FBISD
INSPIRE • EQUIP • IMAGINE
TEACHING & LEARNING

Department of Teaching & Learning

Geometry AAC MS
Overview
2022-2023

This document is designed 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.

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.

The student uses mathematical process to acquire and demonstrate mathematical understanding. The student is expected to:

G.1A Apply mathematics to problems arising in everyday life, society, and the workplace

G.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

G.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

G.1D Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate

G.1E Create and use representations to organize, record, and communicate mathematical ideas

G.1F Analyze mathematical relationships to connect and communicate mathematical ideas

G.1G Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication

Grading Period 1

Unit 1: Foundations of Logical Reasoning

Estimated Date Range: Aug. 10 – Sept. 9
Estimated Time Frame: 22 days

Unit Overview: In this unit, students will build the foundation for logical reasoning beginning with examples from prior knowledge. Students will learn to write and speak using conditional statements, and later biconditional statements. Students often confuse the validity and sequencing of statements so they will learn to separate the conditional statement from its converse, inverse and contrapositive. Students will form the habit of searching for counterexamples to disprove and verify, using geometric diagrams and constructions, as well as algebraic reasoning. Students will begin formal logic with Euclid's postulates, followed by construction of congruent segments and perpendicular bisectors. Two column proofs will be introduced by solving algebraic equations in the context of segment addition and midpoint. This unit includes the following concepts: Conditional Statements and Counterexamples. Developing Logical Arguments, and Exploring Segments.

At home connections:

- Have student complete Logic Puzzles such as Baron's Logic Puzzles to practice utilizing inductive and deductive reasoning skills.
- Ask the student to provide counterexamples for universal statements such as "All birds can fly."

Concepts within Unit #1 Link to TEKS	Success Criteria for this concept
Establishing a Positive Math Community TEKS: G.1A, G.1B, G.1C, G.1D, G.1E, G.1F, G.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 by peers using guidelines and a protocol.
Concept #1: Building Blocks of Geometry TEKS: G.4A	• Explain Euclid's five geometric postulates. • Explain what a postulate is • Describe undefined terms in geometry • Draw and label a point, line, plane, segment and ray. • Describe the postulates associated with points, lines, and planes. • Determine if a set of points in a plane is collinear or coplanar. • Sketch intersections of lines and planes and intersections of planes. • Identify skewed lines in a diagram. • Identify and name points, lines, planes, segments and rays in a diagram. • Differentiate undefined term and postulates
Concept #2: Conditional Statements and Counterexamples TEKS: G.4A, G.4B, G.4C	• Write facts and relationships found in math and non-math contexts as conditional statements. • Use counterexamples to prove conjectures false. • Transform conditional statements into inverse, converse, and contrapositive statements. • Determine the validity of conditional, inverse, converse, and contrapositive statements through the use of counterexamples.
Concept #3: Developing Logical Arguments TEKS: G.4A, G.4B, G.4C	• Differentiate between undefined terms, postulates, conjectures, definitions and theorems

	• Recognize and use postulates, definitions and theorems related to the following concepts:
	  • Vertical Angles
	  • Complementary and Supplementary Angle
	  • Linear Pairs
	• Compare and contrast inductive and deductive reasoning.
	• Use deductive reasoning to reach conclusions.
	• Explain what is a mathematical proof
	• Describe the 3 formats used to write a proof.
	• Describe key components of writing a proof.
	• I can explain the relationship between conditional statements and proofs.
	• Use deductive reasoning and the postulates of equality to write a two column, algebraic proof

Concept #4: Exploring Segments TEKS: G.2A, G.2B, G.4C, G.5A, G.5B, G.5C	• Find the distance between two endpoints on a number line. • Find fractional distances, including midpoint, of a line segment and on a number line. • Apply the Segment Addition Postulate to solve problems • Construct congruent segments and segment bisectors with a compass and straightedge. • Construct congruent segments and explain how the construction proves the segments are congruent. • Construct segment bisectors and explain how the construction proves the segment has been bisected. • Use constructions to validate conjectures made about congruent segments. • Use constructions to validate conjectures made about segment bisectors.

