

Mathematics Curriculum Grade 8

Anchor	Number	Eighth Grade Expectations	Every eighth grader should be able to:	Text pages or supplementary materials	Date Assessed
8A.Numbers and Operations					
1.	8A.1.1	Represent numbers in equivalent forms.	8A 1.1.1 Convert fractions, decimals, and/or percents to equivalent forms.		
			8A 1.1.2 Use scientific notation or exponential forms to express numbers.		
			8A 1.1.3 Find the square or cube of a whole number and/or the square root of a perfect square without a calculator.		
	8A.1.2	Compare quantities or magnitudes of <u>real numbers</u> .	8A 1.2.1 Locate or plot decimals, fractions, mixed numbers, and/or integers on a number line. Mix number forms on the same number line		
			8A 1.2.2 Order a set of up to five rational numbers from least to greatest. Mix number forms in the same set.		
	8A.1.3	Apply number theory concepts.	8A 1.3.1 Use divisibility rules for 2, 3, 4, 5, 6, 9, and 10 to draw conclusions and/or solve problems		
8A 1.3.2 Find and use the greatest common factor (GCF) and/or the least common multiple (LCM) of 2 or 3 numbers.					
2.	8A 2.1	Complete calculations by applying order of operations.	8A 2.1.1 Simplify expressions involving integers, using the order of operations including all levels of grouping symbols – parentheses, braces, brackets.		
	8A 2.2	Represent or solve problems using rates, ratios, proportions and or percents	8A 2.2.1 Select and use ratios, proportions, and percents to solve problems (e.g. tax, discounts, etc. – straight computation and word problems)		
			8A 2.2.2 Represent or solve rate problems (e.g., unit rates, simple interest, distance, etc.) Solve for any term in the equation.		
	8A.3.1	Determine appropriateness of overestimating, underestimating or calculating an exact answer in problem solving situations.	8A 3.1.1 Identify, apply, and explain when it is appropriate to round up or round down.		
8A 3.1.2 Identify, apply, and/or explain when an exact answer is needed or when estimation is appropriate.					
8A 3.2.1 Estimate answers to problems involving simple percents.					
8A 3.2	Using estimation strategies in problem solving.				
8A 3.3	Compute and/or explain operations with integers, fractions, and/or decimals.	8A 3.3.1 Add, subtract, multiply, and/or divide rational numbers with and without a calculator (straight computation or word problems.)			
3.	Compute accurately and fluently and make reasonable estimates.				

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8B. Measurement					
1.	Demonstrate an understanding of measurable attributes of objects and figures, and the units, systems and processes of measurement.	8B.1.1	Convert measurements.	8B1.1.1 Convert among all metric measurements (milli-, centi-, deci-, unit (gram meter or liter), deka-, hecto-, and kilo-.	
				8B 1.1.2 Convert customary measurements to two units above or below the given unit (e.g., inches to yards, pints to gallons.)	
				8B 1.1.3 Convert time to two units above or below a given unit (e.g., seconds to hours.)	
				8B 1.1.4 Convert temperatures from Fahrenheit to Celsius or Celsius to Fahrenheit.	
2.	Apply appropriate techniques, tools, and formulas to determine measurements.	8B 2.1	Determine the measurement of a missing side(s) or angle(s) in a polygon.	8B 2.1.1 determine the number of degrees (for one angle or total) in a 3 through 8-sided polygon and/or the number of sides when given the angle measurement.	
				8B 2.1.2 Find the missing angle measure in a triangle.	
				8B 2.1.3 Use proportions to find the missing length of a side in similar figures.	

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		8B 2.2	Label, measure, and/or list properties of angles.	8B 2.2.1 Measure angles using a protractor.		
				8B 2.2.2 Define, identify, and use properties of complementary, supplementary, adjacent, or vertical angles.		
				8B 2.2.3 Identify and find the measure of corresponding angles, alternate interior angles, or alternate exterior angles.		
		8B 2.3	Use describe, and/or develop procedures to determine measures of perimeter, circumference, area, surface area, and/or volume.	8B 2.3.1 Develop and use formulas and procedures to determine circumference, perimeter, and area of simple and complex figures.		
				8B 2.3.2 determine the surface area and volume for cubes and rectangular prisms.		
				8B 2.3.3 Determine the appropriate type of measurement (circumference, perimeter, area, surface area, volume) for a given situation (e.g., the measurement needed to determine the amount of carpeting for a room.)		
		8B 2.4	Construct, interpret, and/or use scale drawings to solve real-world problems.	8B 2.4.1 Interpret and/ or apply scales shown on maps, blueprints, models, etc.		
				8B 2.4.2 Determine and/or apply an appropriate scale for reduction or enlargement.		
		8B 2.5	Describe how a change in the linear dimension of a figure affects its perimeter, area, or volume.	8B 2.5.1 Determine the amount of change in the perimeter, area, or volume of a figure when its length(s) is/are increased or decreased for triangles, parallelograms, trapezoids, circles, cubes, and rectangular prisms.		

