

Idaho Extended Standards Draft
Extended Content Indicators
Grade 8
Mathematics

Standard 1: Number and Operation - Students in Grade 8 read, write, compare, order, and place on a number line rational numbers, including integers, fractions, decimals, and percents, and absolute values. Students use rational numbers, including percents and ratios, and π (pi) to solve problems. Students convert between standard form, scientific notation, and exponential form. Students add, subtract, multiply, and divide rational numbers and students recall the common equivalent fractions, decimals, and percents of halves, thirds, fourths, fifths, and tenths. Students evaluate numerical expressions with rational numbers using the order of operations and students evaluate numerical expressions with whole number exponents. Students estimate to predict computation results.

Extended Standard 1: Students in Grade 8 read, write, order, or place on a number line rational numbers. With or without the calculator, students use numbers to solve problems. Students identify standard form, scientific notation, and exponential forms. Students add, subtract, multiply, and divide numbers with or without the use of a calculator or manipulatives. Students recall common equivalent fractions and percents. Students evaluate simple numerical expressions using the order of operations. Students estimate to predict simple computation results.

Topic	GR	Goals	Objectives	Essence	Extended Content Indicators
	8.M.1.1	Understand and use numbers.	8.M.1.1.1 Compare magnitudes and relative magnitudes of rational numbers, including integers, fractions, decimals, percents, and absolute values. (337.01.a)		8.M.1.1.1 A Recognize the magnitude of difference between small and large fractions.
			8.M.1.1.2 Use rational numbers, including percents and ratios, and π (pi) to solve problems. (337.01.b)		8.M.1.1.2 A Identify the parts of a ratio in real world situations
			8.M.1.1.3 Locate the position of rational numbers and positive real numbers on a number line. (337.01.e)		8.M.1.1.3 A Identify position of positive rational numbers on a number line.
			8.M.1.1.4 Convert between standard form, scientific notation, and exponential form. (337.01.c)		8.M.1.1.4 A Recognize exponents as a representation of a very large number.
			8.M.1.1.5 Apply number theory concepts (primes, composites, prime factorization, LCM, GCF). (337.01.d)		8.M.1.1.5 A Use repeated addition models to demonstrate primes, composites, prime factorization, LCM, or GCF.
			8.M.1.1.6 Recognize pertinent information for problem solving. (338.01.b)		8.M.1.1.6 A Identify pertinent information needed to solve a multi-step problem.

			8.M.1.1.7 Apply integers in one- and two-step common real-world situations.		8.M.1.1.7 A Identify positive and negative numbers in real-world situations
			8.M.1.1.8 Use appropriate vocabulary.		8.M.1.1.8 A Use appropriate vocabulary.

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Extended Standard 1: Students in Grade 8 read, write, order, or place on a number line rational numbers. With or without the calculator, students use numbers to solve problems. Students identify standard form, scientific notation, and exponential forms. Students add, subtract, multiply, and divide numbers with or without the use of a calculator or manipulatives. Students recall common equivalent fractions and percents. Students evaluate simple numerical expressions using the order of operations. Students estimate to predict simple computation results.

Topic	Gr	Goal	Objectives	Essence	Extended Content Indicators
	8.M.1.2	Perform computations accurately.	8.M.1.2.1 Recall the common equivalent fractions, decimals, and percents of halves, thirds, fourths, fifths, and tenths. (337.02.b)		8.M.1.2.1 A Match common equivalent fractions, decimals, and percents i.e. halves, fourths, and tenths.
			8.M.1.2.2 Add, subtract, multiply, and divide rational numbers. (337.02.a)		8.M.1.2.2 A Add, subtract, multiple, and divide rational numbers, with or without the use of a calculator or manipulatives.
			8.M.1.2.3 Evaluate numerical expressions with whole number exponents (337.02.d)		8.M.1.2.3 A Recognize models of multiples as exponents, i.e. using concrete objects, pictures or student preferred items, use a tray to count multiples of equal groups.
			8.M.1.2.4 Evaluate numerical expressions with rational numbers using the order of operations. (337.02.c)		8.M.1.2.4 A Solve single digit addition, subtraction and multiplication problems using an order of operations, with or without calculator or manipulatives.
			8.M.1.2.5 Select and use an appropriate method of computation from mental math, paper and pencil, calculator, or a combination of the three. (337.02.e)		8.M.1.2.5 A Choose concrete objects, symbolic systems or calculator to solve addition or subtractions problems
			8.M.1.2.6 Use a variety of strategies including common mathematical formulas to compute problems drawn from real life situations. (338.01.a)		8.M.1.2.6 A Use a variety of common math strategies to solve real life problems.

