August 2020

STATE OF NEW JERSEY
DEPARTMENT OF EDUCATION

Grade 4: New Jersey Student Learning Standards for Mathematics - Prerequisite Standards and Learning Objectives

Description

Included here are the prerequisite concepts and skills necessary for students to learn grade level content based on the New Jersey Student Learning Standards in mathematics. This tool is intended to support educators in the identification of any gaps in conceptual understanding or skill that might exist in a student's understanding of mathematics standards. The organization of this document mirrors that of the mathematics instructional units, includes all grade level standards, and reflects a grouping of standards and student learning objectives.

The tables are divided into three columns. The first column contains the grade level standard and student learning objectives, which reflect the corresponding concepts and skills in that standard. The second column contains standards from prior grades and the corresponding learning objectives, which reflect prerequisite concepts and skills essential for student attainment of the grade level standard as listed in the first column. Given that a single standard may reflect multiple concepts and skills, all learning objectives for a prior grade standard may not be listed. Only those prior grade learning objectives that reflect prerequisite concepts and skills important for attainment of the associated grade level standard is listed. The third column contains Student Achievement Partners' recommendations (SAP) for the 2020-21 school year regarding preserving or reducing time as compared to a typical academic year.

Content Emphases Key: ■ : Major Cluster ▣: Supporting Cluster ◎ : Additional Cluster

Unit 1: Place Value and Operations with Whole Numbers

Rationale for Unit Focus

Unit 1 focuses on place value and builds on learners' prior work reading and writing numbers using base-ten numerals, number names, and expanded form. Learners go beyond representing numbers to 1000 to representing any whole number in any of these forms. They use these understandings to round numbers to any place.

Having been introduced to multiplication and division in grade 3, grade 4 learners use these understandings to find factor pairs and to determine whether one whole number is a multiple of another one-digit number. They deepen their understanding of multiplication and relationships to

represent verbal statements of multiplicative comparisons as multiplication equations. The continue to solve multistep word problems and extend that skill to interpreting problems for which the remainder must be interpreted. Learners represent these problems using equations with a variable. They use both mental computation and estimation strategies to assess the reasonableness of their answers.

In grade 3, learners' experiences developed fluency for addition and subtraction within 1000. They demonstrated fluency using various strategies and algorithms based on place value or properties of operations. In grade 4, students become fluent with the standard algorithm for addition and subtraction for any multi-digit whole numbers.

Note: Double asterisks (**) indicate that the example(s) included within the New Jersey Student Learning Standard may be especially informative when considering the Student Learning Objective.

Unit 1, Module A

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
4.NBT.A.1 Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.* We are learning to/that… ▪ recognize that a digit represents 10 times the value of what it represents in the place value to its right	**2.NBT.A.1** Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. a. 100 can be thought of as a bundle of ten tens — called a "hundred." b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones). We have learned to/that…	No special considerations for curricula well aligned to generalizing place value understanding, as detailed in this standard or cluster. Time spent on instruction and practice should **not** be reduced.

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations *SAP* recommendation to preserve or reduce time in 20-21 as compared to a typical year
	▪ represent a word problem using drawings and equations using a symbol for the unknown ▪ a three-digit number is made up of hundreds, tens, and ones ▪ the three digits of a three-digit number represent amounts of hundreds, amounts of tens, and amounts of ones ▪ 100 is a bundle of ten tens called a "hundred" ▪ The numbers 100, 200, 300, 400, 500, 600, 700, 800, and 900 refer to 1, 2, 3, 4, 5, 6, 7, 8, or 9 hundreds (and 0 tens and 0 ones)	

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations *SAP* recommendation to preserve or reduce time in 20-21 as compared to a typical year
4.NBT.A.2 Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. We are learning to/that… ▪ read and write multi digit whole numbers in base-ten numerals, word, and expanded form ▪ compare two multi digit numbers based on place value using <,>, =, to record the results of the comparison	n/a	No special considerations for curricula well aligned to generalizing place value understanding, as detailed in this standard or cluster. Time spent on instruction and practice should **not** be reduced
4.NBT.A.3 Use place value understanding to round multi-digit whole numbers to any place. We are learning to/that… ▪ round multi-digit numbers to any place using place value understanding	**3.NBT.A.1** Use place value understanding to round whole numbers to the nearest 10 or 100. We have learned to/that… ▪ round whole numbers to the nearest 10 or 100, using place value understanding	No special considerations for curricula well aligned to generalizing place value understanding, as detailed in this standard or cluster. Time spent on instruction and practice should **not** be reduced.

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations *SAP* recommendation to preserve or reduce time in 20-21 as compared to a typical year
4.NBT.B.4 Fluently add and subtract multi-digit whole numbers using the standard algorithm. We are learning to/that… ▪ add multi-digit whole numbers using the standard algorithm working towards accuracy and efficiency ▪ subtract multi-digit whole numbers using the standard algorithm working towards accuracy and efficiency	**3.NBT.A.2** 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. We have learned to/that… ▪ add within 1000 with accuracy and efficiency using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction ▪ subtract within 1000 with accuracy and efficiency using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction	In relation to fluency expectations for subtracting multi-digit numbers, *emphasize* problems with only one regrouping step (4.NBT.B.4), in order to reduce algorithm complexity. *Incorporate* fluency expectations of 3.OA.C.7 by giving additional practice sets related to products of single digit factors and related quotients (with unknowns in all positions) into grade 4 work on multi-digit multiplication and division (4.NBT.B.5 and 4.NBT.B.6). Note that there are no fluency expectations for multi-digit multiplication or division in grade 4; repetitive fluency exercises are not required.

