DIOCESE OF HARRISBURG
KINDERGARTEN CURRICULUM
MATH

Anchor: Students will have daily practice using numbers and number relationships.

OBJECTIVE	MASTERY	TEACHER DEMONSTRATION	SUPPORTIVE PRACTICES AND MINI ASSESSMENTS	SUPPLEMENTARY MATERIALS
Count using whole numbers (to 100) by ones and tens (rote counting)	M	**The teacher will:** • Count during daily activities.	**The student will:** • Practice group and individual rote counting experiences (daily counts, objects in the classroom).	
Use concrete objects to represent quantities up to and including 20	M	• Model, the process of counting with one-to-one correspondence, and write the number signifying that amount.	• Represent a given number up to twenty with manipulatives.	
Represent equivalent forms of the same number through the use of concrete objects and drawings up to and including 20.	M	• Provide opportunities for matching and counting objects (i.e., passing out snacks, counting manipulatives).	• Use manipulatives to demonstrate one-to-one correspondence.	
Use concrete objects to separate a set into two equal parts using the terms half and whole.	M	• Provide opportunities for one-to-one correspondence.	• Analyze a set of objects and successfully divide them in half.	
Use concrete objects to group into sets of ten.	D	• Explore one-to-one correspondence.	• Create sets of ten with manipulatives.	
Use concrete objects to demonstrate understanding of one-to-one correspondence up to and including 20.	M	• Provide opportunities for counting, reading, and writing numerals.	• Count a set of manipulatives to match a given number.	
Count, read, and write whole numbers 0 to 20.	M	• Provide opportunities for creating groups of ten.	• Use manipulatives to find before, after, and between on a number line.	
Identify numbers before, after, and between 0-20.	D		• Make a reasonable estimation of how many objects are in a container.	
Estimate using concrete objects up to 100.	D			

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Anchor: Students will have daily practice using numbers and number relationships. (continued)

OBJECTIVE	MASTERY	TEACHER DEMONSTRATION	SUPPORTIVE PRACTICES AND MINI ASSESSMENTS	SUPPLEMENTARY MATERIALS
Identify pennies, nickels, dimes, and quarters by name and value. Count pennies and dimes.	M D	**The teacher will:** • Provide opportunities for modeling appropriate languages. - Separating Sets - Half/whole equal parts - Creating and naming patterns • Provide experiences with patterns (visual, auditory, tactile, kinesthetic).	**The student will:** • Observe the different characteristics of the penny, nickel, dime and quarter and identify them by name and their given value. • Count by ones and tens to identify an amount of money.	

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Anchor: Provide exposure to practices using Computation and Estimation.

OBJECTIVE	MASTERY	TEACHER DEMONSTRATION	SUPPORTIVE PRACTICES AND MINI ASSESSMENTS	SUPPLEMENTARY MATERIALS
Make estimates of objects in a set up to and including 20 and verify by counting. Represent addition and subtraction in everyday situations using up to ten concrete objects. Join and separate sets of objects in quantities up to and including ten. Separate concrete objects into equal groups.	M M M M	**The teacher will:** • Model, using the appropriate language/vocabulary: the process of estimation. • Provide opportunities, in estimating a quantity and counting the number of objects. • Model, using the appropriate language/vocabulary, the processes of adding, subtracting, and dividing sets. • Create real life addition and subtraction problems for learners to solve by using pictures and/or concrete manipulatives. • Identify everyday classroom opportunities that involve the operation of addition and/or subtraction. • Provide opportunities, using counters or objects to make and count sets. • Create addition problems that join two sets of the same amount of objects. • Provide opportunities for learners to explore and apply understanding of joining, subtracting, and dividing sets in learning centers. • Provide Center activities for: - joining sets - subtracting - dividing sets	**The student will:** • Estimate objects in a group and count to verify. • Use counters to: - make sets up to ten. - solve simple math stories. - separate a pile of counters into two equal piles. • Draw pictures to explain the process of joining the sets. • Explore the concepts of addition and subtraction by joining and separating sets. • Combine two sets of objects (up to five) and find the sum. • Explain how they applied their skills during mathematical tasks.	

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Anchor: To provide exposure to methods of measurement.