			8.M.1.2.7 Use appropriate vocabulary and notations. (337.02.f)		8.M.1.2.7A Use appropriate vocabulary.
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Extended Standard 1: Students in Grade 8 read, write, order, or place on a number line rational numbers. With or without the calculator, students use numbers to solve problems. Students identify standard form, scientific notation, and exponential forms. Students add, subtract, multiply, and divide numbers with or without the use of a calculator or manipulatives. Students recall common equivalent fractions and percents. Students evaluate simple numerical expressions using the order of operations. Students estimate to predict simple computation results.

Topic	Gr	Goal	Objectives	Essence	Extended Content Indicators
	8.M.1.3	Estimate and judge reasonableness of results.	8.M.1.3.1 Estimate to predict computation results. (337.03.a)		8.M.1.3.1 A Use estimation to select a reasonable answer to a real world problem involving whole numbers.
			8.M.1.3.2 Identify when estimation is appropriate and apply to problem solving situations. (337.03.b)		8.M.1.3.2 A Identify daily activities where estimation is appropriate.
			8.M.1.3.3 Identify whether a given estimate is an overestimate or underestimate. (337.03.c)		8.M.1.3.3 A Explore over and under estimation through daily living activities.
			8.M.1.3.4 Use a four-function calculator to solve complex grade-level problems.		8.M.1.3.4 A Use assistive technology to solve problems
			8.M.1.3.5 Formulate conjectures and justify (short of formal proof) why they must be or seem to be true. (338.02.c)		8.M.1.3.5 A Formulate a guess to a problem and then show why it seems to be true.
			8.M.1.3.6 Use appropriate vocabulary and notations. (337.03.d)		8.M.1.3.6 A Use appropriate vocabulary.

Standard 2: Concepts and Principles of Measurement - Students in Grade 8 select and use appropriate units and tools to make formal measurements in both systems. Students apply given formulas for perimeter, circumference, and area of triangles, circles, and quadrilaterals, and the volume and surface area of rectangular prisms. Students solve problems involving area of circles and the perimeter and area of rectangles and triangles. Students use rates, proportions, ratios, and map scales in problem solving situations.

Extended Standard 2: Students in Grade 8 select and use appropriate units and tools to make formal measurements. Students apply given formulas for perimeter and area. With or without the use of a calculator, students solve problems involving area and perimeter of simple shapes. Students use rates, proportions, and ratios in problem solving situations.

Topic	Gr	Goal	Objectives	Essence	Extended Content Indicators
	8.M.2.1	Understand and use U.S. customary and metric measurements.	8.M.2.1.1 Select and use appropriate units and tools to make formal measurements in both systems. (339.01.a)		8.M.2.1.1A Select and use appropriate units and tools to make formal measurements.
			8.M.2.1.2 Apply estimation of measurement to real-world and content problems using standard measuring devices. (339.01.b)		8.M.2.1.2 A Estimate length, time, weight, capacity, temperature, and capacity (volume) in real-world problems
			8.M.2.1.3 Compare the differences and relationships among measures of perimeter, area, and volume (capacity) within both systems. (339.01.c)		8.M.2.1.3 A Estimate and understand volume permanence in real world settings, i.e. using manipulatives (ex. rice, water) to explore various shaped containers to estimate volume.
			8.M.2.1.4 Given the formulas, find the circumference, perimeter, or area of triangles, circles, and quadrilaterals, and the volume and surface area of rectangular prisms. (341.01.e)		8.M.2.1.4 A Compare area and perimeter of real world surfaces, e.g around the room, around the city, around a box or ball
			8.M.2.1.5 Convert units of measurement within each system in problem solving situations. (339.01.e)		8.M.2.1.5 A Identify equivalent units of measurement

			8.M.2.1.6 Solve problems involving area of circles and the perimeter and area of rectangles and triangles. (339.01.d)		8.M.2.1.6 A Solve problems involving perimeter and area of rectangles.
			8.M.2.1.7 Use appropriate vocabulary and notations. (339.01.f)		8.M.2.1.7 A Use appropriate vocabulary.

