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STATE OF NEW JERSEY
DEPARTMENT OF EDUCATION

Grade 7: New Jersey Student Learning Standards for Mathematics - Prerequisite Standards and Learning Objectives by Domain

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 New Jersey Student Learning Standards for mathematics, includes all grade- or course-level standards and the associated student learning objectives, and reflects a grouping of the standards by domain.

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 on the left. 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

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.

Grade 7: New Jersey Student Learning Standards for Mathematics - Prerequisite Standards and Learning Objectives

Domain: Ratios and Proportional Relationships

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
7.RP.A.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. *For example*, if a person walks ½ mile in each ¼ hour, compute the unit rate as the complex fraction ½/¼ miles per hour, equivalently 2 miles per hour. We are learning to/that… ▪ compute unit rates involving ratios of fractions (complex fractions) in quantities measured in like or different unit	**6.NS.A.1** Interpret and compute quotients of fractions and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. *For example*, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, $(a/b) \div (c/d) = ad/bc$). How much chocolate will each person get if 3 people share 1/2 lb. of chocolsate equally? How many 3/4- cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?. We are learning to/that… ▪ compute quotients of fractions ▪ interpret quotients of fractions **6.RP.A.2** Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. *For example,* "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger.	For curricula and lessons that are well aligned to analyzing proportional relationships as detailed by the 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 have learned to/that… ▪ construct a unit rate (a/b) from a given ratio (a:b) ▪ explain a unit rate (a/b) associated with a ratio (a:b) **6.RP.A.3** Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. b. Solve unit rate problems including those involving unit pricing and constant speed. *For example*, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?. We have learned to/that… ▪ solve unit rate problems, including unit pricing and constant speed	
7.RP.A.2 Recognize and represent proportional relationships between quantities. a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin. b. Identify the constant of proportionality (unit rate) in tables, graphs, equations,	**6.RP.A.3** Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. a. Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the	For curricula and lessons that are well aligned to analyzing proportional relationships as detailed by the 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
diagrams, and verbal descriptions of proportional relationships. We are learning to/that… ▪ decide whether two quantities show a proportional relationship by testing for equivalent ratios in a table ▪ decide whether two quantities show a proportional relationship by graphing on a coordinate plane and observing whether the graph is a straight line through the origin ▪ identify the constant of proportionality (unit rate) in equations and verbal descriptions of proportional relationships ▪ identify the constant of proportionality (unit rate) in tables, graphs, and diagrams	pairs of values on the coordinate plane. Use tables to compare ratios We have learned to/that… ▪ represent and solve rate and ratio real-world and mathematical problems by using equations ▪ create tables of equivalent ratios and find missing values with whole number measurements ▪ plot pairs of values, in the coordinate plane, from a ratio table to compare ratios	
7.RP.A.2 Recognize and represent proportional relationships between quantities. c. Represent proportional relationships by equations. *For example*, if total cost *t* is proportional to the number *n* of items purchased at a constant price *p*, the relationship between the total cost and the number of items can be expressed as $t = pn$. d. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, *r*) where *r* is the unit rate.	**5.G.A.2** Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. We have learned to/that… ▪ interpret coordinate values of points in the context of the real world and mathematical problems	For curricula and lessons that are well aligned to analyzing proportional relationships as detailed by the 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… ▪ represent proportional relationships by equations using the constant of proportionality (unit rate) ▪ explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate		
7.RP.A.3 Use proportional relationships to solve multistep ratio and percent problems. *Examples*: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. We are learning to/that… ▪ solve multistep ratio and percent problems using proportional relationships ▪ solve multistep ratio and percent problems sing proportional relationships involving simple interest and sales tax ▪ solve multistep ratio and percent problems using proportional relationships involving markups and markdowns ▪ solve multistep ratio and percent problems using proportional relationships involving gratuities, commissions, and fees ▪ solve multistep ratio and percent problems using proportional relationships	**6.RP.A.3** Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. b. Solve unit rate problems including those involving unit pricing and constant speed. *For example*, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed? c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent. d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities	For curricula and lessons that are well aligned to analyzing proportional relationships as detailed by the 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
involving percent increase, percent decrease, and percent error	We have learned to/that… ▪ solve unit rate problems, including unit pricing and constant speed ▪ find the part, whole, and percent of a quantity in real-world problems ▪ convert measurement units utilizing ratio reasoning	

