



Writing in the Primary Math Classroom

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Bain Elementary

This curriculum is recommended for Math/First Grade

Keywords: brainstorming, collaboration, addition to 20, Topic 3, ten-frames, number line, doubles, writing in math

Teaching Standards: See [Appendix 1](#) for teaching strategies addressed in this unit.

Synopsis: This unit is designed to add a deeper understanding of math in the primary classroom through a formatted writing program. This program will provide a step by step approach to encouraging students to think beyond the typical workbook page. Students will be engaged in writing, brainstorming, collaboration and problem solving. Students will be presented with a problem to solve. Students will use the BIPMAR (Brainstorm, Information, Predict, Model, Answer, Reflect) acronym to solve the given problem. The goal is to provide students with a step by step guide to solving any problem.

I plan to teach this unit to 19 students in the first grade math class.

I give Charlotte Teachers Institute permission to publish my curriculum unit in print and online. I understand that I will be credited as the author of my work.

Writing Journals in the Primary Math Classroom

Glenda S. Winborne

Introduction

Rationale

Writing in the math classroom is almost non-existent. To many people math computations are the only justified way for students to learn math. Why do we need to write in Math? Just memorize the facts and move on, is the perspective of many. However, for students to move on in math, they need a deep understanding of what it means to add, subtract, multiply and divide. A deeper understanding comes when time is given to explore their ideas. At the point that a student can materialize their ideas, learning begins. Students begin describing their math ideas through pictures, numbers and words. To encourage students to express their ideas, a math journal is one method of recording student's understanding through a daily format of intentional mathematical writing. The math journal provides a format for exploration and explanatory purposeful writing in the K-2 classroom.

Demographics

Bain Elementary is a public K-5 elementary school. The student population consists of 65% white, 15% black, and 5% Asian. The school reports 86% of students meet or exceed the math goals. 23% of the population is low-income. The NC Department of Public Instruction reported Bain Elementary as an "A" school, having met expected growth. The average first grade classroom consists of 19 students of 6-7 years of age. Female/Male ratio 50/50. Ethnicity in the classroom is 80% white, 10% Hispanic, 5% black, and 5% mixed.

Unit Goals

The goal of this unit is to develop a deeper understanding of addition and subtraction concepts by using math journals to encourage writing. This unit will provide students a format to develop their understanding in math through collaboration and writing. This unit will give students a step-by-step approach to develop their thoughts into rational mathematical concepts through brainstorming, prediction, modeling and reflection, yielding a math journal of exploratory and explanatory writing.

Students will integrate listening and speaking standards (SL1.1, SL1.2), informative/explanatory writing (W.1.2) and addition and subtraction (NC.1.OA.4). The students will participate in collaboration through conversation with peers. Students will listen and share ideas of mathematical ideas through Turn and Talk procedures and brainstorming activities. Students will record their ideas through drawing and writing.

Content Research

I must admit that before beginning this unit, my idea of writing in the math classroom was more focused on convincing my students to put anything on the page that would explain their ideas. Since most first grade students are told what to think and where to go and how to act, the average student does not know how to think for themselves. I stand in front of them and say, “Now put your thoughts on paper (the sound of crickets inserted here)”. It quickly becomes evident that for students to write about their ideas, they needed a way to think aloud, before they could write. As I began my research for this unit, I started with the typical teacher thing to do; look on Pinterest. I could find plenty of information and/or worksheets on adding and subtracting but nothing on mathematical writing. I thought I would just buy one from an education store. I found math journals but they did not mirror the type of writing I wanted to include in my math classroom.

As our seminar began, I quickly discovered that writing in math had many more aspects that I had not even considered. The first discovery was the many types of writing (Casa et al. 2016) associated with math. I did not think about exploratory writing versus explanatory writing. If truth were told, I had never even thought of exploratory writing or what that would even look like in a first grade journal. I just wanted them to be able to explain their thinking. To better understand the types of mathematical writing, exploratory, informative/explanatory, argumentative and mathematically creative (Casa et al. 2016), I began to think of my students and what these types of writing would look like in their journals.

The most common writing form that is used in my classroom is the informative/explanatory type. This type is represented when a student “shows” their work or explains how they got the answer to a problem. Exploratory writing is when a student applies their personal understanding to a problem. Students attempt to provide meaningful connections to the problem. Argumentative writing is the proving of an idea, whether it is for or against a solution to a problem. Students supply their reasoning to support/oppose an idea. After noticing the lack of the latter 3 forms of writing in the classroom, I began to wonder how a first grade student could produce these types of writing. Would some of these forms of mathematical writing be too advanced for their ability at this age?