Standard 2: Concepts and Principles of Measurement - Students in Grade 8 select and use appropriate units and tools to make formal measurements in both systems. Students apply given formulas for perimeter, circumference, and area of triangles, circles, and quadrilaterals, and the volume and surface area of rectangular prisms. Students solve problems involving area of circles and the perimeter and area of rectangles and triangles. Students use rates, proportions, ratios, and map scales in problem solving situations.

Extended Standard 2: Students in Grade 8 select and use appropriate units and tools to make formal measurements. Students apply given formulas for perimeter and area. With or without the use of a calculator, students solve problems involving area and perimeter of simple shapes. Students use rates, proportions, and ratios in problem solving situations.

Topic	Gr	Goal	Objectives	Essence	Extended Content Indicators
	8.M.2.2	Apply the concepts of rates, ratios, and proportions.	8.M.2.2.1 Use rates, proportions, ratios, and map scales in problem-solving situations. (339.03.a)		8.M.2.2.1 A Identify ratios in real world situations, i.e. 2 boys to 1 girl in the class.
			8.M.2.2.2 Determine unit rates in real-world situations.		8.M.2.2.2 A Apply a rate to a real world situation.

Standard 2: Concepts and Principles of Measurement - Students in Grade 8 select and use appropriate units and tools to make formal measurements in both systems. Students apply given formulas for perimeter, circumference, and area of triangles, circles, and quadrilaterals, and the volume and surface area of rectangular prisms. Students solve problems involving area of circles and the perimeter and area of rectangles and triangles. Students use rates, proportions, ratios, and map scales in problem solving situations.

Extended Standard 2: Students in Grade 8 select and use appropriate units and tools to make formal measurements. Students apply given formulas for perimeter and area. With or without the use of a calculator, students solve problems involving area and perimeter of simple shapes. Students use rates, proportions, and ratios in problem solving situations.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
	8.M.2.3	Apply dimensional analysis.	8.M.2.3.1 Illustrate the interrelationship of measurement units through dimensional analysis conversions. (339.04.a)		8.M.2.3.1 A Match simple measurement units to dimensions, i.e. lbs to weight, feet to height, cups to volume

Standard 2: Concepts and Principles of Measurement - Students in Grade 8 select and use appropriate units and tools to make formal measurements in both systems. Students apply given formulas for perimeter, circumference, and area of triangles, circles, and quadrilaterals, and the volume and surface area of rectangular prisms. Students solve problems involving area of circles and the perimeter and area of rectangles and triangles. Students use rates, proportions, ratios, and map scales in problem solving situations.

Extended Standard 2: Students in Grade 8 select and use appropriate units and tools to make formal measurements. Students apply given formulas for perimeter and area. With or without the use of a calculator, students solve problems involving area and perimeter of simple shapes. Students use rates, proportions, and ratios in problem solving situations.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
	8.M.2.4	Apply appropriate techniques and tools to determine measurements.	No objectives at this grade level.		No objectives at this grade level.

Standard 3: Concepts and Language of Algebra and Functions - Students in Grade 8 translate simple word statements and story problems into algebraic expressions and equations. Students use the order of operations in evaluating basic algebraic expressions and students solve one- and two-step equations and inequalities. Students represent a set of data in a table, as a graph, and as a mathematical relationship.

Extended Standard 3: Students in Grade 8 translate simple word statements into numeric expressions and equations. Students follow the order of operations in evaluating basic one and two step equations. Students display a set of data in a table or a graph.

