3rd grade Mathematics Considerations from Achieve the Core/CCSSO

2020–21 Priority Instructional Content in English Language Arts/Literacy and Mathematics

Grade 3 Mathematics Priority Instructional Content for the 2020–21 School Year

The Mathematics Priority Instructional Content for the 2020–21 School Year (Mathematics Instructional Priorities) is designed to support decisions about how to elevate some of the most important mathematics at each grade level in the coming school year while reducing time and intensity for topics that are less integral to the overall coherence of college- and career-ready standards.

At each grade level from kindergarten through grade 8, the Mathematics Instructional Priorities name the grade-level mathematics that is of highest priority at each grade; provide a framework for strategically drawing in prior grade-level content that has been identified as essential for supporting students' engagement with the most important grade-level work; and suggest ways to reduce or sometimes eliminate topics in a way that minimizes the impact to overall coherence. In using this guidance, decision makers should thoughtfully consider in their unique context the likely implications of the spring 2020 disruption as decisions are made to select supports to ensure that students are able to successfully engage with the grade-level content. Decision makers should also bear in mind that while this document articulates content priorities, elevating the Standards for Mathematical Practice in connection with grade-level content is always a priority.

At each grade level, recommendations are provided for facilitating social, emotional, and academic development (SEAD) in mathematics. These recommendations stress themes of discourse, belonging, agency, and identity and can either be applied across grades (even if only listed in one) or they can be modified to fit different grades. These themes of discourse, belonging, agency, and identity are integral to the Standards of Mathematical Practice and the language in the recommendations reflects this connection.

The 2020–21 school year presents a unique set of opportunities and challenges due to the disruption to instruction in spring 2020 as well as the uncertainty associated with the 2020–2021 school year. The Mathematics Instructional Priorities are provided in response to these conditions. They are not criteria, and they do not revise the standards. Rather, they are potential ways, and not the only ways possible, to help students engage deeply with grade-level mathematics in the 2020–21 school year.

The Mathematics Instructional Priorities do not stand alone but are to be used in conjunction with college- and career-ready standards. One reason for this is that codes such as 3.OA.A must be traced back to the standards in order to see the language to which they refer. The Mathematics Instructional Priorities do not reiterate what the standards already say—even in cases where the specific language of a standard is fundamentally important to a high-quality aligned curriculum. Nor do the Mathematics Instructional Priorities mention every opportunity the standards afford to make coherent connections within a grade or between one grade and another—again, even when those connections are fundamentally important and are the basis for the guidance given. Therefore the Mathematics Instructional Priorities will be used most powerfully in cross-grade collaboration among educators who know the standards well and can use existing resources such as the *Progressions* documents and other resources listed in the Appendix.

While the grade-level guidance isn't specific to any math program or set of programs, an examination of a selection of curriculum scope and sequence documents informed the recommendations, especially recommendations about when and how to integrate prior-grade concepts into the current grade. The guidance does not list all possible prior-grade content relevant to the current grade, but instead concentrates the recommendations on the most critical prior-grade connections, with greater emphasis on that content which was likely taught during the last third of the 2019–20 school year based on the scope and sequence analysis.

Where to focus Grade 3 Mathematics?

College- and career-ready mathematics standards have important emphases at each grade level, which for grade 3 are highlighted in this Focus Document. The considerations for the 2020–21 school year that follow are intended to be a companion to the Focus Document. Users should have both documents in hand, as well as a copy of grade-level standards, when considering these recommendations.

For the 2020–21 school year, prioritization of grade-level mathematical concepts combined with some incorporation of prior-grade knowledge and skills will be essential to support all students in meeting grade-level expectations. For these unique times, Student Achievement Partners has developed additional guidance above and beyond what is communicated through the major work designations. As described at greater length on the previous page, the following tables:

- Name priority instructional content at each grade;
- Provide considerations for addressing grade-level content in a coherent way;
- Articulate selected content from the prior grade that may be needed to support students in fully engaging with grade-level mathematics;
- Suggest where adaptations can be made to allow for additional time on the most important topics; and
- Provide suggestions for ways to promote social, emotional, and academic development (SEAD) in grade-level mathematics learning, often through the Standards for Mathematical Practice.