After reading, *Write On* (Firmender, Casa, Colonnese 2017), I was encouraged to think about what I really wanted my students to be able to do in their math journals. The idea of using math journals in my classroom has evolved into a whole new dimension of journaling. The question, “How many in all” has become “Can you prove $1+1=2$?” What did you see in your head when you thought “ $1+1=2$ ”, “Can you offer a strategy that shows this concept?” “How can you model your thoughts/Can you prove your answer using words, numbers or pictures?” While I am asking these questions, their little heads are exploding. I knew I needed to come up with a set of instructions to help them make sense of math and encourage them to discuss math with others. First grade students need a great deal of guidance. A set of instructions or a mnemonic device would help them to walk through the steps of problem solving. The BIPMAR (enVision Math) strategy is the mnemonic device we use in our classroom.

Before students can write effectively in the math classroom, it is imperative that they are able to discuss their ideas with others. It is difficult for first grade students to think of math as anything but “doing equations”. Students need encouragement and guidance to learn how to talk about math. In the classroom, students are given instruction on how to converse with each other through speaking prompts. An example of a speaking prompt is “What I heard you say... or I

disagree with ...” Through practice, students can learn to discuss their ideas without conflict. When students can talk about math then they will be able to write about math. Through the first weeks of school, students are learning that they have ideas to share. Then they learn to trust others with their ideas without fear of humiliation. When an environment of trust is established, students will begin to have math talks. The book, Classroom Discussions, provides information on how to conduct math talks with many ideas and lessons. Some examples for discussing math can be found at this [link](#). (Chapin, O’Connor, & Anderson 2013) The BIPMAR strategy will encourage math talks through the brainstorming step of the strategy. Good mathematical discussions will lead to effective mathematical writing.

Instructional Implementation

In our district we use the Envision Math program. I wanted to give the students a more in depth experience in the math classroom while implementing the required math program. I decided that a math notebook would be a great way to allow exploration and deeper dive into the math topics. The math notebook needed an organization style that would walk the students through the initial reading of the question to the reflection of a job well done. The process needed to be something, the students could use no matter what workbook or worksheet they were using. It was through experimenting with a new format in the Envision math program, Act 3 that I began implementing the BIPMAR sticker protocol in their math journals. In the beginning of the implementation of the stickers, the process was a little cumbersome and a little confusing but we persevered. BIPMAR is our acronym for:

Brainstorm
Information
Predict
Model
Answer
Reflect

We use this organization plan to divide our math journal into step by step instructions for solving a math problem. Each journal page begins with the date. Then a sticker with the letter “B” is placed on their notebook page. The brainstorm process begins. We read the problem together. Students are asked to draw or write the first thing that comes into their mind. They are encouraged to talk with their neighbors about their ideas for this problem. They are encouraged to write down anything that they feel might help them solve the problem. A few minutes are given for this process. When finished, a line is drawn in the notebook to mark off the brainstorming step. The next step is the “I” or information stage. In this stage, we go back to the problem and ask what we already know. Are there any questions that come to mind? Once we establish what we know about the problem, we move to the prediction stage. The “P” is attached to the paper. This is usually a quick stage. First graders are quick to give a guess. It is advisable to encourage *reasonable* predictions. The “M” sticker is placed on the next space of the paper. This stage will be the bulk of the writing/drawing. Students will apply their strategies for solving the problem. They will provide the “proof” for their answer to the question. A student page may include drawings, ten frames, counters and other strategies for modeling the answer to the question. Once finished, the “A” sticker is placed on the paper. The students will now share their

models with the class. The presenter will offer their model and explanation for their answer. The observers will take note of the answers offered. Students can write the answers that are shared on their paper. Students are also encouraged to share multiple ideas and strategies. The final sticker, “R” is for reflection. I encouraged my students in the beginning to write things like, “ I got it right or I almost had it. As the students become more skilled mathematical writers, I would expect them to include how or why they came upon their answer and/or the mistakes they made and how they fixed the answer.

In first grade, stickers are everything. The rationale for the stickers is to add a bit of excitement for the process. When the students place the stickers on their paper, it’s one more step or one more piece of the puzzle. The stickers can be replaced. The letters can be written instead of using stickers. It is also important for students to take notes and to draw a line after each step. The following lesson plans are derived from the Envision Math program required by my district. All of the solve and share problems are from enVision Mathematics.