Topic	Gr	Goal	Objectives	Essence	Extended Content Indicators
	8.M.3.1	Use algebraic symbolism as a tool to represent mathematical relationships.	8.M.3.1.1 Use variables in expressions, equations, and inequalities. (340.01.a)		8.M.3.1.1 A Use the idea of a variable as an unknown quantity using a letter or symbol in simple equations or inequalities.
			8.M.3.1.2 Translate simple word statements and story problems into algebraic expressions and equations. (340.01.b)		8.M.3.1.2 A Translate simple word statements or story problems into numeric expressions.
			8.M.3.1.3 Use symbols “<,” “>,” “=,” “≠,” “≤,” and “≥” to express relationships. (340.01.c)		8.M.3.1.3 A Identify relationships using vocabulary or symbols of “<,” “>,” “=,” “≠.”

Standard 3: Concepts and Language of Algebra and Functions - Students in Grade 8 translate simple word statements and story problems into algebraic expressions and equations. Students use the order of operations in evaluating basic algebraic expressions and students solve one- and two-step equations and inequalities. Students represent a set of data in a table, as a graph, and as a mathematical relationship.

Extended Standard 3: Students in Grade 8 translate simple word statements into numeric expressions and equations. Students follow the order of operations in evaluating basic one and two step equations. Students display a set of data in a table or a graph.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
	8.M.3.2	Evaluate algebraic expressions.	8.M.3.2.1 Use and apply the following properties in evaluating algebraic expressions: commutative, associative, identity, zero, inverse, distributive, and substitution. (340.02.a)		8.M.3.2.1 A Evaluate the following properties in evaluating simple algebraic expressions: commutative, identity, zero, or inverse
			8.M.3.2.2 Use the order of operations in evaluating simple algebraic expressions. (340.02.b)		8.M.3.2.2 A Solve two problems in the order of operations given.
			8.M.3.2.3 Simplify algebraic expressions. (340.02.c)		8.M.3.2.3 A Simplify an addition expression.

Standard 3: Concepts and Language of Algebra and Functions - Students in Grade 8 translate simple word statements and story problems into algebraic expressions and equations. Students use the order of operations in evaluating basic algebraic expressions and students solve one- and two-step equations and inequalities. Students represent a set of data in a table, as a graph, and as a mathematical relationship.

Extended Standard 3: Students in Grade 8 translate simple word statements into numeric expressions and equations. Students follow the order of operations in evaluating basic one and two step equations. Students display a set of data in a table or a graph.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
	8.M.3.3	Solve algebraic equations and inequalities.	8.M.3.3.1 Solve one- and two-step equations and inequalities. (340.03.a)		8.M.3.3.1A Solve one- and two-step equations, such as $(1+2) + (2+2) = ?$
			8.M.3.3.2 Match graphical representations with simple linear equations. (340.03.b)		8.M.3.3.2 A Match a math problem with a pictorial representation.

Standard 3: Concepts and Language of Algebra and Functions - Students in Grade 8 translate simple word statements and story problems into algebraic expressions and equations. Students use the order of operations in evaluating basic algebraic expressions and students solve one- and two-step equations and inequalities. Students represent a set of data in a table, as a graph, and as a mathematical relationship.

Extended Standard 3: Students in Grade 8 translate simple word statements into numeric expressions and equations. Students follow the order of operations in evaluating basic one and two step equations. Students display a set of data in a table or a graph.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
	8.M.3.4	Understand the concept of functions.	8.M.3.4.1 Extend patterns and identify a rule (function) that generates the pattern using rational numbers. (343.01.a)		8.M.3.4.1.A Extend simple patterns and match the rule (function) that generated the pattern using rational numbers.
			8.M.3.4.2 Use relationships to explain how a change in one quantity may result in a change in another, and identify the relationship as a positive, negative, or neither. (343.01.b)		8.M.3.4.2..A Indicate when a change in one quantity may result in a change in another, and identify the relationship as a positive, negative, or neither.
			8.M.3.4.3 Use appropriate vocabulary and notations. (343.01.c)		8.M.3.4.3A Use appropriate vocabulary.

Standard 3: Concepts and Language of Algebra and Functions - Students in Grade 8 translate simple word statements and story problems into algebraic expressions and equations. Students use the order of operations in evaluating basic algebraic expressions and students solve one- and two-step equations and inequalities. Students represent a set of data in a table, as a graph, and as a mathematical relationship.