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Anchor		Number	Eighth Grade Expectations	Every eighth grader should be able to:	Text pages or supplementary materials	Date Assessed
C. Geometry						
1.	Analyze characteristics and properties of two- and three-dimensional geometric shapes and demonstrate understanding of geometric relationships.	8C 1.1	Identify, name, and/or describe properties of quadrilaterals, triangles, circles, pyramids, cubes, prisms, spheres, cones, and/or cylinders.	8C 1.1.1 Identify and/or describe properties of all types of quadrilaterals. (trapezoid, parallelogram, rectangle, rhombus, square).		
				8C 1.1.2 Identify and/or describe properties of all types of triangles (scalene, isosceles, equilateral, right, obtuse, acute).		
				8C 1.1.3 Identify and/or describe properties of cubes, pyramids, spheres, prisms, cones, and cylinders.		
		8C 1.2	Compute measures of sides of right triangles using the Pythagorean Theorem.	8C 1.2.1 Use the Pythagorean Theorem to find the measure of a missing side of a right triangle.		
2.	Identify and/or apply concepts of transformation or symmetry.	8C 2.1	Describe, analyze, and/or draw translations, rotations (90, 180, and 360 degrees) and reflections.	8C 2.1.1 Draw or identify a rotation (turn) about the origin of a 2-dimensional shape on a grid.		
				8C 2.1.2 Draw or identify a reflection (flip) over the axis of a 2-dimensional shape on a grid.		
				8C 2.1.3 Draw or identify a translation (slide) of a 2-dimensional shape on a grid.		
3.	Locate points or describe relationships using the coordinate plane.	8C 3.1	Plot and/or identify ordered pairs on a coordinate plane.	8C 3.1.1 Plot, locate, or identify ordered pairs on a coordinate plane. (The point may be a vertex of a polygon.)		
				8C 3.1.2 Determine and graph the slope of a line on the coordinate plane using slope formulas.		
4.	Apply appropriate techniques and tools to create geometric constructions.	8C 4.1	Apply the principles of geometry to create geometric constructions.	8C 4.1.1 Construct bisectors for lines and angles using a compass and a straightedge.		
				8C 4.1.2 Construct congruent angles, parallel lines, and perpendicular lines using a compass and a straightedge.		
				8C 4.1.3 Construct congruent triangles using a compass and a straightedge.		

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D. Algebraic Concepts						
1.	Demonstrate an understanding of patterns, relations, and functions.	8D 1.1	Analyze, extend, or develop descriptions of patterns or functions.	8D 1.1.1 Continue a numeric or algebraic pattern that could be extended infinitely using at least 3 repetitions and including 2 operations, squares, and square roots.		
				8D 1.1.2 Find missing elements in numeric, geometric, or graphic patterns and functions.		
				8D 1.1.3 Write/state the rule of a function, given elements in an input-output table, chart, or list.		
2.	Represent and /or analyze mathematical situations using numbers, symbols, words, tables, and/or graphs.	8D 2.1	Select and/or use a strategy to simplify an expression, solve an equation or inequality and/or check the solution for accuracy.	8D 2.1.1 Solve one and two step equations and inequalities.		
				8D 2.1.2 Use substitution to check the accuracy of a given value for an equation or inequality. (simple inequalities with one variable)		
				8D 2.1.3 Determine the value of an algebraic expression by simplifying and/or substituting a value for a variable.		
		8D 2.2	Create and/or interpret expressions, equations, or inequalities that model problem situations.	8D 2.2.1 Match a written situation to its numeric and/or algebraic expression, equation, or inequality.		
8D 2.2.2 Write and solve an equation or inequality for a given problem situation.						
3.	Analyze change in various contexts.	8D 3.1	Analyze the effects of changing a variable in an equation.	8D 3.1.1 determine how a change in one variable relates to a change in a second variable (e.g., $4x = y$, What is the effect on y , when x is doubled?)		
4.	Describe or use models to represent quantitative relationships.	8D 4.1	Represent relationships with tables or graphs on the coordinate plane.	8D 4.1.1 Graph a linear function based on an x/y table using rational numbers.		
				8D 4.1.2 Match the graph of a linear function to its x/y table. (integers only)		
				8D 4.1.3 Graph an inequality on the coordinate plane or number line.		
				8D 4.1.4 Match the linear equation ($y = mx + b$ form) to the x/y table (integers only on the table.)		

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E. Data Analysis and Probability						
1.	Formulate or answer questions that can be addressed with data and collect, organize, display, interpret, or analyze data.	8E 1.1	Collect, organize, display, and interpret data to answer questions.	8E 1.1.1 Choose the correct representation for a set of data		
				8E 1.1.2 Collect, organize, interpret, and display data using an appropriate format.		
				8E 1.1.3 Interpret data shown in stem-and-leaf or box-and-whisker plots.		
				8E 1.1.4 Display and/or interpret data shown in bar/double bar graphs, line/double line graphs, circle graphs, scatterplots, histograms, and stem-and-leaf plots. -Use a title, appropriate scale, labels, and key where appropriate. -Circle graphs must show a center point and tic marks.		
2.	Select and/or use appropriate statistical methods to analyze data.	8E2.1	Describe, compare, and/or contrast different plots of data using measures of central tendency.	8E 2.1.1 Determine the mean, median, mode, range, and quartiles for a set of data.		
				8E 2.1.2 Explain how a change in the set of data will affect the measures of central tendency.		
				8E 2.1.3 Choose the measure of central tendency appropriate for a given situation.		
3.	Understand and/or apply basic concepts of probability or outcomes.	8E 3.1	Calculate the probability of an event.	8E 3.1.1 Compute probability for independent and dependent events.		
				8E 3.1.2 Calculate and show the number of permutations and combinations for an event.		
		8E 3.2	Determine the number of combinations and/or permutations for an event.	8E 3.2.1 Calculate/show the number of permutations and/or combinations for an event using at least 4 choices.		
4.	Develop and /or evaluate inferences and predictions or draw conclusions based on data or data displays.	8E 4.1	Draw conclusions, make inferences and/or evaluate hypotheses based on statistical and data displays.	8E 4.1.1 Create a scatter plot and describe any correlation between the variables. Use a line of best fit.		
				8E 4.1.2 Make predictions based on survey results or graphs.		
				8E 4.1.3 Use probability to make and test conjectures about the results of probability experiments and simulations.		

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