Content Area:	Envisions Math	Grade Level:	1
Topic 3.1	Solve and Share:		
Count on to Add	Abby has 5 cubes. Salina gives her 7 more cubes. How many cubes does Abby have now? Show your thinking		
Common Core State Standards in Mathematics			
NC.1.OA.3 Apply the commutative and associative properties as strategies for solving addition problems			
Differentiation		Misconceptions	
<p>Students will be grouped according to level and complete Approaching level, On level, and Beyond level pages.</p> <p>ELL students will receive extra support from Interactive Digital Lessons.</p> <p>Special education students will work in small groups for extra support.</p>		<p>Make sure students count the jumps on the number line and not the first addend.</p>	
Materials		Objectives: Students will be able to . . .	
<p>Number line to 20, Counters, Connecting cubes, student workbook, Math notebook, pencil</p>		<p>Count on to Add using a number line</p>	

Mathematical Writing-- Students will use the solve and share problem to develop a deeper conceptual understanding by completing the BIPMAR strategy referred to previously.

[BIPMAR Strategy](#): Use this strategy for the writing portion. As a whole group, students will use the strategy to write about the solve and share problem.

Assessments/Follow-Up: Quick Check pages, Teacher Observation, Student Response, Homework, and Topic Test

Content Area:	Envisions Math	Grade Level:	1
Topic 3.2 Count on to Add Using and Open Number Line	Solve and Share: Arnie runs 6 miles on Thursday. He runs 5 more miles on Friday. How many miles did Arnie run in all? Use the number line to show how you know.		
Common Core State Standards in Mathematics			
NC.1.OA.1 Represent and solve addition and subtraction word problems, within 20, with unknowns, by using objects, drawings, and equations with a symbol for the unknown number to represent the problem, when solving: • Add to/Take from-Change Unknown • Put together/Take Apart-Addend Unknown • Compare-Difference Unknown			

Differentiation	Misconceptions
<p>Students will be grouped according to level and complete Approaching level, On level, and Beyond level pages.</p> <p>ELL students will receive extra support from Interactive Digital Lessons.</p> <p>Special education students will work in small groups for extra support.</p>	<p>Make sure students count the jumps on the number line and not the first addend.</p>
Materials	Objectives: Students will be able to . . .
<p>Number line to 20, Counters, Connecting cubes, student workbook, Math notebook, pencil</p>	<p>Count on to Add using an open number line</p>
<p>Mathematical Writing-- BIPMAR Strategy: Use this strategy for the writing portion. As a whole group, students will use the strategy to write about the solve and share problem.</p>	
<p>Students will use the solve and share problem to develop a deeper conceptual understanding by completing the BIPMAR strategy referred to previously.</p>	
Assessments/Follow-Up	
<p>Quick Check pages, Teacher Observation, Student Response, Homework, and Topic Test</p>	

Content Area:	Envisions Math	Grade Level:	1
Topic 3.3	Solve and Share:		
Doubles	<p>Carlos and Alisa each have the same number of books. They each have more than 5 books. How many books do they have in all? Show your thinking below.</p>		
Common Core State Standards in Mathematics			
<p>NC.1.OA.1 Represent and solve addition and subtraction word problems, within 20, with unknowns, by using objects, drawings, and equations with a symbol for the unknown number to represent the problem, when solving: • Add to/Take from-Change Unknown • Put together/Take Apart-Addend Unknown • Compare-Difference Unknown</p> <p>NC.1.OA.6 Add and subtract, within 20, using strategies such as: • Counting on • Making ten • Decomposing a number leading to a ten K-2 Mathematics 5 • Using the relationship between addition and subtraction • Using a number line • Creating equivalent but simpler or known sums.</p> <p>NC. 1.OA.9 Demonstrate fluency with addition and subtraction within 10.</p>			
Differentiation		Misconceptions	