The considerations repeatedly use several verbs, such as *combine*, *integrate*, etc. The verbs most commonly used in the considerations are italicized below and defined in a glossary in the Appendix. Note that content is designated at the cluster level when the guidance refers to the cluster and its standards, and at the standard level in cases where guidance varies within a cluster.

Considerations for Addressing PRIORITY Grade-Level Content	
The clusters and standards listed in this table name the priority instructional content for grade 3. The right-hand column contains approaches to shifting how time is dedicated to the clusters and standards in the left-hand column.	
Clusters/Standards	**Considerations**
3.OA.A	No special considerations for curricula well aligned to multiplication and division concepts and problem solving, as detailed in this cluster. Students may need extra support to see row and column structure in arrays of objects. Time spent on instruction and practice should NOT be reduced.
3.OA.B 3.OA.C	*Incorporate* additional practice with double-digit sums (2.NBT.B.5) to support the grade 3 multiplication work with the properties of operations, especially the distributive property.
3.OA.D.8	No special considerations for curricula well aligned to two-step word problems using the four operations, as detailed in this standard. Time spent on instruction and practice should NOT be reduced.
3.NF.A	*Emphasize* the concept of unit fraction as the basis for building fractions. *Prioritize* the number line as a representation to develop students' understanding of fractions as numbers by foregrounding the magnitude, location, and order of fractions among whole numbers (3.NF.A.2)

Considerations for Addressing REMAINING Grade-Level Content	
The clusters and standards listed in this table represent the remainder of grade 3 grade-level content. The right-hand column contains approaches to shifting how time is dedicated to the clusters and standards in the left-hand column.	
Clusters/Standards	**Considerations**
3.OA.D.9*	*Eliminate* lessons or problems on arithmetic patterns.

3.NBT.A.1	*Combine* lessons on rounding in order to reduce the amount of time spent on rounding numbers. *Limit* the amount of required student practice.
3.NBT.A.2	No special considerations for curricula well aligned to addition and subtraction within 1000, as detailed in this standard. Time spent on instruction and practice should not exceed what would be spent in a typical year.
3.NBT.A.3	*Combine* lessons in order to reduce time spent multiplying by multiples of 10. *Emphasize* the connection to single-digit products and tens units.
3.MD.A*	*Combine* lessons in order to reduce the amount of time spent on time, volume, and mass. *Reduce* the amount of required student practice.
3.MD.B.3	*Eliminate* lessons on creating scaled graphs. *Integrate* a few problems with scaled graphs only as settings for multiplication word problems (3.OA.A.3) and two-step word problems (3.OA.8).
3.MD.B.4	*Eliminate* any lessons or problems that do not strongly reinforce the fraction work of this grade (3.NF.A). *Incorporate* foundational work measuring with rulers (2.MD.A) to support entry into generating fractional measurement data in grade 3.
3.MD.C*	*Emphasize* enduring concepts of geometric measurement (iterating a unit with no gaps or overlaps) (3.MD.C.5) and students using area models to support their mathematical explanations involving the distributive property for products (3.MD.C.7c). *Combine* lessons in order to reduce the amount of time spent on measuring area and *limit* the amount of required student practice.
3.MD.D	*Integrate* a few problems on perimeter into work on area (3.MD.C).
3.G.A.1	*Combine* lessons on shapes and their attributes in order to reduce the amount of time spent on this standard.
3.G.A.2	*Eliminate* separate geometry lessons on partitioning shapes.

