| Year | Development | Grade | Overview |
|---|---|---|---|
| 2010 | **Capturing Polygons** | Grades 4-5 | The following lessons will focus on the attributes of polygons. The students will identify, illustrate, construct, sort, manipulate and classify various polygons. These lessons will help strengthen student's spatial sense, listening skills, and creativity. Before teaching these lessons students should have an understanding of angles and the names of polygons up to a 10-sided figure. Students should also be able to use a protractor for Day 2. |
| 2010 | **Exploring 3-D Shapes with Captain Invincible** | Grades 4-5 | In this unit students will explore properties and characteristics of solid shapes in order to identify and name 3-dimensional figures. Students will focus on the similarities and differences between prisms and pyramids as well as the concept of how 2-dimensional nets fold to create 3-dimensional figures. Teachers will engage students through literature, hands on activities, games, and student to student interactions in order to develop the student's understanding of 3-dimensional figures. Prerequisites for this lesson include knowledge of 2-dimensional shapes and properties, faces, edges, vertices, and basic geometric vocabulary. |
| 2010 | **Help Keisha Find Her Lost Twin** | Grades 1-2 | This lesson introduces the concept of recognizing lines of symmetry in different shapes and figures, while determining the factors that makes figures and shapes congruent. It is expected that students are familiar with plane geometric figures and are able to identify the figures if needed. During this lesson students will go on a journey with Keisha to find her identical twin. Throughout the journey students will encounter many different figures that are symmetrical and congruent. |
| 2009 | **A Day in Time** | Grades 3-5 | This unit will teach and reinforce elapsed time and time conversions of hours to minutes, minutes to hours and hours to seconds. The unit is based on the picture book Tuesday by David Wiesner. |
| 2009 | **It's Plane to See** | Grade 2 | In this unit, students have the opportunity to identify and explore geometric solids and their properties by using plane figures as a foundation. The big mathematical ideas for these lessons are the third dimension of height and the use of plane figures to make solid figures. Throughout the unit, students analyze characteristics and properties of three-dimensional geometric shapes and create a data table about geometric relationships. Students use visualization, spatial reasoning, and geometric modeling to solve problems. Students construct various geometric solids using straws and marshmallows. The problem they investigate is: "In the real world, where will we find these shapes, and how are they used? Is there a reason one shape is used instead of another?" |

| Year | Development | Grade | Overview |
|---|---|---|---|
| 2009 | **Planes to Solid Figures** | Grades 3-4 | This unit focuses on the identification of the attributes of plane figures. Students will investigate the attributes of various polygons and their relationship to geometric solids. Finally, the students develop geometric vocabulary in order to describe, compare, and contrast two and three dimensional shapes. |
| 2009 | **Does Poly Want a Polygon?** | Grade 5 | Our unit entitled, “Does Poly Want a Polygon?” will allow students to define, identify and classify the characteristics of polygons within a composite figure. Using literature, aesthetics and hands-on manipulatives, the students will have an understanding of the relationships that exist among the angles and sides of two dimensional figures. Prerequisites for this lesson include the knowledge of parallel and perpendicular lines, faces, edges, vertices and angles. |
| 2009 | **Amusement Angles** | Grade 3 | Students will be able to classify, identify, construct and define right, acute and obtuse angles. During this introductory unit, students will identify and sort the different types of angles in real world pictures, objects, and shapes. This will eventually lead to the students becoming a builder of an amusement park ride or game that incorporates all the types of angles. Students will learn about how angles are useful in the real world when engineers are building things. Students should have prior knowledge of endpoints and rays. |
| 2009 | **Animal Expo** | Grades 3-4 | This lesson applies the concepts of perimeter and area. It is expected that students have experience with generating arrays and using one-inch grid paper. Vocabulary included in these lessons are area, perimeter, and square units.<br><br>During this lesson, students will create animal exhibits to design a diagram of a zoo. The class will be provided with a class model of a diagramed zoo. This model will help them understand how to apply perimeter and area concepts in a real-life scenario. |
| 2009 | **The Case of the Missing Shape** | Grades 2-3 | This lesson introduces students to shape attributes and new shapes. It is expected that students are familiar with identifying squares, circles, triangles, and rectangles before this lesson. During this lesson, students will become detectives working for “Poly Gon” to help her rescue a kidnapped shape. Students will learn to identify trapezoids, parallelograms, and hexagons by their attributes. |
| 2009 | **Top Secret 3D Space Mission** | Grade 4 | The lesson introduces the concepts of three dimensional shapes, faces, edges, vertices, and nets using a space mission theme. The students explore three-dimensional shapes using a variety of hands-on activities moving from concrete to abstract understanding. For each lesson, the skill and objective are embedded into the space mission motivating student participation and engagement. |

