps. • Create graphs conforming to specific coloring properties. • use graph coloring to model a scheduling problem.
Concept #4: PERT Charts TEKS: AQ.2H	• Analyze activity graphs using the Program Evaluation and Review • Technique. • Construct activity graphs to incorporate time constraints and

	• interrelationships between and among tasks. • Make conjectures about minimal completion times and the corresponding activity graph.

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.

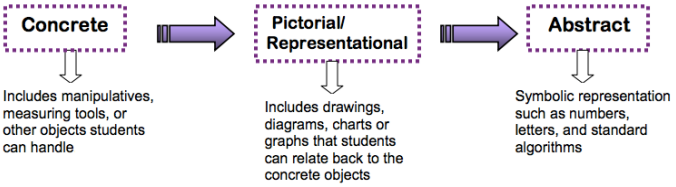
Resource	How it supports parent and students
Pearson-Texas Algebra 1	This is the state adopted textbook for middle school math. Click on the link for directions on accessing the textbook.
Didax Virtual Manipulatives Math Learning Center Math Apps Polypad: Mathigon – Virtual Manipulatives	These online 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.