Focus Topic: 4.1 – Number and Numerical Operations

TSW = The Student Will

Objective(s)	NJCCCS Alignment	Essential Questions	Understandings	Suggested Assessments
• TSW construct meanings for integers, fractions, and decimals	4.1.6.A.1	• How do mathematical ideas interconnect and build on one another to produce a coherent whole?	• One representation may sometimes be more helpful than another.	Ongoing observation & questioning during class discussions
• TSW recognize the decimal nature of currency and compute with money	4.1.6.A.2	• How can we compare and contrast numbers?	• Multiple representations give a fuller understanding of a problem.	Performance tasks
• TSW demonstrate a sense of the relative magnitudes of numbers	4.1.6.A.3	-	•	Multiple Choice
• TSW explore the use ratios and proportions in a variety of situations	4.1.6.A.4	- How can counting, measuring, or labeling help to make sense of the world around us?	• Numeric fluency includes both the understanding of and the ability to appropriately use numbers.	Literature Connections
• TSW use whole number percents between 1 and 100 in a variety of situations	4.1.6.A.5	- How do operations affect numbers?	• There may be multiple algorithms for finding a mathematical solution.	Short Constructed Responses
• TSW use whole numbers, fractions, and decimals to represent equivalent forms of the same number	4.1.6.A.6	- How can we decide when to use an exact answer and when to use an estimate?	• Context is critical when using estimation.	Extended Constructed Responses
• TSW apply number theory concepts in problem solving (primes, factors, multiples, LCM, GCF)	4.1.6.A.7			Self - Assessment
• TSW compare and order numbers	4.1.6.A.8			
• TSW recognize the appropriate use of each arithmetic operation in problem situations	4.1.6.B.1			
• TSW construct and use procedures for calculations with fractions and decimals	4.1.6.B.2			
• TSW use efficient procedures for division of a 3 digit number by a 2 digit number	4.1.6.B.3			
• TSW find squares and cubes of whole numbers	4.1.6.B.5			

• TSW check the reasonableness of results of computations	4.1.6.B.6			
• TSW understand and use the various relationships among operations and properties of operations	4.1.6.B.7			
• TSW apply standard algebraic orders for the four basic operations, including appropriate use of parentheses	4.1.6.B.8			
• TSW use a variety of estimates for both quantities and computations	4.1.6.C.1			
• TSW recognize when an estimate is appropriate	4.1.6.C.2			
• TSW understand the usefulness of an estimate as distinct from an exact answer	4.1.6.C.2			
• TSW determine the reasonableness of an answer by estimating the result of operations	4.1.6.C.3			
• TSW determine whether a given estimate is an overestimate or an underestimate	4.1.6.C.4			

Focus Topic:4.2 – Geometry and Measurement

TSW = The Student Will

Objective(s)	NJCCCS Alignment	Essential Questions	Understandings	Suggested Assessments
• TSW understand and apply concepts involving lines: *Notation for line, ray, angle, line segment *Properties of parallel, perpendicular, and intersecting lines * Sum of the measures of the interior angles of a 180* triangle	4.2.6.A.1	• How can spatial relationships be described by careful use of geometric language?	• Geometric properties can be used to construct geometric figures.	Ongoing observation & questioning during class discussions
• TSW compare properties of cylinders, prisms, cones, pyramids, and spheres	4.2.6.A.2	• How do geometric relationships help us to solve problems?	• Shapes and area can be conserved during mathematical transformations.	Performance tasks
• TSW identify similar objects	4.2.6.A.3	- What situations can be analyzed using transformations and symmetries?	• Reasoning can be used to verify or contradict theorems in geometry.	Short Constructed Responses

• TSW understand and apply the concepts of congruence and symmetry (line and rotation)	4.2.6.A.4	- How can you best represent and verify geometric / algebraic relationships?	• Measurement is affected by how an object is measured.	Extended Constructed Responses
• TSW describe and draw the faces or shadows of three-dimensional geometric objects	4.2.6.A.6	- How can measurement be used to solve problems?		Multiple Choice
• TSW identify a three-dimensional shape with given projections	4.2.6.A.7	- How can measurement be used to solve problem?		Self-Assessment
• TSW identify a three-dimensional shape with a given net	4.2.6.A.8			Literature Connections
• TSW use a translation, reflection, or rotation to map one figure onto another congruent figure	4.2.6.B.1			
• TSW recognize, identify, and describe geometric relationships and properties in relation to real world settings	4.2.6.B.2			
• TSW create geometric shapes with specified properties in the first quadrant on a coordinate grid	4.2.6.C.1			
• TSW use appropriate units to measure surface area and volume	4.2.6.D.1			
• TSW use a scale to find a distance on a map	4.2.5.D.2			
• TSW convert measurement systems within a system	4.2.5.D.3			
• TSW know equivalents between standard and metric systems	4.2.5.D.4			
• TSW use measurements and estimates to describe and compare phenomena	4.2.5.D.5			
• TSW use a protractor to measure angles	4.2.6.E.1			
• TSW apply strategies and formulas for finding perimeter and area of: *triangle, square, triangle, parallelogram, trapezoid *circumference and area of a circle	4.2.6.E.2			

• TSW develop and apply strategies and formulas for finding the surface area and volume of rectangular prisms and cylinders	4.2.6.E.3			
• TSW recognize that shapes with the same perimeter do not necessarily have the same area and vice versa	4.2.6.E.4			
• TSW develop ways of approximating the measures of familiar objects	4.2.6.E.5			

