

Curriculum Alignment to West Virginia College- and Career-Readiness Standards for Mathematics

Amplify Desmos Math Grade 7

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West Virginia Standards for Mathematics	Amplify Desmos Math 7
Ratios and Proportional Relationships	
Analyze proportional relationships and use them to solve real-world and mathematical problems	
M.7.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. (e.g., If a person walks $\frac{1}{2}$ mile in each $\frac{1}{4}$ hour, compute the unit rate as the complex fraction $\frac{1/2}{1/4}$ miles per hour, equivalently 2 miles per hour.)	Addressing: 7.1.04, 7.4.02, 7.4.03, 7.4 Practice Day 1, 7.4 Practice Day 2 Assessing: 7.4 Quiz, 7.4 End Assessment
M.7.2 Recognize and represent proportional relationships between quantities.	Building Towards: 7.1.03, 7.1.04, 7.1.07, 7.1.09, 7.1.10, 7.1 Practice Day 2 Addressing: 7.1.02, 7.1 Practice Day 1, 7.2.02, 7.2.03, 7.2.04, 7.2.05, 7.2.06, 7.2.07, 7.2 Practice Day 1, 7.2.08, 7.2.09, 7.2.10, 7.2.11, 7.2.12, 7.2 Practice Day 2, 7.4.03, 7.4.04, 7.4 Practice Day 1, 7.4.09, 7.4 Practice Day 2 Building On: 7.6.01 Assessing: 7.1 Quiz, 7.2 Quiz, 7.2 End Assessment, 7.3 Quiz, 7.3 End Assessment, 7.4 Quiz
M.7.2a 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.)	Addressing: 7.1.01, 7.2.02, 7.2.03, 7.2.07, 7.2 Practice Day 1, 7.2.08, 7.2.10, 7.2 Practice Day 2, 7.3.01, 7.3.03, 7.3 Practice Day 1, 7.3.07, 7.3 Practice Day 2, 7.4 Practice Day 2 Assessing: 7.1 Quiz, 7.2 Quiz, 7.2 End Assessment, 7.3 End Assessment, 7.4 End Assessment
M.7.2b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	Addressing: 7.1.04, 7.2.03, 7.2.05, 7.2.06, 7.2 Practice Day 1, 7.2.09, 7.2.10, 7.3.01, 7.3.03 Assessing: 7.2 Quiz, 7.2 End Assessment, 7.3 Quiz
M.7.2c Represent proportional relationships by equations. (e.g., 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 $t = pn$.)	Building Towards: 7.1.01 Addressing: 7.2.04, 7.2.05, 7.2.06, 7.2.07, 7.2 Practice Day 1, 7.2.10, 7.2 Practice Day 2, 7.4 Practice Day 2 Building On: 7.3.01 Assessing: 7.2 Quiz, 7.2 End Assessment, 7.3 Readiness Check, 7.4 End Assessment
M.7.2d Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation. Focus special attention on the points $(0, 0)$ and $(1, r)$ where r is the unit rate.	Addressing: 7.2.09, 7.2 Practice Day 2 Assessing: 7.2 End Assessment
M.7.3 Use proportional relationships to solve multistep ratio and percent problems (e.g., simple interest, tax, markups and markdowns, gratuities	Building Towards: 7.1.08, 7.4.01 Addressing: 7.1.07, 7.4.04, 7.4.05, 7.4.06, 7.4.07, 7.4 Practice Day 1, 7.4.08, 7.4.09, 7.4.10, 7.4.11, 7.4.12, 7.4 Practice Day 2,

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and commissions, fees, percent increase and decrease, and/or percent error).	7.8.12 Building On: 7.8.03 Assessing: 7.3 Quiz, 7.3 End Assessment, 7.4 Quiz, 7.4 End Assessment, 7.8 Readiness Check

