

6th Grade
Math

Benchmark 1		
Power Standard: Analyze and solve real-world problems involving addition, subtraction, multiplication and division and demonstrate an understanding of the effect of multiplying and dividing by the number zero and one and all numbers between and via real-world examples of all operations.		
M.O.6.1.4 DOK 3	analyze and solve real-world problems involving addition, subtraction , multiplication and division of <ul style="list-style-type: none"> • whole numbers, • fractions, mixed numbers, • decimals, • integers, and justify the reasonableness by estimation.	
	<ul style="list-style-type: none"> • analyze and solve real-world problems involving addition of whole numbers 	Reasoning & Performance
	<ul style="list-style-type: none"> • analyze and solve real-world problems involving addition of fractions, mixed numbers 	Reasoning & Performance
	<ul style="list-style-type: none"> • analyze and solve real-world problems involving addition of decimals 	Reasoning & Performance
	<ul style="list-style-type: none"> • analyze and solve real-world problems involving addition of integers 	Reasoning & Performance
	<ul style="list-style-type: none"> • analyze and solve real-world problems involving subtraction of whole numbers 	Reasoning & Performance
	<ul style="list-style-type: none"> • analyze and solve real-world problems involving subtraction of fractions, mixed numbers 	Reasoning & Performance
	<ul style="list-style-type: none"> • analyze and solve real-world problems involving subtraction of decimals 	Reasoning & Performance

	<ul style="list-style-type: none"> analyze and solve real-world problems involving subtraction of integers 	Reasoning & Performance
	<ul style="list-style-type: none"> analyze and solve real-world problems involving multiplication of whole numbers 	Reasoning & Performance
	<ul style="list-style-type: none"> analyze and solve real-world problems involving multiplication of fractions, mixed numbers 	Reasoning & Performance
	<ul style="list-style-type: none"> analyze and solve real-world problems involving multiplication of decimals 	Reasoning & Performance
	<ul style="list-style-type: none"> analyze and solve real-world problems involving multiplication of integers 	Reasoning & Performance
	<ul style="list-style-type: none"> analyze and solve real-world problems involving division of whole numbers 	Reasoning & Performance
	<ul style="list-style-type: none"> analyze and solve real-world problems involving division of fractions, mixed numbers 	Reasoning & Performance
	<ul style="list-style-type: none"> analyze and solve real-world problems involving division of decimals 	Reasoning & Performance
	<ul style="list-style-type: none"> analyze and solve real-world problems involving division of integers 	Reasoning & Performance
M.O.6.1.8 DOK 1	demonstrate an understanding of the effect of multiplying and dividing, whole numbers, fractions and decimals by numbers including 0, 1 and values between 0 and 1.	
		Performance
M.O.6.1.9 DOK 3	develop and test hypotheses to derive the rules for addition, subtraction, multiplication and division of integers, justify by using real-world examples and use them to solve problems.	
	<ul style="list-style-type: none"> Develop hypotheses to derive the rules for addition, subtraction, multiplication and division of integers. 	Knowledge
	<ul style="list-style-type: none"> Test hypotheses to derive the rules for addition, subtraction, multiplication and division of integers. 	Performance
Power Standard: Use the appropriate graphs and tables to analyze real world data and analyze a real life situation using statistical measures and organize and present a project using words, graphs, and tables.		
M.O.6.5.1 DOK 3	collect, organize, display, read, interpret and analyze real-world data using appropriate graphs and tables (with and without technology).	

	<ul style="list-style-type: none"> • Collect real world data using appropriate graphs (with and without technology) 	Knowledge
	<ul style="list-style-type: none"> • Organize real world data using appropriate graphs (with and without technology) 	Performance
	<ul style="list-style-type: none"> • Display real world data using appropriate graphs (with and without technology) 	Performance
	<ul style="list-style-type: none"> • Read real world data using appropriate graphs (with and without technology) 	Knowledge
	<ul style="list-style-type: none"> • Interpret real world data using appropriate graphs (with and without technology) 	Performance
	<ul style="list-style-type: none"> • Analyze real world data using appropriate graphs (with and without technology) 	Performance
	<ul style="list-style-type: none"> • Collect real world data using appropriate tables (with and without technology) 	Knowledge
	<ul style="list-style-type: none"> • Organize real world data using appropriate tables (with and without technology) 	Performance
	<ul style="list-style-type: none"> • Display real world data using appropriate tables (with and without technology) 	Performance
	<ul style="list-style-type: none"> • Read real world data using appropriate tables (with and without technology) 	Knowledge
	<ul style="list-style-type: none"> • Interpret real world data using appropriate tables (with and without technology) 	Performance