Unit 1, Module B

Standard and Student Learning Objectives	**Previous Grade(s) Standards and Student Learning Objectives**	**Instructional Considerations** SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
4.OA.C.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.* We are learning to/that… ▪ generate a number or shape pattern that follows a given rule ▪ identify the features of a pattern that are not explicit in the rule	**3.OA.D.9** 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. We have learned to/that… ▪ identify arithmetic patterns, including patterns in the addition table or multiplication table, and explain them using properties of operations	*Limit* lessons on generating and analyzing patterns.
4.OA.B.4 Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.	**3.OA.C.7** 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. We have learned to/that…	*Incorporate* opportunities to solidify the fluency expectations of 3.OA.C.7 by giving additional practice sets related to products of single-digit factors and related quotients (with unknowns in all positions) into the grade 4 work of gaining familiarity with factors and multiples.

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
We are learning to/that… ▪ find all factors pairs for a whole number in the range 1 through 100 ▪ recognize that a whole number is a multiple of each of its factors ▪ determine whether a given whole number is a multiple of a given one-digit number in the range 1 through 100 ▪ determine whether a given whole number is prime or composite in the range 1 through 100	▪ multiply and divide within 100 using strategies such as the relationship between multiplication and division, or properties of operations (working towards accuracy and efficiency)	
4.OA.A.1 Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. We are learning to/that… ▪ interpret multiplication equations as a comparison statement ▪ represent verbal comparison statements as multiplication equations	**3.OA.A.1** 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 and/or represent a context in which a total number of objects can be expressed as 5 × 7.* We have learned to/that… ▪ interpret products of whole numbers in terms of the number of groups and objects** **3.OA.A.3** Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings	No special considerations for curricula well aligned to analyzing and solving multi-step word problems with the four operations (4.OA.A.3), and extending multiplicative thinking beyond grade 3 to solve problems involving comparison and the idea of times-as-many/times-as-much (4.OA.A.2).

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
	and equations with a symbol for the unknown number to represent the problem. We have learned to/that… ▪ use multiplication and division within 100 to solve word problems in situations involving: equal groups, arrays and measurement quantities ▪ use drawings and equations with a symbol for the unknown number to represent multiplication and division word problems within 100	
4.OA.A.2 Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. We are learning to/that… ▪ distinguish multiplicative comparison from additive comparison ▪ multiply and divide to solve word problems involving multiplicative comparisons, using drawings and equations containing a variable to represent the problem	**3.OA.A.3** 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. We have learned to/that… ▪ use multiplication and division within 100 to solve word problems in situations involving: equal groups, arrays and measurement quantities ▪ use drawings and equations with a symbol for the unknown number to represent multiplication and division word problems within 100	No special considerations for curricula well aligned to analyzing and solving multi-step word problems with the four operations (4.OA.A.3), and extending multiplicative thinking beyond grade 3 to solve problems involving comparison and the idea of times-as-many/times-as-much (4.OA.A.2).

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. 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. We are learning to/that… ▪ solve multi-step whole number word problems that have whole number answers, including problems in which remainders must be interpreted ▪ represent these problems using equations with a letter standing for the unknown quantity ▪ assess the reasonableness of answers using mental computation, estimation strategies, and rounding	**3.OA.D.8** 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. We have learned to/that… ▪ solve simple two-step word problems using the four operations ▪ represent two-step word problems using equations with a letter standing for the unknown quantity ▪ assess the reasonableness of answers in two-step word problems using mental computation and estimation strategies including rounding	No special considerations for curricula well aligned to analyzing and solving multi-step word problems with the four operations (4.OA.A.3), and extending multiplicative thinking beyond grade 3 to solve problems involving comparison and the idea of times-as-many/times-as-much (4.OA.A.2).

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The tables are divided into three columns. The first column contains the grade level standard and student learning objectives, which reflect the corresponding concepts and skills in that standard. The second column contains standards from prior grades and the corresponding learning objectives, which reflect prerequisite concepts and skills essential for student attainment of the grade level standard as listed in the first column. Given that a single standard may reflect multiple concepts and skills, all learning objectives for a prior grade standard may not be listed. Only those prior grade learning objectives that reflect prerequisite concepts and skills important for attainment of the associated grade level standard is listed. The third column contains Student Achievement Partners' recommendations (SAP) for the 2020-21 school year regarding preserving or reducing time as compared to a typical academic year.

