# Reading Public Schools

*Instilling a joy of learning and inspiring the innovative leaders of tomorrow*

## Mathematics Curriculum Guide                    Grade 2

### Second Grade Priority Areas

**Extending understanding of base-ten notation (NBT)**

Students extend their understanding of the base-ten system. This includes ideas of counting in fives, tens, and multiples of hundreds, tens, and ones, as well as number relationships involving these units, including comparing. Students understand multi-digit numbers (up to 1000) written in base-ten notation, recognizing that the digits in each place represent amounts of thousands, hundreds, tens, or ones (e.g., 853 is 8 hundreds + 5 tens + 3 ones).

**Building fluency with addition and subtraction (OA, NBT)**

Students use their understanding of addition to develop fluency with addition and subtraction. They solve problems by applying their understanding of models for addition and subtraction, and they develop, discuss, and use efficient, accurate, and generalizable methods to compute sums and differences of whole numbers in base-ten notation, using their understanding of place value and the properties of operations. They select and accurately apply methods that are appropriate for the context to mentally calculate sums and differences.

**Using standard units of measure (MD)**

Students recognize the need for standard units of measure (centimeter and inch) and they use rulers and other measurement tools with the understanding that linear measure involves an iteration of units. They recognize that the smaller the unit, the more iterations they need to cover a given length.

**Describing and analyzing shapes (G)**

Students describe and analyze shapes by examining their sides and angles. Students investigate, describe, and reason about decomposing and combining shapes to make other shapes. Through building, drawing, and analyzing two- and three-dimensional shapes, students develop a foundation for understanding area, volume, congruence, similarity, and symmetry in later grades.

### Mathematical Practice Standards

- Making sense of problems and persevering in solving them
- Reasoning abstractly and quantitatively
- Constructing viable arguments and critiquing the reasoning of others
- Modeling with mathematics
- Using appropriate tools strategically
- Attending to precision
- Looking for and making use of structure
- Looking for and expressing regularity in repeated reasoning

### Content Standards

**Operations and Algebraic Thinking (OA)**
- Represent and solve problems involving addition and subtraction
- Add and subtract within 20
- Work with equal groups of objects to gain foundations for multiplication

**Number and Operations in Base Ten (NBT)**
- Understand place value
- Use place value understanding and properties of operations to add and subtract

**Measurement and Data (MD)**
- Measure lengths indirectly and by iterating length units
- Relate addition and subtraction to length
- Work with time and money
- Represent and interpret data

