**St. Kitts International Academy Math Curriculum**

**Kindergarten to Grade 6**

**Program Overview**

The focus of our curriculum is concrete – pictorial – abstract. This means that students learn to make connections between physical materials, visual representations and mathematical symbols. This aides children in developing deep conceptual understanding of the content being taught. With our curriculum children learn to think critically and develop problem solving skills. Students are engaged in learning both the process and method of problem solving effectively and confidently. Students are tasked to *think* about their thinking. Therefore, thinking mathematically will become a conscious habit and children learn to monitor their thought process and communicate their ideas through mathematical thinking.

*There are five strands of mathematics across six grade levels:*

Numbers & Operations

Measurement

Geometry

Data Analysis

Algebra

Instruction focuses on the problem-solving process. This helps students build good habits for approaching mathematical problems of all difficulty levels.

Children learn to understand the problems laid out for them by:

-Describing the problem in their own words.

-Determining was information is given.

-Understanding what information is still needed to solve the problem.

Students learn to focus on the problem-solving method by exploring different problem solving strategies and then learning to select, express, categorize and compare these strategies. Strategies include:

-Draw a picture

-Make a list

-Choose an operation

-Guess and check

-Look for a pattern

-Make a supposition

-Act is out

-Work backwards-

-Solve part of the problem

**Kindergarten**

**Numbers & Operations**

***Whole Numbers / Place Value***

-Rate count within 100 by 1s and 10s

-Read and write 0 to 10 – the numeral and the corresponding number word

-Identify the last number counted as the number of objects in the group

-Count on and backwards within 10

-Count groups of up to 20 objects in different arrangements

-Compare the number of objects in two groups

-Compare and order numbers within 20

-Understand that the number that comes next is 1 more

-Break apart 4 to 10 objects into two parts

-Make 4 to 10 with two parts

-Write a number bond for 4 to 10

-Use ordinal numbers 1st to 10th to indicate position

-Estimate the number of objects in a group of fewer than 10 objects

-Subitize up to 6 objects

-Compare and decompose numbers from 10 to 19 as 10 ones and some more ones

***Addition / Subtraction***

-Add or subtract within 10

-Act out addition and subtraction stories to illustrate the meanings of addition and subtraction

-Count all to add two quantities within 10

-Illustrate addition and subtraction stories and problems with number bonds

-Use drawings to represent addition and subtraction stories

-Write addition and subtraction facts within 5

-Count on to add or count backwards to subtract within 10

-Write a number sentence for an addition or subtraction problem

**Measurement**

***Length***

-Describe an object using ‘long’, ‘tall’ and ‘short’

-Compare up to 3 objects

-Measure using up to 10 non-standard units

***Mass***

-Describe an object using ‘heavy’ and ‘light’

-Compare up to 3 objects

-Explore mass by hefting

-Measure with a pan balance using up to 10 non-standard units

-Explore estimation

-Understand a big object is not necessarily heavier than a smaller one

***Size***

-Describe an object using ‘big’ and ‘small’

-Compare up to 3 objects

***Volume***

-Compare the volume of liquids in 2 identical containers

***Time: Calendar***

-Name the days of the week in sequence

-Link specific days to familiar events

-Name the months of the year in sequence

-Link familiar events to months

-Count the days in the month

-Sequence events in order of ‘morning’, ‘afternoon’ and ‘night’.

-Measure and compare short periods of time in informal ways and using ‘longer’, ‘shorter’, faster’ and ‘slower’.

***Money***

-Recognize and name the coins in both EC and US currency

-Count and tell the amount of money up to twenty-center in one-cent coins

-Compare two amounts of money between one and ten cents

-Add or subtract amounts of money:

 -in one-cents up to 10 cents and represent the result with drawings

**Geometry**

***Plane Shapes***

-Recognize and name give basic plan shapes: circle, triangle, rectangle, square and hexagon

-Count the sides and corners of a shape

-Build awareness of attributes: shape, size and color

-Sort and group (and re-sort) according to attributes: size, color and shape

-Describe the location of plane shapes using positional and directional words

-Identify plane shapes on real-world objects

-Use plane shapes to create a new shape and items commonly found in the environment

***Solid Shapes***

-Recognize and name basic solid shapes: sphere, cylinder, cone and cube

-Describe the attributes of solid shapes: slide, stack and roll

-Identify real-world objects as solids

-Describe the location of solid shapes using positional and directional words

-Identify plane shapes on solid shapes

-Use solids to build and compare two structures

***Patterns***

-Identify visual patterns in the environment

-Describe copy and extend AB, ABC, AAB shape sound and action patterns

-Transfer patterns to a different form

**Data Analysis**

***Graphs***

-Sort and group up to 10 objects by color or pattern

-Participate in a class survey to collect data

-Sort and count data to create a 3-column or 3-row picture graph of up to 10 objects per category.

