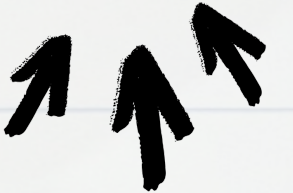


7TH GRADE ACCELERATED MATH LEARNING PROGRESSIONS

How are these progressions organized?
By Strand - colors as designated below.

[Click here for the B1G-M
\(B.E.S.T. Instructional Guide for Mathematics\)
document available on Turnkey.](#)



**Number Sense
and Operations**

**Algebraic
Reasoning**

**Geometric
Reasoning**

**Data Analysis &
Probability**

These categories are directly outlined in the following
documents from the Florida Department of Education:

[Test Item Specifications](#)
[Test Design Summary and Blueprint](#)

(click links above to view these documents)

Number Sense and Operations

MA.7.NSO.1.1 Know and apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions, limited to whole-number exponents and rational number bases.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Comprehension Level (Integrating); Secondary Taxonomy Level: Retrieval Level (Executing)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis

- I CAN analyze numerical expressions with exponents to identify errors in the application of the Laws of Exponents and explain the correct reasoning needed to generate equivalent expressions.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Comprehension and Retrieval

- I CAN know and apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions, limited to whole-number exponents and rational number bases.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall that an exponent represents repeated multiplication.
- I CAN recognize the base and exponent in an exponential expression.
- I CAN identify rational numbers in fraction and decimal form.
- I CAN recall the Product of Powers Law (when multiplying like bases, add exponents).
- I CAN recall the Quotient of Powers Law (when dividing like bases, subtract exponents).
- I CAN recall the Power of a Power Law (when raising a power to a power, multiply exponents).
- I CAN recall the Power of a Product Law (distribute the exponent to each factor).
- I CAN recall the Zero Exponent Law (any non-zero base to the zero power equals 1).
- I CAN execute multiplication and division with rational numbers.
- I CAN execute the procedure to evaluate expressions with exponents.

Number Sense and Operations

MA.7.NSO.1.2 Rewrite rational numbers in different but equivalent forms including fractions, mixed numbers, repeating decimals and percentages to solve mathematical and real-world problems.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Knowledge Utilization Level (Problem Solving)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Knowledge Utilization

- I CAN determine which form of a rational number (fraction, mixed number, repeating decimal, or percentage) is most efficient or appropriate for solving a specific mathematical or real-world problem and justify my choice.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Knowledge Utilization

- I CAN rewrite rational numbers in different but equivalent forms including fractions, mixed numbers, repeating decimals and percentages to solve mathematical and real-world problems.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recognize rational numbers in various forms.
- I CAN recall that equivalent forms represent the same value.
- I CAN execute the procedure to convert a fraction to a decimal.
- I CAN execute the procedure to convert a decimal to a fraction.
- I CAN execute the procedure to convert an improper fraction to a mixed number.
- I CAN execute the procedure to convert a mixed number to an improper fraction.
- I CAN execute the procedure to convert a fraction or decimal to a percentage.
- I CAN execute the procedure to convert a percentage to a fraction or decimal.
- I CAN recognize repeating decimals and use bar notation.

Number Sense and Operations

MA.8.NSO.1.1 Extend previous understanding of rational numbers to define irrational numbers within the real number system. Locate an approximate value of a numerical expression involving irrational numbers on a number line.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Comprehension Level (Integrating); Secondary Taxonomy Level: Retrieval Level (Executing)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis

- I CAN critique and identify errors in another student's work when they locate irrational numbers on a number line and explain why their placement is plausible or implausible.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Comprehension and Retrieval

- I CAN extend my previous understanding of rational numbers to define irrational numbers within the real number system and locate an approximate value of a numerical expression involving irrational numbers on a number line.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the definition of rational numbers and provide examples.
- I CAN recognize that irrational numbers cannot be expressed as a fraction of two integers.
- I CAN identify examples of irrational numbers (such as π , $\sqrt{2}$, $\sqrt{3}$).
- I CAN execute the procedure of locating rational numbers on a number line.
- I CAN calculate approximate decimal values of square roots and other irrational expressions.
- I CAN describe the relationship between perfect squares and their square roots.
- I CAN identify between which two consecutive whole numbers an irrational number falls.