| Year | Development | Grade | Overview |
|---|---|---|---|
| 2008 | All About Area | Grades 2-3 | This unit explains and explores area. Students learn how to find area of a given figure by counting squares on a grid. They also create figures with a given area. More advanced exploration involves student discovery of the formula for finding area through the discussion of the relationship between area and the number of squares on adjacent sides of a rectangle. Activities include the use of manipulatives and reflective writing. |
| 2008 | Classifying Triangles | Grades 4-5 | In this unit, the students will learn how to classify triangles based on angle measurement and side length. The students are expected to have prior knowledge of angle types (obtuse, acute, and right) and measuring angles with a protractor before beginning this unit. The students will be taking a discovery/hands-on approach to reach the objectives of the lessons. Technology is incorporated into two of the three lessons. Informal and formal assessments are included, with a summative assessment after Lesson Three. |
| 2008 | Designing a Geocity | Grades 3-4 | The unit, “Designing a Geocity,” allows students to explore the essential properties and relationships of two-dimensional and three-dimensional figures using models. Students will use prior knowledge to compare and contrast two- and three-dimensional figures. Students will have the opportunity to use geometric manipulatives and tools to create two-dimensional blueprints and to use those blueprints to design and construct model towns. |
| 2008 | Geometry Go Getters: Comparing Two- and Three-Dimensional Figures | Grade 5 | In this geometric unit students will be exposed to two- and three-dimensional figures. Students will learn how to classify and identify properties of those figures in order to compare and contrast them. |
| 2008 | Let's Get In Shape | Grades 4-5 | In this unit, students will explore geometric solids. Using various hands-on activities, class discussions, literature & art, students will identify the properties of solid geometric figures and analyze the relationship between plane and solid figure surfaces. Students will learn how to identify solid shapes, describe the figures using their attributes, and relate plane figures to the surfaces of solid figures. |
| 2008 | Polygon Power | Grade 3 | Students will learn to identify types of lines and basic polygons, specifically parallel lines, intersecting lines and perpendicular lines. Polygons include triangles, quadrilaterals, pentagon, hexagon, and octagon. This unit there will also focus on identifying quadrilaterals and their properties. |

| Year | Development | Grade | Overview |
|---|---|---|---|
| 2008 | 'Round-N-'Round We Go: A Math Adventure with Circles | Grades 4-6 | In this unit, students will develop an understanding of attributes and properties of circles. Through exploration, students will make connections and discover the relationships between radius, diameter, and circumference. Furthermore, applications will be conducted through the construction and measurement of a variety of circles. |
| 2008 | Warning! Construction Zone: Building Solids from Nets | Grade 4 | In this unit, the students will be examining and defining attributes of solids and their nets. The students will be expected to have a basic understanding of 3-D attributes before beginning this unit. Hands on activities are a large part of this unit along with interactive websites. The unit begins with the students finding examples of solids in their daily surroundings. The students build solids using marshmallows and coffee stirrers to easily identify the vertices and edges. The students will be working at centers where they will be composing and decomposing solids to observe the nets and exploring alternate nets for solids. This unit's culminating activity has the students building a package for a birthday gift. |
| 2007 | 3D: Comparing and Contrasting Two - and Three - Dimensional Geometric Shapes | Grades 4-5 | Students will use their prior knowledge of two- dimensional shapes to discover the similarities and differences between two and three-dimensional figures. Students will apply this knowledge to create three-dimensional geometric shape nets as well as a concrete model of the shape itself. |
| 2007 | Capacity Counts | Grades 3-4 | In this unit, students will explore capacity units using estimation, exact measurements and conversions. Students will move from estimating appropriate units to converting from cups, pints, quarts and gallons. They will also have the opportunity to use problem solving as part of the assessment. |
| 2007 | Elapsed Time in the Real World | Grades 3-5 | This Concept Development Unit will introduce students to the concept of elapsed time using clocks and number lines. Students will explore elapsed time to the hour, half hour, and then minutes. Students will have the opportunity to develop the concept of measuring elapsed time in real world problem solving situations. Students should have a firm knowledge of telling time in order to begin this concept unit involving elapsed time. |

| Year | Development | Grade | Overview |
|---|---|---|---|
| 2007 | GeoDesign: Finding Perimeter and Area | Grades 4-6 | Perimeter and area are essential components for measurement and geometry. By completing activities relative to finding perimeter and area students will be able to make connections to both mathematical and real life applications. Because students often struggle with understanding concepts of measurement, they sometimes experience difficulty when being asked to use measurement tools, determine spatial accuracy, use formulas, and understand concepts as they relate to measurement. This unit will review linear measurement, teach area of polygons (two-dimensional figures), and will prepare students for the study of volume (three-dimensional figures) using hands-on activities that require the use of manipulatives. |
| 2007 | Measuring Perimeter and Area | Grades 1-2 | Perimeter and area are components of measurement. Through the activities presented in this unit, students will be involved in identifying the similarities and differences between perimeter and area. Students will be actively engaged in creating geometric shapes and measuring both the perimeter and area of their shapes. |
| 2007 | Perimeter and Polygons | Grade 4 | Finding the perimeter of objects and polygons is an important skill to continue to develop and master by the fourth grade. Students should have various opportunities to use real-life experiences using standard- and non-standard forms of measurement to find perimeter. Given these opportunities within the math classroom, students can explore a variety of formulas and computational skills in order to obtain an outcome. The instructional leader can provide experiences to develop conceptual thought and design. |
| 2007 | Ponder the Polygon | Grades 2-3 | Ponder the Polygon allows students to identify and classify polygons. Using hands-on manipulatives, the students will be able to correctly identify regular and irregular polygons, as well as identify the number of sides and angles for each. Students have had exposure to solid figures, lines and line segments, and angles. |
| 2007 | Quadrilaterals | Grades 3-4 | For the next three days, students will become familiar with properties of quadrilaterals. Through exploration students will use geoboards to manipulate different properties of quadrilaterals. In addition to communicating their ideas through oral and written responses, they will work in cooperative heterogeneous groups to create resources that reinforce specific concepts. Lessons are organized to provide the teacher with an assortment of varied assessments to enhance student achievement. |