-Visually compare data

**Grade 1**

**Numbers & Operations**

***Whole Numbers/Place Value***

-Count within 100

-Read and write a number from 0 to 100 (numeral and the corresponding number word)

-Count on and backwards within 100

-Use number notation and place values

-Estimate the number of objects in a group of fewer than 100 objects

-Compare the number of objects in two or more sets.

-Compare and order numbers within 100

-Find the number which is 1 or 10 more than (or less than) a given number within 100

-Make a number story to illustrate a number bond for 5 to 10

-Write a number bond for 5 to 10

Name a position using an ordinal number from 1st to 10th and position words

***Addition/ Subtraction***

-Use picture cutouts (or other manipulatives) to illustrate the meanings of addition and subtraction

-Make a number story for a given addition or subtraction sentence

-Write a number sentence for a given situation involving addition or subtraction

-Observe the identity and commutative properties of addition

-Observe the answer when 0 is subtracted from a number

-Write a family of four addition and subtraction facts for a given number bond

-Identify a double fact

-Add or subtract within 100

-Solve a 1-step word problem involving addition or subtraction of numbers within 20

-Mentally add:

 -two or three 1-digit whole numbers

 -a 1-digit number to a 2-digit whole number

 -tens to a 2-digit whole number

-Mentally subtract:

 -a 1-digit whole number from another 1-digit whole number

 -a 1-digit whole number from a 1-digit whole number

 -tens from a 2-digit whole number

***Fractions /Concepts***

-Recognize and name one half of a whole which is divided into 2 equal parts

-Recognize and name one quarter of a whole which is divided into 4 equal parts

**Measurement**

***Length***

-Compare the lengths of two or more objects

-Arrange objects in order according to their lengths

-Estimate and measure the length of an object in non-standard units

***Mass***

-Compare the masses of two objects

-Compare and order the masses of three objects

-Estimate and measure the length of an object in non-standard units

***Time: Calendar***

-Read a calendar

-Name the days of the week

-Name the months of the year

-Read and write a date

***Time: Clock***

-Tell time to the hour and half hour

-Relate time to events of a day

-Sequence events according to the time of the day

-Describe estimated time relative to the hour and half past the hour

-Compare durations using ‘longer or ‘shorter’

***Money***

-Recognize and name the five-cent, ten-cent, fifty-cent and one-dollar coins (in EC and US currency)

-Recognize and name the one-dollar, five-dollar, ten-dollar, twenty-dollar, fifty-dollar notes (in EC and US currency)

-Count and tell the amount of money in:

 -a set of coins up to $1

 -a set of notes up to $100

-Exchange money

-Count and tell the amount of money in a set of notes and coins

-Make up an amount of money using a set of notes and coins

-Compare amounts of money in dollars or cents

-Add or subtract amounts of money:

 -in cents up to $1

 -in dollars up to $100

**Geometry**

***Plane Shapes***

-Recognize and name the four basic plane shapes: circle, triangle, rectangle and square

-Describe an object by its shape

-Count the sides and corners of a shape

-Classify a plan shape according to each of these attributes: shape, size and color

-Continue a pattern of plane shapes according to one or two of these attributes: shape, size and color

-Fit suitable pieces together to make a plane shape

***Solid Shapes***

-Recognize and name a cube, cuboid, cone, cylinder and sphere

-Classify solid shapes according to each of these attributes: shape, size and color

-Identify a solid shape that can slide, stack or roll

-Describe the relative position of a solid shape using position words

-Continue a pattern of solid shapes according to one or two of these attributes: shape, size and color

**Data Analysis**

***Tally Charts***

-Classify objects or people by a predetermined standard and count the numbers in each category

