Emphases in Common Core Standards for Mathematical Content
Kindergarten – Grade 8

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Content Emphases by Cluster

Describes content emphases in the standards at the cluster level for each grade. These are provided because curriculum, instruction and assessment at each grade must reflect the focus and emphasis of the standards.

Not all of the content in a given grade is emphasized equally in the standards. The list of content standards for each grade is not a flat, one-dimensional checklist; this is by design. There are sometimes strong differences of emphasis even within a single domain. Some clusters require greater emphasis than the others based on the depth of the ideas, the time that they take to master, and/or their importance to future mathematics or the demands of college and career readiness. In addition, an intense focus on the most critical material at each grade allows depth in learning, which is carried out through the Standards for Mathematical Practice. Without such focus, attention to the practices would be difficult and unrealistic, as would best practices like formative assessment.

Therefore, to make relative emphases in the standards more transparent and useful, the NY Math Emphases designate clusters as Major, Additional and Supporting for the grade in question.

To say that some things have greater emphasis is not to say that anything in the standards can safely be neglected in instruction. Neglecting material will leave gaps in student skill and understanding and may leave students unprepared for the challenges of a later grade. The assessments will mirror the message that is communicated here: Major Clusters will be a majority of the assessment, Supporting Clusters will be assessed through their success at supporting the Major Clusters and Additional Clusters will be assessed as well. The assessments will strongly focus where the standards strongly focus.

In addition to identifying the Major, Additional and Supporting Clusters for each grade, suggestions are given in each grade for ways to connect the Supporting Clusters to the Major Clusters of the grade. Thus, rather than suggesting even inadvertently that some material not be taught, there is direct advice for teaching it in ways that foster greater focus and coherence.

Finally, the following are some recommendations for using the cluster-level emphases:

Do …

- Use the guidance to inform instructional decisions regarding time and other resources spent on clusters of varying degrees of emphasis.

- Allow the focus on the major work of the grade to open up the time and space to bring the Standards for Mathematical Practice to life in mathematics instruction through sense-making, reasoning, arguing and critiquing, modeling, etc.

- Evaluate instructional materials taking the cluster-level emphases into account. The major work of the grade must be presented with the highest possible quality; the supporting work of the grade should indeed support the major focus, not detract from it.

- Set priorities for other implementation efforts taking the emphases into account, such as staff development; new curriculum development; or revision of existing formative or summative testing at the state, district or school level.

Don't …

- Neglect any material in the standards. (Instead, use the information provided to connect Supporting Clusters to the other work of the grade.)

- Sort clusters from Major to Supporting, and then teach them in that order. To do so would strip the coherence of the mathematical ideas and miss the opportunity to enhance the major work of the grade with the supporting clusters.

- Use the cluster headings as a replacement for the standards. All features of the standards matter — from the practices to surrounding text to the particular wording of individual content standards. Guidance is given at the cluster level as a way to talk about the content with the necessary specificity yet without going so far into detail as to compromise the coherence of the standards.

Explanations of terms used:

Major clusters – areas of intensive focus, where students need fluent understanding and application of the core concepts (approximately 70%).

Supporting clusters – rethinking and linking; areas where some material is being covered, but in a way that applies core understandings (approximately 20%).

Additional Clusters – expose students to other subjects, though at a distinct, level of depth and intensity (approximately 10%).

Kindergarten

Major	Supporting	Additional
Counting and Cardinality ▪ Know number names and count sequence. ▪ Count to tell the number of objects. ▪ Compare numbers. **Operations and Algebraic Thinking** ▪ Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from. **Number and Operations in Base Ten** ▪ Work with numbers 11-19 to grain foundations for place value.	**Geometry** ☐ Identify and describe shapes. ☐ Analyze, compare, create, and compose shapes.	**Measurement and Data** o Describe and compare measurable attributes. o Classify objects in categories.