Focus Topic:4.3 – Patterns and Algebra

TSW = The Student Will

Objective(s)	NJCCCS Alignment	Essential Questions	Understandings	Suggested Assessments
• TSW provide descriptions of patterns using tables, verbal rules, simple equations, and graphs	4.3.6.A.1	- How can change be best represented mathematically?	• The symbolic language of algebra is used to communicate and generalize the patterns in mathematics.	Ongoing observation & questioning during class discussions
• TSW create patterns involving whole numbers and rational numbers using iterative formulas and recursive patterns	4.3.6.A.1	- How are patterns of change related to the behavior of functions?	• Patterns and relationships can be represented graphically, numerically, symbolically or verbally.	Performance tasks
• TSW describe and create patterns involving whole numbers and rational numbers using recursive patterns, including Pascal's Triangle	4.3.6.A.1	- How can we use physical models to clarify mathematical relationships?	• Mathematical models can be used to describe and quantify physical relationships.	Multiple Choice
• TSW describe the general behavior of functions given by formulas or verbal rules	4.3.6.B.1	- What makes an algebraic algorithm both effective and efficient?	• Algebraic and numeric procedures are interconnected and build on one another	Short Constructed Responses
• TSW use patterns, relations, and linear functions to model situations using variables to represent unknown quantities	4.3.6.C.1			Extended Constructed Responses
• TSW use patterns, relations, and linear functions to model situations using concrete materials, tables, graphs, verbal rules, algebraic expressions, equations, and inequalities	4.3.6.C.1			Literature Connections
• TSW draw freehand sketches of graphs that model	4.3.6.C.2			Self-Assessment
• TSW graph and interpret relationships between quantities	4.3.6.C.2			

• TSW graph changes over time	4.3.6.C.2			
• TSW graph rates of change	4.3.6.C.2			
• TSW solve linear equations with whole number coefficients only evaluate numerical expressions	4.3.6.D.1			
• TSW solve linear equations with variables on one or both sides of the equation	4.3.6.D.1			
• TSW apply the properties of operations and numbers using the distributive property	4.3.6.D.2			
• TSW understand the properties of operations and numbers using the product of a number when its reciprocal is 1	4.3.6.D.2			
• TSW evaluate numerical expressions	4.3.6.D.3			
• TSE extend understanding and use inequality	4.3.6.D4			

Focus Topic:4.4 – Data Analysis, Probability, and Discrete Mathematics

TSW = The Student Will

Objective(s)	NJCCCS Alignment	Essential Questions	Understandings	Suggested Assessments
• TSW collect, generate, organize and display data generated from surveys	4.4.6.A.1	• How can the collection, organization, interpretation, and display of data be used to answer questions?	• Graphs convey data in a precise way.	Ongoing observation & questioning during class discussions
• TSW draw inferences from displays of data using a bar graph, line graph, circle graph, table, and histogram	4.4.6.A.2	• What counting strategy works best here?	• Experimental results tend to approach theoretical probabilities after a large number of trials.	Performance tasks
• TSW read, interpret and construct displays of data using range, median, and mean	4.4.6.A.2	• How can algorithmic thinking be used to solve problems?	• Optimization is finding the best solution within given constraints.	Projects

• TSW display data using calculators and computers to record and process information	4.4.6.A.2	• What is the best way to solve this? What counting strategy works best?		Short Constructed Responses
• TSW respond to questions about data	4.4.6.A.3	• How can experimental and theoretical probabilities be used to make predictions or draw conclusions?		Extended Constructed Responses
• TSW generate questions and hypotheses	4.4.6.A.3			Multiple Choice
• TSW formulate strategies for answering questions	4.4.6.A.3			Self - Assessment
• TSW test hypotheses	4.4.6.A.3			
• TSW determine the probability of events using the multiplication rule for probabilities	4.4.6.B.1			
• TSW determine the probability of event and complementary event add up to 1	4.4.6.B.1			
• TSW determine probability using intuitive, experimental, and theoretical methods given numbers of various types	4.4.6.B.2			
• TSW explore compound events	4.4.6.B.3			
• TSW model situations involving probability with simulations	4.4.6.B.4			
• TSW recognize and understand the connections among the concepts of independent outcomes, picking at random, and fairness	4.4.6.B.5			
• TSW use Venn Diagrams to solve counting problems and justify that all possibilities have been calculated without duplication	4.4.6.C.1			
• TSW apply the multiplication principle of counting in simple situations and the number of ways items can be arranged in order	4.4.6.C.2			
• TSW list the possible combinations of two elements chosen from a given set	4.4.6.C.3			

• TSW devise strategies for winning simple games	4.4.6.D.1			
• TSW analyze vertex edge graphs and tree diagrams	4.4.6.D.2			
• TSW use vertex-edge graphs to represent and find solutions to practical problems	4.4.6.D.3			

Focus Topic:4.5 –Mathematical Processes

TSW = The Student Will

Objective(s)	NJCCCS Alignment	Essential Questions	Understandings	Suggested Assessments
• TSW monitor progress and reflect on the process of problem solving activity	4.5.A.5	• Fully Integrated in above	• Fully Integrated in above	Ongoing observation & questioning during class discussions
• TSW use the language of mathematics to express mathematical ideas precisely	4.5.B.4			Performance tasks
• TSW trace the development of mathematical concepts over time and across cultures	4.5.C.5			Projects
• TSW make and investigate mathematical conjectures	4.5.D.5			Self – Assessment
• TSW use representations to model and interpret physical, social, and mathematical phenomena	4.5.E.3			
• TSW use graphing calculators and computer software to investigate properties of functions and their graphs	4.5.F.5			