	<ul style="list-style-type: none"> Analyze real world data using appropriate tables (with and without technology) 	Performance
M.O.6.5.2 DOK 4	identify a real life situation using statistical measures (mean, median, mode, range, outliers) overtime, make a hypothesis as to the outcome; design and implement a method to collect, organize and analyze data; analyze the results to make a conclusion; evaluate the validity of the hypothesis based upon collected data, design a mode of presentation using words, graphs, models, and/or tables (with and without technology).	
		Product
Power Standard: Write and solve one-step equations and proportions involving ratios, probability, and measurements, number sense, properties of operations		
M.O.6.2.5 DOK 2	solve real-world proportion problems involving rates, probability and measurements using multiple strategies, justify selection of strategies.	
	<ul style="list-style-type: none"> solve real-world proportion problems involving rates using multiple strategies, justify selection of strategies. 	Performance
	<ul style="list-style-type: none"> solve real-world proportion problems involving probability using multiple strategies, justify selection of strategies. 	Performance
	<ul style="list-style-type: none"> solve real-world proportion problems involving measurements using multiple strategies, justify selection of strategies. 	Performance
M.O.6.2.6 DOK 2	write and solve one-step equations using number sense, properties of operations and the idea of maintaining equality to represent and solve real-world problems.	
	<ul style="list-style-type: none"> Write one-step equations using number sense, properties of operations and the idea of maintaining equality to represent and solve real-world problems. 	Product
	<ul style="list-style-type: none"> Solve one-step equations using number sense, properties of operations and the idea of maintaining equality to represent and solve real-world problems. 	Performance
Power Standard: Simplify, evaluate, and create algebraic expression using the order of operations, patterns to the nth term, and input and output table.		
M.O.6.2.1 DOK 1	simplify numerical expressions and evaluate algebraic expressions using order of operations.	

	<ul style="list-style-type: none"> simplify numerical expressions using order of operations 	Knowledge
	<ul style="list-style-type: none"> evaluate algebraic expressions using order of operations 	Performance
M.O.6.2.2 DOK 2	use inductive reasoning to extend patterns to predict the nth term (e.g., powers and triangular numbers).	
	<ul style="list-style-type: none"> use inductive reasoning to extend patterns 	Reasoning
	<ul style="list-style-type: none"> use inductive reasoning to predict the nth term 	Reasoning
	<ul style="list-style-type: none"> use inductive reasoning to extend patterns to predict powers 	Reasoning
	<ul style="list-style-type: none"> use inductive reasoning to extend patterns to predict triangular numbers 	Reasoning
M.O.6.2.3 DOK 2	create algebraic expressions that correspond to real-world situations; use the expressions to solve problems.	
	<ul style="list-style-type: none"> create algebraic expressions 	Reasoning & Performance
	<ul style="list-style-type: none"> create algebraic expressions that correspond to real-world situations 	Reasoning & Performance
	<ul style="list-style-type: none"> create algebraic expressions that use the expressions to solve problems 	Reasoning & Performance
M.O.6.2.4 DOK 2	determine the rule, output or input; given an input/output model using one operation, write an algebraic expression for the rule and use to identify other input/output values.	
	<ul style="list-style-type: none"> determine the rule, output or input; given an input/output model using one operation 	Performance
	<ul style="list-style-type: none"> write an algebraic expression for the rule given an input/output model 	Performance
	<ul style="list-style-type: none"> use the formula to identify other input/output values 	Performance
Power Standard: none		
M.O.6.5.3 DOK 2	perform simple probability events using manipulatives; predict the outcome given events using experimental and theoretical probability; express experimental and theoretical probability as a ratio, decimal or percent.	
	<ul style="list-style-type: none"> Perform simple probability events 	Performance
	<ul style="list-style-type: none"> Perform simple probability events using manipulatives 	Performance
	<ul style="list-style-type: none"> Perform simple probability events using manipulatives; predict the 	Reasoning & Performance