<p>Students will be grouped according to level and complete Approaching level, On level, and Beyond level pages.</p> <p>ELL students will receive extra support from Interactive Digital Lessons.</p> <p>Special education students will work in small groups for extra support.</p>	<p>If students cannot determine if the cubes show doubles facts, Ask them if the cube stacks are the same size.</p>
<p>Materials</p>	<p>Objectives: Students will be able to . . .</p>
<p>Number line to 20, Counters, Connecting cubes, student workbook, Math notebook, pencil</p>	<ul style="list-style-type: none"> · Memorize doubles facts · Reason mathematically
<div data-bbox="204 1108 1414 1283" style="border: 1px solid black; background-color: #e6f2ff; padding: 5px;"> <p>Mathematical Writing--BIPMAR Strategy: Use this strategy for the writing portion. As a whole group, students will use the strategy to write about the solve and share problem.</p> </div> <div data-bbox="204 1283 1414 1457" style="border: 1px solid black; background-color: #e6f2ff; padding: 5px;"> <p>Students will use the solve and share problem to develop a deeper conceptual understanding by completing the BIPMAR strategy referred to previously.</p> </div> <p>Assessments/Follow-Up</p>	
<ul style="list-style-type: none"> · Quick Check pages, Teacher Observation, Student Response, Homework, and Topic Test 	

Content Area:	Envisions Math	Grade Level:	1
Topic 3.4	Solve and Share:		
Doubles Plus	<p>Carlos and Emily each pick 5 strawberries. What doubles fact shows how many strawberries they have in all? If Emily picks 1 more strawberry, how could you find how many strawberries in all?</p>		
Common Core State Standards in Mathematics			
<p>NC.1.OA.1 Represent and solve addition and subtraction word problems, within 20, with unknowns, by using objects, drawings, and equations with a symbol for the unknown number to represent the problem, when solving: • Add to/Take from-Change Unknown • Put together/Take Apart-Addend Unknown • Compare-Difference Unknown</p> <p>NC.1.OA.6 Add and subtract, within 20, using strategies such as: • Counting on • Making ten • Decomposing a number leading to a ten K-2 Mathematics 5 • Using the relationship between addition and subtraction • Using a number line • Creating equivalent but simpler or known sums</p> <p>NC. 1.OA.9 Demonstrate fluency with addition and subtraction within 10.</p>			
Differentiation	Misconceptions		
<p>Students will be grouped according to level and complete Approaching level, On level, and Beyond level pages.</p> <p>ELL students will receive extra support from Interactive Digital Lessons.</p> <p>Special education students will work in small groups for extra support.</p>	<p>If students cannot determine if the cubes show doubles facts, ask them if the cube stacks are the same size.</p>		

Materials	Objectives: Students will be able to . . .
Number line to 20, Counters, Connecting cubes, student workbook, Math notebook, pencil	<ul style="list-style-type: none"> · Use doubles facts to solve doubles plus one problems · Reason mathematically
Mathematical Writing-- BIPMAR Strategy : Use this strategy for the writing portion. As a whole group, students will use the strategy to write about the solve and share problem.	
Students will use the solve and share problem to develop a deeper conceptual understanding by completing the BIPMAR strategy referred to previously.	
Assessments/Follow-Up	
Quick Check pages, Teacher Observation, Student Response, Homework, and Topic Test	

Content Area:	Envisions Math	Grade Level:	1
Topic 3.5	Solve and Share:		
Make 10 to Add	Andy says that he can find $9 + 5$ by starting with $9 + 1 = 10$. What do you think about Andy's way? Show your work and explain.		
Common Core State Standards in Mathematics			
<p>NC.1.OA.6 Add and subtract, within 20, using strategies such as: • Counting on • Making ten • Decomposing a number leading to a ten K-2 Mathematics 5 • Using the relationship between addition and subtraction • Using a number line • Creating equivalent but simpler or known sums</p> <p>NC. 1. OA.9 Demonstrate fluency with addition and subtraction within 10</p>			
Differentiation		Misconceptions	
<p>Students will be grouped according to level and complete Approaching level, On level, and Beyond level pages.</p> <p>ELL students will receive extra support from Interactive Digital Lessons.</p> <p>Special education students will work in small groups for extra support.</p>		<p>If students cannot determine if the cubes show doubles facts, ask them if the cube stacks are the same size.</p>	
Materials		Objectives: Students will be able to . .	

<p>Number line to 20, Counters, Connecting cubes, student workbook, Math notebook, pencil</p>	<ul style="list-style-type: none"> · Make 10 to add to 20 · Model with math
<p>Mathematical Writing--BIPMAR Strategy: Use this strategy for the writing portion. As a whole group, students will use the strategy to write about the solve and share problem.</p>	
<p>Students will use the solve and share problem to develop a deeper conceptual understanding by completing the BIPMAR strategy referred to previously.</p>	
<p>Assessments/Follow-Up</p>	
<p>Quick Check pages, Teacher Observation, Student Response, Homework, and Topic Test</p>	

<p>Content Area:</p>	<p>Envisions Math</p>	<p>Grade Level:</p>	<p>1</p>
<p>Topic 3.6 Continue to make 10 to Add</p>	<p>Solve and Share: How can you make 10 to solve the addition fact $\square + \square$? Show your work and explain.</p>		
<p>Common Core State Standards in Mathematics</p>			

NC.1.OA.6 Add and subtract, within 20, using strategies such as: • Counting on • Making ten • Decomposing a number leading to a ten K-2 Mathematics 5 • Using the relationship between addition and subtraction • Using a number line • Creating equivalent but simpler or known sums

NC. 1. OA.9 Demonstrate fluency with addition and subtraction within 10.