Unit 2: Angular and Linear Relationships

Estimated Date Range: Sept. 12 – Oct. 4
Estimated Time Frame: 16 days

Unit Overview: In this unit, students will continue applying conditional statements, logic, and constructions in the context of angle pairs and parallel and perpendicular lines. Students should gain experience in both solving for missing measurements with algebraic proofs and writing formal proofs of conjectures they learned in 8th grade (parallel lines cut by transversals). Proofs with scaffolds are still appropriate in this unit, and the teacher can adjust based on the proficiency of the class. This unit will also use the coordinate plane to review the slopes of parallel and perpendicular lines. Students will explore the relationship between the endpoints of a segment and points on its perpendicular bisector through coordinate geometry and construction.

At home connections:

- Have student utilize the Math Open Reference Constructions or Math is Fun Constructions websites to practice the following constructions in Geometry. Student will need a pencil, compass, and ruler.
- Copying a Line Segment
- Constructing Line Perpendicular to a Point on the Line
- Copying an Angle
- Bisecting an Angle

Concepts within Unit # 2 **Link to TEKS**	**Success Criteria for this concept**
Concept #1: Exploring Angles TEKS: G.4B, G.4C, G.5B, G.5C	• Construct congruent angles and angle bisectors with a compass and straightedge
Concept #2: Parallel Lines and Angle Pairs TEKS: G.4B, G.4C, G.5A, G.5B, G.5C, G.6A	• Use congruent angles to construct a line parallel to a given line through a point not on the line using a compass and a straightedge
Concept #3: Lines on the Coordinate Plane	• Derive the distance, slope and midpoint formulas.

TEKS: G.2A, G.2B, G.2C	• Use the distance, slope and midpoint formulas to verify congruence of segments. • Use the distance, slope and midpoint formulas to verify parallelism and perpendicularity of lines
Concept #4: Perpendicular Lines TEKS: G.4B, G.4C, G.5B, G.5C, G.6A	• Provide step by step directions for constructing perpendicular bisectors using multiple methods.

Unit 3: Properties of Transformations

Estimated Date Range: Oct. 5 – Oct. 7 and Oct. 11 – Oct. 27
Estimated Time Frame: 16 days (continued in Grading Period 2)

Unit Overview: In this unit, students will review and extend their knowledge of transformations. In 8th grade, students learn how to identify and perform translations, reflections, rotations, and dilations on the coordinate plane using algebraic notation. In this unit, students will review these properties with a focus on what preserves congruence, what preserves similarity, and what does neither. Students will also apply transformations off the coordinate plane, using constructions to explore and make further conjectures.

At home connections:

- Discuss with student transformations such as translations, reflections, rotations, and dilations.
- Have student share the process for translating and dilating a figure on and off the coordinate plane.

Concepts within Unit # 3 Link to TEKS	Success Criteria for this concept
Concept #1: Rigid Transformations TEKS: G.3A, G.3B, G.3C, G.3D, G.5B, G.5C, G.6C	• Create and explain translations on the coordinate plane using algebraic notation and off the coordinate plane using congruent angles. • Create and explain reflections of a figure across any line on the coordinate plane using algebraic notation and off the coordinate plane using perpendicular bisectors.
Concept #2: Non-Rigid Transformations TEKS: G.3A, G.3B, G.3C, G.5C, G.7A	• Create and explain dilations (enlargements and reductions) on the coordinate plane with the center at the origin using algebraic notation. • Create and explain dilations (enlargements and reductions) on the coordinate plane with any point as the center using algebraic notation. • Create and explain dilations off the coordinate plane using constructions.
Concept #3: Compositions of Transformations TEKS: G.3A, G.3B, G.3C	• Determine the image and pre-image of a two-dimensional figure using a composition of rigid and non-rigid transformations on and off the coordinate plane.

Grading Period 2

Unit 3: Properties of Transformations (Continued)

Estimated Date Range: Oct. 5 – Oct. 7 and Oct. 11 – Oct. 27
Estimated Time Frame: 16 days (continued from Grading Period 1)
See Grading Period 1 for details

Unit 4: Proofs of Triangle Congruence and Similarity

Estimated Date Range: Oct. 28 – Nov. 18 and Nov. 28 – Dec. 16
Estimated Time Frame: 30 days

Unit Overview: In this unit, students will take the established criteria of similarity, as well as the special case of congruency, and derive the minimum criteria needed to determine similar and congruent triangles. Students have background knowledge of Angle-Angle Similarity and CPCTC (corresponding parts of congruent triangles are congruent) from middle school, so the focus here is to formalize the criteria into theorems. Once the theorems are derived and established, students will culminate their logical reasoning practice into full proofs applying the triangle theorems. Students will also use constructions to verify theorems associated with special segments, specifically those in triangles. They will investigate relationships among points along the perpendicular bisector of a segment and the distance from a point along the angle bisector to the rays of the angle. Additionally, they will investigate, discover and apply properties of special segments in triangles including angle bisectors, perpendicular bisectors, medians, altitudes and midsegments.