Extended Standard 3: Students in Grade 8 translate simple word statements into numeric expressions and equations. Students follow the order of operations in evaluating basic one and two step equations. Students display a set of data in a table or a graph.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
	8.M.3.5	Understand the concept of functions.	8.M.3.5.1 Represent a set of data in a table, as a graph, and as a mathematical relationship. (343.02.a)		8.M.3.5.1 A Create a simple graphic or pictorial representation of a set (e.g. inventory)

Standard 3: Concepts and Language of Algebra and Functions - Students in Grade 8 translate simple word statements and story problems into algebraic expressions and equations. Students use the order of operations in evaluating basic algebraic expressions and students solve one- and two-step equations and inequalities. Students represent a set of data in a table, as a graph, and as a mathematical relationship.

Extended Standard 3: Students in Grade 8 translate simple word statements into numeric expressions and equations. Students follow the order of operations in evaluating basic one and two step equations. Students display a set of data in a table or a graph.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
	8.M.3.6	Apply functions to a variety of problems.	8.M.3.6.1 Use patterns and linear functions to represent and solve problems. (343.03.a)		8.M.3.6.1 A Use patterns and mathematical functions to represent a problem.

Standard 4: Concepts and Principles of Geometry - Students in Grade 8 describe and classify relationships among types of one-, two-, and three-dimensional geometric figures using their defining properties. Students apply the fundamental concepts, properties, and relationships among points, lines, rays, planes, angles, and shapes. Students identify and apply congruence, similarities, and line symmetry of shapes.

Extended Standard 4: Students in Grade 8 classify one-,two-,and three dimensional geometric figures using their defining properties. Students differentiate the concepts, properties, and relationships among points, lines, rays, angles, and shapes. Students identify congruence, similarities, or line symmetry of shapes.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
	8.M.4.1	Apply concepts of size, shape, and spatial relationships.	8.M.4.1.1 Describe and classify relationships among types of one-, two-, and three-dimensional geometric figures, using their defining properties. (341.01.a)		8. M. 4.1.1.A Classify one-, two-, and three- dimensional geometric figures, using their defining properties.
			8.M.4.1.2 Draw and measure various angles and shapes using appropriate tools. (341.01.b)		8. M. 4.1.2.A Select the appropriate tool to draw or measure various angles and shapes.
			8.M.4.1.3 Apply the fundamental concepts, properties, and relationships among points, lines, rays, planes, and angles. (341.01.c)		8.M.4.1.3 A Differentiate between points, lines, rays, and angles.
			8.M.4.1.4 Identify and model the effects of reflections, translations, rotations, and scaling on various shapes. (341.01.g)		8.M.4.1.4.A Replicate the effects of reflections, translations, or rotations on various shapes.
			8.M.4.1.5 Identify congruence, similarities, and line symmetry of shapes. (341.01.d)		8.M.4.1.5.A Arrange shapes to show congruence, similarities, and line symmetry of shapes.
			8.M.4.1.6 Explain the concept of surface area and volume (capacity). (341.01.f)		8.M.4.1.6.A Recognize the concept of surface area and volume (capacity).
			8.M.4.1.7 Use appropriate vocabulary and symbols. (341.01.h)		8.M.4.1.7 A Use appropriate vocabulary and symbols.

Standard 4: concepts and Principles of Geometry - Students in Grade 8 describe and classify relationships among types of one-, two-, and three-dimensional geometric figures using their defining properties. Students apply the fundamental concepts, properties, and relationships among points, lines, rays, planes, angles, and shapes. Students identify and apply congruence, similarities, and line symmetry of shapes.

Extended Standard 4: Students in Grade 8 classify one-,two-,and three dimensional geometric figures using their defining properties. Students differentiate the concepts, properties, and relationships among points, lines, rays, angles, and shapes. Students identify congruence, similarities, or line symmetry of shapes.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
	8.M.4.2	Apply the geometry of right triangles.	No objectives at this grade level.		No objectives at this grade level.

Standard 4: Concepts and Principles of Geometry - Students in Grade 8 describe and classify relationships among types of one-, two-, and three-dimensional geometric figures using their defining properties. Students apply the fundamental concepts, properties, and relationships among points, lines, rays, planes, angles, and shapes. Students identify and apply congruence, similarities, and line symmetry of shapes.