**Geometry (G)**
- Reason with shapes and their attributes.

| Concepts | Essential Questions | Resources |
|---|---|---|
| *Operations and Algebraic Thinking (OA):* **Represent and solve problems involving addition and subtraction** | • How can the math I know help me solve problems in my world?<br>• How do good mathematicians think when they are solving a problem? | Math in Focus (chapter 4)<br>Developing Number Concepts (bk 1 ch. 1,3; bk 2 ch.1)<br>Calendar Math |
| *Operations and Algebraic Thinking (OA):* **Add and Subtract within 20** | • What strategies help me add and subtract quickly and accurately? | Math in Focus (chapters 2,3)<br>Developing Number Concepts (bk 1 ch. 1,3; bk 2 ch.1,2,3; bk3 ch.1)<br>Calendar Math |
| Operations and Algebraic Thinking (OA): **Work with equal groups of objects to gain foundations for multiplication.** | • Where do I see even numbers in the world?<br>• Where do I see odd numbers in the world?<br>• How can I organize groups of equal numbers? | Math in Focus (chapters 5,6,15)<br>Developing Number Concepts (bk 3 ch.2) |
| *Number and Operations in Base Ten (NBT):* **Understand place value** | • What do large numbers mean?<br>• If I see more than one large number, how can I tell which one is the largest or the smallest?<br>• How can I use large numbers to communicate my ideas? | Math in Focus (chapter 1)<br>Developing Number Concepts (bk 1)<br>Calendar Math |
| *Number and Operations In Base 10 (NBT):* **Use place value understanding and properties of operations to add and subtract.** | • How can understanding numbers help me do math in my head?<br>• What strategies can I use to add and subtract numbers?<br>• How can I explain my reasoning about why my strategies work? | Math in Focus (chapters 2,3,10)<br>Developing Number Concepts (bk 1,2)<br>Calendar Math |
| *Measurement and Data (MD):* **Measure and estimate lengths in standard units.** | • Why do people use standard units of measure?<br>• What are the similarities and differences between the metric system and the customary system? | Math in Focus (chapters 7,13)<br>Developing Number Concepts (bk 1, ch 1,3; bk 3, ch. 1) |
| *Measurement and Data (MD):* **Relate addition and subtraction to length** | • How can the math that I know help me solve problems involving length?<br>• How can numbers help me communicate the sizes of objects? | Math in Focus (chapters 7,13) |
| *Measurement and Data (MD):* **Work with time and money** | • How can the math that I know help me spend and save my money?<br>• How are analog clocks and digital clocks the same, and how are they different?<br>• Where does the base ten number system appear in my world? | Math in Focus (chapters 11,14) |
| *Measurement and Data (MD):* **Represent and interpret data** | • Why are graphs useful?<br>• What information can I get from a graph?<br>• What information can I communicate with a graph? | Math in Focus (chapter 17)<br>Developing Number Concepts (bk 1 ch. 3) |
| *Geometry (G):* **Reason with shapes and their attributes** | • Where can I find different shapes in my world?<br>• How can I cut a shape into equal pieces?<br>• What do equal pieces look like?<br>• What are the special names for the different shapes I see? | Math in Focus (chapter 19)<br>Developing Number Concepts (bk 1 ch. 1,3)<br>Calendar Math |

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| **Curriculum Guide** | Curriculum guides are public documents that are aligned with the Massachusetts Department of Education Curriculum Frameworks. They focus on the set of standards that students will learn within certain disciplines at appropriate grade levels. Curriculum Guides are intended for teachers, parents, and the wider school community as an overview document of the course of study for the year. |
| **Curriculum Map** | Curriculum maps are internal documents utilized as planning tools for teachers. Curriculum maps keep a focus on the end-of-year standards and chart a course for the teaching and learning over the year. They are typically organized in a grade-level overview organized by month or marking period. Curriculum maps typically include; standards and expectations for the grade/content, essential skills/concepts, methods of assessment, and major content resources. Maps are never "done" as ongoing work of educators include revisions, additions, and revisits to the maps. They provide an overview for the year while also allowing educators to see a vertical picture of how the content develops as students progress through each grade. |
| **Standards** | The standards used as the foundation of our curriculum come directly from the Massachusetts Department of Education Curriculum Frameworks. State standards may be viewed here:  http://www.doe.mass.edu/frameworks/ |
| **Priority Areas** | The state of Massachusetts identifies critical areas that should be the priority focus of that grade's instructional time. |
| **Practice Standards** | Practice Standards are a set of skills/behaviors that are replicated in grades preK-12 and are currently found in Mathematics, Social Studies, and Science standards. These standards describe ways in which students engage with the content and the level of application grows increasingly complex as students progress vertically throughout their education. |
| **Content Standards** | The Content Standards describe what students should know and be able to do within each grade-level. |
| **Essential Questions** | Essential questions are questions that are not answerable with an easy answer or a simple instruction. The purpose of essential questions is to provide opportunities for inquiry into the learning and act as an umbrella to anchor the unit/lesson. |
| **Resources** | Resources identified in Curriculum Guides are not intended to be exhaustive, nor are they intended to be prescriptive. The resources identified may function as a menu of curriculum resources from which educators identify the most appropriate tools to utilized in their classrooms. More specifics about identified resources are identified within the curriculum map documents. |