Number Sense and Operations

MA.8.NSO.1.2 Plot, order and compare rational and irrational numbers, represented in various forms.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Analysis Level (Matching); Secondary Taxonomy Level: Retrieval Level (Executing)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis

- I CAN critique another student's work when they plot, order, and compare rational and irrational numbers in various forms and identify any errors in their reasoning or placement.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Analysis and Retrieval

- I CAN plot, order and compare rational and irrational numbers, represented in various forms.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the definitions of rational and irrational numbers.
- I CAN recognize rational numbers in various forms (fractions, decimals, integers, percentages).
- I CAN recognize irrational numbers in various forms (radicals, π , non-repeating/non-terminating decimals).
- I CAN execute the procedure of converting between different forms of rational numbers (fraction to decimal, etc.).
- I CAN calculate approximate decimal values of irrational numbers.
- I CAN execute the procedure of plotting rational numbers on a number line.
- I CAN identify the relative position of numbers (greater than, less than, equal to).

Number Sense and Operations

MA.8.NSO.1.3 Extend previous understanding of the Laws of Exponents to include integer exponents. Apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions, limited to integer exponents and rational number bases, with procedural fluency.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Comprehension Level (Integrating); Secondary Taxonomy Level: Retrieval Level (Executing)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis

- I CAN identify and explain errors in another student's application of the Laws of Exponents with integer exponents and rational number bases, and determine the reasonableness of their equivalent expressions.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Comprehension and Retrieval

- I CAN extend my previous understanding of the Laws of Exponents to include integer exponents and apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions, limited to integer exponents and rational number bases, with procedural fluency.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the Laws of Exponents for positive exponents (product rule, quotient rule, power rule, power of a product, power of a quotient).
- I CAN recognize when to apply each Law of Exponents.
- I CAN execute the procedure of evaluating expressions with positive integer exponents.
- I CAN define and recognize zero as an exponent (any non-zero base to the zero power equals 1).
- I CAN define and recognize negative integer exponents and their relationship to positive exponents.
- I CAN calculate the value of expressions with rational number bases.
- I CAN execute the procedure of simplifying expressions by combining like terms with exponents.

Number Sense and Operations

MA.8.NSO.1.4 Express numbers in scientific notation to represent and approximate very large or very small quantities. Determine how many times larger or smaller one number is compared to a second number.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Comprehension Level (Integrating); Secondary Taxonomy Level: Retrieval Level (Executing)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis

- I CAN compare and contrast multiple real-world scenarios involving scientific notation to determine which situations represent the greatest or least proportional differences and justify my reasoning.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Comprehension and Retrieval

- I CAN express numbers in scientific notation to represent and approximate very large or very small quantities and determine how many times larger or smaller one number is compared to a second number.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall what scientific notation is and identify its components (coefficient and power of 10).
- I CAN recognize when a number is written in proper scientific notation (coefficient between 1 and 10).
- I CAN execute the procedure of multiplying and dividing by powers of 10.
- I CAN calculate the value of numbers written in scientific notation by converting to standard form.
- I CAN execute the procedure of converting standard form numbers to scientific notation.
- I CAN identify whether a number in scientific notation represents a very large or very small quantity based on the exponent.
- I CAN recall and apply the Laws of Exponents to divide numbers in scientific notation.

