

Montana MAST Math Testlets

Gr	Testlet	Standards	Content Attributes
3	Concepts of Multiplication and Division	3.OA.1 3.OA.2 3.OA.3	<ul style="list-style-type: none"> Interpret products and quotients of whole numbers. Solve one-step real-world problems by multiplying or dividing within 10×10.
3	Multiplication and Division Equations	3.OA.4 3.OA.6	<ul style="list-style-type: none"> Determine an unknown number in a multiplication or division equation relating three whole numbers, within 10×10. Understand division as an unknown-factor problem.
3	Multiply and Divide Within 100	3.OA.5 3.OA.7	<ul style="list-style-type: none"> Understand and use properties of operations to multiply and divide. Fluently multiply and divide within 10×10.
3	Time, Liquid Volume, and Mass	3.MD.1 3.MD.2	<ul style="list-style-type: none"> Tell time and solve problems involving intervals of time. Solve real-world problems involving liquid volume and mass.
3	Real-World Problems and Patterns	3.OA.8 3.OA.9 3.NBT.1	<ul style="list-style-type: none"> Represent and solve two-step real-world problems. Identify arithmetic patterns and explain them using the properties of operations.
3	Place Value and Operations in Base Ten	3.NBT.2 3.NBT.3	<ul style="list-style-type: none"> Add and subtract within 1,000. Multiply two-digit multiples of 10 by one-digit whole numbers.
3	Understand Fractions as Numbers	3.NF.1 3.NF.2 3.NF.2.a 3.NF.2.b 3.G.2	<ul style="list-style-type: none"> Represent unit fractions using area and length models. Extend unit fraction understanding to represent non-unit fractions.
3	Compare and Find Equivalent Fractions	3.NF.3 3.NF.3.a 3.NF.3.b 3.NF.3.c 3.NF.3.d	<ul style="list-style-type: none"> Recognize and generate equivalent fractions and explain their equivalency using visual models. Compare fractions and justify the comparison using visual models.
3	Unit Squares and Square Units	3.MD.5 3.MD.5.a 3.MD.5.b 3.MD.6 3.MD.7 3.MD.7.a	<ul style="list-style-type: none"> Understand concepts of area. Demonstrate area of a rectangle can be found by counting unit squares and by multiplying side lengths.
3	Solve Area Problems	3.MD.7 3.MD.7.b 3.MD.7.c 3.MD.7.d	<ul style="list-style-type: none"> Solve real-world and mathematical problems involving area. Use area models to represent and explain the distributive property of multiplication over division.
3	Data and Graphing	3.MD.3 3.MD.4	<ul style="list-style-type: none"> Represent categorical data on scaled graphs and solves real-world problems using data presented on scaled graphs. Measure length and represent the measurement data on a line plot.

3	Two-Dimensional Geometric Figures	3.MD.8 3.G.1	<ul style="list-style-type: none"> Categorize shapes based on shared attributes, focusing on quadrilaterals. Solve real-world and mathematical problems involving perimeter.
4	Place Value in the Base Ten System	4.NBT.1 4.NBT.2 4.NBT.3	<ul style="list-style-type: none"> Apply understanding of the 10-to-1 multiplicative relationship between a digit in one place and the same digit in the place to its immediate left. Read, write, compare, and round multi-digit whole numbers.
4	Addition and Subtraction Algorithms	4.NBT.4	<ul style="list-style-type: none"> Fluently add multi-digit whole numbers using a standard algorithm. Fluently subtract multi-digit whole numbers using a standard algorithm.
4	Extend Concepts of Multiplication	4.OA.1 4.OA.2 4.OA.4	<ul style="list-style-type: none"> Interpret and solve problems involving multiplicative comparison. Identify factor pairs and multiples of whole numbers and determine whether a number is prime or composite.
4	Multi-Digit Multiplication	4.NBT.5	<ul style="list-style-type: none"> Multiply up to four-digit by one-digit whole numbers and two two-digit numbers. Illustrate and explain multi-digit multiplication.
4	Multi-Digit Division	4.NBT.6	<ul style="list-style-type: none"> Find whole number quotients and remainders with up to four-digit dividends and one-digit divisors. Illustrate and explain multi-digit division.
4	Real-World Problems and Patterns	4.OA.3 4.OA.5	<ul style="list-style-type: none"> Solve multi-step word problems using the four operations, including problems where a remainder must be interpreted and problems involving multiplicative comparison. Generate number and shape patterns and identify features of the pattern.
4	Compare and Find Equivalent Fractions	4.NF.1 4.NF.2	<ul style="list-style-type: none"> Recognize and generate equivalent fractions and explain the equivalency using fraction models. Compare fractions.
4	Add and Subtract Fractions	4.NF.3 4.NF.3.a 4.NF.3.b 4.NF.3.c 4.NF.3.d 4.MD.4	<ul style="list-style-type: none"> Understand a fraction as the sum of unit fractions with the same denominator and use this understanding to add and subtract fractions (including fractions >1 and mixed numbers). Solve real-world problems by adding and subtracting fractions with like denominators, including problems with fractional data presented on a line plot.
4	Multiply Fractions	4.NF.4 4.NF.4.a 4.NF.4.b 4.NF.4.c	<ul style="list-style-type: none"> Apply knowledge of multiples to multiply a fraction by a whole number. Solve word problems by multiplying a fraction by a whole number.
4	Decimal Fractions	4.NF.5 4.NF.6 4.NF.7	<ul style="list-style-type: none"> Use fraction understanding to compare decimals. Express fractions as decimals and add decimal fractions.
4	Solve Measurement Problems	4.MD.1 4.MD.2 4.MD.3	<ul style="list-style-type: none"> Solve real-world and mathematical measurement problems, including problems involving relative sizes of measurement units. Solve problems using the area and perimeter formulas for rectangles.
4	Angles and Geometry	4.MD.5 4.MD.5.a 4.MD.5.b 4.MD.6	<ul style="list-style-type: none"> Understand concepts of angle and measure angles. Draw and identify lines and angles and classify shapes by properties of their lines and angles.