Differentiation	Misconceptions
<p>Students will be grouped according to level and complete Approaching level, On level, and Beyond level pages.</p> <p>ELL students will receive extra support from Interactive Digital Lessons.</p> <p>Special education students will work in small groups for extra support.</p>	<p>If students cannot determine if the cubes show doubles facts, ask them if the cube stacks are the same size.</p>
Materials	Objectives: Students will be able to . . .
<p>Number line to 20, Counters, Connecting cubes, student workbook, Math notebook, pencil</p>	<ul style="list-style-type: none"> · Make to ten to add to 20 · make math arguments
<p>Mathematical Writing--BIPMAR Strategy: Use this strategy for the writing portion. As a whole group, students will use the strategy to write about the solve and share problem.</p>	
<p>Students will use the solve and share problem to develop a deeper conceptual understanding by completing the BIPMAR strategy referred to previously.</p>	

Assessments/Follow-Up

Quick Check pages, Teacher Observation, Student Response, Homework, and Topic Test

Content Area:	Envisions Math	Grade Level:	1
Topic 3.7 Explain Addition Strategies	Solve and Share: 8 + 6 = ? Choose a strategy to solve the problem. Use words, objects, or pictures to explain your work.		
Common Core State Standards in Mathematics			
NC.1.OA.6 Add and subtract, within 20, using strategies such as: • Counting on • Making ten • Decomposing a number leading to a ten K-2 Mathematics 5 • Using the relationship between addition and subtraction • Using a number line • Creating equivalent but simpler or known sums			
NC. 1.OA.9 Demonstrate fluency with addition and subtraction within 10.			
Differentiation	Misconceptions		

<p>Students will be grouped according to level and complete Approaching level, On level, and Beyond level pages.</p> <p>ELL students will receive extra support from Interactive Digital Lessons.</p> <p>Special education students will work in small groups for extra support.</p>	<p>If students cannot determine if the cubes show doubles facts, ask them if the cube stacks are the same size.</p>
<p>Materials</p>	<p>Objectives: Students will be able to . . .</p>
<p>index cards, counters, connecting cubes, Workbook 133-136, math notebook, pencil, solve and share question</p>	<p>Solve addition problems using different strategies make math arguments</p>
<p>Mathematical Writing--BIPMAR Strategy: Use this strategy for the writing portion. As a whole group, students will use the strategy to write about the solve and share problem.</p>	
<p>Students will use the solve and share problem to develop a deeper conceptual understanding by completing the BIPMAR strategy referred to previously.</p>	
<p>Assessments/Follow-Up</p>	
<p>Quick Check pages, Teacher Observation, Student Response, Homework, and Topic Test</p>	

Content Area:	Envisions Math	Grade Level:	1
Topic 3.8	<p>Solve Addition Word Problems with Facts to 20</p> <p>Solve and Share: Caleb collects stickers. He has 4 more stickers than Zoe. Zoe has 5 stickers. How many stickers does Caleb have? Use objects, drawings, or an equation to show your thinking.</p>		
Common Core State Standards in Mathematics			
<p>NC.1.OA.1 Represent and solve addition and subtraction word problems, within 20, with unknowns, by using objects, drawings, and equations with a symbol for the unknown number to represent the problem, when solving: • Add to/Take from-Change Unknown • Put together/Take Apart-Addend Unknown • Compare-Difference Unknown</p> <p>NC.1.OA.6 Add and subtract, within 20, using strategies such as: • Counting on • Making ten • Decomposing a number leading to a ten K-2 Mathematics 5 • Using the relationship between addition and subtraction • Using a number line • Creating equivalent but simpler or known sums</p> <p>NC. 1.OA.9 Demonstrate fluency with addition and subtraction within 10.</p>			
Differentiation	Misconceptions		
<p>Students will be grouped according to level and complete Approaching level, On level, and Beyond level pages.</p> <p>ELL students will receive extra support from Interactive Digital Lessons.</p> <p>Special education students will work in small groups for extra support.</p>	<p>Students will deepen their understanding of problems through comparison using the terms, fewer and more. The term, fewer does not always mean subtract. It may be necessary to rephrase the problems using more to help students understand this concept.</p>		