Extended Standard 4: Students in Grade 8 classify one-,two-,and three dimensional geometric figures using their defining properties. Students differentiate the concepts, properties, and relationships among points, lines, rays, angles, and shapes. Students identify congruence, similarities, or line symmetry of shapes.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
	8.M.4.3	Apply graphing in two dimensions.	8.M.4.3.1 Identify and plot points on a coordinate plane. (341.03.a)		8.M.4.3.1.A Identify or plot a point in the first quadrant on a coordinate plane.

Standard 4: Concepts and Principles of Geometry - Students in Grade 8 describe and classify relationships among types of one-, two-, and three- dimensional geometric figures using their defining properties. Students apply the fundamental concepts, properties, and relationships among points, lines, rays, planes, angles, and shapes. Students identify and apply congruence, similarities, and line symmetry of shapes.

Extended Standard 4: Students in Grade 8 classify one-,two-,and three dimensional geometric figures using their defining properties. Students differentiate the concepts, properties, and relationships among points, lines, rays, angles, and shapes. Students identify congruence, similarities, or line symmetry of shapes.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
	8.M.4.4	Represent and graph linear relationships.	No objectives at this grade level.		No objectives at this grade level.
	8.M.4.5	Use reasoning skills.	No objectives at this grade level.		No objectives at this grade level.

Standard 5: Data Analysis, Probability, and Statistics - Students in Grade 8 analyze and interpret tables, charts and graphs, including frequency tables, scatter plots, line graphs, line plots, bar graphs, histograms, circle graphs, and stem-and-leaf plots. Students collect, organize, and display data with appropriate notation in tables, charts, and graphs, including scatter plots, line graphs, line plots, bar graphs, histograms, and stem-and-leaf plots. Students choose and calculate the appropriate measure of central tendency – mean, median, and mode. Students recognize equally likely outcomes and make predictions based on experimental and theoretical probabilities.

Extended Standard 5: Students in Grade 8 read and interpret tables, charts, or graphs. Students collect, organize, and display a simple set of data in tables, charts, or graphs. Students identify simple measures of central tendency – median and mode. Students recognize outcomes and make predictions with simple probability experiments.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
	8.M.5.1	Understand data analysis.	8.M.5.1.1 Analyze and interpret tables, charts, and graphs, including frequency tables, scatter plots, broken line graphs, line plots, bar graphs, histograms, circle graphs, and stem-and-leaf plots. (342.01.a)		8.M.5.1.1.A Read and interpret charts and graphs, including line graphs, bar graphs, frequency tables, or circle graphs.
			8.M.5.1.2 Explain and justify conclusions drawn from tables, charts, and graphs. (342.01.b)		8.M.5.1.2.A Identify a conclusion drawn from tables, charts, or graphs.
			8.M.5.1.3 Use appropriate vocabulary and notations. (342.01.c)		8.M.5.1.3 A Use appropriate vocabulary.

Standard 5: Data Analysis, Probability, and Statistics - Students in Grade 8 analyze and interpret tables, charts and graphs, including frequency tables, scatter plots, line graphs, line plots, bar graphs, histograms, circle graphs, and stem-and-leaf plots. Students collect, organize, and display data with appropriate notation in tables, charts, and graphs, including scatter plots, line graphs, line plots, bar graphs, histograms, and stem-and-leaf plots. Students choose and calculate the appropriate measure of central tendency – mean, median, and mode. Students recognize equally likely outcomes and make predictions based on experimental and theoretical probabilities.

Extended Standard 5: Students in Grade 8 read and interpret tables, charts, or graphs. Students collect, organize, and display a simple set of data in tables, charts, or graphs. Students identify simple measures of central tendency – median and mode. Students recognize outcomes and make predictions with simple probability experiments.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
	8.M.5.2	Collect, organize, and display data.	8.M.5.2.1 Collect, organize, and display data with appropriate notation in tables, charts, and graphs, including scatter plots, broken line graphs, line plots, bar graphs, histograms, and stem-and-leaf plots. (342.02.a)		8.M.5.2.1.A Collect, organize, and display the data in tables, charts or graphs.