OBJECTIVE	MASTERY	TEACHER DEMONSTRATION	SUPPORTIVE PRACTICES AND MINI ASSESSMENTS	SUPPLEMENTARY MATERIALS
Understand the spatial concepts of over, under, beside, in, out, around, on and between. Compare two objects. Estimate and measure objects using nonstandard units.	M M D	**The teacher will:** • Incorporate spatial concept words into directions throughout the day. • Incorporate comparative and spatial vocabulary to compare, locate, and identify positions in space. • Use gross motor activities to help children understand and internalize comparative and positional words and phrases. • Emphasize the daily use of positional words. • Model the processes of measurement using standard and nonstandard tools and units while using the appropriate language/vocabulary. • Provide interesting objects for comparison.	**The student will:** • Engage in teacher-led activities, such as Simon Says, that use spatial words (example: "stand in the circle"). • Use positional vocabulary to describe the relative positions of objects ("The book is on the chair.") ("I am in front of Amanda."). • Collect two classroom objects and compare them by a defined characteristic (length, height, weight). • Explore objects to determine which will make a good measuring tool.	

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Anchor: To provide exposure to methods of measurement. (continued)

OBJECTIVE	MASTERY	TEACHER DEMONSTRATION	SUPPORTIVE PRACTICES AND MINI ASSESSMENTS	SUPPLEMENTARY MATERIALS
Determine the length and height of objects with nonstandard units (e.g., hands, shoe lengths, jelly beans.) Describe the instruments used for standard measurement of time, length, weight, volume, and temperature.	D D	**The teacher will:** • Demonstrate how to measure objects starting at an end point and adding on cubes until the cubes are equal in length to the object they are measuring. • Design and provide activities to help children recognize the attributes of length, weight, time and volume. • Provide opportunities, and support learners in determining the appropriate measurement tool. • Provide cooking and mixing activities that use measurement for real life purposes. • Create measurement math stories that require students to determine which measuring tool to use ("What would I need to do to find out how long I brush my teeth in the morning?") • Provide opportunities, and support learners in using standard and nonstandard units to measure objects by more than one attribute. • Engage children in thinking about the concept of time (number of days at school, season, days of the week, month).	**The student will:** • Use multiple units of the same size (nonstandard units) to measure and estimate the length of and object. • Investigate the different ways to measure the various attributes of an object. • Measure and compare classroom objects. • Select appropriate tools for the attribute being measured (e.g., clock to tell time, scale to weight, measuring cups to help bake a cake). • Recognize parts of the day and discuss activities that occur in the morning, afternoon, and night. • Participate using the calendar. Identify the season, the month, and the date of today, tomorrow, and yesterday. • Use pictures, drawings, and words to depict events in the order of occurrence. • Manipulate clocks in the math center. • Generate solutions to problems that might arise if we do not pay attention to time.	

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Anchor: To make, check and verify predictions about the quantity, size, and shape of objects and groups of objects. Use measurements in everyday situations.

OBJECTIVE	MASTERY	TEACHER DEMONSTRATION	SUPPORTIVE PRACTICES AND MINI ASSESSMENTS	SUPPLEMENTARY MATERIALS
Use math vocabulary comparison terms when making predictions regarding the quantity, size, and shape of objects. Identify the use of measurement in everyday situations. (nonstandard)	D D	**The teacher will:** • Model, using the appropriate language/vocabulary, the process of estimation (size of object, size of container, comparisons of size of containers). • Engage learners in recognizing and applying measurement in everyday situations. • Encourage and support learners in explaining how they applied their skills during mathematical tasks.	**The student will:** • Analyze the size of the container and the objects inside when making an estimate as to the amount. • Examine the object being measured to determine the appropriate tool and approach. • Make an estimate by considering the size of the object(s) and its container.	

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Anchor: Introduce to Problem Solving Skills

OBJECTIVE	MASTERY	TEACHER DEMONSTRATION	SUPPORTIVE PRACTICES AND MINI ASSESSMENTS	SUPPLEMENTARY MATERIALS
Identify a problem. What information is needed and what strategies will you use to solve a problem?	D	**The teacher will:** • Model, using the appropriate language/vocabulary, the process of identifying and solving a problem. • Facilitate classroom discussion to identify the necessary steps and the appropriate order to solve problems occurring in and out of the classroom. • Create and provide opportunities for learners to engage in problem solving activities. • Answer open-ended questions, encourage conversations, and create classroom activities that encourage learners to explore a variety of possible solutions. • Encourage and support learners to explain their mathematical thinking and work. • Provide opportunities for learners to explore and apply understanding of problem solving throughout the school day.	**The student will:** • Think about possible solutions to solve daily problems occurring in and out of the classroom. • Utilize different strategies and approaches to solve daily problems occurring in and out of the classroom.	