		4.MD.7 4.G.1 4.G.2 4.G.3	
5	Numerical Expressions	5.OA.1 5.OA.2	<ul style="list-style-type: none"> Evaluate numeric expressions. Read, write, and interpret numeric expressions.
5	Place Value and Powers of Ten	5.NBT.1 5.NBT.2 5.MD.1	<ul style="list-style-type: none"> Apply understanding of the 10-to-1 multiplicative relationship between adjacent places in a number. Explain patterns related to place value when multiplying or dividing by a power of ten and evaluate powers of ten represented in exponent form.
5	Represent and Compare Decimals	5.NBT.3 5.NBT.3.a 5.NBT.3.b 5.NBT.4	<ul style="list-style-type: none"> Read, write, and round decimals to the thousandths place. Use place value understanding to compare and order decimals.
5	Multiply and Divide Whole Numbers	5.NBT.5 5.NBT.6 5.MD.1	<ul style="list-style-type: none"> Multiply whole numbers using the standard algorithm and apply multiplication skills to solve real-world problems. Divide whole numbers using a variety of strategies based on place value and the properties of operations and apply division skills to solve real-world problems.
5	Operations with Decimals	5.NBT.7 5.MD.1	<ul style="list-style-type: none"> Add and subtract decimals to the hundredths. Multiply and divide decimals to the hundredths.
5	Add and Subtract Fractions	5.NF.1 5.NF.2 5.MD.2	<ul style="list-style-type: none"> Add and subtract fractions with unlike denominators. Apply fraction addition and subtraction skills to solve real-world problems and assess the reasonableness of the solution.
5	Multiply Fractions	5.NF.4 5.NF.4.a 5.NF.4.b 5.NF.5 5.NF.5.a 5.NF.5.b 5.NF.6 5.MD.2	<ul style="list-style-type: none"> Interpret fraction multiplication in a variety of ways and apply this understanding to multiply fractions, mixed numbers, and whole numbers. Apply fraction multiplication skills to solve real-world problems and assess the reasonableness of the solution.
5	Division with Fractions	5.NF.3 5.NF.7 5.NF.7.a 5.NF.7.b 5.NF.7.c 5.MD.2	<ul style="list-style-type: none"> Apply understanding of division to divide a unit fraction by a whole number and a whole number by a unit fraction. Solve real-world problems and assess the reasonableness of the solution by dividing fractions and by representing the quotient of two whole numbers as a fraction.
5	Unit Cubes and Cubic Units	5.MD.3 5.MD.3.a 5.MD.3.b 5.MD.4 5.MD.5	<ul style="list-style-type: none"> Understand concepts of volume. Demonstrate volume of a right rectangular prism can be found by counting unit cubes and by multiplying edge lengths.