Grade 7: New Jersey Student Learning Standards for Mathematics - Prerequisite Standards and Learning Objectives

Domain: The Number System

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
7.NS.A.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. a. Describe situations in which opposite quantities combine to make 0. *For example,* in the first round of a game, Maria scored 20 points. In the second round of the same game, she lost 20 points. What is her score at the end of the second round? b. Understand $p + q$ as the number located a distance $\|q\|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts. We are learning to/that… ▪ apply previous understandings of addition to add rational numbers ▪ describe situations in which opposites combine to make zero ▪ show by modeling, a number and its opposite have a sum of zero (additive inverse)	**6.NS.C.5** Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. We are learning to/that… ▪ use positive and negative numbers to represent quantities in real-world contexts and explain the meaning of zero in context **6.NS.C.6** Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., -(-3) = 3, and that 0 is its own opposite.	*Incorporate* foundational work on understandings of rational numbers (6.NS.C.5, 6.NS.C.6 and 6.NS.C.7) to build towards operations with rational numbers (7.NS.A) as detailed by the cluster.

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
▪ $p + q$ is the number located a distance $\|q\|$ from p, in the positive or negative direction depending on whether q is positive or negative (e.g. 5 + -4 is 4 units in the negative direction from 5 and, similarly, 5 + 4 is also 4 units away in the positive direction) ▪ represent addition and subtraction of signed rational numbers on a vertical or horizontal number line ▪ interpret sums of rational numbers in real world situations	We have learned to/that… ▪ locate numbers with opposite signs as points on opposite sides of zero on the number line **6.NS.C.7** Understand ordering and absolute value of rational numbers. a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *For example,* interpret -3 > -7 as a statement that -3 is located to the right of -7 on a number line oriented from left to right. c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. *For example,* for an account balance of -30 dollars, write |-30| = 30 to describe the size of the debt in dollars. We have learned to/that… ▪ represent the relative position of two numbers on a number line diagram using inequality statements ▪ absolute value of a rational number is its distance from zero on the number line	

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
7.NS.A.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. c. Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference and apply this principle in real-world contexts. d. Apply properties of operations as strategies to add and subtract rational numbers. We are learning to/that… ▪ apply previous understandings of subtraction to subtract rational numbers ▪ subtraction of rational numbers is the same as adding the additive inverse, $p - q = p + (-q)$ ▪ show by modeling on a number line that the distance between two rational numbers is the absolute value of their differences and apply the concept in real world contexts	**5.NF.A.1** Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example*, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, $a/b + c/d = (ad + bc)/bd$.) We have learned to/that… ▪ add and subtract fractions with unlike denominators, including mixed numbers, by replacing given fractions with equivalent fraction	*Incorporate* foundational work on understandings of rational numbers (6.NS.C.5, 6.NS.C.6 and 6.NS.C.7) to build towards operations with rational numbers (7.NS.A) as detailed by the cluster.

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 properties of operations as strategies to add and subtract rational numbers		
7.NS.A.2 Apply and extend previous understandings of multiplication and division of fractions to multiply and divide rational numbers. a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (-1)(-1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts. b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real world contexts. We are learning to/that… ▪ apply previous understandings of multiplication of fractions to multiply signed rational numbers	**5.NF.B.4** Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a. Interpret the product $(a/b) \times q$ as a part of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. *For example*, use a visual fraction model to show $(2/3) \times 4 = 8/3$, and create a story context for this equation. Do the same with $(2/3) \times (4/5) = 8/15$. (In general, $(a/b) \times (c/d) = ac/bd$.) We have learned to/that… ▪ apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. ▪ interpret the product of a fraction and a fraction as $(a/b) \times (c/d) = ac/bd$ ** **5.NF.B.3** Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction	*Incorporate* foundational work on understandings of rational numbers (6.NS.C.5, 6.NS.C.6 and 6.NS.C.7) to build towards operations with rational numbers (7.NS.A) as detailed by the cluster.