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Anchor: Organize data on graphs, tallies and pictograms.

OBJECTIVE	MASTERY	TEACHER DEMONSTRATION	SUPPORTIVE PRACTICES AND MINI ASSESSMENTS	SUPPLEMENTARY MATERIALS
Gather, organize and display data on a bar graph and/or pictograph. Answer questions based on data shown on graphs or charts.	D D	**The teacher will:** • Model, using the appropriate language/vocabulary, the process of graphing (creating a graph, adding data, and interpreting the data). • Pose open-ended questions to engage learners in "reading" the data on a graph. • Provide opportunities for learners to see graphs used in the real world. • Provide opportunities for learners to explore and apply understanding of creating and interpreting a graph throughout the school day.	**The student will:** • Participate in classroom graphing activities by adding his/her input to a graph. • Analyze the data on classroom graphs.	

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Anchor: Exposure to Probability and Predictions

OBJECTIVE	MASTERY	TEACHER DEMONSTRATION	SUPPORTIVE PRACTICES AND MINI ASSESSMENTS	SUPPLEMENTARY MATERIALS
State and explain the likelihood of an event using the terms: likely, unlikely, or certain. Compare sets of data using the concepts of largest, smallest, most, and least.	D D	**The teacher will:** • Model, using the appropriate language/vocabulary, the process of determining the likelihood of real life events/things occurring. • Explain examples of activities that are most likely to occur at certain times of the year and explaining the meaning of the words likely, unlikely or certain. • Facilitate predictions of possible results by referring to previous events. • Encourage and support learners in explaining how they applied their skills during mathematical tasks.	**The student will:** • Determine the likelihood of real life events/things occurring. • Predict the results of experiments.	

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Anchor: Provide opportunities for learners to explore and apply understanding of the foundations for algebraic thinking throughout the school day.

OBJECTIVE	MASTERY	TEACHER DEMONSTRATION	SUPPORTIVE PRACTICES AND MINI ASSESSMENTS	SUPPLEMENTARY MATERIALS
Identify, describe, and extend patterns based on shape, size, color, sound, or number. Use concrete objects to show equal or not equal. Recreate a simple story problem using concrete objects or pictures. Use concrete objects and trial and error to represent a number story. Use concrete objects or pictures to represent a number story that involves a missing addend. Explain how solutions are determined. Identify the purposes for different mathematical symbols (+, -, and =)	M M D D D D D	**The teacher will:** • Provide a variety of materials for sorting, classifying, and creating patterns. • Demonstrate and explain the concept of recognizing, describing, and extending a pattern. • Provide opportunities and support learners in recognizing, describing, and extending patterns. • Provide opportunities and support learners in recognizing and describing patterns in the environment. • Model, using the appropriate language/vocabulary, the process of determining equal and not equal sets. • Support learners in determining whether sets are equal. • Support learners using numbers as they draw pictures to illustrate story problems. • Support learners in solving the missing addend (given an end number – "5" and a set number – "2", learners will "count on" from "2" to "5" to determine 3 is the missing amount).	**The student will:** • Sort manipulatives and other objects according to attribute (color, shape, size, function). Define sorting rule. • Recognize, describe, and extend a pattern. • Use manipulatives to create sets that are equal. • Determine whether two sets of objects are equal by counting the objects in each set. • Use concrete manipulatives and/or draw pictures to show the process of addition. • Use concrete manipulatives and/or draw pictures to determine the missing addend (There were 3 bears at the table. Now there are 5. How many came?) • Utilize a number line to "count on" from a specified number to reach an end number. • Use numbers and symbols to represent adding and subtraction of concrete objects or pictures.	

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Anchor: Provide opportunities for learners to explore and apply understanding of the foundations for algebraic thinking throughout the school day. (continued)

OBJECTIVE	MASTERY	TEACHER DEMONSTRATION	SUPPORTIVE PRACTICES AND MINI ASSESSMENTS	SUPPLEMENTARY MATERIALS
		The teacher will: • Provide opportunities and support learners in solving real life story problems. • Provide opportunities and support learners in solving story problems with symbolic notation of numbers and adding/subtracting and equal sign. • Encourage and support learners in explaining how they applied their skills during mathematical tasks.	**The student will:** • Solve a simple story problem and explain the process. • Draw story problems and assign the appropriate number to each set, then choose the correct symbol.	