| Year | Development | Grade | Overview |
|---|---|---|---|
| 2007 | What's Your Angle? - Classifying & Measuring Angles | Grade 4 | Students will identify and create acute, right, obtuse and straight angles. Use of the protractor to measure angles will be introduced and practiced with real and virtual manipulatives. Throughout the lessons students will begin with concrete experiences and move toward authentic application of measurement. |
| 2007 | "Shape-Up" with Geometry | Grades 3-4 | This unit includes three lessons and an assessment to help students develop the perspective and visual perception of geometric models. Students will analyze the properties of geometric figures, explore their relationships, and construct threedimensional models from two-dimensional representations. |
| 2007 | Shaping Up- Exploring the Attributes of Shapes all Around Us | Grades 1-2 | Students are reintroduced to shapes through a read-aloud. Integrating mathematics and literacy will not only engage students but also allow students to develop an understanding of the place of mathematics in their world. Student will use shape models to compare shapes and work together to identify shapes in their classroom, school, and home. This lesson also provides students the opportunity to reflect in writing on the shape-hunting process. Students of various learning styles will become engaged throughout the lesson (visual, spatial, and total physical response). In the following lesson, students will identify and analyze two-dimensional shapes and develop vocabulary to describe the attributes of two-dimensional shapes. |
| 2007 | Symmetry in Your World \| Part II \| Part III | Grade 3 | This unit focuses on symmetrical shapes and objects in the real world. After students complete this unit, they will be able to apply their knowledge of symmetry to real world objects. Students will learn how to identify the lines of symmetry as well as complete the missing halves of symmetrical figures. |
| 2007 | What's Your Angle? \| Part II \| Part III \| Part IV \| Part V | Grades 4-5 | In order to understand the construction of angles, students should have prior knowledge of the basic geometric ideas of lines, rays, and vertices as well as the four basic types of angles. This unit introduces the students to measuring different types of angles, such as acute, obtuse, right and straight. It will include how to use the protractor as a tool of measurement. |
| 2005 | Awesome Area | Grades 2-3 | Students will explore the concept of area in a realistic application. They will develop their understanding of area through constructing, drawing, and labeling spaces. Throughout the problem-solving process, students will analyze and communicate their mathematical thinking. Finally, students will explain their understanding of area by justifying their answers. |
| 2005 | Backyard Building - Area and Perimeter | Grades 2-3 | The students will use prior knowledge and manipulatives to explore the concepts of area and perimeter. The students will use their problem solving skills to create a space-saving backyard of their dreams. |

| Year | Development | Grade | Overview |
|---|---|---|---|
| 2005 | Designers Challenge - Exploring Area | Grades 3-4 | The students will use prior knowledge and manipulatives to explore concepts that focus on determining the area of regular and irregular shapes. The series of activities in this unit will assist students with limited experiences and ability, while extending and challenging those students who are knowledgeable about the concepts. The students will have the opportunity to explore a variety of materials such as: geoboards, snap cubes, square tiles, and cereal boxes. |
| 2005 | Elapsed Time | Grade 4 | This Concept Development Unit will introduce students to the concept of measuring time with clocks. Students will explore minutes, seconds, and hours to examine elapsed time. Students develop time sense by recording the ways they spend their time and solving simple problems involving time and elapsed time in several contexts. |
| 2005 | Geometry Safari | Grade 3 | In this unit, students will explore geometry through hands-on activities, creative constructions, literature, and technology. Students will identify and explore attributes of two-dimensional figures and incorporate mathematical language while manipulating geometric shapes. Students will develop mathematical strategies and reasoning through cooperative learning experiences. |
| 2005 | The Hands Of Time | Grades 2-3 | Students will explore the different ways to measure time. They will develop their understanding of how to tell time to the hour, half and quarter hours, and then five-minute intervals. They will identify time on analog and digital clocks and be able to read a clock at the hour or half hour. Throughout the lessons, they will participate in timed events and keep time as record keepers. Finally, they will expand their own understanding of the measurement of time as a process similar to the other standard forms of measurement they utilize during the year. |
| 2005 | Inching Along | Grade 4 | This three-day lesson will help students measure to the nearest half, fourth, or eighth of an inch. Students will be introduced to, but not assessed, on sixteenths. Students will learn to select the simplest form of the fraction in order to correctly identify fractional lengths. |
| 2005 | Mathematical Movements | Grade 3 | This four-day lesson moves students through a mathematical dance of flips (reflections), slides (translations), and turns (rotations). Students will learn to identify congruent figures in order to describe the properties of slides, flips, and turns for two-dimensional objects through the use of student-centered investigations including comic strips, finger painting, pattern blocks and designing a dream bedroom. |

| Year | Development | Grade | Overview |
|---|---|---|---|
| 2005 | Measurement Conversion | Grade 4 | Students will explore the relationship between various units of measurement including inches to feet, feet to yards, and inches to yards. They will develop there understanding through the creation and use of a function table. They will then be able to calculate and determine equivalent units of measure and apply them to real world situations. |
| 2005 | Time After Time | Grades 3-4 | Students will develop an understanding of telling time by using a wide variety of strategies and techniques. Students will use estimation to tell time using seconds, hours, and minutes in order to choose reasonable time estimates for given activities. Students will also use pictures, words and symbols in order to read, write and represent time to the nearest minute. Given a time, students will be able to count up using minutes and hours in order to determine elapsed time. Lastly, students will further their understanding of the importance of time in our every day lives. |
| 2004 | Awesome Area- Geometry and Measurement | Grades 2-3 | The students will use prior knowledge and manipulatives to explore the concept of area. They will investigate the area of different sized figures. |
| 2004 | Cover Your Bases and Faces | Grades 4-5 | Students will create solid figures using nets in order to determine the attributes of a three-dimensional figure. They will use the protractor to measure the angles in polygons and to calculate the sum of the interior angles. |
| 2004 | Geometric Solids: Get In Shape | Grades 3-4 | The students will use their understanding of geometry to create a three-dimensional figure and be able to explain the attributes of the three-dimensional solid. They will be comparing shapes by identifying the faces, vertices, and edges. |
| 2004 | Measurement: Using a Ruler to Measure Sea Creatures to the Nearest Eighth Inch | Grades 4-5 | In this lesson, students will acquire the skills necessary to understand the markings on a ruler and use it to measure objects to the nearest 1/2, 1/4 and 1/8 of an inch. Students will use snap cubes to understand the lengths of ruler markings. Students will also create oversized “incredible inches” to measure objects to the nearest eighth of an inch. Finally, students will measure, cut and paste certain fish into a paper aquarium. |
| 2004 | "Measuring Up" | Grades 1-2 | This Concept Development Unit will introduce the students to nonstandard and standard units of measurement. Students will use different objects to measure such as counting bears, base ten blocks, paper clips, pennies, etc. to identify nonstandard units of measurement. They also will be introduced to the centimeter, decimeter, and meter. Each lesson will include a literature connection, discussion exploration, and assessment. |