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 on signed rational numbers continue to satisfy the properties of operations ▪ the distributive property, leading to products such as (-1)(-1) = 1 and the rules for multiplying signed numbers ▪ interpret the products of signed rational numbers in real world situations ▪ apply previous understandings of division of fractions to divide signed rational numbers ▪ integers can be divided as long as the divisor is not zero ▪ division of integers results in a signed rational number ▪ If *p* and *q* are integers, then *-(p/q) = (-p)/q = p/(-q)* ▪ interpret quotients of signed rational numbers by describing real world contexts	models or equations to represent the problem. We have learned to/that… ▪ solve word problems involving division of whole numbers resulting in a fraction or mixed number quotient	
7.NS.A.2 Apply and extend previous understandings of multiplication and division of fractions to multiply and divide rational numbers. c. apply properties of operations as strategies to multiply and divide rational numbers. d. convert a rational number to a decimal using long division; know that the decimal	**6.NS.A.1** Interpret and compute quotients of fractions and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. We have learned to/that… ▪ compute quotients of fractions	*Incorporate* foundational work on understandings of rational numbers (6.NS.C.5, 6.NS.C.6 and 6.NS.C.7) to build towards operations with rational numbers (7.NS.A) as detailed by the cluster.

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
form of a rational number terminates in 0s or eventually repeats. We are learning to/that… ▪ apply properties of operations as strategies to multiply and divide signed rational numbers ▪ convert a rational number to a decimal using long division ▪ the decimal form of a rational number terminates in zeros or eventually repeats	**6.NS.B.2.** Fluently divide multi-digit numbers using the standard algorithm. We have learned to/that… ▪ divide multi-digit numbers using the standard algorithm working towards accuracy and efficiency **5.NF.B.4** Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. We have learned to/that… ▪ apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction **5.NF.B.3** Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. We have learned to/that… ▪ interpret a fraction as division of the numerator by the denominator using visual fraction models or equations	

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
7.NS.A.3 Solve real-world and mathematical problems involving the four operations with rational numbers. We are learning to/that… ▪ solve real-world and mathematical problems involving the four operations with rational numbers in fraction form ▪ solve real-world and mathematical problems involving the four operations with rational numbers in decimal form	**6.NS.B.3** Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation We have learned to/that… ▪ add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation **5.NF.A.1** Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For* example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, *a*/*b* + *c*/*d* = (*ad* + *bc*)/*bd*.) We have learned to/that… ▪ add and subtract fractions with unlike denominators, including mixed numbers, by replacing given fractions with equivalent fraction **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.	*Incorporate* foundational work on understandings of rational numbers (6.NS.C.5, 6.NS.C.6 and 6.NS.C.7) to build towards operations with rational numbers (7.NS.A) as detailed by the cluster.

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 measurement quantities using diagrams such as number line diagrams that feature a measurement scale. We have learned to/that… ▪ solve word problems involving measurement that includes simple fractions or decimals, using the four operations	

Grade 7: New Jersey Student Learning Standards for Mathematics - Prerequisite Standards and Learning Objectives