	outcome given events using experimental probability	
	<ul style="list-style-type: none"> Perform simple probability events using manipulatives; predict the outcome given events using theoretical probability 	Reasoning & Performance
	<ul style="list-style-type: none"> perform simple probability events using manipulatives; predict the outcome given events using experimental and theoretical probability; express experimental and theoretical probability as a ratio 	Reasoning & Performance
	<ul style="list-style-type: none"> perform simple probability events using manipulatives; predict the outcome given events using experimental and theoretical probability; express experimental and theoretical probability as a decimal 	Reasoning & Performance
	<ul style="list-style-type: none"> perform simple probability events using manipulatives; predict the outcome given events using experimental and theoretical probability; express experimental and theoretical probability as a percent 	Reasoning & Performance
Power Standard: none		
M.O.6.1.1 DOK 1	demonstrate an understanding of large numbers by converting and comparing numbers in scientific notation and standard notation (with and without technology).	
	<ul style="list-style-type: none"> demonstrate an understanding of large numbers by converting numbers in scientific notation and standard notation (with and without technology). 	Knowledge
	<ul style="list-style-type: none"> demonstrate an understanding of large numbers by comparing numbers in scientific notation and standard notation (with and without technology). 	Knowledge
Power Standard: none		
M.O.6.1.5 DOK 2	apply the distributive, commutative, associative and identity properties to numeric expressions and use to prove equivalency.	
	<ul style="list-style-type: none"> Apply the distributive property to numeric expressions and use to prove equivalency 	Performance
	<ul style="list-style-type: none"> Apply the commutative property to numeric expressions and use to 	Performance

	prove equivalency	
	<ul style="list-style-type: none"> Apply the associative property to numeric expressions and use to prove equivalency 	Performance
	<ul style="list-style-type: none"> Apply the identify property to numeric expressions and use to prove equivalency 	Performance
Benchmark 2		
Power Standard: Determine pi using actual measurements and derive the formula to determine the sum of measures of the interior angles.		
M.O.6.4.1 DOK 2	determine an approximation for pi using actual measurements.	
		Performance
M.O.6.3.2 DOK 2	use inductive reasoning with the measures of interior angles in polygons and derive the formula to determine the sum of the measures of the interior angles.	
	<ul style="list-style-type: none"> use inductive reasoning with the measures of interior angles in polygons 	Reasoning
	<ul style="list-style-type: none"> derive the formula to determine the sum of the measures of the interior angles 	Reasoning
Power Standard: Predict, describe, and perform transformation on two-dimensional shapes and create designs using line and rotational symmetry.		
M.O.6.3.4 DOK 2	create designs using line and rotational symmetry.	
M.O.6.3.5 DOK 2	<p>predict, describe, and perform transformations on two-dimensional shapes</p> <ul style="list-style-type: none"> translations rotations 	

	<ul style="list-style-type: none"> reflections 	
	<ul style="list-style-type: none"> Predict transformations on two-dimensional shapes (translations, rotations, reflections). 	Knowledge
	<ul style="list-style-type: none"> Describe transformations on two-dimensional shapes (translations, rotations, reflections). 	Reasoning
	<ul style="list-style-type: none"> Perform transformations on two-dimensional shapes (translations, rotations, reflections). 	Performance
Power Standard: none		
M.O.6.1.3 DOK 1	compare and order integers using multiple strategies (e.g., symbols, manipulatives, number line).	
	<ul style="list-style-type: none"> Compare integers using symbols 	Performance
	<ul style="list-style-type: none"> Compare integers using manipulatives 	Performance
	<ul style="list-style-type: none"> Compare integers using number lines 	Performance
	<ul style="list-style-type: none"> Compare integers using multiple strategies 	Performance
	<ul style="list-style-type: none"> Order integers using symbols 	Performance
	<ul style="list-style-type: none"> Order integers using manipulatives 	Performance
	<ul style="list-style-type: none"> Order integers using number lines 	Performance
	<ul style="list-style-type: none"> Order integers using multiple strategies 	Performance
Power Standard: none		
M.O.6.5.4 DOK 2	determine combinations and permutations of given real-world situations by multiple strategies, including creating lists.	

	<ul style="list-style-type: none"> determine permutations of given real-world situations by multiple strategies, including creating lists. 	Performance
	<ul style="list-style-type: none"> determine combinations of given real-world situations by multiple strategies, including creating lists. 	Performance
Power Standard: none		
M.O.6.1.2 DOK 2	determine the greatest common factor and least common multiple using multiple strategies to solve real-world problems; find prime factorization of a number.	
	<ul style="list-style-type: none"> determine the least common multiple using multiple strategies to solve real-world problems 	Performance
	<ul style="list-style-type: none"> determine the greatest common factor using multiple strategies to solve real-world problems 	Performance
	<ul style="list-style-type: none"> find prime factorization of a number. 	Performance
Benchmark 3		
Power Standard: Analyze characteristics and compare geometric figures using defining characteristics; apply the concepts of parallel, perpendicular, intersecting lines to real-world situations, and use geometric representations to solve real-world problems.		
M.O.6.3.1 DOK 2	analyze characteristics using defining properties of <ul style="list-style-type: none"> lines, angles, polygons, triangles, and compare these geometric figures.	
	<ul style="list-style-type: none"> analyze characteristics using defining properties of lines 	Performance
	<ul style="list-style-type: none"> analyze characteristics using defining properties of angles 	Performance