| Year | Development | Grade | Overview |
|---|---|---|---|
| 2004 | Protector of Polygon Place | Grades 3 | This four-day lesson takes students through a mystery in which they will use the knowledge of geometry to discover the hero of Polygon Place. Students will learn to identify and categorize angles, triangles, quadrilaterals and other polygons through their use of various manipulatives including pattern blocks, tangrams, and pre-cut shapes. Students use their problem solving skills to determine the hero of Polygon Place by the end of day four. |
| 2004 | Tessellating Terriers are Flipping, Sliding and Turning | Grade 2-5 | This performance-based Concept Development Unit integrates geometric problem solving with real life application. Students will demonstrate their knowledge of tessellations and the use of slides (translations), flips (reflections), and turns (rotations). These lessons are designed to be accessible for intermediate and primary students. Teachers should be able to teach the basic principles of motion (slides, flips and turns) in this unit, accessing prior knowledge such as congruence and symmetry. Extensions are created through the manipulation of tangrams. Furthermore, students will apply what they have learned by identifying movement and the creation of tessellations. |
| 2003 | Attributes of Polygons | Grades 2-3 | This Concept Development Unit will introduce students to polygons, giving particular emphasis to triangles. Students will use manipulatives to construct, classify, compare, and predict outcomes using properties of polygons. Every lesson in this unit includes a literature connection, discussion, exploration, and writing. Some lessons also include an art extension. The class culminating activity is to design and construct a class quilt using triangles and other shapes that are constructed from triangles. It should be noted that the materials used in this unit should be left on a shelf for the students to use for discovery and exploration on their own. |
| 2003 | Geometric Gumdrops Galore | Grades 3-4 | This is a four-day lesson to identify and practice using geometric solids. Students will identify the similarities and differences of two-dimensional and three-dimensional shapes. They will explore faces, edges, and vertices of eight geometric solids. After creating their own geometric solids, they will use different solids to create a model town. |
| 2003 | Go Fly a Kite | Grades 2-3 | The students will identify symmetrical shapes and objects, and the students will draw lines of symmetry with the use of pattern blocks. In the final lesson, students will build on their knowledge of symmetry in order to construct a symmetrical kite. |
| 2003 | Qualifying Quadrilaterals | Grades 4-5 | Through problem solving, oral and written communication, higher-order thinking and a variety of manipulatives, students will identify, classify and create quadrilaterals according to their attributes. |

| Year | Development | Grade | Overview |
|---|---|---|---|
| 2003 | Quilting Exploration with Polygons and Tessellations | Grades 4-5 | This unit explores the mathematical explanations for patterns using repeating polygons to create designs. Students will use problem-solving skills and reasoning to create a quilt using polygons. They will analyze geometric relationships. They will be able to compare or classify quadrilaterals by length or sides and measures of angles. They will use squares, rectangles, rhombi, parallelograms and trapezoids. Students will explore patterns that repeat, tessellate or transform to create designs on a quilt. They will be able to identify lines of symmetry. |
| 2003 | Round and Round We Go | Grade 2 | The students will develop the concept of perimeter by counting units around a variety of geometric shapes. They will also develop the concept of area by counting square units within a variety of geometric shapes. |
| 2003 | Spatial Sense: I Just Want to Fit In | Grades: 4GT and 5 | Students need to develop spatial sense for geometric figures. This is important because the developed spatial sense leads to better understanding of more abstract concepts such as “parts of a whole” and fractions, perimeter and area relationships, and the continual growth of number sense. After completing this series of lessons they should have a working understanding of how various polygons “fit” into each other and how polygons combine to create different shapes.They should also understand how the areas of different polygons relate to each other. |
| 2003 | The Tanazon Rain Forest | Grades 3-4 | This unit will cover line(s) of symmetry, transformations (slides, flips, and turns), and tessellations using tangrams. Rainforest animals will be created in this unit by using tangrams shapes. The concept of the rainforest will be developed throughout this unit. Identification of line symmetry will be developed by using a Symmetry Design Map. Transformations will be drawn and labeled on graph paper. Tessellation designs will be created to display on a bulletin board. The completion of the lesson will be a rainforest bulletin board display showing animals and trees. |
| 2003 | What's Your Angle? | Grade 4 | The students will be able to create and identify various types of lines and angles. Students will apply the appropriate name to angles by first comparing the size of angles visually. Students will then proceed to exact measurements of angles by learning to use a protractor and then being able to correlate the actual degrees to the name of the angles. |
| 2002 | Amusement Park Extravaganza | Grade 3 | The students involved in this task will engage in activities pertaining to geometry and measurement. Students will construct models, design an original park and write to persuade. By completing this task students will extend and refine their geometric thinking, calculate area and perimeter, identify the attributes of geometric figures, and relate these experiences to real life. |