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The Number System	
Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers	
M.7.4 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.	Building Towards: 7.5.01 Addressing: 7.5.02, 7.5.04, 7.5.05, 7.5 Practice Day 1, 7.5.09 Assessing: 7.5 Quiz 1, 7.5 Quiz 2, 7.5 End Assessment, 7.6 Readiness Check
M.7.4a Describe situations in which opposite quantities combine to make 0. (e.g., a hydrogen atom has 0 charge because its two constituents are oppositely charged.)	Addressing: 7.5.01, 7.5 Practice Day 1 Assessing: 7.5 Quiz 1
M.7.4b 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. (i.e., To add " $p + q$ " on the number line, start at " 0 " and move to " p " then move $ q $ 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.	Building Towards: 7.5.01 Addressing: 7.5.02, 7.5.03, 7.5.04, 7.5 Practice Day 1 Assessing: 7.5 Quiz 1, 7.5 End Assessment
M.7.4c 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.	Building Towards: 7.5.01 Addressing: 7.5.02, 7.5.04, 7.5.05, 7.5 Practice Day 1 Assessing: 7.5 Quiz 1, 7.5 End Assessment
M.7.4d Apply properties of operations as strategies to add and subtract rational numbers.	Building Towards: 7.5.02 Addressing: 7.5.03, 7.5.04, 7.5 Practice Day 1, 7.5.10, 7.5 Practice Day 2 Assessing: 7.5 Quiz 1, 7.5 End Assessment
M.7.5 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	Addressing: 7.5.06, 7.5.09, 7.5 Practice Day 2 Assessing: 7.5 Quiz 2, 7.5 End Assessment

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M.7.5a 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.	Building Towards: 7.5.06 Addressing: 7.5.07, 7.5 Practice Day 2 Building On: 7.5.08 Assessing: 7.5 Quiz 2
M.7.5b 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.	Building Towards: 7.5.07 Addressing: 7.5.08, 7.5 Practice Day 2 Assessing: 7.5 Quiz 2, 7.5 End Assessment
M.7.5c Apply properties of operations as strategies to multiply and divide rational numbers.	Building Towards: 7.5.07 Addressing: 7.5.08, 7.5.10, 7.5 Practice Day 2 Assessing: 7.5 Quiz 2
M.7.5d Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.	Addressing: 7.4.13
M.7.6 Solve real-world and mathematical problems involving the four operations with rational numbers. Instructional Note: Computations with rational numbers extend the rules for manipulating fractions to complex fractions.	Addressing: 7.5 Practice Day 1, 7.5.10, 7.5 Practice Day 2, 7.5.11, 7.5.12, 7.5.13 Assessing: 7.5 Quiz 1, 7.5 Quiz 2, 7.5 End Assessment, 7.6 Readiness Check

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Expressions and Equations	
Use properties of operations to generate equivalent expressions	
M.7.7 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	Building Towards: 7.5.05, 7.5.10 Addressing: 7.6.08, 7.6.09, 7.6.10, 7.6.11, 7.6 Practice Day 1, 7.6 Practice Day 2 Assessing: 7.6 Quiz, 7.6 End Assessment
M.7.8 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. (e.g., $a + 0.05a = 1.05a$ means that “increase by 5%” is the same as “multiply by 1.05.”)	Addressing: 7.4.05, 7.4 Practice Day 1, 7.4.08, 7.4.10, 7.4 Practice Day 2, 7.6.08, 7.7.03, 7.7.04 Assessing: 7.4 Quiz

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Solve real-life and mathematical problems using numerical and algebraic expressions and equations	
<p>M.7.9 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. (e.g., If a woman making \$25 an hour gets a 10% raise, she will make an additional $\frac{1}{10}$ of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar $9\frac{3}{4}$ inches long in the center of a door that is $27\frac{1}{2}$ 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.)</p>	<p>Addressing: 7.5.05, 7.5 Practice Day 1, 7.5.10, 7.5 Practice Day 2, 7.5.11, 7.5.12, 7.5.13, 7.6.02, 7.6.03, 7.6.04, 7.6.11, 7.6.12, 7.6 Practice Day 1, 7.6 Practice Day 2, 7.8.02 Assessing: 7.5 Quiz 2, 7.5 End Assessment, 7.6 Quiz, 7.6 End Assessment</p>
<p>M.7.10 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.</p>	<p>Building Towards: 7.5.05, 7.5.10, 7.6.02, 7.7.02 Addressing: 7.4.08, 7.4.10, 7.6.03, 7.6.04, 7.6.12, 7.6 Practice Day 1, 7.6.13, 7.6.15, 7.6 Practice Day 2, 7.7.03, 7.7.04, 7.7 Practice Day 1 Assessing: 7.4 End Assessment, 7.6 Readiness Check, 7.6 Quiz, 7.6 End Assessment, 7.7 Quiz, 7.7 End Assessment</p>
<p>M.7.10.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. (e.g., The perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width? An arithmetic solution similar to “$54 - 6 - 6$ divided by 2” may be compared with the reasoning involved in solving the equation $2w - 12 = 54$. An arithmetic solution similar to “$54/2 - 6$” may be compared with the reasoning involved in solving the equation $2(w - 6) = 54$.)</p>	<p>Building Towards: 7.6.01, 7.6.04 Addressing: 7.6.05, 7.6.06, 7.6.07, 7.6.08, 7.6.11, 7.6.12, 7.6 Practice Day 1, 7.6 Practice Day 2 Assessing: 7.6 Quiz, 7.6 End Assessment</p>
<p>M.7.10.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. (e.g., 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.)</p>	<p>Addressing: 7.6.13, 7.6.14, 7.6.15, 7.6.16, 7.6.17, 7.6 Practice Day 2 Assessing: 7.6 End Assessment</p>