Depth Opportunities:

CC 4, 5, 6; OA 2, 4

Grade 1

Major	Supporting	Additional
Operations and Algebraic Thinking ▪ Represent and solve problems involving addition and subtraction. ▪ Understand and apply properties of operations and the relationship between addition and subtraction. ▪ Add and subtract within 20. ▪ Work with addition and subtraction equations. **Number and Operations in Base Ten** ▪ Extend the counting sequence. ▪ Understand place value. ▪ Use place value understanding and properties of operations to add and subtract. **Measurement and Data** ▪ Measure lengths indirectly and by iterating length units.	**Geometry** ☐ Reason with shapes and their attributes.	**Measurement and Data** o Tell and write time. o Represent and interpret data.

Depth Opportunities:

OA 1, 6; NBT 2, 4; MD 2

Grade 2

Major	Supporting	Additional
Operations and Algebraic Thinking ▪ 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** ▪ Understand place value. ▪ Use place value understanding and properties of operations to add and subtract. **Measurement and Data** ▪ Measure and estimate lengths in standard units. ▪ Relate addition and subtraction to length.	**Geometry** ☐ Reason with shapes and their attributes.	**Measurement and Data** o Work with time and money. o Represent and interpret data.

Depth Opportunities:

OA 1, 2; NBT 1, 7; MD 5

Grade 3

Major	Supporting	Additional
Operations and Algebraic Thinking ▪ Represent and solve problems involving multiplication and division. ▪ Understand the properties of multiplication and the relationship between multiplication and division. ▪ Multiply and divide within 100. ▪ Solve problems involving the four operations, and identify and explain patterns in arithmetic. **Number and Operations – Fractions** ▪ Develop understanding of fractions as numbers. **Measurement and Data** ▪ Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects. ▪ Geometric measurement: understand concepts of area and relate area to multiplication and to addition.	**Geometry** ☐ Reason with shapes and their attributes.[1] **Measurement and Data** ☐ Represent and interpret data. [2]	**Number and Operations in Base Ten** o Use place value understanding and properties of operations to perform multi-digit arithmetic. **Measurement and Data** o Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

Depth Opportunities:

OA 3, 6; NF 3; MD 2, 7

[1] *Work should be positioned in support of area measurement and understanding of fractions.*
[2] *Students multiple and divide to solve problems using information presented in scaled bar graphs. Pictographs and scaled bar graphs are a visually appealing context for one- and two-step word problems.*

Grade 4

Major	Supporting	Additional
Operations and Algebraic Thinking ▪ Use the four operations with whole numbers to solve problems. **Number and Operations in Base Ten** ▪ Generalize place value understanding for multi-digit whole numbers. ▪ Use place value understanding and properties of operations to perform multi-digit arithmetic. **Number and Operations – Fractions** ▪ Extend understanding of fraction equivalence and ordering. ▪ Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. ▪ Understand decimal notation for fractions, and compare decimal fractions.	**Operations and Algebraic Thinking** ☐ Gain familiarity with factors and multiples. [3] **Measurement and Data** ☐ Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. ☐ Represent and interpret data. [4]	**Operations and Algebraic Thinking** o Generate and analyze patterns. **Measurement and Data** o Geometric measurement: understand concepts of angles and measure angles. **Geometry** o Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Depth Opportunities:

NBT 5, 6; NF 1, 3, 4

[3] *Work in this cluster supports students' work with multi-digit arithmetic as well as their work with fraction equivalence.*

[4] *The standard in this cluster requires students to use a line plot to display measuresments in fractions of a unit and to solve problems involving addition and subtraction of fractions, connecting it directly to the Number and Operations – Fractions clusters.*

Grade 5

Major	Supporting	Additional
Number and Operations in Base Ten ▪ Understand the place value system. ▪ Perform operations with multi-digit whole numbers and with decimals to hundredths. **Number and Operations – Fractions** ▪ Use equivalent fractions as a strategy to add and subtract fractions. ▪ Apply and extend previous understandings of multiplication and division to multiply and divide fractions. **Measurement and Data** ▪ Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.	**Measurement and Data** ☐ Represent and interpret data. [5] ☐ Convert like measurement units within a given measurement system. [6]	**Operations and Algebraic Thinking** o Write and interpret numerical expressions. o Analyze patterns and relationships. **Geometry** o Graph points on the coordinate plane to solve real-world and mathematical problems. o Classify two-dimensional figures into categories based on their properties.