Domain: Expressions and Equations

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
7.EE.A.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients We are learning to/that… ▪ apply the properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients	**6.EE.A.3** Apply the properties of operations to generate equivalent expressions. We have learned to/that… ▪ generate equivalent expressions using the properties of operations.	*Incorporate* foundational work on writing and transforming linear expressions from grade 6 (6.EE.A) into the work of using properties of operations to generate equivalent expressions, as detailed by cluster (7.EE.A)
7.EE.A.2 Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, a* + 0.05*a* = 1.05*a* means that "increase by 5%" is the same as "multiply by 1.05." We are learning to/that… ▪ rewriting an expression in different forms can clarify the problem and how the quantities are related	**6.EE.A.4** Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). We have learned to/that… ▪ two expressions are equivalent when they name the same number regardless of which value is substituted into them ▪ identify when two expressions are equivalent	*Incorporate* foundational work on writing and transforming linear expressions from grade 6 (6.EE.A) into the work of using properties of operations to generate equivalent expressions, as detailed by cluster (7.EE.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
7.EE.B.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *For example*: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation We are learning to/that… ▪ convert between forms (fractions, decimals, and whole numbers) as appropriate to solve multi-step real life and mathematical problems with positive and negative rational numbers in any form ▪ apply the properties of operations to calculate with numbers in any form when solving multi-step real-life and mathematical problems, and assess the	n/a	For curricula and lessons that are well aligned to solving multi-step real-life and mathematical problems as detailed by the 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
reasonableness of answers using mental computation and estimation strategies		
7.EE.B.4 Use variables to represent quantities in a real-world or mathematical problem and construct simple equations and inequalities to solve problems by reasoning about the quantities. a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. *For example*, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width? We are learning to/that… ▪ solve world problems by reasoning about their quantities and constructing simple equations of the form $p(x + q) = r$, where p, q, and r are specific rational numbers ▪ compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. ▪ solve equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers with accuracy and efficiency	**6.EE.B.6** Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. We have learned to/that… ▪ write expressions using variables to represent real-world or mathematical situations **6.EE.B.7** Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers. We have learned to/that… ▪ write and solve equations of the form $x + p = q$ and $px = q$, where p, q, and x are all nonnegative rational numbers, for real-world and mathematical problems	*Emphasize* equations relative to inequalities. *Incorporate* foundational work of reasoning about and solving one-variable equations (6.EE.B) to support students' work on constructing equations to solve problems as detailed by the standard (7.EE.B.4). 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
7.EE.B.4 Use variables to represent quantities in a real-world or mathematical problem and construct simple equations and inequalities to solve problems by reasoning about the quantities. b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. *For example:* As a salesperson, you are paid \$50 per week plus \$3 per sale. This week you want your pay to be at least \$100. Write an inequality for the number of sales you need to make and describe the solutions. We are learning to/that… ▪ solve world problems by reasoning about their quantities and constructing simple inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers ▪ use variables to represent unknown quantities in mathematical problems to construct and solve simple inequalities ▪ describe the solution of an inequality using a graph and inequality statement and interpret its meaning in the context of the problem	**6.EE.B.8** Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams. We have learned to/that… ▪ represent a constraint or condition in a real-world or mathematical problem by writing an inequality in the form $x > c$ or $x < c$ ▪ represent the infinitely many solutions to the inequalities $x > c$ or $x < c$ on a number line diagram	*Emphasize* equations relative to inequalities. *Incorporate* foundational work of reasoning about and solving one-variable equations (6.EE.B) to support students' work on constructing equations to solve problems as detailed by the standard (7.EE.B.4). Time spent on instruction and practice should **not** be reduced.

Grade 7: New Jersey Student Learning Standards for Mathematics - Prerequisite Standards and Learning Objectives

Domain: Geometry

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
7.G.A.1 Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. We are learning to/that… ▪ solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale	**6.G.A.1** Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems. We have learned to/that… ▪ find the area of right triangles and other triangles by composing into rectangles ▪ find the area of special quadrilaterals and polygons by composing into rectangles or decomposing into triangles and other shapes ▪ apply the techniques of finding area of polygons by composition or decomposition to solve real-world and mathematical problems	*Reduce* time spent creating scale drawings by hand. Time spent on instruction and practice should not exceed what would be spent in a typical year.
7.G.A.2 Draw (with technology, with ruler and protractor, as well as freehand) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	n/a	*Limit* lessons on drawing and constructing triangles, as detailed in the standard (7.G.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
We are learning to/that… ▪ draw geometric shapes with given conditions with technology, with rulers and protractors, as well as freehand ▪ construct triangles from three measures of angles or sides using technology and notice when the conditions determine a unique triangle, more than one triangle, or no triangle ▪ construct triangles from three measures of angles or sides using rulers and protractors and notice when the conditions determine a unique triangle, more than one triangle, or no triangle		
7.G.A.3 Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids. We are learning to/that… ▪ describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids	n/a	*Limit* lessons on analyzing figures that result from slicing three dimensional figures, as detailed in the standard (7.G.A.3).

