

# Charyl Stockwell Academy

## Navigator Benchmarks and Grade Level Expectations

\*Benchmarks are in normal font, GLCES are in italics

### Mathematics Curriculum with Focal Points

#### Year One Focal Points:

##### **Number and Operations and Algebra: Developing understandings of addition and subtraction and strategies for basic addition facts and related subtraction facts.**

- Apply understanding of number systems by building models, drawing pictures, and symbolically representing them to solve problems
  - *Compose and decompose and express numbers up to 1000 using concrete materials and pictures*
- Use part-whole relationships to explore numbers and to develop number concepts
- Understand addition and subtraction through basic addition and subtraction facts and fact families
- Develop their own methods of recording operations involving these facts and other algorithms
- Demonstrate how models relate to standard symbolic expressions and algorithms
- Explain why they are using a computational method and how they know whether to add or subtract in a given situation
- Apply their understanding of number relationships in solving problems
  - *Find missing values in open sentences using the relationship between addition and subtraction, e.g.  $42 + \underline{\quad} = 57$*
  - *Understand that addition is the inverse of subtraction*
- Use manipulatives to model addition and subtraction with numbers
- Use manipulatives and diagrams to explore problems involving counting and arranging objects
- Explore sets and set relationships by sorting and classifying objects
  - *Compare two or more sets in terms of the difference in number elements (one to one correspondence between two sets)*

##### ***Numbers and Operations and Algebra Continued Instruction:***

- Given a concrete model, write and solve open sentences and write stories to fit the open sentence
- Explore properties of addition and subtraction (e.g. commutative and associative properties) and give examples of how they use those properties

**Number and Operations: Developing an understanding of whole number relationships, including grouping in tens and ones**

- Develop an understanding of whole numbers and represent them by building, drawing, reading, counting, and symbolically representing them
  - *Read and write numbers to 100 in numerals and words, and relate them to quantities they represent*
- Recognize different representations of the same number
- Investigate and develop an understanding of the base ten-place value system through hundreds using Base 10 Blocks, 100 charts, etc.
  - *Count to 110 by 1's, 2's, 5's, 10's starting from any number in the sequence*
  - *Compare and order numbers to 100, using the phrases: same as, greater than, fewer than, use the symbols =, >, <*
  - *Identify one more than, one less than, 10 more than, and 10 less than for any number up to 100*
  - *Arrange sets of numbers in increasing or decreasing order*
  - *Find the distance between two numbers on the number line, e.g. how far is 9 from 6?*
- Explore and recognize different representations for the same number and explain why they are the same

***Number and Operations Continued Instruction: all benchmarks and GLCEs for this area are essential.***

**Geometry: Composing and decomposing geometric shapes**

- Recognize and name familiar shapes in two and three dimensions, such as rectangles and spheres
- Describe the attributes of familiar two and three-dimensional shapes
  - *Describe relative position of objects on a plane and in space, using words such as above, below, behind, and in front of*
- Compare, sort, and classify two and three-dimensional shapes
  - *Classify familiar plane and solid objects, e.g. square, rectangle, rhombus, cube, pyramid, prism, cone, cylinder, and sphere, by common attributes such as shape, size, color, roundness, or number of corners and explain which attributes are being used for classification*
- Draw and build familiar two and three-dimensional shapes
- Use shapes and shape properties to describe physical world
- Locate and describe objects in terms of their position either right or left
  - *Explore and predict the results of putting together and taking apart two-dimensional and three-dimensional shapes*
  - *Recognize that shapes that have been slid, turned, or flipped are the same shape, e.g. a square is rotated 45 degrees is still a square*

### ***Geometry Extensions:***

- *Identify and create common two-dimensional and three-dimensional shapes such as triangles, rectangles, squares, circles, semi-circles, spheres and rectangular prisms and describe their physical and geometric attributes*
- *Find and name locations using simple coordinate systems such as maps and first quadrant grids*

### **Year Two Focal Points:**

#### **Number and Operations: Developing an understanding of the base-ten numeration system and place-value concepts.**

- *Read and write numbers to 1000 in numerals and words, and relate them to quantities they represent*
- Recognize different representations of the same number
- Investigate and develop an understanding of using the base ten place value system with regrouping
- Investigate and develop an understanding of the base ten-place value system through hundreds using Base 10 Blocks, 100 charts, etc.
  - *Count to 1000 by 1's, 10's, 100's starting from any number in the sequence*
  - *Compare and order numbers to 1000, using the phrases: same as, greater than, fewer than, use the symbols =, >, <*
  - *Identify one more than, one less than, 10 more than, and 10 less than for any number up to 1000*
  - *Arrange sets of numbers in increasing or decreasing order to 1000*
  - *Skip count by 2's, 3's, 4's, 5's, and 10's*
  - *Find the distance between two numbers on the number line, e.g. how far is 79 from 26?*
- Explore and recognize different representations for the same number and explain why they are the same
- Apply their understanding of number systems to model and solve problems

#### ***Numbers and Operations Continued Instruction: all benchmarks and GLCEs for this area are essential.***

#### **Number and Operations and Algebra: Developing quick recall of addition facts and related subtraction facts and fluency with multidigit addition and subtraction.**