Content Emphases Key: ■ : Major Cluster ▣: Supporting Cluster ◎ : Additional Cluster

Unit 2: Multi-digit Multiplication and Division & Fraction Equivalence

Rationale for Unit Focus

In Unit 2, learners extend their work with multiplication and division to focus on multi-digit numbers. They multiply whole numbers up to four digits by a one-digit number and multiply two two-digit numbers. They work with four-digit dividends and one-digit divisors to find whole number quotients. Learners continue to use strategies based on place value and the properties of operations from grade 3 to multiply and divide, while illustrating and explaining their calculations using equations, rectangular arrays, and area models. Learners build on the work of the prior unit – solving word problems that involve multiplicative comparison – to solve multi-step word problems involving the four

operations. They represent these problems using equations with variables and they use mental computation and appropriate estimation strategies to determine whether their answers are reasonable.

In second module of this unit, learners build upon their grade 3 understandings of fraction equivalence. In grade 3, learners determined fraction equivalence by comparing size or by locating fractions at the same point on the number line. They also recognized and generated simple equivalent fractions and used visual fraction models to illustrate their equivalence. Now in grade 4, learners compare the number of parts and the size of the parts when comparing two fractions that are the same size. They use this principle to recognize and generate equivalent fractions.

Unit 2 concludes as students develop understanding of adding and subtracting fractions as joining and separating parts that refer to the same whole. With this understanding in place, they then decompose fractions whose numerator is larger than into a sum of fractions and justify these decompositions with visual fraction models.

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Unit 2, Module A

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations *SAP* recommendation to preserve or reduce time in 20-21 as compared to a typical year
4.NBT.B.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. We are learning to/that… ▪ multiply up to four-digit by one-digit numbers using strategies based on place value and properties of operations	**3.OA.C.7** 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. We have learned to/that… ▪ multiply and divide within 100 using strategies such as the relationship between multiplication and division, or	In relation to fluency expectations for subtracting multi-digit numbers, *emphasize* problems with only one regrouping step (4.NBT.B.4), in order to reduce algorithm complexity. *Incorporate* fluency expectations of 3.OA.C.7 by giving additional practice sets related to products of single digit factors and related quotients (with unknowns in all positions) into grade 4 work on multi-digit multiplication and division (4.NBT.B.5 and 4.NBT.B.6).

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
▪ multiply two two-digit numbers using strategies based on place value and properties of operations ▪ illustrate and explain the multiplication calculation by using equations, rectangular arrays, and area models	properties of operations (working towards accuracy and efficiency) **3.NBT.A.2** 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. We have learned to/that… ▪ add within 1000 with accuracy and efficiency using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction **3.NBT.A.3** 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. We have learned to/that… ▪ multiply and divide within 100 using strategies such as: relationship between multiplication and division or properties of operations (working towards accuracy and efficiency)	Note that there are no fluency expectations for multi-digit multiplication or division in grade 4; repetitive fluency exercises are not required.
4.NBT.B.6 Find whole-number quotients and remainders with up to four-digit	**3.OA.C.7** Fluently multiply and divide within 100, using strategies such as the	In relation to fluency expectations for subtracting multi-digit numbers, *emphasize*

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. We are learning to/that… ▪ find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors using strategies based on place value ▪ illustrate and explain the division calculation by using equations, rectangular arrays, and/or area models ▪ find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors using strategies based on properties of operations and/or the relationship between multiplication and division	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. We have learned to/that… ▪ multiply and divide within 100 using strategies such as the relationship between multiplication and division, or properties of operations (working towards accuracy and efficiency) **3.NBT.A.2** 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. We have learned to/that… ▪ subtract within 1000 with accuracy and efficiency using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction	problems with only one regrouping step (4.NBT.B.4), in order to reduce algorithm complexity. *Incorporate* fluency expectations of 3.OA.C.7 by giving additional practice sets related to products of single digit factors and related quotients (with unknowns in all positions) into grade 4 work on multi-digit multiplication and division (4.NBT.B.5 and 4.NBT.B.6). Note that there are no fluency expectations for multi-digit multiplication or division in grade 4; repetitive fluency exercises are not required.
4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four	**3.OA.D.8** Solve two-step word problems using the four operations. Represent these problems using equations with a letter	*For curricula and lessons that are well aligned to* analyzing and solving multi-step word problems with the four operations

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
operations, including problems in which remainders must be interpreted. 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. We are learning to/that… ▪ solve multi-step whole number word problems that have whole number answers, including problems in which remainders must be interpreted ▪ represent these problems using equations with a letter standing for the unknown quantity ▪ assess the reasonableness of answers using mental computation, estimation strategies, and rounding	standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. We have learned to/that… ▪ solve simple two-step word problems using the four operations ▪ represent two-step word problems using equations with a letter standing for the unknown quantity ▪ assess the reasonableness of answers in two-step word problems using mental computation and estimation strategies including rounding	(4.OA.A.3), and extending multiplicative thinking beyond grade 3 to solve problems involving comparison and the idea of times-as-many/times-as-much (4.OA.A.2), *no special considerations for shifting how time is dedicated are recommended.*
4.MD.A.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor*. We are learning to/that…	**3.OA.A.4** 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 = ?. We have learned to/that…	*Combine* lessons on problems involving measurement, except for those on measurement conversion (see 4.MD.A.1). *Limit* the amount of required student practice.

