Third Grade Mathematics

Dear Third Grade Families;

Welcome to the Ann Arbor Public Schools Family Pages. We hope the information you find here assists you in supporting your child while s/he is learning important skills and concepts throughout the third grade year.

Everyday Mathematics provides the core learning resource for Mathematics in the Ann Arbor Public Schools elementary grades. ***Everyday Mathematics*** (EM) supports teachers in providing students with the mathematical instruction and experiences they need to ensure that their learning focuses on the major work of each grade. Units of study are based on grade level goals for mathematical content and mathematical practice supported by aligned instruction and assessment. Information below is from *Everyday Mathematics, Goals for Mathematical Practice*, McGraw Hill Education.

Operations and Algebraic Thinking

Represent and solve problems involving multiplication and division	Interpret multiplication in terms of equal groups. Interpret division in terms of equal shares or equal groups. Use multiplication and division to solve number stories. Pose number stories involving multiplication and division. Determine the unknown in multiplication and division equations.
Understand properties of multiplication and the relationship between multiplication and division	Apply properties of operations to multiply or divide. Understand division as an unknown factor problem.
Multiply and divide within 100	Multiply within 100 fluently. Know all products of 1-digit numbers X 1, X 2, X 5, X 10 automatically. Know all square products of 1-digit numbers automatically. Know all products of 1-digit numbers X 0, X3, and X 9 automatically. Know all products of 1-digit numbers X 4, X 6, X 7, X 8 automatically. Divide within 100 fluently.
Solve problems involving the four operations, and identify and explain patterns in arithmetic	Assess the reasonableness of answers to problems. Solve 2-step number stories involving two of the four operations. Model 2-step number stories with equations using a letter or symbol for the unknown. Understand that grouping symbols affect the order in which operation are performed. Apply the order of operations when grouping symbols are not present. Identify arithmetic patterns and explain them using properties of operations.

Number and Operations in Base Ten

Use place value understanding and properties of operations to perform multi-digit arithmetic	Use place value understanding to round whole numbers to the nearest 10. Use place value understanding to round whole numbers to the nearest 100. Add within 1,000 fluently. Subtract within 1,000 fluently. Multiply 1-digit numbers by multiples of 10.
Develop understanding of fractions as numbers	Understand, identify and represent unit fractions as 1 part when a whole is divided into b equal parts. Understand, identify and represent non-unit fractions as the quantity formed by a parts of size 1/b. Represent fractions by sharing collections of objects into equal shares. Represent unit fractions on a number-line diagram. Represent non-unit fractions on a number-line diagram. Understand that equivalent fractions are the same size. Understand that equivalent fractions name the same point on a number line.

	Recognize and generate simple equivalent fractions. Express whole numbers as fractions. Recognize fractions that are equivalent to whole numbers. Compare fractions with the same numerator or the same denominator. Recognize that fraction comparisons require the whole to be the same size. Record fraction comparisons using >, =, or <. Justify the conclusions of fraction comparisons.

Measurement and Data

Solve problems involving measurement and estimation.	Tell and write time. Measure time intervals in minutes. Solve number stories involving time intervals by adding or subtracting. Measure and estimate masses of objects using grams and kilograms. Measure and estimate liquid volumes using liters and other units. Solve 1-step number stories involving mass. Solve 1-step number stories involving volume.
Represent and interpret data	Organize and represent data on scaled bar graphs and scaled picture graphs. Solve 1- and 2-step problems using information in graphs. Measure lengths to the nearest ½ inch, 1/4 , or whole centimeter. Collect, organize and represent data on line plots.
Geometric measurement: understand concepts of area and relate area to multiplication and addition	Understand that a unit square has 1 square unit of area and can measure area. Understand that a plane figure completely covered by n unit squares has area n square units. Measure areas by counting unit squares. Find the area of a rectangle by tiling it. Show that tiling a rectangle results in the same area as multiplying its side lengths. Multiply side lengths to find areas of rectangles. Solve real-world and mathematical problems involving areas of rectangles. Represent whole-number products as rectangular areas. Use tiling to concretely demonstrate the distributive property. Use area models to represent the distributive property. Recognize area as additive. Find areas of rectilinear figures by decomposing them into on-overlapping rectangles, and apply this technique to solve real-world problems.
Geometric measurement: recognize perimeter	Solve problems involving perimeters of polygons. Exhibit rectangles with the same perimeter and different areas or the same area and different perimeters.

Geometry

Reason with shapes and their attributes	Understand that shapes in different categories may share attributes that can define a larger category. Recognize specific subcategories of quadrilaterals. Draw quadrilaterals that do not belong to specified subcategories. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.

Mathematical Practice

Make sense of problems and persevere in solving them	Make sense of your problem. Reflect on your thinking as you solve your problem. Keep trying when your problem is hard.

	Check whether your answer makes sense. Solve problems in more than one way. Compare the strategies you and others use.
Reason abstractly and quantitatively	Create mathematical representations using numbers, words, pictures, symbols, gestures, tables, graphs, and concrete objects. Make sense of the representations you and others use. Make connections between representations.

The Council of Great City Schools provides information on such topics as: 1) the progression of student learning across grade levels; 2) suggestions for helping your child at home; 3) questions to ask your child's teacher for a better understanding of your child's growth; and 4) parents may find ways to enrich a child's work at home by understanding the learning that will happen in the following year.
Great City Schools Parent Roadmap - 3rd Grade
Great City Schools Parent Roadmap in Spanish - 3rd Grade

Suggestions from the *Council of Great City Schools:*
Partnering with Teachers
Don't be afraid to reach out to your child's teacher—you are an important part of your child's education. Ask to see a sample of your child's work or bring a sample with you. Ask the teacher questions like:

- Is my child at the level where he/she should be at this point of the school year?
- Where is my child excelling?
- What do you think is giving my child the most trouble?
- How can I help my child improve in this area?
- What can I do to help my child with upcoming work?

Helping Your Child Learn Outside of School
1. Use everyday objects to allow your child to count and group a collection of objects.
2. Encourage your child to construct numbers in multiple ways. For example, what are some ways that you can make 10? Answers might include 5+5, 6+4, 8+2, etc. Have your child explain his or her thinking.
3. Have your child create story problems to represent addition and subtraction of small numbers. For example, "Ann had eight balloons. Then she gave three away, so she only had five left."