-Make and read a tally chart

***Graphs***

-Make a simple picture graph using one-to-one representation

-Read and interpret a picture graph

**Grade 2**

**Numbers and Operations**

***Whole Numbers / Place Value***

-Count within 100

-Read and write a number from 0 – 1000 – the numeral and the corresponding number word

-Use number notation and place values (hundreds, tens, ones)

-Compare and order numbers within 1000

-Use the symbols ‘<’ and ‘>’ for comparison of numbers

-Find the number which is 1, 10 or 100 more than (or less than) a given number within 1000

***Addition / Subtraction***

-Add or subtract within 1000

-Use a part-whole bar model or a comparison bar model to represent addition or subtraction situations

-Solve up to 2-step word problems involving addition and subtraction

-Find the missing part in an addition sentence

-Find the missing part or whole in a subtraction sentence

-Mentally add:

 -1 1-digit number to a 2-digit whole number with regrouping

 -two 2-digit whole numbers without regrouping

 -ones, tens or hundreds to a 3-digit whole number

-98 or 99 to a number up to 3 digits

-Mentally subtract:

 -a 1-digit number from 1 2-digit whole number with regrouping

 -a 2-digit whole number from another 2-digit whole number without regrouping

 -ones, tens or hundreds from a 3-digit whole number

 -98 or 99 to a 3-digit whole number

***Multiplication / Division***

-Recognize equal groups and find the total number in the groups by repeated addition

-Use mathematical language such as ‘4 three’ and ‘2 groups of 5’ to describe equal groups

-Use manipulatives to illustrate the meaning of multiplication and the sharing and grouping concepts of division

-Make a number story for a given multiplication sentence

-Write a number sentence for a given situation involving multiplication or division

-Work out a multiplication fact within 40 by repeated addition

-Solve a 1-step picture problem involving multiplication or division

-Write a family of four multiplication facts and division facts

-Count by twos, three, fours, fives and tens

-Write an addition double as a multiplication fact

-Observe the commutative and distributive properties of multiplication

-Build up the multiplication tables of 2, 3, 4, 5 and 10 and commit the multiplication facts to memory

-Use a related multiplication fact to divide

-Multiply or divide numbers within the multiplication tables of 2, 3, 4, 5 and 10

-Use a part-whole bar model to represent a multiplication or division situation

-Solve a 1-step word problem involving multiplication or division using the multiplication tables of 2, 3, 4, 5 and 10

***Fraction Concepts***

-Recognize and name a unit fraction up to 1/12

-Recognize and name a fraction of a whole which is divided into two equal parts

-Find the fraction that must be added to a given fraction to make a whole

-Compare and order unit fractions

**Measurement**

***Length***

-Understand the need for standardized units of measure of length

-Understand that a meter if greater than a centimeter (also explore inches and feet)

-Estimate and measure length in meters or centimeters (also explore inches and feet)

-Compare lengths in meters and centimeters (also explore inches and feet)

-Choose an appropriate unit of measure when measuring lengths

-Measure the length of a line segment in centimeters

-Draw a line segment of a given length

-Solve up to 2-step word problems involving length

***Mass***

-Understand the need for standardized units of measure of mass

-Measure mass in kilograms or grams (also explore ounces and pounds)

-Compare masses in kilograms or grams (also explore ounces and pounds)

-Solve up to 2-step word problems involving mass

***Time: Calendar***

-Know the number of days in a month and in a year

-Understand the relationship between 1 hour, 1 day, 1 week, 1 month and 1 year

***Time: Clock***

-Tell and write time to 5 minutes

-Use a.m. and p.m. when telling time

-Relate time to events of a day

-Find the duration of a time interval

-Develop a sense of the duration of daily activities

-Solve word problems involving time

***Money***

-Count and tell the amount of money in a set of notes or coins

-Read and write an amount of money in decimal notation

-Change dollars and cents to cents and vice versa

-Compare amounts of money in dollars and cents

-Exchange money

-Give change for purchase paid with $1

-Solve a 1-step word problem involving money

**Geometry**

***Plane Shapes***

-Identify a semicircle and quarter circle

-Identify and name basic shapes that make up a new shape

-Fit cutouts of shapes together to make a new shape

-Copy a figure on a dot grid or square grid

-Continue a pattern of plane shapes according to one or two of these attributes: shape, size, color and orientation

***Solid Shapes***-Identify the flat and curved surfaces of a solid object in the shape of a cube, cuboid, cone, cylinder or sphere