**While these clusters are Major Work of the Grade, during the 2020–21 school year, it is recommended that they receive lighter treatment in favor of other priority instructional content.*

Facilitate Social, Emotional, and Academic Development (SEAD)[12] Through Grade-Level Content	
The left-hand column contains sample actions for how SEAD can be effectively integrated into grade-level mathematics instruction, in connection with Standards for Mathematical Practice named in the right-hand column. Efforts should be made to facilitate SEAD even in remote learning environments, using synchronous and asynchronous approaches and the capabilities afforded by remote learning technologies.	
Sample Actions	**Connection to Standards for Mathematical Practice (SMP)**
Establish discussion protocols to facilitate students' engagement in peer-to-peer mathematical discourse (for example, about the meaning of multiplication and division, reasoning about fractions) that supports active listening, values diverse perspectives and insights, sets team roles, and ensures there is equity of voice and responsibility.	MP6: Attend to precision.
Attend to the ways in which students position one another as capable or not capable of doing mathematics and provide opportunities to elevate the voices of marginalized students, such as strategically sharing student work, student thinking, and solutions.	MP3: Construct viable arguments and critique the reasoning of others.
Draw on knowledge and experiences that students bring to mathematics (culture, contexts, language, and experiences) by using multiple representations and contexts (for example, when working with multiplication and division situations).	MP2: Reason abstractly and quantitatively.

[12] Sample SEAD actions contribute to students' sense of belonging and safety, efficacy, value for effort and growth, as well as a sense of engagement in work that is relevant and culturally responsive. The actions can be modified to fit any grade, K–8, by considering the content of that grade level. See other grade-level Mathematics Instructional Priorities documents for additional samples.

3rd Grade Math Important Prerequisites

Prerequisite Standard Address before or within grade-level instruction	Grade-Level Standard ■ Major ▣ Supporting ▣ Additional	Standard Language	Instructional Time Preserve or reduce time in 20-21 as compared to a typical year, per SAP guidance
2.G.A.1	▣3.G.A.1 *Conceptual*	Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.	*Combine lessons on shapes and their attributes in order to reduce the amount of time spent on this standard.*
2.G.A.3	▣3.G.A.2 *Conceptual, Procedural*	Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.*	*Eliminate separate geometry lessons on partitioning shapes.*
2.MD.C.7	■3.MD.A.1 *Procedural, Application*	Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.	*Combine lessons in order to reduce the amount of time spent on time, volume, and mass. Reduce the amount of required student practice.*
	■3.MD.A.2 *Application*	Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.	
	▣3.MD.B.3 *Application*	Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.*	*Eliminate lessons on creating scaled graphs. Integrate a few problems with scaled graphs only as settings for multiplication word problems (3.OA.A.3) and two-step word problems (3.OA.D.8).*
	▣3.MD.B.4 *Procedural, Application*	Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units - whole numbers, halves, or quarters.	*Eliminate any lessons or problems that do not strongly reinforce the fraction work of this grade (3.NF.A).*
2.MD.A.1	■3.MD.C.5 *Conceptual*	Recognize area as an attribute of plane figures and understand concepts of area measurement.	*Emphasize enduring concepts of geometric*
	■3.MD.C.5a *Conceptual*	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.	

	3.MD.C.5b *Conceptual*	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.	*measurement (iterating a unit with no gaps or overlaps) (3.MD.C.5) and students using area models to support their mathematical explanations involving the distributive property for products (3.MD.C.7c). Combine lessons in order to reduce the amount of time spent on measuring area and limit the amount of required student practice.*
2.G.A.2	3.MD.C.6 *Conceptual, Procedural*	Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).	
	3.MD.C.7 *Conceptual*	Relate area to the operations of multiplication and addition.	
	3.MD.C.7a *Conceptual*	Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.	
	3.MD.C.7b *Procedural, Application*	Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.	
	3.MD.C.7c *Conceptual*	Use tiling to show in a concrete case that the area of a rectangle with 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.	
	3.MD.C.7d *Conceptual, Application*	Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.	
	3.MD.D.8 *Conceptual, Procedural, Application*	Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.	*Integrate a few problems on perimeter into work on area (3.MD.C).*
2.MD.A.2, 2.G.A.3	3.NF.A.1 *Conceptual*	Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b.	*Emphasize the concept of unit fraction as the basis for building fractions. Prioritize the number line as a representation to develop students' understanding of fractions as numbers by foregrounding the magnitude, location, and order of fractions among whole numbers (3.NF.A.2)*
2.MD.B.6	3.NF.A.2 *Conceptual*	Understand a fraction as a number on the number line; represent fractions on a number line diagram.	
	3.NF.A.2a *Conceptual*	Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line.	
	3.NF.A.2b *Conceptual*	Represent a fraction a/b on a number line diagram by marking off a lengths 1/b from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.	
	3.NF.A.3 *Conceptual*	Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.	
	3.NF.A.3a *Conceptual*	Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.	