Number Sense and Operations

MA.8.NSO.1.5 Add, subtract, multiply and divide numbers expressed in scientific notation with procedural fluency.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Retrieval Level (Executing)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Comprehension

- I CAN explain the mathematical reasoning behind why certain steps are necessary when adding, subtracting, multiplying, and dividing numbers in scientific notation and describe the relationships between the operations.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Retrieval

- I CAN add, subtract, multiply and divide numbers expressed in scientific notation with procedural fluency.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the Laws of Exponents (product rule, quotient rule, power rule).
- I CAN recognize numbers written in scientific notation.
- I CAN execute the procedure of converting numbers to and from scientific notation.
- I CAN execute the procedure of multiplying and dividing powers of 10.
- I CAN execute the procedure of adding and subtracting numbers with like terms.
- I CAN identify when exponents must be the same to add or subtract in scientific notation.
- I CAN calculate products and quotients of decimal coefficients.
- I CAN execute the procedure of adjusting scientific notation to maintain proper form (coefficient between 1 and 10).

Number Sense and Operations

MA.8.NSO.1.6 Solve real-world problems involving operations with numbers expressed in scientific notation.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Knowledge Utilization Level (Problem Solving)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Knowledge Utilization

- I CAN evaluate multiple solution strategies for real-world problems involving scientific notation, select the most efficient approach, and justify my decision based on established criteria.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Knowledge Utilization

- I CAN solve real-world problems involving operations with numbers expressed in scientific notation.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall what scientific notation is and recognize its components.
- I CAN recognize real-world contexts where very large or very small numbers are used (astronomy, biology, technology, etc.).
- I CAN execute the procedure of adding, subtracting, multiplying, and dividing numbers in scientific notation.
- I CAN identify which operation(s) are needed to solve a given problem.
- I CAN calculate and convert between scientific notation and standard form.
- I CAN execute the procedure of solving multi-step problems with rational numbers.
- I CAN interpret the meaning of a solution in the context of a real-world problem.

Number Sense and Operations

MA.8.NSO.1.7 Solve multi-step mathematical and real-world problems involving the order of operations with rational numbers including exponents and radicals.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Knowledge Utilization Level (Problem Solving)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Knowledge Utilization

- I CAN evaluate different solution pathways for multi-step problems with rational numbers, exponents, and radicals, determine which strategy is most efficient, and justify my choice using mathematical reasoning.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Knowledge Utilization

- I CAN solve multi-step mathematical and real-world problems involving the order of operations with rational numbers including exponents and radicals.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the order of operations (PEMDAS/GEMDAS).
- I CAN recognize when parentheses, exponents, multiplication, division, addition, and subtraction are present in an expression.
- I CAN execute the procedure of evaluating expressions with exponents.
- I CAN execute the procedure of simplifying radicals (square roots and cube roots).
- I CAN calculate operations with rational numbers (fractions, decimals, integers).
- I CAN execute the procedure of applying the order of operations in single-step and two-step problems.
- I CAN identify what operations are needed to solve a given problem.
- I CAN interpret the meaning of a solution in context of a real-world problem.

Algebraic Reasoning

MA.7.AR.2.2 Write and solve two-step equations in one variable within a mathematical or real-world context, where all terms are rational numbers.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Knowledge Utilization Level (Problem Solving)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Knowledge Utilization

- I CAN evaluate different approaches for solving two-step equations with rational numbers, determine which method is most efficient for a given problem, and justify my choice.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Knowledge Utilization

- I CAN write and solve two-step equations in one variable within a mathematical or real-world context, where all terms are rational numbers.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recognize an equation as a mathematical statement showing two expressions are equal.
- I CAN identify the variable in an equation.
- I CAN recognize rational numbers in fraction, decimal, and integer form.
- I CAN translate mathematical or real-world contexts into equations.
- I CAN recall that inverse operations undo each other.
- I CAN execute addition and subtraction with rational numbers.
- I CAN execute multiplication and division with rational numbers.
- I CAN apply the order of operations in reverse to isolate the variable.
- I CAN execute the procedure to check solutions by substituting back into the original equation.

