3rd Grade Geometry

According to the NYS Common Core Guidelines

SECTION 1: REASON WITH SHAPES AND THEIR ATTIBUTES

1) Here, students should be able to sort shapes in general categories, including rhombuses, rectangles and others. They should be able to recognize shared attributes, and that shard attributes define categories, such as quadrilaterals. Additionally, the students should be able to identify examples of certain categories and draw quadrilaterals that don't fit in any subcategory.

2) This part of the requirements relies heavily on the students' understanding of fractions. Each student should be able to divide shapes into equal sections and express a unit fraction of the whole. Example: Divide a square into four equal parts and label each section as ¼ of the total area of the square.

SECTION 2: MEASUREMENT AND DATA

Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

1) Based on this requirement, students should be able to accurately tell time. They should be able to use their knowledge of time to add and subtract time intervals in minutes. This can be done by using a number line diagram.

2) Students should be able to work with liquid volumes and masses of objects in standard units of grams, kilograms, and liters. They should be able to apply these measurements to one-step word problems that involve mass and volume in the same unit. They should be able to use drawings to represent the problem.

SECTION 3: REPRESENT AND INTERPRET DATA

This is the largest section of the geometry unit; it includes five different skills, many of which require multiple applications.

3) Students should be able to draw a scaled picture graph and bar graph that represents a data set with multiple categories. They should be able to solve both one and two step "how many more" and "how many less" problems using the information provided by scaled bar graphs. Students should be able to draw a bar graph in which each square in the graph represents a specific number, such as 5 trees.

4) Students should be able to obtain their own measurement data, such as lengths, by using rulers that are marked with halves and fourths of an inch. They should be able to display this data by making a line plot in which the horizontal scale is marked with the appropriate units, such as whole numbers, halves, or quarters. Overall, geometrical measurement should incorporate understanding concepts of area and relating area to multiplication and addition.

5) Students should understand that area is an attribute of plane figures in addition to understanding the concept of area measurement. For example, a square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area. Also, a plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.

6) Students should be able to measure an area by counting unit squares, such as square cm, square m, square in, square ft, and other improvised units.

7) Students should see the relationship between are and the operations of multiplication and addition. They should practice, 1) finding the area of a rectangle with whole number side lengths in the context of solving real world and mathematical problems, and represent whole-number side lengths (a and b + c is the sum of a × b and a × c (use area models to represent the distributive property in mathematical reasoning), 2) multiplying side lengths (of whole numbers) to find the area of a rectangles in the context of real world mathematical problems- also, they should use mathematical reasoning to represent whole-number products as rectangular areas, 3) using tiling to show the area of a rectangle with whole number side lengths (a and b + c is the sum of a × b and a × c)- area models represent the distributive property in mathematical reasoning, 4) recognizing area as additive; finding areas of rectilinear figures by breaking them down into non-overlapping rectangles and adding the areas of the non-overlapping parts- they should apply this technique to solve real world problems.

A major principle they should understand is geometric measurement, which is defined as recognizing perimeter as an attribute of plane figures and distinguish between linear and area measures.

8) The common core standards place an emphasis on the ability of students to solve real world and mathematical problems that involve perimeters or polygons, including finding perimeter when given side lengths, finding an unknown side length, and displaying rectangles with the same perimeter and different areas or with the same area and different perimeters.