Standard 5: Data Analysis, Probability, and Statistics - Students in Grade 8 analyze and interpret tables, charts and graphs, including frequency tables, scatter plots, line graphs, line plots, bar graphs, histograms, circle graphs, and stem-and-leaf plots. Students collect, organize, and display data with appropriate notation in tables, charts, and graphs, including scatter plots, line graphs, line plots, bar graphs, histograms, and stem-and-leaf plots. Students choose and calculate the appropriate measure of central tendency – mean, median, and mode. Students recognize equally likely outcomes and make predictions based on experimental and theoretical probabilities.

Extended Standard 5: Students in Grade 8 read and interpret tables, charts, or graphs. Students collect, organize, and display a simple set of data in tables, charts, or graphs. Students identify simple measures of central tendency – median and mode. Students recognize outcomes and make predictions with simple probability experiments.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
	8.M.5.3	Apply simple statistical measurements.	8.M.5.3.1 Choose and calculate the appropriate measure of central tendency – mean, median, and mode. (342.03.a)		8.M.5.3.1.A Identify the measure of central tendency – median and mode.
			8.M.5.3.2 Explain the significance of distribution of data, including range, frequency, gaps, and clusters. (342.03.b)		8.M.5.3.2.A Identify or locate distribution of data, including range, frequency, gaps, or clusters.

Standard 5: Data Analysis, Probability, and Statistics - Students in Grade 8 analyze and interpret tables, charts and graphs, including frequency tables, scatter plots, line graphs, line plots, bar graphs, histograms, circle graphs, and stem-and-leaf plots. Students collect, organize, and display data with appropriate notation in tables, charts, and graphs, including scatter plots, line graphs, line plots, bar graphs, histograms, and stem-and-leaf plots. Students choose and calculate the appropriate measure of central tendency – mean, median, and mode. Students recognize equally likely outcomes and make predictions based on experimental and theoretical probabilities.

Extended Standard 5: Students in Grade 8 read and interpret tables, charts, or graphs. Students collect, organize, and display a simple set of data in tables, charts, or graphs. Students identify simple measures of central tendency – median and mode. Students recognize outcomes and make predictions with simple probability experiments.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
	8.M.5.4	Understand basic concepts of probability.	8.M.5.4.1 Model situations of probability using simulations. (342.04.a)		8.M.5.4.1.A Reproduce a situation of probability using a common example of coin toss or rolling of dice.
			8.M.5.4.2 Recognize equally likely outcomes. (342.01.c)		8.M.5.4.2.A Recognize equally likely outcomes.
			8.M.5.4.3 Explain that probability ranges from 0% to 100% and identify a situation as having high or low probability.		8.M.5.4.3 A. Match probability range from low to high to situations.
			8.M.5.4.4 Use the language of probability. (342.04.b)		8.M.5.4.4.A Use the language of probability.

Standard 5: Data Analysis, Probability, and Statistics - Students in Grade 8 analyze and interpret tables, charts and graphs, including frequency tables, scatter plots, line graphs, line plots, bar graphs, histograms, circle graphs, and stem-and-leaf plots. Students collect, organize, and display data with appropriate notation in tables, charts, and graphs, including scatter plots, line graphs, line plots, bar graphs, histograms, and stem-and-leaf plots. Students choose and calculate the appropriate measure of central tendency – mean, median, and mode. Students recognize equally likely outcomes and make predictions based on experimental and theoretical probabilities.

Extended Standard 5: Students in Grade 8 read and interpret tables, charts, or graphs. Students collect, organize, and display a simple set of data in tables, charts, or graphs. Students identify simple measures of central tendency – median and mode. Students recognize outcomes and make predictions with simple probability experiments.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
	8.M.5.5	Make predictions or decisions based on data.	8.M.5.5.1 Make predictions based on experimental and theoretical probabilities. (342.05.a)		8.M.5.5.1A Recognize predictions based on experimental probabilities.
			8.M.5.5.2 Conduct statistical experiments and interpret results using tables, charts, or graphs. (342.05.c)		8.M.5.5.2.A Perform a simple statistical experiment and record results using tables, charts, or graphs.
			8.M.5.5.3 Use appropriate vocabulary and notations. (342.05.b)		8.M.5.5.3 A Use appropriate vocabulary.