| Year | Development | Grade | Overview |
|---|---|---|---|
| 2002 | Apple Orchard | Grades 2-4 | This unit focuses on measurement. The students will work on area and perimeter and analyze a coordinate grid. At the end of the unit, the students will design an apple orchard and write a letter (or make a poster or video) to persuade an orchard owner to use his/her design to expand the orchard. |
| 2002 | Scooter Race | Grades 4-5 | Students will choose a design and construct a racetrack for scooters. They will need to construct (according to specific attributes given) and compute the perimeter and area of each design (rectangle, triangle, circle).They will also need to determine the cost of building the track (asphalt, turf, concrete) and fencing (wood, vinyl, aluminum). Students will then choose the best design based on a variety of factors including cost, safety, and spatial sense related to purpose, and support their choice using mathematical reasoning. Additionally, students will compute other costs and choose scooters and safety helmets. Finally, students will need to compute the total cost and write to inform the PTA of their detailed proposal for a scooter racetrack. |
| 2002 | Second Graders to the Rescue! | Grade 2 | This unit focuses on basic shapes and symmetry. Students will construct symmetrical and nonsymmetrical designs with cubes and pattern blocks and explain why a particular design does or does not show symmetry. |
| 2002 | Tantalizing Tangrams | Grades 3-5 | In this unit, students will develop spatial-visualization skills by identifying geometric figures in tangrams. Students will investigate attributes of symmetry, congruency, and similarity as they create various shapes and figures with tangrams and then incorporate them into a story. |
| 2001 | Geometric Petting Zoo | Grades 3-5 | Students will apply their knowledge of area, perimeter, and circular geometry (circumference, radius and diameter) in order to plan a petting zoo and complete activities. The end result will be a map of their design plan, and a written letter to persuade the mayor to select their plan. |
| 2001 | Patterns, Paths, and Perimeters | Grades 2-3 | Students will apply their knowledge of geometric shapes, standard units of measurement, and perimeter to create patterns and compare lengths using the theme of a Rain Forest. |
| 2001 | Picturesque Polygons | Grades 4-6 | Students will apply their knowledge of polygons to design geometrical art pieces. |
| 2001 | Sizzilin Styles of Symmetry | Grades 2-3 | This unit focuses on exploring basic shapes through patterns and symmetry. In addition, students will analyze and construct symmetrical objects and patterns. At the end of the unit students will follow a given vignette to create a symmetrical butterfly. |

| Year | Development | Grade | Overview |
|---|---|---|---|
| 2001 | The Silver Diner | Grades 4-6 | This unit will have students work with 1 inch grid paper to design polygon-shaped table arrangements for 30 people in a restaurant setting. Students will present their final product orally to the class along with oral persuasive arguments created by the group. |
| 2000 | Around and About Pattern Blocks | Grades 3-5 | Students will apply their knowledge of area, perimeter, non-standard measurement, and pattern blocks to play and then design a fair game.After exploring area and perimeter, students will work cooperatively to write multi-step directions for a game they design. |
| 2000 | Jammin' with Geometry | Grades 4-5 | Students will apply their knowledge of diameter, radius, and the use of a compass to design their own geometrically designed compact disk cover. |
| 2000 | Olympic Circles | Grades 3-5 | Students will apply their knowledge of circular geometry (circles, radius, diameter, arcs, chords), measurement, and use of a safety compass to design an Olympic Game emblem. The students will then write to persuade. The students will work in pairs to complete these instructional activities with the exception of the individual emblem and writing activity. This unit will integrate mathematics with the Olympics. |
| 1999 | All Wrapped Up in Tessellations | Grades 3-4 | This Concept Development Unit involves four activities and a performance task. The students will learn how to use flips, slides, and turns to create a tessellation. At the end of the unit, the students will use what they know about tessellations to design wrapping paper that will be sold at their school. |
| 1999 | Custom Creations | Grades 4-5 | Students will apply their knowledge of area, perimeter, measurement, and use of a safety compass to design a “courtyard” area. They will work cooperatively and use these skills to design a scaled-down model of flower beds (with patterns) and picnic tables (with a given radius) to be placed in a 27 foot by 21 foot area. |
| 1999 | Finding the Way | Grade 4 | It is the first week of school and the kindergarten students are having problems finding their way to the restroom. In this unit, students will use geometrical problem-solving skills, measurement and distance to construct a map to be used to guide the younger students. |
| 1999 | Inchology -- The Study of Inches | Grades 3-5 | This Concept Development Unit involves students reading to perform a task. The students will utilize rulers to design and construct a math game. The students also will create problem cards using various operations in math. The students will then write to persuade. The students will work in cooperative groups to complete these activities with the exception of the independent writing assignment. |