Algebraic Reasoning

MA.7.AR.3.3 Solve mathematical and real-world problems involving the conversion of units across different measurement systems.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Knowledge Utilization Level (Problem Solving)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Knowledge Utilization

- I CAN determine which measurement system (customary or metric) is most appropriate for a given real-world situation, convert between systems as needed, and justify my reasoning based on precision, context, and practicality.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Knowledge Utilization

- I CAN solve mathematical and real-world problems involving the conversion of units across different measurement systems.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recognize the customary measurement system (inches, feet, yards, miles, ounces, pounds, cups, etc.).
- I CAN recognize the metric measurement system (millimeters, centimeters, meters, kilometers, grams, kilograms, liters, etc.).
- I CAN recall common conversion factors within the customary system.
- I CAN recall common conversion factors within the metric system.
- I CAN recall conversion factors between customary and metric systems.
- I CAN identify which units need to be converted in a problem.
- I CAN execute multiplication and division to convert units.
- I CAN set up and use dimensional analysis (unit multipliers) to convert units.
- I CAN label answers with appropriate units.

Algebraic Reasoning

MA.7.AR.4.1 Determine whether two quantities have a proportional relationship by examining a table, graph or written description.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Analysis Level (Analyzing Errors)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Knowledge Utilization

- I CAN investigate various representations of relationships (tables, graphs, and written descriptions) to identify why certain relationships are not proportional, and construct an argument explaining the characteristics that distinguish proportional from non-proportional relationships.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Analysis

- I CAN determine whether two quantities have a proportional relationship by examining a table, graph or written description.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall that a proportional relationship has a constant ratio between two quantities.
- I CAN recall that a proportional relationship passes through the origin (0, 0) when graphed.
- I CAN recognize tables, graphs, and written descriptions as representations of relationships.
- I CAN execute division to calculate ratios from a table.
- I CAN identify whether ratios are equivalent.
- I CAN recognize a straight line through the origin on a graph.
- I CAN identify key information in a written description.
- I CAN calculate the constant of proportionality (unit rate).

Algebraic Reasoning

MA.7.AR.4.2 Determine the constant of proportionality within a mathematical or real-world context given a table, graph or written description of a proportional relationship.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Comprehension Level (Integrating)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis

- I CAN compare constants of proportionality from multiple proportional relationships represented in different forms (table, graph, written description) to determine which represents the greatest or least rate, and explain the real-world meaning of the comparison.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Comprehension

- I CAN determine the constant of proportionality within a mathematical or real-world context given a table, graph or written description of a proportional relationship.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall that the constant of proportionality is the constant ratio in a proportional relationship.
- I CAN recall that the constant of proportionality represents the unit rate.
- I CAN recognize a proportional relationship from a table, graph, or written description.
- I CAN execute division to find the ratio of y to x in a table.
- I CAN identify a point on a graph and read its coordinates.
- I CAN execute division to calculate $y \div x$ from graph coordinates.
- I CAN recognize the constant of proportionality as the slope of a line through the origin.
- I CAN identify the relationship between two quantities in a written description.

Algebraic Reasoning

MA.7.AR.4.3 Given a mathematical or real-world context, graph proportional relationships from a table, equation or a written description.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Retrieval Level (Executing)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Comprehension

- I CAN explain how the constant of proportionality is represented visually on the graph of a proportional relationship, and interpret what the steepness of the line reveals about the rate of change in the real-world context.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Retrieval

- I CAN given a mathematical or real-world context, graph proportional relationships from a table, equation or a written description.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall that proportional relationships graph as straight lines through the origin.
- I CAN recognize proportional relationships in tables, equations, and written descriptions.
- I CAN identify ordered pairs from a table.
- I CAN identify the constant of proportionality in an equation of the form $y = kx$.
- I CAN generate ordered pairs from an equation.
- I CAN extract numerical information from a written description.
- I CAN label axes on a coordinate plane with appropriate scales and units.
- I CAN execute the procedure to plot points on a coordinate plane.
- I CAN draw a line through plotted points.