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
▪ apply the area formula for rectangles in real world and mathematical problems ▪ apply perimeter formulas for rectangles in real world and mathematical problems	▪ determine the unknown whole number in a multiplication or division equation relating three whole numbers ** **3.MD.D.8** 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. We have learned to/that… ▪ solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths ▪ solve real world and mathematical problems involving perimeters of polygons, including finding unknown side lengths when given the perimeter	
4.NBT.B.4 Fluently add and subtract multi-digit whole numbers using the standard algorithm. We are learning to/that…	**3.NBT.A.2** 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. We have learned to/that…	In relation to fluency expectations for subtracting multi-digit numbers, *emphasize* problems with only one regrouping step (4.NBT.B.4), in order to reduce algorithm complexity. *Incorporate* fluency expectations of 3.OA.C.7 by giving additional practice sets related to

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
▪ add multi-digit whole numbers using the standard algorithm working towards accuracy and efficiency ▪ subtract multi-digit whole numbers using the standard algorithm working towards accuracy and efficiency	▪ add within 1000 with accuracy and efficiency using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction ▪ subtract within 1000 with accuracy and efficiency using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction	products of single digit factors and related quotients (with unknowns in all positions) into grade 4 work on multi-digit multiplication and division (4.NBT.B.5 and 4.NBT.B.6). Note that there are no fluency expectations for multi-digit multiplication or division in grade 4; repetitive fluency exercises are not required.

Unit 2, Module B

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
4.NF.A.1 Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. We are learning to/that… ▪ explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models ▪ understand that the number and size of the parts of equivalent fractions differ even though the two fractions are the same size ▪ recognize and generate equivalent fractions	**3.NF.A.3** Explain equivalence of fractions in special cases and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. b. 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. *c.* 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.* d. 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 <. We have learned to/that…	*For curricula and lessons that are well aligned to* fraction equivalence and ordering, as detailed in this cluster, *no special considerations for shifting how time is dedicated are recommended.* *Incorporate* some foundational work on simple equivalent fractions (3.NF.A.3). Time spent on instruction and practice should **not** be reduced.

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
	▪ compare fractions by reasoning about their size ▪ two fractions are equivalent (equal) if they are the same size, or the same point on a number line ▪ recognize and generate simple equivalent fractions ▪ explain why two fractions are equivalent by using a visual fraction model ▪ express whole numbers as fractions ▪ recognize fractions that are equivalent to whole numbers ▪ compare two fractions with the same numerator or the same denominator by reasoning about their size	
4.NF.A.2 Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <. We are learning to/that…	n/a	*For curricula and lessons that are well aligned to* fraction equivalence and ordering, as detailed in this cluster, *no special considerations for shifting how time is dedicated are recommended.* *Incorporate* some foundational work on simple equivalent fractions (3.NF.A.3). Time spent on instruction and practice should **not** be reduced.

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
▪ recognize that, when comparing two fractions, they must refer to the same whole ▪ record the results of comparison with symbols >, =, or < ▪ compare two fractions with different numerators and different denominators by comparing to benchmark fraction such as ½ ▪ compare two fractions with different numerators and different denominators by creating common denominators and numerators		
4.NF.B.3 Understand a fraction *a*/*b* with *a* > 1 as a sum of fractions 1/*b*. a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. We are learning to/that… ▪ addition of fractions can be thought of as joining parts that refer to the same whole ▪ subtraction of fractions can be thought of as separating parts that refer to the same whole	**3.NF.A.1** 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*. We have learned to/that… ▪ a fraction is a quantity formed when a whole is partitioned into equal parts where a unit fraction (*1/b*) is the quantity formed by 1 part when a whole is partitioned into *b* equal parts. (For example, ¼ is the quantity that is formed by 1 part of the 4 total parts when the whole is partitioned into 4 equal parts) ▪ a fraction *a/b* as the quantity formed by *a* parts, where each part has a size of *1/b*.	*Emphasize* reasoning with unit fractions to determine sums and products, not committing calculation rules to memory or engaging in repetitive fluency exercises. *Incorporate* some foundational work on the meaning of the unit fraction (3.NF.A.1 and 3.NF.A.2), especially through partitioning the whole on a number line diagram.

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
	(For example, ¾ is the quantity that is formed by 3 parts of the 4 total parts where each part has a size of ¼.)	
4.NF.B.3 Understand a fraction *a*/*b* with *a* > 1 as a sum of fractions 1/*b*. b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples*: *3/8 = 1/8 + 1/8 + 1/8; 3/8 = 1/8 + 2/8; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.* We are learning to/that… ▪ decompose a fraction, in multiple ways, into a sum of fractions that have the same denominator ▪ record each decomposition by an equation ▪ justify decompositions using visual fraction models	**3.NF.A.2** Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. 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. b. 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. We have learned to/that… ▪ represent and recognize 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 and that the endpoint of the part based at 0 locates the number *1/b* on the number line ▪ represent and recognize a fraction *a/b* on a number line diagram by marking off a lengths *1/b* from 0 and that its endpoint	*Emphasize* reasoning with unit fractions to determine sums and products, not committing calculation rules to memory or engaging in repetitive fluency exercises. *Incorporate* some foundational work on the meaning of the unit fraction (3.NF.A.1 and 3.NF.A.2), especially through partitioning the whole on a number line diagram.