- Understand addition and subtraction through basic addition and subtraction facts and fact families
  - *Identify number families of addition and subtraction and know them fluently*
- Explain why they are using a computational method and how they know whether to add or subtract in a given situation
- Apply their understanding of number relationships in solving problems
- Develop and apply the appropriate method of computation from among mental computation, estimation, paper and pencil; explain why they are choosing that method
  - *Find missing values in open sentences using the relationship between addition and subtraction, e.g.  $42 + \underline{\quad} = 57$*
  - *Understand that addition is the inverse of subtraction*

- Calculate mentally sums and differences involving: three-digit numbers and ones; three-digit numbers and tens; three-digit numbers and hundreds
- Add and subtract fluently two numbers up to two digits each, using strategies including formal algorithms
- Estimate and calculate the sum of two numbers with three digits that do not require regrouping
- Apply their understandings of addition and subtraction and analytical thinking to solve computational situations and problems accurately
  - Add three one-digit numbers
  - Model addition and subtraction (with numbers up to two digits) for a given contextual situation using objects or pictures, explain in words, record using numbers and symbols; solve
- Apply addition and subtraction operations efficiently and accurately in solving problem
  - Add and subtract fluently two numbers: up to and including two-digit numbers with regrouping and up to four digit numbers with out regrouping.
  - Use mental math strategies to fluently add and subtract two and three digit numbers
  - Add and subtract whole numbers fluently

***Numbers and Operations and Algebra Continued Instruction:***

- Explore properties of addition and subtraction (e.g. commutative and associative properties) and give examples of how they use those properties
- Develop strategies for estimating quantity and evaluate the reasonableness of their estimates
- Explore, develop, and invent their own algorithms for estimation and mental computation
  - Understand multiplication and the result of counting the total number of objects in a set of equal groups ( repeated addition), or  $3 \times 5 = 5 + 5 + 5 = 15$

**Measurement: Developing an understanding of linear measurement and facility in measuring lengths.**

- Use standard and non-standard units of measure to measure length (inch, foot, yard, centimeter, meter), weight (mass)(more or less than a pound), temperature (Fahrenheit), capacity (cup, quart, pint)
  - Estimate and measure length of objects using non-standard and standard units to the nearest whole unit using abbreviations: cm, m, in, ft, yd
  - Solve simple word problems involving length
- Identify the attribute to be measured and select the appropriate unit of measurement for length.
- Use standard tools for measurement

- Apply measurement to practical situations to solve practical problems
- Collect and analyze data through counting and measuring

***Measurement Continued Instruction:***

- *Add, and subtract length of objects using non-standard and standard units to the nearest whole unit using abbreviations: cm, m, in, ft, yd*
- *Solve simple word problems involving time and money*
- Identify the attribute to be measured and select the appropriate unit of measurement for time and money.
- Develop strategies (e.g., using an anchor) for estimating measurements and compare the estimates to the results of the measurement; decide whether an estimate is a “good estimate” or “in the zone”
- *Add and subtract lengths (no conversion units)*
- *Find the area of a rectangle with whole number side lengths by covering with unit squares and counting.*
- *Read temperature using the scale on a thermometer in degrees Fahrenheit*
  - Organize data using concrete objects, pictures, tallies, tables, diagrams, or graphs (bar graphs, pie charts, pictograph)
    - *Collect and organize data to use in pictographs*
  - Present data using a variety of appropriate representations
    - *Make pictographs using a scale representation, using scales where symbols equal more than one*
  - Interpret and explain data they have collected and organized or read
    - *Read and interpret pictographs using scale factors of 2 and 3*
    - *Solve problems using information in pictographs, including symbolic representations*

**Money and Time:**

- Identify visual and number patterns in every day life ( e.g. leaf lobes, honeycomb, checkerboard, numbers on an analog clock, coins (3 nickels = 15 cents,) etc.)
- Recognize that change is often predictable, but variable, and that patterns emerge to help describe the change
- Begin to describe and differentiate between types of numerical or geometric relationships, especially repeating, growing, and shrinking patterns
- Explore now-next patterns
- Make and explain predictions based on data
  - *Identify the different denominations of coins and bills*
  - *Match one coin or bill on one denomination to an equivalent set of coins/bills of other denominations, e.g. 1 quarter = 2 dimes and 1 nickel*
  - *Tell the amount of money in cents up to \$1, in dollars up to \$100. Use the symbols \$ and C*

- *Read and write amounts of money using decimal notations*
- *Add and subtract money in dollars and in cents*
- Tell time to the hour, half-hour, and quarter hour and select appropriate units of time
  - *Tell time on a twelve-hour clock face to the hour, half hour*
- Tell time in five minute increments with teacher assistance
- Use clocks and calendars to model the passage of time

## **Other Continued Instruction Areas:**

### Patterns

- Explore, recognize, describe, copy and extend numerical, visual, and geometric patterns
- Represent and record number, geometric and visual patterns in a variety of ways
  - *Create, describe, and distinguish patterns, such as repeating patterns, and growing patterns using number, shape, and size*
  - *Predict the next element in a simple repeating pattern*
  - *Describe ways to get to the next element in simple repeating patterns*

### Probability

- Explain the difference between chance and certainty and use real-life examples to illustrate their understanding
- Compare events and describe them as “more likely” or “less likely” and use the language of fractions to describe simple probabilities