At home connections:

- Have student design a visual of triangle congruence theorems such as SSS, ASA, SAS, AAS, and HL.
- Discuss with student the importance of providing detailed evidence when making a claim.
- Have student design an instructional tool that explains the properties of special segments in triangles.
- Have student research real world examples of special segments in triangles.

Concepts within Unit # 4 Link to TEKS	Success Criteria for this concept
Concept #1: Similar and Congruent Triangle Theorems TEKS: G.2B, G.5A, G.6B, G.6C, G.7A, G.7B, G.8A	• Apply and connect the definition of congruence to rigid transformations. • Apply and connect the definition of similarity to dilations. • Determine what information is needed to identify similar triangles. • Prove a given set of triangles similar using logical reasoning. • Apply triangle similarity to solve problems. • Derive similar triangle theorems. • Derive theorems involving triangle proportionality with parallel lines. • Determine what information is needed to identify congruent triangles. • Prove a given set of triangles congruent using logical reasoning. • Apply triangle congruence to solve problems. • Derive congruent triangle theorems.
Concept #2: Relationships in Similar and Congruent Triangles TEKS: G.2B, G.6B, G.7A, G.7B, G.8A, G.8B	• Prove and apply Triangle Proportionality Theorem to solve problems. • Prove and apply Geometric Mean Theorem to solve problems. • Prove and apply Hypotenuse-Leg Theorem to solve problems. • Prove and apply similarity theorems to identify properties of Isosceles Triangles. • Prove and apply similarity theorems to identify properties of Equilateral / Equiangular Triangles.
Concept #3: Special Segments and Triangle Proofs TEKS: G.4C, G.5A, G.5C	• Verify conjectures made about special segments of triangles. • Use a variety of tools to investigate special segments of triangles and their points of concurrency. • Apply my algebraic reasoning to solve problems.

	• Prove conjectures about special segments using theorems I previously derived. • Apply theorems and proofs specifically to isosceles, equilateral and right triangles.

Grading Period 3

Unit 5: Exploration of Polygon and Quadrilateral Properties

Estimated Date Range: Jan. 5 – Jan. 25
Estimated Time Frame: 14 days

Unit Overview: In this unit, students will investigate, discover, and apply properties associated with interior and exterior angles of polygons so that they can find the sum of the interior angles or the measure of each interior/exterior angle in a regular polygon. Next, they will investigate, discover, and apply the properties of quadrilaterals, specifically in reference to their angles and diagonals, so that they can verify that a quadrilateral is a parallelogram, rectangle, rhombus or square.

At home connections:

- Discuss with students the properties of quadrilaterals.
- Play the "Properties of Quadrilateral" game. This game requires one player to choose a quadrilateral such as a square. Other players will provide clues or properties to guess the chosen quadrilateral. All properties of the quadrilateral must be given before the guess is made. The player who has chosen the quadrilateral will write the correct properties on chart paper as they are given and draw the quadrilateral after players guess correctly.

Concepts within Unit # 6 Link to TEKS	Success Criteria for this concept
Concept #1: Polygon Properties TEKS: G.5A	• Find the interior angle sum of any polygon. • Find the interior angle of any regular polygon. • Find the exterior angle sum of any regular polygon. • Find the exterior angle of any regular polygon. • Find the specific name (number of sides) of a regular polygon when given the measure of each exterior or interior angle or the sum of the interior angles.
Concept #2: Quadrilateral Proofs TEKS: G.4C, G.5A, G.6E	• Make conjectures about geometric relationships in quadrilaterals by investigating patterns in diagonals and opposite and adjacent sides and angles. • Formally prove the type of quadrilateral given a minimal amount of information. • Determine counterexamples when inadequate information is given to prove a quadrilateral is a parallelogram, rectangle, rhombus or square. • Solve for missing angles and/or side lengths of quadrilaterals.

Unit 6: Right Triangle Relationships

Estimated Date Range: Jan. 26 – Feb. 13
Estimated Time Frame: 13 days

Unit Overview: In this unit, students will investigate, discover, and apply the properties associated with side lengths of special right triangles and extend those properties to non-special right triangles. Students will apply either the ratios found in special right triangles or trigonometric ratios in order to find unknown side lengths and measures in both mathematical and practical scenarios. The practical scenarios include angles of elevation and depression.