		5.MD.5.a	
5	Solve Volume Problems	5.MD.5 5.MD.5.b 5.MD.5.c	<ul style="list-style-type: none"> Find the volume of right rectangular prisms in mathematical and real-world problems. Find the volume of composite rectilinear figures in mathematical and real-world problems.
5	Understand the First Quadrant	5.OA.3 5.G.1 5.G.2	<ul style="list-style-type: none"> Apply understanding of the structure of the coordinate plane. Plot points on a coordinate plane and interpret the coordinate values in context.
5	Attributes of Geometric Figures	5.G.3 5.G.4	<ul style="list-style-type: none"> Arrange two-dimensional figures into a hierarchy based on geometric properties. Demonstrate that geometric attributes of one class of shapes belong to all subclasses of that shape.
6	Concepts of Ratios and Unit Rates	6.RP.1 6.RP.2 6.RP.3 6.RP.3.a 6.RP.3.b	<ul style="list-style-type: none"> Find and compare unit rates and ratios. Use ratios and unit rates to solve problems.
6	Percents and Measurement Conversions	6.RP.3 6.RP.3.c 6.RP.3.d	<ul style="list-style-type: none"> Solve problems involving percent. Use ratio reasoning to convert between two systems of measurement.
6	Divide Fractions	6.NS.1	<ul style="list-style-type: none"> Interpret and compute quotients of fractions. Solve word problems by dividing fractions and interpret the quotients.
6	Computational Fluency	6.NS.2 6.NS.3	<ul style="list-style-type: none"> Fluently divide multi-digit numbers by using the standard algorithm. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
6	Rational Numbers and Absolute Value	6.NS.5 6.NS.6 6.NS.6.a 6.NS.6.c 6.NS.7 6.NS.7.a 6.NS.7.b 6.NS.7.c 6.NS.7.d	<ul style="list-style-type: none"> Represent positive and negative values in context and represent rational numbers as points on a number line. Understand and interpret absolute value and compare and order rational numbers.
6	Algebraic Expressions and Exponents	6.EE.1 6.EE.2 6.EE.2.a 6.EE.2.b 6.EE.2.c	<ul style="list-style-type: none"> Read and write expressions using numbers and variables. Evaluate expressions including exponents and variables.
6	Equivalent Expressions	6.NS.4 6.EE.3 6.EE.4	<ul style="list-style-type: none"> Use properties of operations to simplify expressions. Generate and identify equivalent expressions.

6	Variables in Expressions and Equations	6.EE.5 6.EE.6 6.EE.7 6.EE.9	<ul style="list-style-type: none"> Write and use expressions and equations to solve real-world and mathematical problems, using variables to represent unknown quantities. Understand the relationship between independent and dependent variables and represent it in an equation.
6	Write and Interpret Inequalities	6.EE.5 6.EE.8	<ul style="list-style-type: none"> Demonstrate understanding that the solution to an inequality is a value that makes the statement true. Write inequalities to represent constraints in real-world or mathematical problems and graph the solutions on number line diagrams.
6	Solve Problems with Area and Volume	6.G.1 6.G.2 6.G.4	<ul style="list-style-type: none"> Find the area of polygons and the surface area of three-dimensional shapes. Find the volume of right rectangular prisms.
6	The Coordinate Plane	6.NS.6 6.NS.6.b 6.NS.8 6.G.3	<ul style="list-style-type: none"> Solve real-world and mathematical problems by graphing in four graphing on the coordinate plane. Draw polygons in the coordinate plane and find the length of horizontal and vertical line segments using coordinates.
6	Concepts of Statistics	6.SP.1 6.SP.2 6.SP.3 6.SP.4 6.SP.5 6.SP.5.a 6.SP.5.b 6.SP.5.c 6.SP.5.d	<ul style="list-style-type: none"> Recognize statistical questions and display numerical data on a number line. Summarize data sets in relation to their context.
7	Ratios and Proportional Relationships	7.RP.1 7.RP.2 7.RP.2.a 7.RP.2.b 7.RP.2.c 7.RP.2.d	<ul style="list-style-type: none"> Compute and identify unit rates from tables, graphs, and verbal descriptions. Determine if a relationship is proportional and interpret points in context.
7	Solve Problems with Ratio and Proportion	7.RP.3 7.G.1	<ul style="list-style-type: none"> Represent proportional relationships with equations and solve multi-step problems. Use proportional relationships to solve ratio, percent, and scale drawing problems.
7	Add and Subtract Rational Numbers	7.NS.1 7.NS.1.a 7.NS.1.b 7.NS.1.c 7.NS.1.d	<ul style="list-style-type: none"> Add rational numbers and interpret sums. Subtract rational numbers and interpret differences.
7	Multiply and Divide Rational Numbers	7.NS.2 7.NS.2.a 7.NS.2.b 7.NS.2.c	<ul style="list-style-type: none"> Multiply rational numbers and interpret products. Divide rational numbers and interpret quotients.