	3.NF.A.3b *Conceptual*	Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3. Explain why the fractions are equivalent, e.g., by using a visual fraction model.	
	3.NF.A.3c *Conceptual*	Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.	
	3.NF.A.3d *Conceptual*	Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.	
	3.NBT.A.1 *Conceptual, Procedural*	Use place value understanding to round whole numbers to the nearest 10 or 100.	*Combine lessons on rounding in order to reduce the amount of time spent on rounding numbers. Limit the amount of required student practice.*
2.NBT.A.1, 2.NBT.B.7, 2.NBT.B.8, 2.NBT.B.9, 2.OA.B.2	3.NBT.A.2 *Conceptual, Procedural*	Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.	
	3.NBT.A.3 *Conceptual, Procedural*	Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.	*Combine lessons in order to reduce time spent multiplying by multiples of 10. Emphasize the connection to single-digit products and tens units.*
2.NBT.A.2, 2.OA.C.3, 2.OA.C.4	3.OA.A.1 *Conceptual*	Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as 5 × 7.*	*Students may need extra support to see row and column structure in arrays of objects.*
	3.OA.A.2 *Conceptual*	Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. *For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.*	
	3.OA.A.3 *Application*	Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	
	3.OA.A.4 *Procedural*	Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = _ ÷ 3, 6 × 6 = ?*	

2.NBT.B.5 2.NBT.B.5	■3.OA.B.5 *Conceptual*	Apply properties of operations as strategies to multiply and divide. *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15 then 15 × 2 = 30, or by 5 × 2 = 10 then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)*	
	■3.OA.B.6 *Conceptual*	Understand division as an unknown-factor problem. *For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.*	
	■3.OA.C.7 *Procedural*	Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.	
2.OA.A.1	■3.OA.D.8 *Application*	Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.	
	■3.OA.D.9 *Conceptual, Application*	Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*	*Eliminate lessons or problems on arithmetic patterns.*

- **What should we make of standards that have an important prerequisite that needs to be addressed, but a reduction in instructional time is also recommended?** These considerations should be weighed together, along with the needs of your group of students. For example, the time spent on a standard might be reduced from five days to three days by de-emphasizing one part of the standard, but prior-grade needs might be addressed within the first lesson through strategic choice of tasks.

Category	Meaning	Example	Actions to take
Address **before** grade-level instruction	Without this prior knowledge, students most likely do not have a way to access the grade-level standard.	A 7th-grader who has not learned how to divide positive fractions (6.NS.A.1) needs to build that understanding before beginning to divide negative fractions (7.NS.A.2c).	Students may require **dedicated instruction** on prerequisite standards before the grade level instruction is taught. (Not every standard needs its own full lesson; multiple standards may be addressed at once, or a standard might be taught as a short mini-lesson.)
Address **within** grade-level instruction	Students will have an entry point into grade-level content, but will benefit from instruction that weaves in this prior-grade content.	A 4th-grader who struggles with recalling multiplication facts (3.OA.C.7) can still access grade-level, multi-step application problems (4.OA.A.3) when given a multiplication table, but will need small doses of continued support to attain fluency.	**Individual tasks or strategies** from these standards can be incorporated into grade-level lessons to address important content that was missed in the prior grade.

See Complete K-8 Documents here:

2020–21 Priority Instructional Content from Achieve the Core
https://achievethecore.org/content/upload/2020%E2%80%9321%20Priority%20Instructional%20Content%20in%20ELA%20Literacy%20and%20Mathematics_June%202020.pdf

Math Important prerequisite skills list from CCSSO:
https://docs.google.com/document/d/1mcApF1n7sPI7XsrIx29Ab_tmAAvne4A-VuJKSWb_qSg/edit