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
	locates the number *a/b* on the number line	

February 2021

Grade 4: New Jersey Student Learning Standards for Mathematics - Prerequisite Standards and Learning Objectives

Description

Included here are the prerequisite concepts and skills necessary for students to learn grade level content based on the New Jersey Student Learning Standards in mathematics. This tool is intended to support educators in the identification of any gaps in conceptual understanding or skill that might exist in a student's understanding of mathematics standards. The organization of this document mirrors that of the mathematics instructional units, includes all grade level standards, and reflects a grouping of standards and student learning objectives.

The tables are divided into three columns. The first column contains the grade level standard and student learning objectives, which reflect the corresponding concepts and skills in that standard. The second column contains standards from prior grades and the corresponding learning objectives, which reflect prerequisite concepts and skills essential for student attainment of the grade level standard as listed in the first column. Given that a single standard may reflect multiple concepts and skills, all learning objectives for a prior grade standard may not be listed. Only those prior grade learning objectives that reflect prerequisite concepts and skills important for attainment of the associated grade level standard is listed. The third column contains Student Achievement Partners' recommendations (SAP) for the 2020-21 school year regarding preserving or reducing time as compared to a typical academic year.

Content Emphases Key: ■ : Major Cluster ▢: Supporting Cluster ◎ : Additional Cluster

Unit 3: Building Fractions & Decimal Notation

Rationale for Unit Focus

The focus of Unit 3 is early operations with fractions. Learners add and subtract fractions with like denominators. They solve word problems involving both addition and subtraction of fractions, including fractions data gathered from line plots. Learners multiply fractions by whole numbers and understand that fractions that are not unit fractions are multiples of some basic unit fraction. As with earlier grades, learners continue to model their fractions understanding with visual fraction models.

Previous understandings of fraction equivalence are extended to express a fraction with denominator 10 as an equivalent fraction with denominator 100. Learners use this technique to add two fractions with respective denominators 10 and 100, use decimal notation for fractions with these two denominators, and compare two decimals. The unit concludes as learners revisit solving multistep word problems posed with whole numbers and use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money. These problems include those involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit.

Note: Double asterisks (**) indicate that the example(s) included within the New Jersey Student Learning Standard may be especially informative when considering the Student Learning Objective.

Unit 3, Module A

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
4.NF.B.3 Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$. c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction. We are learning to/that… ▪ add and subtract mixed numbers with like denominators	**3.NF.A.2** Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. 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. b. 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. We have learned to/that… ▪ fractions are numbers and can be found or represented on the number line	*Emphasize* reasoning with unit fractions to determine sums and products, not committing calculation rules to memory or engaging in repetitive fluency exercises. *Incorporate* some foundational work on the meaning of the unit fraction (3.NF.A.1 and 3.NF.A.2), especially through partitioning the whole on a number line diagram. **Note:** While this standard is part of the Major Work of the Grade, during the 2020-21 school year, it is recommended that it receive lighter treatment.

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
	▪ represent and recognize 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 and that the endpoint of the part based at 0 locates the number *1/b* on the number line ▪ represent and recognize a fraction *a/b* on a number line diagram by marking off a lengths *1/b* from 0 and that its endpoint locates the number *a/b* on the number line **3.NBT.A.2** 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. We have learned to/that… ▪ add within 1000 with accuracy and efficiency using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction ▪ subtract within 1000 with accuracy and efficiency using strategies and algorithms based on place value, properties of operations, and/or the	

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
	relationship between addition and subtraction	
4.NF.B.3 Understand a fraction *a*/*b* with *a* > 1 as a sum of fractions 1/*b*. d. Solve word problems involving addition and subtraction of fractions, referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem. We are learning to/that… ▪ solve word problems involving addition and subtraction of fractions that refer to the same whole and have like denominators using visual fraction models ▪ solve word problems involving addition and subtraction of fractions that refer to the same whole and have like denominators using equations to represent the problem	**3.NF.A.2** Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. 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. b. 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. We have learned to/that… ▪ fractions are numbers and can be found or represented on the number line ▪ represent and recognize 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 and that the endpoint of the part based at 0 locates the number *1/b* on the number line ▪ represent and recognize a fraction *a/b* on a number line diagram by marking off a lengths *1/b* from 0 and that its endpoint	*Emphasize* reasoning with unit fractions to determine sums and products, not committing calculation rules to memory or engaging in repetitive fluency exercises. *Incorporate* some foundational work on the meaning of the unit fraction (3.NF.A.1 and 3.NF.A.2), especially through partitioning the whole on a number line diagram. **Note:** While this standard is part of the Major Work of the Grade, during the 2020-21 school year, it is recommended that it receive lighter treatment.