	<ul style="list-style-type: none"> analyze characteristics using defining properties of polygons 	Performance
	<ul style="list-style-type: none"> analyze characteristics using defining properties of triangles 	Performance
	<ul style="list-style-type: none"> Compare lines, angles, polygons, and triangles 	Performance
M.O.6.3.3 DOK 2	apply the concepts of parallel, perpendicular, intersecting, and skew lines to real-world situations (i.e. roads and routes).	
	<ul style="list-style-type: none"> apply the concepts of parallel lines to real-world situations 	Performance
	<ul style="list-style-type: none"> apply the concepts of perpendicular lines to real-world situations 	Performance
	<ul style="list-style-type: none"> apply the concepts of intersecting lines to real-world situations 	Performance
	<ul style="list-style-type: none"> apply the concepts of skew lines to real-world situations 	Performance
M.O.6.3.6 DOK 2	use geometric representations to solve real-world problems.	
		Reasoning
Power Standard: Develop and test hypothesis to determine formulas for given geometric situations, investigate, model and describe surface area of rectangular prisms and cylinders developing strategies to determine volume of cylinders, solving real-world problems.		
M.O.6.4.2 DOK 3	develop and test hypotheses to determine formulas for <ul style="list-style-type: none"> perimeter of polygons, including composite figures area of parallelograms area of triangles area of composite figures made of parallelograms and triangles circumference of a circle area of a circle 	

	<ul style="list-style-type: none"> • volume of a rectangular prism 	
		Reasoning
M.O.6.4.3 DOK 2	investigate, model and describe surface area of rectangular prisms and cylinders; develop strategies to determine the surface area of rectangular prisms.	
	<ul style="list-style-type: none"> • Investigate surface area of rectangular prisms 	Knowledge
	<ul style="list-style-type: none"> • Model surface area of rectangular prisms 	Performance
	<ul style="list-style-type: none"> • Describe surface area of rectangular prisms 	Performance
	<ul style="list-style-type: none"> • Investigate surface area of rectangular cylinders 	Knowledge
	<ul style="list-style-type: none"> • Model surface area of rectangular cylinders 	Performance
	<ul style="list-style-type: none"> • Describe surface area of rectangular cylinders 	Performance
	<ul style="list-style-type: none"> • Develop strategies to determine the surface area of rectangular prisms 	Reasoning
M.O.6.4.4 DOK 2	develop strategies to determine volume of cylinders; solve real-world problems involving volume of cylinders, justify the results.	
	<ul style="list-style-type: none"> • develop strategies to determine volume of cylinders 	Product
	<ul style="list-style-type: none"> • develop strategies to solve real-world problems involving volume of cylinders 	Product
	<ul style="list-style-type: none"> • develop strategies that justify the results 	Product
	<ul style="list-style-type: none"> • develop strategies to justify the results from solving real world programs involving volume of cylinders 	Product
Power Standards: Plot polygons on coordinate grids, determine lengths and areas from the graph, construct a scale drawing of a 2 dimensional polygon.		
M.O.6.3.7	plot polygons on coordinate grids, determine lengths and areas from the graph.	

DOK 1		
	<ul style="list-style-type: none"> plot polygons on coordinate grids 	Reasoning
	<ul style="list-style-type: none"> plot polygons on coordinate grids to determine lengths from the graph 	Reasoning
	<ul style="list-style-type: none"> plot polygons on coordinate grids to determine areas from the graph 	Reasoning
M.O.6.4.5 DOK 2	given a two-dimensional polygon, construct a scale drawing given the scale factor.	
	<ul style="list-style-type: none"> Identify a two-dimensional polygon 	Reasoning
	<ul style="list-style-type: none"> Construct a scale drawing given the scale factor of a two-dimensional polygon 	Reasoning
Power Standard: Convert between fractions/ratios, mixed numbers, decimals, and percents in appropriate real-world problems; compute the percent of a number to solve application problems and justify the reasonableness by estimation.		
M.O.6.1.6 DOK 1	convert between fractions/ratios, mixed numbers, decimals and percents in appropriate real-world problems.	
		Performance
M.O.6.1.7 DOK 2	compute the percent of a number to solve application problems and justify the reasonableness by estimation.	
	<ul style="list-style-type: none"> compute the percent of a number to solve application problems 	Performance
	<ul style="list-style-type: none"> justify the reasonableness by estimation 	Reasoning