At home connections:

- Have student research real-world applications of trig ratios and right triangles.
- Have student create a digital photo album of angles of elevation and depression identified at home and in the community.

Concepts within Unit # 7 Link to TEKS	Success Criteria for this concept
Concept #1: Special Right Triangles TEKS: G.6D, G.6E, G.9B	• Use and Apply Pythagorean theorem to find unknown side lengths of triangles and express answers in simplified radical form. • Investigate and discover the ratios associated with side lengths of 45°-45°-90° triangles using a square and its diagonal. • Investigate and discover the ratios associated with side lengths of 30°-60°-90° triangles using an equilateral triangle and its altitude. • Apply special right triangles patterns in problem situations to solve for missing sides. • Apply special right triangles to scenarios involving angles of elevation and depression. • Provide a proof of the Pythagorean Theorem • Make connections between the side lengths of special right triangles and their angle measures and use these connections in parallelogram proofs.
Concept #2: Trigonometric Relationships TEKS: G.6D, G.6E, G.9A, G.9B	• Correctly identify which trigonometric ratio is appropriate to solve for missing side lengths and angles. • Correctly set up a trigonometric equation (ratio) and solve for missing side lengths of a right triangle. • Correctly set up a trigonometric equation and apply the inverse to solve for an unknown angle measure. • Correctly draw a diagram of a situation of angle of elevation or depression and solve. • Make connections between the trig ratios and their angle measures and use these connections in parallelogram proofs.

Unit 7: Circle Relationships and Proofs

Estimated Date Range: Feb. 14 – Mar 7
Estimated Time Frame: 14 days

Unit Overview: In this unit, students will use proportional reasoning to find lengths of arcs and areas of sectors and segments. They will also investigate and apply the equation for circles in order to graph circles in the coordinate plane as well as identify attributes of circles. Finally, they will investigate, discover, and apply properties of angles and segments in circles in order to find unknown lengths and measures in both mathematical and real-world scenarios.

At home connections:

- Have student create a diagram showing the different parts of a circle such as the central angle, radius, chord, arc, tangent line, secant line, sector, and arc length.
- Have student find different circular objects in the home and identify various parts of the circle.
- Have student create a tool (I.e. brochure, poster, Power Point, etc.) that explains the key relationships in circle.

Concepts within Unit # 8 Link to TEKS	Success Criteria for this concept
Concept #1: Proportional Relationships in Circle TEKS: G.12B, G.12C, G.12D	• Solve proportional relationships. • Solve for arc length given a central angle and radius. • Solve for a central angle given a radius and arc length. • Solve for sector area given a central angle and radius.

	• Solve for a central angle given the area of a sector. • Convert between radians and degrees .
Concept #2: Equations of Circles TEKS: G.2B, G.12E	• Determine the center and radius of a circle given the equation. • Determine the equation of a circle given the center and a point on the circle by applying distance formula. • Determine the equation of a circle given the graph. • Determine the equation of a circle given the center and a point on the circle by applying distance formula. • Determine the equation of a circle given the endpoint of a diameter by applying midpoint and distance formula
Concept #3: Key Relationships in Circles TEKS: G.5A, G.6A, G.12A	• Solve for Central Angle and Inscribed Angle. • Solve for Angles formed by Intersecting Chords, Secants and Tangents. • Solve for Segment Length formed by intersecting Chords, Secants and Tangents. • Verify a line is tangent by proving a right angle at the point of intersection between the tangent line and radius. • Apply theorems to cyclic quadrilaterals.

Unit 8: Dimensional Analysis of 2D Figures

Estimated Date Range: Mar. 8 – Mar. 10 and Mar. 20 – April 3

Estimated Time Frame: 14 days (continued in Grading Period 4)

Unit Overview: In this unit, students will apply formulas for various types of polygons and circles to find the areas of composite figures. They will also investigate and determine the relationships between the perimeter, area, and surface area of figures whose dimensions are changed both proportionally and non-proportionally.

At home connections:

- Have student identify in the home or community 2D objects such as triangles, trapezoids, parallelograms, kites and regular polygons.
- Have student design a composite figure using triangles, trapezoids, parallelograms, kites, circles and regular polygons. Student will find the area of the composite figure.