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Geometry	
Draw, construct, and describe geometrical figures and describe the relationships between them	
M.7.11 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.	Addressing: 7.1.01, 7.1.02, 7.1.03, 7.1.04, 7.1.05, 7.1 Practice Day 1, 7.1.06, 7.1.07, 7.1.08, 7.1.09, 7.1.10, 7.1 Practice Day 2 Building On: 7.2.08 Assessing: 7.1 Readiness Check, 7.1 Quiz, 7.1 End Assessment
M.7.12 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 the following:	Addressing: 7.7.05, 7.7.06, 7.7.07, 7.7.08, 7.7 Practice Day 1 Assessing: 7.7 Quiz, 7.7 End Assessment
M.7.12a a unique triangle (e.g., three side measures satisfy the triangle inequality theorem)	Addressing: 7.7.05, 7.7.06, 7.7.07, 7.7.08, 7.7 Practice Day 1 Assessing: 7.7 Quiz, 7.7 End Assessment
M.7.12b more than one triangle (e.g., given three angles whose sum is 180 degrees), or	Addressing: 7.7.05, 7.7.06, 7.7.07, 7.7.08, 7.7 Practice Day 1 Assessing: 7.7 Quiz, 7.7 End Assessment
M.7.12c no triangle (e.g., angle sum is not 180 degrees or sum of the measures of two sides does not exceed the measure of the third side).	Addressing: 7.7.05, 7.7.06, 7.7.07, 7.7.08, 7.7 Practice Day 1 Assessing: 7.7 Quiz, 7.7 End Assessment
M.7.13 Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.	Addressing: 7.7.09 Assessing: 7.7 End Assessment
Solve real-life and mathematical problems involving angle measure, area, surface area, and volume	
M.7.14 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. Instructional Note: Include problems where students must determine area given circumference but not vice versa.	Building Towards: 7.3.01, 7.3.02, 7.3.05 Addressing: 7.3.03, 7.3.04, 7.3 Practice Day 1, 7.3.06, 7.3.07, 7.3.08, 7.3.09, 7.3 Practice Day 2 Assessing: 7.3 Quiz, 7.3 End Assessment
M.7.15 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.	Building Towards: 7.7.01 Addressing: 7.7.02, 7.7.03, 7.7.04, 7.7 Practice Day 1 Assessing: 7.7 Quiz, 7.7 End Assessment
M.7.16 Solve real-world and mathematical problems involving area, volume and surface area of two- and	Building Towards: 7.1.08 Addressing: 7.1.05, 7.1 Practice Day 1, 7.1.07, 7.1 Practice Day 2, 7.3 Practice Day 2, 7.7.10, 7.7.11, 7.7.12, 7.7.13, 7.7

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three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	Practice Day 2 Assessing: 7.1 Quiz, 7.1 End Assessment, 7.3 End Assessment, 7.7 End Assessment

