



The Number System		6.NS							
<b>Apply and extend previous understandings of multiplication and division to divide fractions by fractions.</b>		Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5	Cycle 6	Cycle 7	Cycle 8
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 $(2/3) \div (3/4)$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(2/3) \div (3/4) = 8/9$ 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 chocolate 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?	●	●	●	●	●	●	●	●
<b>Compute fluently with multi-digit numbers and find common factors and multiples.</b>		Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5	Cycle 6	Cycle 7	Cycle 8
2	Fluently divide multi-digit numbers using the standard algorithm.								
3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	●	●	●	●	●	●	●	●
4	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express $36 + 8$ as $4(9 + 2)$ .	●	●	●	●	●	●	●	●
	MA.4a. Apply number theory concepts, including prime factorization and relatively prime numbers, to the solution of problems.								
<b>Apply and extend previous understandings of numbers to the system of rational numbers.</b>		Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5	Cycle 6	Cycle 7	Cycle 8
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.	●		●					
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.	●		●					
7	Understand ordering and absolute value of rational numbers.		●		●				
8	Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.		●		●		●		●

# Expressions and Equations

6.EE

Apply and extend previous understandings of arithmetic to algebraic expressions.		Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5	Cycle 6	Cycle 7	Cycle 8
1	Write and evaluate numerical expressions involving whole-number exponents.	●		●					
2	Write, read, and evaluate expressions in which letters stand for numbers.	●		●					
	a. Write expressions that record operations with numbers and with letters standing for numbers. For example, express the calculation "Subtract y from 5" as $5 - y$ .		●		●		●		●
	c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). For example, use the formulas $V = s^3$ and $A = 6s^2$ to find the volume and surface area of a cube with sides of length $s = 1/2$ .	●		●		●		●	
3	Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression $3(2 + x)$ to produce the equivalent expression $6 + 3x$ ; apply the distributive property to the expression $24x + 18y$ to produce the equivalent expression $6(4x + 3y)$ ; apply properties of operations to $y + y + y$ to produce the equivalent expression $3y$ .		●		●	●	●	●	●
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). For example, the expressions $y + y + y$ and $3y$ are equivalent because they name the same number regardless of which number $y$ stands for.		●		●	●		●	

# Expressions and Equations

6.EE

Reason about and solve one-variable equations and inequalities.		Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5	Cycle 6	Cycle 7	Cycle 8
5	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	●		●	●	●	●	●	●
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.		●				●		●
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.	●		●	●	●	●	●	●
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.		●		●		●		●
Represent and analyze quantitative relationships between dependent and independent variables.		Cycle 1	Cycle 2	Cycle w3	Cycle 4	Cycle 5	Cycle 6	Cycle 7	Cycle 8
9	Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.	●		●		●		●	

**Geometry****6.G**

<b>Solve real-world and mathematical problems involving area, surface area, and volume.</b>		<b>Cycle 1</b>	<b>Cycle 2</b>	<b>Cycle 3</b>	<b>Cycle 4</b>	<b>Cycle 5</b>	<b>Cycle 6</b>	<b>Cycle 7</b>	<b>Cycle 8</b>
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.	●		●		●	●	●	●
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 $V = b h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.	●		●		●		●	
3	Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.	●	●		●	●	●	●	●
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		●		●	●	●		●

# Statistics and Probability

# 6.SP

Develop understanding of statistical variability.		Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5	Cycle 6	Cycle 7	Cycle 8
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.		●		●		●		
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.	●		●		●		●	
3	Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.	●		●		●		●	
Summarize and describe distributions.		Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5	Cycle 6	Cycle 7	Cycle 8
4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.	●	●	●	●	●	●	●	
	MA.4.a. Read and interpret circle graphs.								
5	Summarize numerical data sets in relation to their context, such as by:								
	a. Reporting the number of observations.		●		●		●		
	b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.		●		●		●		
	c. Giving quantitative measures of center (median and/or mean) and variability (inter-quartile 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.	●		●		●		●	



<b>The Number System</b>		<b>7.NS</b>							
<b>Apply and extend previous understandings of multiplication and division to divide fractions by fractions.</b>		Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5	Cycle 6	Cycle 7	Cycle 8
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.	●	●	●	●	●	●	●	●
2	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	●	●	●	●	●	●	●	●
3	Solve real-world and mathematical problems involving the four operations with rational numbers. [Computations with rational numbers extend the rules for manipulating fractions to complex fractions.]	●	●	●	●	●	●	●	●

<b>Geometry</b>		<b>7.G</b>							
<b>Draw, construct, and describe geometrical figures and describe the relationships between them.</b>		Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5	Cycle 6	Cycle 7	Cycle 8
1	Solve problems involving scale drawings of geometric figures, such as computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	●	●	●	●	●		●	●
2	Draw (freehand, with ruler and protractor, and with technology) 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.	●		●	●	●		●	
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.	●		●			●		●
<b>Solve real-world and mathematical problems involving angle measure, area, surface area, and volume.</b>		Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5	Cycle 6	Cycle 7	Cycle 8
4	Know the formulas for the area and circumference of a circle and solve problems; give an informal derivation of the relationship between the circumference and area of a circle.		●		●		●		●
5	Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and use them to solve simple equations for an unknown angle in a figure.	●		●	●		●		●
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.	●		●		●		●	



<b>Statistics and Probability</b>		<b>7.SP</b>							
<b>Use random sampling to draw inferences about a population.</b>		<b>Cycle 1</b>	<b>Cycle 2</b>	<b>Cycle 3</b>	<b>Cycle 4</b>	<b>Cycle 5</b>	<b>Cycle 6</b>	<b>Cycle 7</b>	<b>Cycle 8</b>
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.		●		●		●		
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 how far off the estimate or prediction might be.		●		●		●		
<b>Draw informal comparative inferences about two populations.</b>		<b>Cycle 1</b>	<b>Cycle 2</b>	<b>Cycle 3</b>	<b>Cycle 4</b>	<b>Cycle 5</b>	<b>Cycle 6</b>	<b>Cycle 7</b>	<b>Cycle 8</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.		●		●		●		
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.	●		●		●		●	
<b>Investigate chance processes and develop, use, and evaluate probability models.</b>		<b>Cycle 1</b>	<b>Cycle 2</b>	<b>Cycle 3</b>	<b>Cycle 4</b>	<b>Cycle 5</b>	<b>Cycle 6</b>	<b>Cycle 7</b>	<b>Cycle 8</b>
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 $\frac{1}{2}$ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.					●	●		
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.	●		●		●			

**Statistics and Probability****7.SP**

<b>Investigate chance processes and develop, use, and evaluate probability models.</b>		<b>Cycle 1</b>	<b>Cycle 2</b>	<b>Cycle 3</b>	<b>Cycle 4</b>	<b>Cycle 5</b>	<b>Cycle 6</b>	<b>Cycle 7</b>	<b>Cycle 8</b>
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.								
8	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.					●		●	