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
7.G.B.4 Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. We are learning to/that… ▪ know the formulas for area and circumference of a circle ▪ solve problems using the formula for circumference of a circle and for the area of a circle ▪ informally derive the relationship between the circumference and area of a circle	n/a	*Combine* lessons on knowing and using the formulas for the area and circumference of a circle in order to *reduce* the amount of time spent on this topic. *Limit* the amount of required student practice.
7.G.B.5 Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. We are learning to/that… ▪ supplementary angles are two angles whose sum is 180 degrees and complementary angles are two angles whose sum is 90 degrees ▪ vertical angles, the pairs of opposite angles made by two intersecting lines, have equal measures ▪ adjacent angles are two angles that share a vertex and a side	**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 have learned to/that… ▪ 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	*Combine* lessons to address key concepts and skills of unknown angles, area, volume, and surface area (7.G.B.5, 7.G.B.6). *Reduce* 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
▪ use facts about supplementary, complementary, vertical and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure	▪ solve addition and subtraction problems to find unknown angle measures on a diagram in real world and mathematical problems	
7.G.B.6 Solve real-world and mathematical problems involving area, volume and surface area of two and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. We are learning to/that… ▪ solve real-world and mathematical problems involving area of two-dimensional objects composed of triangles, quadrilaterals, and polygons ▪ solve real-world and mathematical problems involving volume and surface area of three-dimensional objects composed of cubes and right prisms	**6.G.A.1** Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems. We have learned to/that… ▪ find the area of right triangles and other triangles by composing into rectangles ▪ find the area of special quadrilaterals and polygons by composing into rectangles or decomposing into triangles and other shapes ▪ apply the techniques of finding area of polygons by composition or decomposition to solve problems **6.G.A.2** Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = l\ w\ h$ and	*Combine* lessons to address key concepts and skills of unknown angles, area, volume, and surface area (7.G.B.5, 7.G.B.6). *Reduce* the amount of required student practice. *Incorporate* conceptual understanding of finding the area of polygons and the volume of right rectangular prisms (6.G.A.1, 6.G.A.2) in teaching real-life and mathematical problems involving area, volume, and surface area of two- and three-dimensional objects (7.G.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
	$V = B\,h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems. We have learned to/that… ▪ find volumes of right rectangular prisms with fractional edge lengths applying the volume formulas $V = l\,w\,h$ and $V = B\,h$ in real-world or mathematical problems **6.G.A.4** Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems. We have learned to/that… ▪ represent three-dimensional figures made up of rectangles and triangles by using nets ▪ solve real-world and mathematical problems by using nets to find surface area applying net surface area techniques	

Grade 7: New Jersey Student Learning Standards for Mathematics - Prerequisite Standards and Learning Objectives

Domain: Statistics and Probability

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
7.SP.A.1 Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences. We are learning to/that… ▪ statistics is used to gain information about a population by examining a sample of the population ▪ generalizations about a population from a sample are valid only if the sample is representative of that population ▪ random sampling tends to produce representative samples of the population and support valid inferences	**6.SP.A.1** Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *For example*, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages. We have learned to/that… ▪ a statistical question is one that anticipates variability in the data related to the question and accounts for it in the answers ▪ recognize statistical questions	*Combine* lessons on using random sampling to draw inferences about a population and using measures of center and variability to draw comparative inferences about two populations in order to reduce the amount of time spent on this topic. *Incorporate* students' grade 6 understanding of statistical variability (6.SP.A). *Limit* the amount of required student practice.
7.SP.A.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. *For example*, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge	**6.SP.A.2** Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. We have learned to/that… ▪ a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape	*Combine* lessons on using random sampling to draw inferences about a population and using measures of center and variability to draw comparative inferences about two populations in order to reduce the amount of time spent on this topic. *Incorporate* students' grade 6 understanding of statistical variability (6.SP.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
how far off the estimate or prediction might be. We are learning to/that… ▪ use data from a random sample to make inferences about a population with an unknown characteristic ▪ generate multiple samples, or simulated samples, of the same size to gauge variation in estimates or predictions		*Limit* the amount of required student practice.
7.SP.B.3 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. *For example*, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable. We are learning to/that… ▪ informally gauge the extent of visual overlap between two numerical distributions with similar variabilities, measure the difference between the centers and express the difference as a multiple of the measure of variability	n/a	*Eliminate* lessons and problems on assessing the degree of overlap on data distributions, as detailed in the standard (7.SP.B.3).