Depth Opportunities:

NBT 1, 6; NF 2, 4; MD 5

[5] *The standard in this cluster provides an opportunity for solving real-world problems with operations on fractions, connecting directly to both number and Operations – Fractions clusters.*

[6] *Work in these standards supports computation with decimals. For example, converting 5 cm to .05 m involves computation with decimals to hundredths.*

Grade 6

Major	Supporting	Additional
Ratios and Proportional Relationships ▪ Understand ratio concepts and use ratio reasoning to solve problems. **The Number System** ▪ Apply and extend previous understandings of numbers to the system of rational numbers. ▪ Apply and extend previous understandings of multiplication and division to divide fractions by fractions. **Expressions and Equations** ▪ Apply and extend previous understandings of arithmetic to algebraic expressions. ▪ Reason about and solve one-variable equations and inequalities. ▪ Represent and analyze quantitative relationships between dependent and independent variables.	**Geometry** □ Solve real-world and mathematical problems involving area, surface area, and volume.[7]	**Statistics and Probability** o Develop understanding of statistical variability. o Summarize and describe distributions. **The Number System** o Compute fluently with multi-digit numbers and find common factors and multiples.

Depth Opportunities:

RP 3; NS 1; NS 8; EE 3, 7

[7] *In this cluster, students work on problems with areas of triangles and volumes of right rectangular prisms, which connects to work in the Expressions and Equations domain. In addition, another standard within this cluster asks students to draw polygons in the coordinate plane, which supports work with the coordinate plane in the Number System domain.*

Grade 7

Major	Supporting	Additional
Ratios and Proportional Relationships ▪ Analyze proportional relationships and use them to solve real-world and mathematical problems. **The Number System** ▪ Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. **Expressions and Equations** ▪ Use properties of operations to generate equivalent expressions. ▪ Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	**Statistics and Probability** ☐ Use random sampling to draw inferences about a population. [8] ☐ Investigate chance processes and develop, use, and evaluate probability models. [9]	**Statistics and Probability** o Draw informal comparative inferences about two populations. **Geometry** o Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. o Draw, construct and describe geometrical figures and describe the relationships between them.

Depth Opportunities:

RP 2; NS 3; EE 3, 4; G 6

[8] *The standards in this cluster represent opportunities to apply percentages and proportional reasoning. In order to make inferences about a population, one needs to apply such reasoning to the sample and the entire population.*
[9] *Probability models draw on proportional reasoning and should be connected to the major work in those standards.*

Grade 8

Major	Supporting	Additional
Expressions and Equations ▪ Work with radicals and integer exponents. ▪ Understand the connections between proportional relationships, lines, and linear equations. ▪ Analyze and solve linear equations and pairs of simultaneous linear equations. **Functions** ▪ Define, evaluate, and compare functions. **Geometry** ▪ Understand and apply the Pythagorean Theorem. ▪ Understand congruence and similarity using physical models, transparencies, or geometry software.	**The Number System** ☐ Know that there are numbers that are not rational, and approximate them by rational numbers. [10] **Functions** ☐ Use functions to model relationships between quantities. [11] **Statistics and Probability** ☐ Investigate patterns of association in bivariate data. [12]	**Geometry** o Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.

Depth Opportunities:

EE 5, 7, 8; F 2; G 7

[10] *Work with the number system in this grade is intimately related to work with radicals, and both of these may be connected to the Pythagorean Theorem as well as to volume problems, e.g., in which a cube has known volume but unknown edge lengths.*

[11] *The work in this cluster involves functions for modeling linear relationships and a rate of change/initial value, which supports work with proportional relationships and setting up linear equations.*

[12] *Looking for patterns in scatterplots and using linear models to describe data are directly connected to the work in the Expressions and Equations clusters. Together, these represent a connection to the Standard for Mathematical Practice Model with mathematics.*