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
	locates the number *a/b* on the number line **2.OA.A.1** Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. We have learned to/that… ▪ represent a word problem with drawings and equations using a symbol for the unknown ▪ solve one and two-step addition and subtraction word problems within 20 involving situations of adding to, taking from, putting together, taking apart, and comparing	
4.MD.B.4 Make a line plot to display a data set of measurements in fractions of a unit (½, ¼, ⅛). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example,* from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.	**3.MD.B.4** 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. We have learned to/that… ▪ make a line plot showing measurement data, where the horizontal scale is	*Limit* lessons and problems that do not strongly reinforce fraction work of this grade (4.NF).

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
We are learning to/that… ▪ make a line plot to display a data set of measurements using unit fractions (½, ¼, ⅛) ▪ use data presented in line plots to solve problems involving addition and subtraction of fractions.	marked off in appropriate units— whole numbers, halves, or quarters	
4.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. a. Understand a fraction *a*/*b* as a multiple of 1/*b*. *For example, u*se a visual fraction model to represent 5/4 as the product 5 × (¼), recording the conclusion by the equation 5/4 = 5 × (1/4). We are learning to/that… ▪ a fraction *a*/*b* is a multiple of 1/*b*	n/a	*Emphasize* reasoning with unit fractions to determine sums and products, not committing calculation rules to memory or engaging in repetitive fluency exercises. *Incorporate* some foundational work on the meaning of the unit fraction (3.NF.A.1 and 3.NF.A.2), especially through partitioning the whole on a number line diagram. **Note:** While this standard is part of the Major Work of the Grade, during the 2020-21 school year, it is recommended that it receive lighter treatment.
4.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. b. Understand a multiple of *a*/*b* as a multiple of 1/*b*, and use this understanding to multiply a fraction by a whole number. *For example,* use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing	n/a	*Emphasize* reasoning with unit fractions to determine sums and products, not committing calculation rules to memory or engaging in repetitive fluency exercises. *Incorporate* some foundational work on the meaning of the unit fraction (3.NF.A.1 and 3.NF.A.2), especially through partitioning the whole on a number line diagram.

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
this product as 6/5. (In general, $n \times (a/b) = (n \times a)/b$.) We are learning to/that… ▪ a multiple of a/b is also a multiple of $1/b$ using a visual fraction model ▪ multiply a fraction by a whole number by using the idea that a/b is a multiple of $1/b$ **		**Note:** While this standard is part of the Major Work of the Grade, during the 2020-21 school year, it is recommended that it receive lighter treatment.
4.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie? We are learning to/that… ▪ solve word problems involving multiplication of a fraction by a whole number, using fraction models and equations to represent the problem	**3.OA.D.8** 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. We have learned to/that… ▪ solve simple two-step word problems using the four operations ▪ represent two-step word problems using equations with a letter standing for the unknown quantity ▪ assess the reasonableness of answers in two-step word problems using mental computation and estimation strategies including rounding	*Emphasize* reasoning with unit fractions to determine sums and products, not committing calculation rules to memory or engaging in repetitive fluency exercises. *Incorporate* some foundational work on the meaning of the unit fraction (3.NF.A.1 and 3.NF.A.2), especially through partitioning the whole on a number line diagram. **Note:** While this standard is part of the Major Work of the Grade, during the 2020-21 school year, it is recommended that it receive lighter treatment.

Unit 3, Module B

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
4.NF.C.5 Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. *For example,* express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100. We are learning to/that… ▪ express a fraction with denominator of 10 as an equivalent fraction that has a denominator of 100 ▪ add two fractions, one with a denominator of 10 and one with a denominator of 100, by writing each fraction as a fraction with denominator 100**	**3.NF.A.3** Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. b. 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. We have learned to/that… ▪ compare fractions by reasoning about their size ▪ two fractions are equivalent (equal) if they are the same size, or the same point on a number line ▪ recognize and generate simple equivalent fractions ▪ explain why two fractions are equivalent by using a visual fraction model	*For curricula and lessons that are well aligned to* concepts of decimal fractions, as detailed in this cluster, *no special considerations for shifting how time is dedicated are recommended.* Time spent on instruction and practice should **not** be reduced.
4.NF.C.6 Use decimal notation for fractions with denominators 10 or 100. *For example,* rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.	n/a	*For curricula and lessons that are well aligned to* concepts of decimal fractions, as detailed in this cluster, *no special considerations for shifting how time is dedicated are recommended.* Time spent on instruction and practice should **not** be reduced

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
We are learning to/that… ▪ use decimal notation for fractions with denominators 10 or 100 **		
4.NF.C.7 Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <. We are learning to/that… ▪ compare two decimals to hundredths by reasoning about their size. ▪ recognize that comparisons are valid only when the two decimals refer to the same whole and to record the results of comparisons with the symbols >, =, or <	**3.NF.A.3** Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. b. 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. We have learned to/that… ▪ compare fractions by reasoning about their size ▪ two fractions are equivalent (equal) if they are the same size, or the same point on a number line ▪ recognize and generate simple equivalent fractions ▪ explain why two fractions are equivalent by using a visual fraction model	*For curricula and lessons that are well aligned to* concepts of decimal fractions, as detailed in this cluster, *no special considerations for shifting how time is dedicated are recommended.* Time spent on instruction and practice should **not** be reduced
4.MD.A.1 Know relative sizes of measurement units within one system of units including km, m, cm. mm; kg, g; lb oz; *l*,	**3.MD.A.2** Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg),	*For curricula and lessons that are well aligned to* measurement conversion, as detailed in