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Anchor: Provide opportunities for learners to explore and apply understanding of geometry throughout the school day.

OBJECTIVE	MASTERY	TEACHER DEMONSTRATION	SUPPORTIVE PRACTICES AND MINI ASSESSMENTS	SUPPLEMENTARY MATERIALS
Identify common two and three-dimensional geometric shapes. Create and reproduce geometric designs using concrete objects. Draw and/or construct two-dimensional geometric shapes.	M D M	**The teacher will:** • Model, using the appropriate language/vocabulary, the process of recognizing, describing the properties, and naming geometric shapes. • Provide opportunities and support learners in locating geometric shapes within the environment. • Provide materials/opportunities and support learners in creating shapes. • Provide opportunities and support learners in describing the attributes of shapes.	**The student will:** • Explore the environment to locate two and three-dimensional shapes (circle, square, triangle, rectangle, cube, sphere, and cone). • Name two-dimensional shapes in the environment and describe their properties. • Create various geometric shapes with manipulatives (pattern blocks, geoboards, and tangrams). • Determine if shapes folded in half are the same or different (symmetrical or nonsymmetrical). • Observe items from nature to determine if they are symmetrical or nonsymmetrical.	

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Anchor: Provide opportunities for learners to explore and apply understanding of geometry throughout the school day. (continued)

OBJECTIVE	MASTERY	TEACHER DEMONSTRATION	SUPPORTIVE PRACTICES AND MINI ASSESSMENTS	SUPPLEMENTARY MATERIALS
Name and describe two-dimensional geometric shapes in real life. Explore symmetry in nature (leaves, butterflies). Identify a reflection. Create a reflection. Identify geometric shapes that are turned in different ways.	M D D D M	**The teacher will:** • Model, using the appropriate language/vocabulary, the process of determining whether something is symmetrical. • Provide opportunities and support learners in determining whether a shape or object is symmetrical. • Support learners in making observations about the symmetry found in nature. • Model, using the appropriate language/vocabulary, the process of determining whether something is a reflection. • Model, using the appropriate language/vocabulary, how a shape can be turned in different ways and remains the same shape. • Encourage and support learners in explaining how they applied their skills during mathematical tasks.	**The student will:** • Explore the concept of reflection and symmetry. • Explore geometric shapes turned in different ways.	

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Anchor: Provide opportunities for learners to explore and apply understanding of triangles throughout the school day.

OBJECTIVE	MASTERY	TEACHER DEMONSTRATION	SUPPORTIVE PRACTICES AND MINI ASSESSMENTS	SUPPLEMENTARY MATERIALS
Identify 4 basic shapes (△ ○ □ ■) in the environment and discuss how they are alike and different.	M	**The teacher will:** • Model, using the appropriate language/vocabulary, the process of comparing the attributes of basic shapes. • Provide opportunities and support learners in identifying shapes in the environment. • Provide opportunities and support learners in comparing the attributes of shapes. • Encourage and support learners in explaining how they applied their skills during mathematical tasks.	**The student will:** • Identify shapes in everyday situations. • Identify and describe similarities and differences in shapes found in everyday situations and teacher created learning materials.	

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Anchor: Provide opportunities for learners to explore and apply understanding of ordering (from least to greatest, and from slow to fast).

OBJECTIVE	MASTERY	TEACHER DEMONSTRATION	SUPPORTIVE PRACTICES AND MINI ASSESSMENTS	SUPPLEMENTARY MATERIALS
Order whole numbers (0-20) from least to greatest value. Identify faster and slower situations that occur in real life.	D D	**The teacher will:** • Model, using the appropriate language/vocabulary, the process of ordering numbers from least to greatest. • Use classroom tools such as the number line, or the 100s board, to model strategies that support learning. • Provide opportunities and support learners in ordering numbers from least to greatest. • Model, using the appropriate language/vocabulary, the process of deciding which real life event or object is faster and slower. • Provide opportunities and support learners in deciding which real life object or event is faster or slower. • Encourage and support learners in explaining how they applied their skills during mathematical tasks.	**The student will:** • Place number cards in order from 0 to 20. • Visualize and think about two objects (such as a bike and a car) and compare their rates of speed.	