Concepts within Unit # 9 Link to TEKS	Success Criteria for this concept
Concept #1: Composite Area TEKS: G.9A, G.11A, G.11B, G.12C	• Calculate the area of a regular polygon. • Calculate area of composite figures by decomposing into various shapes. • Calculate composite area of figures with missing areas or overlapping areas. • Solve composite area problems that include real world context.
Concept #2: Dimensional Change TEKS: G.10B, G.11B	• Apply scale factor to perimeter and area correctly. • Recognize the difference between proportional and non-proportional dimensional changes. • Use scale and proportions to justify the difference between proportional and non-proportional changes. • Calculate the changes in area and perimeter when the dimensional change is proportional. • Calculate the changes in area and perimeter when the dimensional change is non-proportional.

	• Explain the reasonableness of the solutions to problems involving dimensional change in context of the situation.

Grading Period 4

Unit 8: Dimensional Analysis of 2D Figures (continued)

Estimated Date Range: Mar. 8 – Mar. 10 and Mar. 20 – April 3
Estimated Time Frame: 14 days
See Grading Period 3 for details

Unit 9: Dimensional Analysis of 3D Figures

Estimated Date Range: April 4 – April 27
Estimated Time Frame: 16 days

Unit Overview: In this unit, students will apply formulas for the volume and surface area of various 3D figures including prisms, pyramids, cones, cylinders, spheres, and composite figures, to solve problems in both mathematical and real-world scenarios. They will also investigate and identify how both proportional and non-proportional changes in the dimensions of a 3D figure affect the figures volume and surface area.

At home connections:

- Have student identify in the home or community 3D objects such as prisms, pyramids, cones, cylinders, and spheres.
- Have student create a video explaining how to calculate the surface area or volume of one of the 3D objects.

Concepts within Unit # 10 Link to TEKS	Success Criteria for this concept
Concept #1: Cross Sections TEKS: G.10A	• Identify the two shapes created by a horizontal cross section of a 3D figure. • Identify the two shapes created by a vertical cross section of a 3D figure. • Identify the two shapes created by a diagonal cross section of a 3D figure. • Use a model to create a three-dimensional object by rotating a two-dimensional figure. • Identify the three-dimensional figure that is formed when rotating a two-dimensional figure.
Concept #2: Surface Area TEKS: G.11C, G.10B	• Calculate lateral surface area of prisms, pyramids, cones and cylinders. • Calculate total surface area of prisms, pyramids, cones, cylinders, and spheres. • Calculate surface area of composite three-dimensional figures. • Use appropriate units of measure when calculating surface area. • Calculate surface area for problems with real world context. • Explain the reasonableness of the solution to surface area problems with real world context. • Apply scale factor to surface area correctly. • Recognize the difference between proportional and non-proportional dimensional changes • Calculate the changes in surface area when the dimensional change is proportional. • Calculate the changes in surface area when the dimensional change is non-proportional. • Explain the reasonableness of the solutions to problems involving dimensional change in context of the situation.

Concept #3: Volume TEKS: G.11D, G.10B	• Calculate the volume of prisms, pyramids, cones, cylinders, and spheres. • Calculate the volume of composite three-dimensional figures. • Use appropriate units of measure when calculating volume. • Calculate volume for problems with real world context. • Explain the reasonableness of the solution to volume problems with real world context. • Apply scale factor to volume correctly. • Recognize the difference between proportional and non-proportional dimensional changes • Calculate the changes in volume when the dimensional change is proportional. • Calculate the changes in volume when the dimensional change is non-proportional. • Explain the reasonableness of the solutions to problems involving dimensional change in context of the situation.
Concept #4: Spherical Geometry TEKS: G.4D	• Define spherical geometry. • Represent parallel lines on a sphere. • Compare and explain the differences between parallel lines in Euclidean geometry and spherical geometry. • Represent triangles on a sphere. • Calculate the sum of the angles of a triangle on a sphere. • Compare and explain the differences between the sum of the angles of a triangle in Euclidean geometry and spherical geometry.

Unit 10: Applications of Probability

Estimated Date Range: April 28 – May 25

Estimated Time Frame: 20 days

Unit Overview: In this unit, students will extend their understanding of probability. In 7th grade, students studied representing sample spaces in multiple ways, using simulations and experiments to represent events, and determining experimental and theoretical probability for both simple and compound events. In Geometry, students will continue creating sample spaces, including the use of permutations and combinations. Students will also study geometric probability, independence of events and conditional probability. Students will continue the study of probability is subsequent courses they may choose to take, including MMA, AQR, Statistics and/or Statistics AP.