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
7.SP.B.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. *For example*, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book. We are learning to/that… ▪ draw informal comparative inferences about two populations by using the measures of center (mean and median) and measures of variability (interquartile range and mean absolute deviation) from random samples**	**6.SP.B.5** Summarize numerical data sets in relation to their context, such as by: c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. We have learned to/that… ▪ describe overall patterns and any striking deviations from a data set by giving the measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation) with reference to the context with which the data was collected	*Combine* lessons on using random sampling to draw inferences about a population and using measures of center and variability to draw comparative inferences about two populations in order to reduce the amount of time spent on this topic. *Incorporate* students' grade 6 understanding of statistical variability (6.SP.A). *Limit* the amount of required student practice.
7.SP.C.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around ½ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event. We are learning to/that… ▪ the probability of a chance event is a number between 0 and 1 that expresses	n/a	*Combine* lessons on developing, using, and evaluating probability models in order to emphasize foundational concepts and reduce the amount of time spent on this topic (7.SP.C). *Limit* the amount of required student practice. *Eliminate* lessons and problems on finding probabilities of compound events, as detailed in the standards (7.SP.C.8).

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
the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around ½ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event		
7.SP.C.6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. *For example*, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times. We are learning to/that… ▪ approximate the probability of a chance event by collecting data on the chance process that it produces observing long run relative frequency ▪ predict approximate relative frequency when given the probability	n/a	*Combine* lessons on developing, using, and evaluating probability models in order to emphasize foundational concepts and reduce the amount of time spent on this topic (7.SP.C). *Limit* the amount of required student practice. *Eliminate* lessons and problems on finding probabilities of compound events, as detailed in the standards (7.SP.C.8).
7.SP.C.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.	n/a	*Combine* lessons on developing, using, and evaluating probability models in order to emphasize foundational concepts and reduce the amount of time spent on this topic (7.SP.C).

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
a. Develop a uniform probability model by assigning equal probability to all outcomes and use the model to determine probabilities of events. *For example,* if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected. We are learning to/that… ▪ develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events		*Limit* the amount of required student practice. *Eliminate* lessons and problems on finding probabilities of compound events, as detailed in the standards (7.SP.C.8).
7.SP.C.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. *For example,* find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?	n/a	*Combine* lessons on developing, using, and evaluating probability models in order to emphasize foundational concepts and reduce the amount of time spent on this topic (7.SP.C). *Limit* the amount of required student practice. *Eliminate* lessons and problems on finding probabilities of compound events, as detailed in the standards (7.SP.C.8).

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… ▪ develop a probability model, which may not be uniform, by observing frequencies in data generated from a chance process ▪ compare probabilities from a model to observed frequencies and explain possible sources of the discrepancy if the agreement is not good		
7.SP.C.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. We are learning to/that… ▪ the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs	n/a	*Combine* lessons on developing, using, and evaluating probability models in order to emphasize foundational concepts and reduce the amount of time spent on this topic (7.SP.C). *Limit* the amount of required student practice. *Eliminate* lessons and problems on finding probabilities of compound events, as detailed in the standards (7.SP.C.8).
7.SP.C.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event	n/a	*Combine* lessons on developing, using, and evaluating probability models in order to emphasize foundational concepts and reduce the amount of time spent on this topic (7.SP.C).

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described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event. We are learning to/that… ▪ represent the sample space for a compound event using various methods such as, organized lists, tables, and tree diagrams ▪ identify the outcomes in the sample space which compose an event that has been described in everyday language		*Limit* the amount of required student practice. *Eliminate* lessons and problems on finding probabilities of compound events, as detailed in the standards (7.SP.C.8).
7.SP.C.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. c. Design and use a simulation to generate frequencies for compound events. *For example,* use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood? We are learning to/that… ▪ design and use a simulation to generate frequencies for compound events	n/a	*Combine* lessons on developing, using, and evaluating probability models in order to emphasize foundational concepts and reduce the amount of time spent on this topic (7.SP.C). *Limit* the amount of required student practice. *Eliminate* lessons and problems on finding probabilities of compound events, as detailed in the standards (7.SP.C.8).