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example,* know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ... We are learning to/that… ▪ know relative sizes of measurement units within one system of units including km, m, cm. mm; kg, g; lb, oz.; l, ml; hr, min, sec. ▪ express measurements in larger units in terms of a smaller unit within a single system of measurement ▪ record measurement equivalents in a two-column table**	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. We have learned to/that… ▪ estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l) **3.OA.C.7** 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. We have learned to/that… ▪ multiply and divide within 100 using strategies such as the relationship between multiplication and division, or properties of operations (working towards accuracy and efficiency)	this standard, *no special considerations for shifting how time is dedicated are recommended.* Time spent on instruction and practice should **not** be reduced

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
4.MD.A.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. We are learning to/that… ▪ solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, using the four operations ▪ solve word problems involving measurement that includes simple fractions or decimals, using the four operations ▪ solve word problems that require expressing measurements given in a larger unit in terms of a smaller unit, using the four operations ▪ represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale	**3.OA.D.8** 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. We have learned to/that… ▪ solve simple two-step word problems using the four operations ▪ represent two-step word problems using equations with a letter standing for the unknown quantity	*Combine* lessons on problems involving measurement, except for those on measurement conversion (see 4.MD.A.1). Limit the amount of required student practice

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
4.NBT.B.4 Fluently add and subtract multi-digit whole numbers using the standard algorithm. We are learning to/that… ▪ add multi-digit whole numbers using the standard algorithm, working towards accuracy and efficiency ▪ subtract multi-digit whole numbers using the standard algorithm, working towards accuracy and efficiency	**3.NBT.A.2** 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. We have learned to/that… ▪ add within 1000 with accuracy and efficiency using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction ▪ subtract within 1000 with accuracy and efficiency using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction	In relation to fluency expectations for subtracting multi-digit numbers, *emphasize* problems with only one regrouping step (4.NBT.B.4), in order to reduce algorithm complexity. *Incorporate* fluency expectations of 3.OA.C.7 by giving additional practice sets related to products of single digit factors and related quotients (with unknowns in all positions) into grade 4 work on multi-digit multiplication and division (4.NBT.B.5 and 4.NBT.B.6). Note that there are no fluency expectations for multi-digit multiplication or division in grade 4; repetitive fluency exercises are not required.
4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. 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.8** 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. We have learned to/that… ▪ solve simple two-step word problems using the four operations	*For curricula and lessons that are well aligned to* analyzing and solving multi-step word problems with the four operations (4.OA.A.3), and extending multiplicative thinking beyond grade 3 to solve problems involving comparison and the idea of times-as-many/times-as-much (4.OA.A.2), *no special considerations for shifting how time is dedicated are recommended.*

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
We are learning to/that… ▪ solve multi-step whole number word problems that have whole number answers, including problems in which remainders must be interpreted ▪ represent these problems using equations with a letter standing for the unknown quantity ▪ assess the reasonableness of answers using mental computation, estimation strategies, and rounding	▪ represent two-step word problems using equations with a letter standing for the unknown quantity ▪ assess the reasonableness of answers in two-step word problems using mental computation and estimation strategies including rounding	

February 2021

Grade 4: New Jersey Student Learning Standards for Mathematics - Prerequisite Standards and Learning Objectives

Description

Included here are the prerequisite concepts and skills necessary for students to learn grade level content based on the New Jersey Student Learning Standards in mathematics. This tool is intended to support educators in the identification of any gaps in conceptual understanding or skill that might exist in a student's understanding of mathematics standards. The organization of this document mirrors that of the mathematics instructional units, includes all grade level standards, and reflects a grouping of standards and student learning objectives.

The tables are divided into three columns. The first column contains the grade level standard and student learning objectives, which reflect the corresponding concepts and skills in that standard. The second column contains standards from prior grades and the corresponding learning objectives, which reflect prerequisite concepts and skills essential for student attainment of the grade level standard as listed in the first column. Given that a single standard may reflect multiple concepts and skills, all learning objectives for a prior grade standard may not be listed. Only those prior grade learning objectives that reflect prerequisite concepts and skills important for attainment of the associated grade level standard is listed. The third column contains the recommendations from Student Achievement Partners' recommendations (SAP) for the 2020-21 school year regarding preserving or reducing time as compared to a typical academic year.

Content Emphases Key: ■ : Major Cluster ◻: Supporting Cluster ◎ : Additional Cluster

Unit 4: Geometry and Measurement

Rationale for Unit Focus

In this final unit, learners build, draw, and analyze two-dimensional shapes to deepen their understanding of properties of two-dimensional objects and the use of them to solve problems involving symmetry. They identify key parts of figures such as parallel lines, perpendicular lines, points, line segments, and right angles. Learners recognize angles as geometric shapes formed by two rays, understand concepts of angle measurement, and measure angles using protractors. They sketch angles and use the understanding that angle measure is additive to create and solve equations to find unknown angle measures.