At home connections:

- Have student share the difference between permutations and combinations
- Ask student to identify real-world examples of permutations and combinations.
- Have student design an "Area of Probability" game.

Concepts within Unit # 11 Link to TEKS	Success Criteria for this concept
Concept #1: Area Probability TEKS: G.13B	• Determine which areas are needed to solve the probability problems. • Find the needed areas in order to solve the probability problem. • Solve a probability problem that involves area. • Explain the reasonableness of the solution to the problem in context of the problem.
Concept #2: Permutations and Combinations	• Explain the Fundamental Counting Principal

TEKS: G.13A	• Use permutations to solve problems. • Use combinations to solve problems. • Explain the differences between a permutations and combinations • Explain the reasonableness of solutions to permutations and combination problems in the context of the situation.
Concept #3: Compound Probability TEKS: G.13C, G.13E	• Define and give an example of two independent events. • Define and give an example of mutually exclusive events. • Define and give an example of overlapping events. • Solve problems that include finding the probability of independent events using diagrams and formulas. • Solve problems that include finding the probability of mutually exclusive events using diagrams and formulas. • Solve problems that include finding the probability of overlapping events using diagrams and formulas.
Concept #4: Conditional Probability TEKS: G.13D, G.13E	• Use two-way frequency tables to solve conditional probability problems. • Use two-way relative frequency tables to solve conditional probability problems. • Define and give examples of conditional probability. • Solve conditional probability problems using tree diagrams. • Solve conditional probability using formulas.

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.

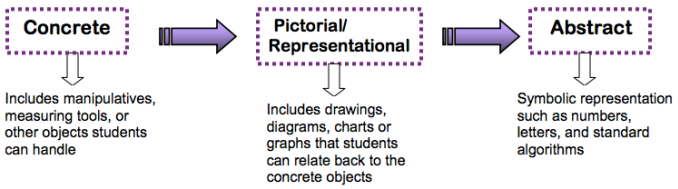
Resource	How it supports parent and students
Pearson-Geometry	This is the state adopted textbook for high school math. Click on the link for directions on accessing the textbook.
Didax Virtual Manipulatives Math Learning Center Math Apps Polypad: Mathigon – Virtual Manipulatives	These online resources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

Math Workshop:

During math instruction in grades K-8 in FBISD, we follow the Math Workshop structures. Instruction during a math class follows one of the three structures: Task and Share, Mini Lesson, Guided Math and Learning Stations, and Guided Math and Learning Stations. The structure that is used each day is determined by the content covered as well as student need.

<table>
<tr><th>Task and Share</th><th colspan="2">Mini Lesson, Guided Math and Learning Stations</th><th colspan="2">Guided Math and Learning Stations</th></tr>
<tr><td>Number Sense Routine</td><td colspan="2">Number Sense Routine</td><td colspan="2">Number Sense Routine</td></tr>
<tr><td rowspan="2">Math Task</td><td colspan="2">Mini Lesson</td><td rowspan="2">Guided Math</td><td rowspan="2">Learning Stations</td></tr>
<tr><td>Guided Math</td><td>Learning Stations</td></tr>
<tr><td>Task Share and Student Reflective Closure</td><td colspan="2">Student Reflective Closure</td><td colspan="2">Student Reflective Closure</td></tr>
</table>

Number Sense Routine – An engaging accessible, purposeful routine to begin math class that promotes a community of positive mathematics discussion and thinking.

Math Task – A problem-solving task that students work on in small groups. The teacher monitors and probes student thinking through questions. The task should have multiple entry points, allowing for all students to have access to the problem.

Task Share with Student Reflective Closure – Students come together as a whole class and discuss the various strategies they used to solve a rich mathematical task. Students ask questions, clarify their thinking, modify their work, and add to their collection of strategies.

Mini Lesson – A well-planned whole group lesson focused on the day's learning intention and accessible to all levels of learners.

Guided Math – Small group instruction that allows the teacher to support and learn more about students' understandings and misconceptions. Can include intervention, more on-level support, or enrichment.

Learning Stations – Activity in which students engage in meaningful mathematics and are provided with purposeful choices. Could include individual, partner or group tasks.

Student Reflective Closure – A deliberate and meaningful time for students to reflect on what they've learned and experienced during a math task, at activities in learning stations, or in a guided math group.