| Year | Development | Grade | Overview |
|---|---|---|---|
| 1999 | Lines, Angles, Polygons - Putting Them All Together | Grades 4-5 | Students will create models of lines segments, rays, angles, and polygons using a variety of materials. In this unit students will identify attributes of geometric shapes and use tools to measure and classify angles. Students will use their problem-solving skills to combine a variety of geometric shapes to completely cover a rectangular surface. |
| 1999 | Raising a Flag for the New Millennium | Grade 3 | This unit is designed to provide third-grade students with hands-on experience using pattern blocks to create a flag design for their school. This unit integrates literature into the lessons. By the completion of the unit, students will attain the concepts of transformation--specifically slides, flips, and turns --and will know the properties of polygons. Extension activities and connections to technology are provided to allow for enrichment of geometric concepts. |
| 1999 | Remodel, Reconfigure ... Go Figure! | Grades 3-4 | In this Concept Development Unit, third- and fourth-grade students will design the furniture and floor patterns for an ideal classroom. They will construct furniture shapes using pattern blocks and create patterns for floor tiles using flips, slides, and turns. |
| 1999 | School Store Simulation | Grades 4-5 | This Concept Development Unit is designed to allow students to apply and improve the concept of scale in diagrams and models. In addition, the concepts of measurement and spatial relationships will be applied to real world situations. Students will make decisions concerning stock based on consumer wants, allocated space, and allotted money to create a model of a school supply store. |
| 1999 | Starburst Storage | Grades 4-5 | Students will use linker cubes to create models of boxes that will be used to ship 32 Starburst candies. From this, they will decide which box is best and they will then construct this box using inch square paper. They will use skills involving volume, reasoning, measurement, and problem solving. |
| 1999 | The Playground Dilemma | Grade 5 | Students will gain an understanding of the concept of finding area of a designated shape. They will improve their ability to use instruments of measurement and formulas to analyze and solve mathematical problems pertaining to area. Students will apply their knowledge of finding area to a real-life situation, and they will create, organize, and communicate how mathematical ideas build on one another to produce a coherent whole. |
| 1998 | Angling for Fitness | Grades 4-6 | This Concept Development Unit integrates geometric problem solving with real-world application. This unit will involve the mathematical skills of investigating and measuring right, obtuse, acute, and straight angles. Students will use these skills to complete a performance-based project in which they will design a fitness trail that meets specific standards. |

| Year | Development | Grade | Overview |
|---|---|---|---|
| 1998 | Get to the Route of It! | Grades 4-5 | This Concept Development Unit incorporates concrete application of measurement tools, geometry vocabulary, and problem solving skills. The students will discover and apply the skills necessary for writing clear directions which will accurately guide classmates from one location to another. |
| 1998 | Harvey Potter's Fields | Grades 3-4 | This Concept Development Unit involves a collection of activities designed to familiarize students with the concepts of area and perimeter. Students will use geoboards, yardsticks, rulers, models, and grids. The unit contains a math-literature link using the book Harvey Potter's Balloon Farm, by Jerdine Nolen. The children will be expected to communicate their findings mathematically, verbally, and in written form. |
| 1998 | Let's Go Fly a Kite! | Grades 3-5 | This performance task actively involves students individually and in pairs in designing and constructing a kite. Through the course of this unit, they will construct and use tangrams, and read, write, and follow directions. They will calculate perimeter and area, create a repeating pattern, and apply computational and measurement skills. They also will use writing to communicate mathematically. |
| 1998 | One, Two, Three Little Pigs | Grades 1-3 | This performance-based Concept Development Unit is comprised of five activities: Read-Aloud: The Three Little Pigs, House Collage, Piggy Glyph, House Construction and Designing Oink Street. Each activity is centered around the book, *The Three Little Pigs*, by Paul Galdone. This unit integrates mathematics with children's literature, language arts, and visual arts. The activities in the unit allow for students to actively solve problems and to explore while working in cooperative groups. Communication skills will be developed through discussions, journal responses, descriptive and persuasive letters, and interpretations of glyphs. |
| 1998 | Perimeter All Around | Grade 5 | This is a performance-based Concept Development Unit that integrates problem solving and the study of perimeter. Students will demonstrate and use their understanding of perimeter in a variety of ways. Students will work cooperatively to design an arrangement for the school cafeteria using perimeter to help determine the available seating. This is a developmental lesson on perimeter, not an introductory lesson; therefore, students should have prior knowledge of perimeter. |

| Year | Development | Grade | Overview |
|---|---|---|---|
| 1998 | Pool Time | Grade 3 | In this performance-based assessment, students will integrate problem solving with realworld application as they explore pool designs. Students will make conjectures, and validate their thinking based on their knowledge of geometric concepts. Students will apply communication skills by writing a note about their discoveries. This unit may be used as an instructional resource or a summative assessment. |
| 1998 | Six Leg Symmetry | Grades 2-3 | This Concept Develoment Unit is designed to provide second- and third grade-students with hands on experiences using pattern blocks to create symmetrical insect shapes. The concepts of symmetry, spatial relationships, reflection, flips, and slides are included. Internet sites and extension activities are provided to allow for adaptation and enrichment of geometric concepts. |
| 1998 | Slides, Flips, and Turns -- Tessellation ... | Grades 3-4 | Students will investigate tessellations as they use pattern blocks to design a “placemat." In doing so, they will examine what properties allow a figure to tessellate. Students also will develop an understanding of movement within tessellations and acquire specific math vocabulary. Their final product will be a placemat that can be laminated and displayed and a paragraph that describes the mathematics that goes into its development. This is an enjoyable activity for kids that demonstrates appropriate math content. It takes approximately two to three classroom periods. |
| 1998 | The Blue Diamond Ranch | Grades 4-5 | Students will improve their ability to recognize spatial relationships through visualization awareness activities. Students will gain an understanding of area and perimeter and the relationship between the two. They will make mathematic decisions in real-life situations. All subject areas will be integrated into this unit so students will gain global awareness of problem solving. |
| 1998 | Triangles | Grades 3-5 | Students will be introduced to three types of triangles: equilateral, scalene, and isosceles. They will use manipulatives to build each of the three types, classify triangles based on their side attributes, and make models to test rules they have learned about triangles. The culminating activity will require students to use this information to design a stained glass window pattern, and write a persuasive letter to their school PTA. |
| 1997 | Club Math | Grades 3-5 | Students will be actively involved in performance-based instruction and assessment as they design a clubhouse using geometric shapes. Through the designing of this clubhouse, the students will be introduced to the structural significance of geometric shapes in all buildings and the purposes of these shapes. Students will demonstrate their ability to construct objects using various geometric shapes. They also will explain their problem-solving, decision-making process, and reasoning in oral and written forms. |