-Identify the faces, edges and vertices of a solid object in the shape of a cub, cuboid, cone, cylinder or sphere

-Use the solid shapes to form different solid figures

-Continue a pattern of solid shapes according to one or two of these attributes; shape, size color and orientation

***Line Segments***

-Identify a line segment and a curve

**Data Analysis**

***Tally Charts***

-Use a tally chart to gather data and represent data in a picture graph

***Graphs***

-Use a tally chart to gather data and represent data in a picture graph

-Make a picture graph with scale

-Read and interpret a picture graph with scale

-Solve problems using data presented in a picture graph

**Grade 3**

**Numbers & Operations**

***Whole Numbers / Place Value***

- Read and write a number within 10,000 – the numeral and the corresponding number word

-Use number notation and place values (thousands, hundreds, tens, ones)

- Compare and order numbers within 10,000

-Find the number which is 1, 10, 100 or 1000 more than (or less than) a give number within 10,000

- Identify odd and even numbers

***Addition / Subtraction***

- Associate the terms ‘sum’ and ‘difference’ with addition and subtraction respectively

- Add or subtract within 10,000

- Use a part-whole bar model or a comparison bar model to represent an addition or subtraction situation

- Solve up to 2-step word problems involving addition and subtraction

- Mentally add two 2-digit whole numbers with regrouping

-Mentally subtract a 2-digit whole number from another 2-digit whole number with regrouping

***Multiplication / Division***

-Multiply a number by zero

-Count by sixes, sevens, eights and nines

-Observe the commutative and distributive properties of multiplication

-Build up the multiplication tables of 6, 7, 8 and 9 and commit the multiplication facts to memory

-Multiply or divide numbers within the multiplication tables of 6, 7, 8 and 9

-Associate the term ‘product’ with multiplication

-Associate the terms ‘quotient’ and ‘remainder’ with division

-Multiply or divide a whole number up to 3 digits by a 1-digit number

-Use a part-whole bar model or a comparison bar model to represent a multiplication or division statement

-Solve up to 2-step word problems involving multiplication and division

-Mentally multiply or divide tens or hundreds by a 1-digit whole number

***Fractions/ Concepts***

-Identify the numerator and denominator of a fraction

-Compare and order fractions which have a common numerator

-Recognize and name equivalent fractions of a given fraction with denominator up to 12

-Express a fraction in its simplest form

-Compare and order like, related and unlike fractions, including comparing fractions with respect to ½

***Fractions / Arithmetic Operations***

-Add or subtract like and related fractions within 1 whole

-Solve a 1-step word problem involving fractions

**Measurement**

***Length***

***-***Understand that a kilometer is greater than a meter and that a millimeter is smaller than a centimeter

-Measure and compare lengths in kilometers, meters, centimeters and millimeters

-Convert a measurement of length from compound units to a smaller unit and vice versa

- Add or subtract lengths in compound units

-Solve up to 2-step word problems involving length

***Perimeter / Area***

-Measure area in non-standard units

-Compare the areas of figures made up of unit squares and half squares

-Visualize the sizes of 1 square centimeter and 1 square meter

-Find the area of a figure made up of 1-centimeter or 1-meter squares and half-squares

***Volume***

-Understand the concept of volume

-Compare volumes of liquid in two or more containers in non-standard units

-Measure a volume of liquid in liters and milliliters

-Compare volumes of liquid in liters and milliliters

-Tell the difference between volume and capacity

-Compare capacities of two or more containers

-Convert liters and milliliters to milliliters and vice versa

-Add or subtract volumes in liters and milliliters

-Solve up to 2-step word problems involving volume and capacity

***Mass***

-Measure mass in kilograms and grams

-Convert kilograms and grams into grams and vice versa

-Compare masses in kilograms and grams

-Add or subtract masses in kilograms and grams

-Solve up to 2-step word problems involving mass

***Time: Calendar***

-Express years and months in months and vice versa

-Express weeks and days in days and vice versa

***Time: Clock***

-Tell and write time to 1 minute

-Find the duration of a time interval

-Convert hours and minutes to minutes and vice versa

-Add or subtract in hours and minutes

-Solve word problems involving time

***Money***

-Add or subtract amounts of money in dollars and cents

-Solve up to 2-step word problems involving money

**Geometry**

***Line Segments***