Note: Double asterisks (**) indicate that the example(s) included within the New Jersey Student Learning Standard may be especially informative when considering the Student Learning Objective.

Unit 4, Module A

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
4.G.A.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. We are learning to/that… ▪ draw points, lines, line segments, rays, right angles, acute angles, obtuse angles, perpendicular lines and parallel lines ▪ identify points, lines, line segments, rays, right angles, acute angles, obtuse angles, perpendicular lines and parallel lines in two-dimensional figures	n/a	*Combine* lessons on drawing and identifying lines and angles and classifying shapes by properties. *Limit* the amount of required student practice.
4.G.A.2 Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles. We are learning to/that… ▪ classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines	n/a	*Combine* lessons on drawing and identifying lines and angles and classifying shapes by properties. *Limit* the amount of required student practice.

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
▪ classify two-dimensional figures based on the presence or absence of angles of a specified size ▪ identify right triangles and recognize right triangles as a category		
4.G.A.3 Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry. We are learning to/that… ▪ a line of symmetry is a line across the figure that divides the figure into matching parts ▪ recognize a line of symmetry ▪ identify line-symmetric figures and draw lines of symmetry	n/a	*Combine* lessons on drawing and identifying lines and angles and classifying shapes by properties. *Limit* the amount of required student practice.

Unit 4, Module B

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
4.MD.C.5 Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one degree angle," and can be used to measure angles. b. An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees. We are learning to/that… ▪ recognize angles as geometric shapes that are formed wherever two rays share a common endpoint ▪ angles are measured in degrees ▪ an angle is measured by considering the fraction of the circular arc that is between the two points where the two rays intersect the circle ▪ a "one degree angle" is defined as 1/360 of the entire circle	n/a	*Emphasize* the foundational understanding of a one-degree angle as a unit of measure (4.MD.C.5a) and use that as the basis for measuring and drawing angles with protractors (4.MD.C.6).

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
▪ one degree angles can be used to measure angles		
4.MD.C.6 Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. We are learning to/that… ▪ measure angles in whole-number degrees using a protractor ▪ sketch angles that have a specified measure	n/a	*Emphasize* the foundational understanding of a one-degree angle as a unit of measure (4.MD.C.5a) and use that as the basis for measuring and drawing angles with protractors (4.MD.C.6).
4.MD.C.7 Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure. We are learning to/that… ▪ angle measure as additive ▪ when an angle is decomposed into non-overlapping parts, the angle measurement of the whole equals the sum of the angle measures of its parts ▪ solve addition and subtraction problems to find unknown angle measures on a	n/a	*Eliminate lessons on recognizing angle measure as additive.*

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations SAP recommendation to preserve or reduce time in 20-21 as compared to a typical year
diagram in real world and mathematical problems		
4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. 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. We are learning to/that… ▪ solve multi-step whole number word problems that have whole number answers, including problems in which remainders must be interpreted ▪ represent these problems using equations with a letter standing for the unknown quantity ▪ assess the reasonableness of answers using mental computation, estimation strategies, and rounding	**3.OA.D.8** 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. We have learned to/that… ▪ solve simple two-step word problems using the four operations ▪ represent two-step word problems using equations with a letter standing for the unknown quantity ▪ assess the reasonableness of answers in two-step word problems using mental computation and estimation strategies including rounding	*For curricula and lessons that are well aligned to* analyzing and solving multi-step word problems with the four operations (4.OA.A.3), and extending multiplicative thinking beyond grade 3 to solve problems involving comparison and the idea of times-as-many/times-as-much (4.OA.A.2), *no special considerations for shifting how time is dedicated are recommended.*
4.NBT.B.4 Fluently add and subtract multi-digit whole numbers using the standard algorithm. We are learning to/that…	**3.NBT.A.2** 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.	In relation to fluency expectations for subtracting multi-digit numbers, *emphasize* problems with only one regrouping step (4.NBT.B.4), in order to reduce algorithm complexity.

Standard and Student Learning Objectives	Previous Grade(s) Standards and Student Learning Objectives	Instructional Considerations *SAP* recommendation to preserve or reduce time in 20-21 as compared to a typical year
▪ add multi-digit whole numbers using the standard algorithm with accuracy and efficiency ▪ subtract multi-digit whole numbers using the standard algorithm with accuracy and efficiency	We have learned to/that… ▪ add within 1000 with accuracy and efficiency using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction ▪ subtract within 1000 with accuracy and efficiency using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction	*Incorporate* fluency expectations of 3.OA.C.7 by giving additional practice sets related to products of single digit factors and related quotients (with unknowns in all positions) into grade 4 work on multi-digit multiplication and division (4.NBT.B.5 and 4.NBT.B.6). Note that there are no fluency expectations for multi-digit multiplication or division in grade 4; repetitive fluency exercises are **not** required.