		7.NS.2.d	
7	Expressions with Rational Numbers	7.EE.1 7.EE.2	<ul style="list-style-type: none"> • Generate equivalent expressions using properties of operations. • Rewrite expressions to highlight particular quantities.
7	Solving Equations	7.EE.4 7.EE.4.a	<ul style="list-style-type: none"> • Solve word problems that can be represented by equations of the form $px+q=r$ and $p(x+q)=r$. • Solve equations of the form $px+q=r$ and $p(x+q)=r$ fluently.
7	Solving Inequalities	7.EE.4 7.EE.4.b	<ul style="list-style-type: none"> • Solve word problems that can be represented by inequalities of the form $px+q>r$ or $px+q<r$. • Interpret the solution set of an inequality in the context of the problem.
7	Solve Problems with Rational Numbers	7.NS.3 7.EE.3	<ul style="list-style-type: none"> • Solve real-world problems with rational numbers. • Solve mathematical problems with rational numbers.
7	Angle Relationships and Triangles	7.G.2 7.G.5	<ul style="list-style-type: none"> • Construct triangles and other geometric shapes with given conditions. • Find an unknown angle measure in a figure by writing and solving simple equations and using facts about supplementary, complementary, vertical, and adjacent angles.
7	Solve Problems with Geometric Figures	7.G.3 7.G.4 7.G.6	<ul style="list-style-type: none"> • Apply formulas for geometric measurement. • Solve real-world and mathematical problems involving two- and three-dimensional figures.
7	Measures of Center and Variability	7.SP.1 7.SP.2 7.SP.3 7.SP.4	<ul style="list-style-type: none"> • Make inferences about a population based on sample data. • Use measures of center and variability to draw informal comparisons about two populations.
7	Probability	7.SP.5 7.SP.6 7.SP.7 7.SP.7.a 7.SP.7.b 7.SP.8 7.SP.8.a 7.SP.8.b	<ul style="list-style-type: none"> • Approximate the probability of a chance event using a probability model or observed frequencies. • Represent and use sample spaces for compound events to find the probability of a compound chance event.
8	Understand and Use Irrational Numbers	8.NS.1 8.NS.2 8.EE.2 8.G.9	<ul style="list-style-type: none"> • Approximate the value of irrational numbers and use irrational numbers to solve problems. • Solve equations with square roots and cube roots.
8	Exponent Rules and Scientific Notation	8.EE.1 8.EE.3 8.EE.4	<ul style="list-style-type: none"> • Apply rules of exponents to produce equivalent expressions. • Use scientific notation to solve problems.
8	Understand Functions	8.F.1 8.F.5	<ul style="list-style-type: none"> • Recognize a function represented in different ways and identify points on the function. • Describe a functional relationship between two quantities.
8	Compare and Interpret Functions	8.F.2 8.F.3	<ul style="list-style-type: none"> • Interpret the equations of linear functions. • Compare properties of functions represented in different ways.
8	Construct Functions	8.F.4	<ul style="list-style-type: none"> • Construct a function.

			<ul style="list-style-type: none"> Interpret and analyze function components.
8	Linear Equations in One Variable	8.EE.7 8.EE.7.a 8.EE.7.b	<ul style="list-style-type: none"> Recognize equations with different types of solutions. Solve linear equations with rational number coefficients.
8	Proportional Relationships and Lines	8.EE.5 8.EE.6	<ul style="list-style-type: none"> Use slope and the equation of a line to solve problems. Graph proportional relationships and compare them when represented in different ways.
8	Systems of Equations	8.EE.8 8.EE.8.a 8.EE.8.b 8.EE.8.c	<ul style="list-style-type: none"> Solve a system of equations algebraically or from a verbal description. Estimate the solution of a system of equations from a graph.
8	Pythagorean Theorem	8.G.6 8.G.7 8.G.8	<ul style="list-style-type: none"> Use the Pythagorean Theorem to find unknown side lengths. Use the Pythagorean Theorem to find distance between two points in a coordinate system.
8	Geometric Transformations	8.G.1 8.G.2 8.G.3	<ul style="list-style-type: none"> Use transformations to show congruence of two-dimensional figures. Describe the effects of transformations on two-dimensional figures.
8	Similarity and Congruence	8.G.4 8.G.5	<ul style="list-style-type: none"> Use transformations to show similarity of two-dimensional figures. Use informal arguments to show relationships between angles.
8	Bivariate Data	8.SP.1 8.SP.2 8.SP.3 8.SP.4	<ul style="list-style-type: none"> Use a line of best fit to model data and solve problems. Describe data patterns.