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Statistics and Probability	
Use random sampling to draw inferences about a population	
M.7.17 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.	Addressing: 7.8.10, 7.8.11, 7.8.12, 7.8.15, 7.8 Practice Day 2 Building On: 7.8.14 Assessing: 7.8 End Assessment
M.7.18 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. (e.g., 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.)	Addressing: 7.8.12, 7.8.13, 7.8.15, 7.8 Practice Day 2 Building On: 7.8.14 Assessing: 7.8 End Assessment
Draw informal comparative inferences about two populations	
M.7.19 Given two data displays, distinguish measures of center and measures of variation	Building Towards: 6.8.04, 6.8.05 Addressing: 6.8.07, 6.8.08, 6.8.09, 6.8.10, 6.8 Practice Day 1, 6.8.11, 6.8.12, 6.8.13, 6.8.14, 6.8.15, 6.8.15, 6.8 Practice Day 2 Assessing: 6.8 Quiz, 6.8 End Assessment
M.7.20 Compare two numerical data sets in relation to their context, such as by:	Building Towards: 6.8.06 Addressing: 6.8.10, 6.8 Practice Day 1, 6.8.12, 6.8.16, 6.8 Practice Day 2 Assessing: 6.8 End Assessment
M.7.20a Reporting the number of observations.	Addressing: 6.8.02, 6.8.05, 6.8 Practice Day 1, 6.8.16 Assessing: 6.8 Quiz, 6.8 End Assessment

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M.7.20b Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.	Addressing: 6.8.01, 6.8.02, 6.8 Practice Day 1, 6.8.15, 6.8.16, 6.8 Practice Day 2
M.7.20c Giving quantitative measures of center (median and/or mean) and describing overall pattern(s).	Building Towards: 6.8.04, 6.8.05 Addressing: 6.8.07, 6.8.08, 6.8.10, 6.8 Practice Day 1, 6.8.11, 6.8.12, 6.8 Practice Day 2 Assessing: 6.8 Quiz, 6.8 End Assessment
M.7.20d Giving quantitative measures of variability (interquartile range (IQR), range, and/or mean absolute deviation (MAD)) and describing any striking deviations from the overall pattern(s).	Building Towards: 6.8.04, 6.8.05 Addressing: 6.8.08, 6.8.09, 6.8.10, 6.8 Practice Day 1, 6.8.13, 6.8.14, 6.8.16, 6.8 Practice Day 2 Assessing: 6.8 Quiz, 6.8 End Assessment
M.7.20e Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.	Building Towards: 6.8.07, 6.8.09, 6.8.11 Addressing: 6.8.12, 6.8.16
M.7.21 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. (e.g., 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.)	Building Towards: 7.8.09 Addressing: 7.8.14, 7.8.15, 7.8 Practice Day 2 Assessing: 7.8 End Assessment
M.7.22 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. (e.g., 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.)	Addressing: 7.8.14, 7.8.15, 7.8 Practice Day 2 Assessing: 7.8 End Assessment
Investigate chance processes and develop, use, and evaluate probability models	
M.7.23 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 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	Addressing: 7.8.02, 7.8.03, 7.8 Practice Day 1, 7.8 Practice Day 2 Building On: 7.8.04, 7.8.05, 7.8.06 Assessing: 7.8 Quiz

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M.7.24 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. (e.g., 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.) Instructional Note: Provide adequate models for students to understand relative frequency is the experimental probability which when given enough trials will match the theoretical probability.	Building Towards: 7.8.01 Addressing: 7.8.02, 7.8.03, 7.8.04, 7.8.05, 7.8 Practice Day 1, 7.8 Practice Day 2 Assessing: 7.8 Quiz, 7.8 End Assessment
M.7.25 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.	Addressing: 7.8.05, 7.8 Practice Day 1, 7.8 Practice Day 2 Assessing: 7.8 Quiz
M.7.25a Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. (e.g., 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.)	Addressing: 7.8.02, 7.8 Practice Day 1, 7.8 Practice Day 2 Building On: 7.8.06, 7.8.07 Assessing: 7.8 End Assessment
M.7.25b Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. (e.g., 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?)	Addressing: 7.8.04, 7.8.05, 7.8 Practice Day 1 Assessing: 7.8 Quiz
M.7.26 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.	Addressing: 7.8.06, 7.8.07, 7.8.08, 7.8 Practice Day 1, 7.8 Practice Day 2 Assessing: 7.8 Quiz, 7.8 End Assessment
M.7.26a 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.	Addressing: 7.8.06, 7.8 Practice Day 1, 7.8 Practice Day 2 Assessing: 7.8 Quiz, 7.8 End Assessment
M.7.26b Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event.	Addressing: 7.8.06, 7.8 Practice Day 1, 7.8 Practice Day 2 Assessing: 7.8 Quiz, 7.8 End Assessment

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M.7.26c Design and use a simulation to generate frequencies for compound events. (e.g., 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?)	Addressing: 7.8.07, 7.8.08, 7.8 Practice Day 1 Assessing: 7.8 Quiz