



Critical Areas for COHERENCE in Mathematics in 3rd Grade

In Grade 3, instructional time should focus on **five** critical areas:

1. Developing an understanding of all operations with a focus on multiplication and division and strategies for multiplication and division within 100.

Students develop and refine their understanding of all operations to solve multistep problems and focus on the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; multiplication is finding an unknown product, and division is finding an unknown factor in these situations. For equal-sized group situations, division can require finding the unknown number of groups or the unknown group size. Students use properties of operations (e.g., Associative Property and Distributive Property) to calculate products of whole numbers, using increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors. By comparing a variety of solution strategies, students learn the relationship between multiplication and division. Students understand that a word problem can be represented with an equation based on the situation, but the solution may use a related equation that is easier to manipulate (e.g., a word problem may be represented with a situation equation such as $54 + ? = 78$; and students understand that even though the word problem is a joining situation, it is easier to solve using a subtraction equation $\{78 - 54 = ?\}$).

2. Developing understanding of fractions, especially unit fractions (fractions with numerator of 1).

Students develop an understanding of fractions, beginning with unit fractions. Students view fractions in general as being built out of unit fractions, and they use fractions along with visual fraction models to represent parts of a whole. Students understand that the size of a fractional part is relative to the size of the whole. For example, $\frac{1}{2}$ of the paint in a small bucket could be less paint than $\frac{1}{3}$ of the paint in a larger bucket, but $\frac{1}{3}$ of a ribbon is longer than $\frac{1}{5}$ of the same ribbon because when the ribbon is divided into 3 equal parts, the parts are longer than when the ribbon is divided into 5 equal parts. Students are able to use fractions to represent numbers equal to, less than, and greater than one. They solve problems that involve comparing fractions by using visual fraction models and strategies based on noticing equal numerators or denominators.

3. Developing understanding of the structure of rectangular arrays and of area.

Students recognize area as an attribute of two-dimensional regions. They measure the area of a shape by finding the total number of same-size units of area required to cover the shape without gaps or overlaps, a square with sides of unit length being the standard unit for measuring area. Students understand that rectangular arrays can be decomposed into identical rows or into identical columns. By decomposing rectangles into rectangular arrays of squares, students connect area to multiplication, and justify using multiplication to determine the area of a rectangle.

4. Solving problems involving measurement.

Students add, subtract, multiply, and divide to solve one-step word problems involving masses or volumes. Students measure time (distinguishing between a.m. and p.m.) with intervals in minutes; and measure and estimate liquid volumes and masses of objects using standard units of measure. (Third grade students do not use cubic units).

5. Describing and analyzing two-dimensional shapes.

Students describe, analyze, and compare properties of two-dimensional shapes. They compare and classify shapes by their sides and angles, and connect these with definitions of shapes. Students also relate their fraction work to geometry by expressing the area of part of a shape as a unit fraction of the whole.