| Year | Development | Grade | Overview |
|---|---|---|---|
| 1997 | Diving into Pool Geometry | Grades 3-5 | This performance-based assessment integrates geometric problem solving with real-world application. This unit will involve the mathematical skills of investigating and measuring perimeter, area, and volume by using analytical problem solving; comparing the relationships between perimeter and area; using a compass to design a pattern; and drawing models to scale. The students will use all of these skills to complete a cumulative project in which they will design a pool that meets specific standards in their backyard, design and order the proper amount of tiles for decoration, and use both oral and written communication skills to discuss and explain their creations. |
| 1997 | Fishy Business | Grade 5 | In this Concept Development Unit, students will research, design, and create a school aquarium. The students will use knowledge and concepts attained from their experiences with mathematics (focus on geometry), science (focus on oceanography/biology), and language arts (focus on writing to persuade and reading for information). Students will employ cooperative learning strategies to successfully complete this assessment task. This is an active and involved task lasting. |
| 1997 | Floors, Tiles, and Patterns! | Grades 4-6 | Students design improvements and make mathematical decisions for a layout of a Kindergarten room thanks to the generosity of a wealthy alumnus. This activity will utilize skills in geometry including: creating geometric patterns using polygons, finding area and perimeter, categorizing geometric shapes, and using deductive reasoning. Other math skills utilized are computation, problem solving, and data collection. |
| 1997 | Lemonade Stand | Grade 3 | This Concept Development Unit involves designing and building a lemonade stand and creating a marketing and organizational plan for a lemonade sale. The sale will occur during this whole school's lunch as the culminating activity for the project. This unit involves cross-curricular connections to art, science, social studies, language arts, and technology. |
| 1997 | Ocean Speedway | Grades 4-5 | This Concept Development Unit involves the design and construction of a mini-car oval speedway. Students will use rulers, compasses, protractors, and other materials to make a two-dimensional model of an oval track, safety fence, ticket booth, and refreshment stand. This unit involves estimating and determining the perimeter and area of the track. Students will be asked to determine cost factors and to communicate both findings written and oral findings. |
| 1997 | Play Day Design | Grades 3-4 | In this Concept Development Unit, the students will help design the layout and activities for a Play Day at their school. They will integrate skills in geometry, spatial analysis, measurement, and communication to achieve this goal. |

| Year | Development | Grade | Overview |
|---|---|---|---|
| 1997 | Polygon Mania | Grades 4-5 | This activity invites students to create a polygon gameboard. The task is designed to assess the knowledge of polygons, perimeter, area, and angles by using a variety of materials. |
| 1997 | Teachable Tessellations | Grades 3-4 | This performance-based Concept Development Unit integrates geometric problem solving with real-life application. Students will demonstrate their knowledge of tessellations and the use of slides, flips, and turns. Students will work cooperatively to design a permanent tessellation activity area for the school blacktop. They will then write a persuasive business letter to the principal explaining why a tessellation blacktop area is a worthy project. |
| 1997 | Wendy Wheels Gets Her Wish Home | Grades 4-5 | A major toy company has recently created a doll that is physically challenged. The doll is confined to a wheel chair. Unfortunately, the company did not consider housing adaptations that would meet the doll's needs. |
| 1996 | Air Powered Geometry | Grades 1-3 | This is an interdisciplinary activity which integrates mathematics, science, and art. Students will examine shapes and manipulate those shapes to create a science manipulative. |
| 1996 | Baseballapalooza | Grades 4-6 | This activity integrates geometric problem-solving with architecture and design. Students will design a baseball field within given criteria and then persuade a local organization to fund the project. |
| 1996 | Designing Our School Garden | Grade 3 | This performance-based Concept Development Unit integrates geometric problem solving with real-world application. Students will design a garden with a variety of flowers that each occupy a portion of the garden. Students will demonstrate their knowledge of area and perimeter, based on information gained from reading a table. They will also explain their decision-making process and math reasoning in letter form. |
| 1996 | Geo-Room Design | Grade 3 | The teacher will read the book *The Berenstein Bears' New Neighbors* by Stan and Jan Berenstein. The students will select polygons from the story and construct a picture. The students will write a descriptive paragraph with geometric vocabulary to describe their pictures. The students will identify polygons in their surroundings through a scavenger hunt. The students will design a room using congruent and similar polygons. Using mathematical vocabulary, the students will describe their pictures and share with the class. |