Materials	Objectives: Students will be able to . . .
Counters, connecting cubes, student workbook 137-140, math notebook, pencil, solve and share question	<ul style="list-style-type: none"> · Solve different kinds of addition word problems · Make sense of problems
Mathematical Writing-- BIPMAR Strategy : Use this strategy for the writing portion. As a whole group, students will use the strategy to write about the solve and share problem.	
Students will use the solve and share problem to develop a deeper conceptual understanding by completing the BIPMAR strategy referred to previously.	
Assessments/Follow-Up	
Quick Check pages, Teacher Observation, Student Response, Homework, and Topic Test	

Content Area:	Envisions Math	Grade Level:	1
Topic 3.9 Problem Solving, Critique Reasoning	Solve and Share: A pet store has 9 frogs. 5 of the frogs are green and the rest are brown. Lidia adds $\square + \square$ and says that the store has 14 brown frogs. Do you agree or disagree with Lidia's thinking. Use pictures, words, or equations to explain.		

Common Core State Standards in Mathematics

NC.1.OA.1 Represent and solve addition and subtraction word problems, within 20, with unknowns, by using objects, drawings, and equations with a symbol for the unknown number to represent the problem, when solving: • Add to/Take from-Change Unknown • Put together/Take Apart-Addend Unknown • Compare-Difference Unknown

NC. 1. OA. 3 Apply the commutative and associative properties as strategies for solving addition problems.

NC.1.OA.6 Add and subtract, within 20, using strategies such as: • Counting on • Making ten • Decomposing a number leading to a ten K-2 Mathematics 5 • Using the relationship between addition and subtraction • Using a number line • Creating equivalent but simpler or known sums

NC. 1.OA.9 Demonstrate fluency with addition and subtraction within 10.

Differentiation	Misconceptions
<p>Students will be grouped according to level and complete Approaching level, On level, and Beyond level pages.</p> <p>ELL students will receive extra support from Interactive Digital Lessons.</p> <p>Special education students will work in small groups for extra support.</p>	<p>If students cannot determine if the cubes show doubles facts, ask them if the cube stacks are the same size.</p>
Materials	Objectives: Students will be able to . . .
<p>Counters, connecting cubes, workbook 141-144, math notebook, pencil, solve and share question</p>	<p>Critique the thinking of others by using pictures, words or equations Add and subtract correctly</p>

Mathematical Writing--[BIPMAR Strategy](#): Use this strategy for the writing portion. As a whole group, students will use the strategy to write about the solve and share problem.

Students will use the solve and share problem to develop a deeper conceptual understanding by completing the BIPMAR strategy referred to previously.

Assessments/Follow-Up

Quick Check pages, Teacher Observation, Student Response, Homework, and Topic Test.

Appendix1: Implementing Teaching Standards

The standards addressed in this unit are from the North Carolina Standard Course of Study, First Grade Mathematics. Specifically the standards 1.OA.1, 1. OA. 3, 1. OA.6 and 1.OA. 9. This unit focuses on Topic 3 from the Envision Mathematics Curriculum required by Charlotte Mecklenburg School System. The lessons are supportive of the topics of adding fluently to 20, mathematical tools and strategies to solve word problems.

Student Resources

Counters- plastic manipulatives that are used to help count and add on.

Connecting cubes- plastic manipulatives that connect to help students to count, add on, and provide a visual of fewer than and more than.

Ten-frames- paper frames that are laminated or in plastic sleeves. These frames help students to count on or add to an existing number by using counters of dual colors to represent the numbers in the problem.

Number cards- cards that have the numbers 1-10 to use as a starting point for adding on.

Number line- a representative of a number line 0-20, recommended on card stock and laminated to be used again.

Math notebook- spiral bound or marble composition book to used for the BIPMAR problem solving strategy.

Pencil

Envision student workbook volume 1

Teacher Resources

[Envision Math](#) A link to the Envision math curriculum.

[EngageNY](#) If Envision math is unavailable, Engage NY can be used for the topics listed in the lesson plans. This is a link to Module 1 Operations and Algebraic Thinking. Handouts can also be located at this location.

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