| Year | Development | Grade | Overview |
|---|---|---|---|
| 1996 | Monumental Math | Grades 3-4 | The teacher will read the book *Letters From Felix* by Annette Langen and Constanza Droop, which describes world monuments. The students will compare estimated and actual heights of monuments. Students will construct a graph to compare the heights of the structures. In pairs, the students will select polygons to construct architectural structures from around the world. They will find the perimeter of the structures using a ruler. They will construct an original monument using polygons. The students will write using mathematical vocabulary to describe the strategies used to complete the tasks. |
| 1996 | Olympic Quadrilaterals | Grades 4-5 | The teacher will read a picture book showing quadrilaterals. The students will construct, define, and describe the five quadrilaterals. The students will apply their geometric reasoning using state of the art technology or paper and pencil. |
| 1996 | Polyart Gallery | Grades 3-5 | Students will investigate geometric concepts that are used in modern art. In cooperative groups the students will then create an original art piece using these concepts. Each piece is self-evaluated using an established price criterion that will determine the monetary value of their work. The students will independently compose a letter to a potential client explaining the geometric/artistic process and persuading potential customer to purchase the work. |
| 1996 | Shuttle Control | Grades 4-5 | Students will be asked to design a control panel for a new space shuttle that will be launched in the year 2000. They will use a variety of polygons and be expected to determine area. This unit will help students develop a positive attitude toward mathematics and appreciate the role of mathematics in school, culture, and society. |
| 1996 | Smile and Tile in Style! | Grades 6 | The student will find the area of his/her individual bedroom floor (den or other room of choice). The student will make a scale model of the room to be used in the planning of the tile floor using a tessellating pattern. |

| Year | Development | Grade | Overview |
|---|---|---|---|
| 1995 | Terrific Tessellations | Grades 4-5 | This activity integrates geometric transformations with art and design. Students will explore geometric transformations: slides, flips, and turns. They will communicate how these transformations modify a polygon. Students will also determine which geometric shapes tessellate. They will design a unit cell from a cluster of geometric shapes and repeat this design to form a tessellation. Students will alter a paper square with scissors to make a transformation (slide or glide reflection) and then create a tessellation design from their new shape. To assess performance, students will create a floor from their own tessellation design for the math lab and write a persuasive letter describing their design. Students will apply their knowledge of geometric transformations and tessellations as they use a rubric to evaluate their own design. |
| 1995 | The Paint Experience | Grades 3-5 | Students will explore the mathematical strands of measurement, problem solving, reasoning, number relationships, statistics, geometry, estimation, area, cost analysis, and communication while applying them to painting a house, a situation from real life. |
| 1995 | Blacktop Games | Grade 5 | This is a multi-day mathematics and language arts lesson plan. Using scale drawings students will do a whole class task for a cafeteria setting, a guided practice task for a kindergarten classroom, and an independent task for a blacktop playground area. During the independent task the students will also write a letter requesting funds for this project. |
| 1995 | Cover It Up...With Area | Grades 3-4 | This is a series of activities involving methods of finding area. The use of manipulatives, cooperative learning, literature, and real-life applications are emphasized as students explore this geometric concept. |
| 1995 | Creating A Symmetrical Design | Grade 3 | This unit teaches students the meaning of symmetry by having them manipulate a variety of objects. Using this knowledge, they will create a symmetrical design and write an informative paragraph about the quilt design and the importance of symmetry. |
| 1995 | Mary Wore A Red Dress Geoboard Activity | Grade 3 | The teacher will read the story Mary Wore A Red Dress. The students will pick different types of clothing to construct similar shapes using the geoboard. When finished, the students will make an individual book of these shapes describing the characteristics of each picture. |
| 1995 | Math Carnival | Grades 5-6 | This unit deals with the development and implementation of student-created math games to be used in a math carnival at the end of the school year. Students will also apply geometry skills by drawing a scale map. |

| Year | Development | Grade | Overview |
|---|---|---|---|
| 1995 | Pick A Polygon | Grade 3 | The teacher will read the book *The Greedy Triangle* by Marilyn Burns. The students will select a polygon and construct a picture. Using mathematical vocabulary the students will describe their pictures. |
| 1995 | Playing In A Geo-World | Grades 4-6 | This activity integrates geometric problem-solving with real-world architecture. Students will receive the task of designing and constructing a three-dimensional playground with given criteria. The students will also write to persuade. Students will apply their knowledge of geometry as they use a rubric to evaluate each group's model. |
| 1995 | Shapes and Solids Scavenger Hunt | Grade 3 | The students will recognize the characteristics of shapes and solids with real-life objects. In pairs, the students will complete a shapes and solids scavenger hunt task. Once completed, the students will record shapes and solids found in the classroom and justify their answers using appropriate mathematical vocabulary. |
| 1995 | Shape Your Life: Personal Polygon Timeline | Grades 5-6 | This activity integrates geometry with the study of timelines and should be used as a culmination to a geometry unit on polygons. This activity can be completed by using historical or personal events. Students will research and list important events in their lives. They will then assign events with angle degree measurements in order of importance to allow accurate shapes without exceeding angle sum totals. For each year in their lives, they will then be able to construct a polygon. |
| 1995 | Space Symmetry | Grade 3 | The students will construct a symmetrical picture using geoboards and pattern blocks after listening to the story Space Case. |
| 1995 | Super Symmetry | Grade 3 | The students will write their names in cursive to create a symmetrical figures. The teacher will read the book *The Bedspread* by Sylvia Fair. The students will construct a symmetrical picture with a partner using plane figures, good mathematical vocabulary, and descriptive words. |
| 1995 | Tessellation Teasers | Grade 3 | The students will find patterns in their classroom and listen to the book, *Patterns* by Henry Pluckrose. They will create their own tessellation patterns. Once completed, the students will use the software program TesselMania or a similar tessellation software program to create complex patterns. |

| Year | Development | Grade | Overview |
|---|---|---|---|
| 1995 | Will It Fly? | Grades 3-6 | This Concept Development Unit will give students in a cooperative learning group situation the opportunity to create a kite using their understanding of geometry and measurement. This activity will require students to measure, predict, make and test a model, and read and interpret data. Each group's objective will be to produce the highest flying kite using the materials provided, and then explain their results. The activity can be integrated with science, social studies, and language arts/reading as introduction or extension. |