Algebraic Reasoning

MA.7.AR.4.4 Given any representation of a proportional relationship, translate the representation to a written description, table or equation.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Comprehension Level (Symbolizing)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis

- I CAN analyze multiple representations of the same proportional relationship to identify which representation most effectively communicates the relationship for a specific purpose or audience, and justify my reasoning.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Comprehension

- I CAN given any representation of a proportional relationship, translate the representation to a written description, table or equation.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recognize proportional relationships in various forms (graph, table, equation, written description).
- I CAN identify the constant of proportionality from any representation.
- I CAN recall the equation form for proportional relationships ($y = kx$).
- I CAN read and interpret ordered pairs from a graph.
- I CAN identify the relationship between x and y values in a table.
- I CAN execute division to find the constant of proportionality.
- I CAN generate ordered pairs to create a table.
- I CAN identify the variables and their units in a proportional relationship.
- I CAN write clear mathematical descriptions using appropriate vocabulary.

Algebraic Reasoning

MA.7.AR.4.5 Solve real-world problems involving proportional relationships.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Knowledge Utilization Level (Problem Solving)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Knowledge Utilization

- I CAN evaluate multiple real-world proportional situations to determine which option provides the best value, rate, or outcome based on specific criteria, and justify my decision using proportional reasoning and calculations.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Knowledge Utilization

- I CAN solve real-world problems involving proportional relationships.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recognize proportional relationships in real-world contexts.
- I CAN identify the two quantities in a proportional relationship.
- I CAN determine the constant of proportionality from given information.
- I CAN recall the equation form for proportional relationships ($y = kx$).
- I CAN execute multiplication and division to solve for unknown values.
- I CAN set up and solve proportions.
- I CAN identify what the problem is asking me to find.
- I CAN interpret solutions in the context of the problem.
- I CAN label answers with appropriate units.

Algebraic Reasoning

MA.8.AR.1.1 Apply the Laws of Exponents to generate equivalent algebraic expressions, limited to integer exponents and monomial bases.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Comprehension Level (Integrating); Secondary Taxonomy Level: Retrieval Level (Executing)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis

- I CAN critique another student's application of the Laws of Exponents when generating equivalent algebraic expressions with integer exponents and monomial bases, identify any errors in their reasoning, and explain the correct approach

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Comprehension and Retrieval

- I CAN apply the Laws of Exponents to generate equivalent algebraic expressions, limited to integer exponents and monomial bases.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the Laws of Exponents (product rule, quotient rule, power rule, power of a product, power of a quotient).
- I CAN recognize monomial expressions and their components (coefficient and variables with exponents).
- I CAN identify integer exponents (positive, negative, and zero).
- I CAN execute the procedure of applying exponent rules with numerical bases.
- I CAN recognize when expressions are equivalent.
- I CAN execute the procedure of simplifying expressions with variables and exponents.
- I CAN recall that a variable with no visible exponent has an exponent of 1.
- I CAN calculate the result when applying negative and zero exponents.

Algebraic Reasoning

MA.8.AR.1.2 Apply properties of operations to multiply two linear expressions with rational coefficients.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Retrieval Level (Executing)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Comprehension

- I CAN explain why the distributive property works when multiplying two linear expressions with rational coefficients and describe the relationship between the terms in the original expressions and the resulting product.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Retrieval

- I CAN apply properties of operations to multiply two linear expressions with rational coefficients.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the properties of operations (distributive property, commutative property, associative property).
- I CAN recognize linear expressions and identify their components (coefficients, variables, constants).
- I CAN identify rational coefficients (integers, fractions, decimals).
- I CAN execute the procedure of multiplying rational numbers.
- I CAN execute the procedure of applying the distributive property with single terms.
- I CAN execute the procedure of multiplying a monomial by a binomial.
- I CAN execute the procedure of combining like terms.
- I CAN recall the rules for multiplying variables with exponents (product rule).

Algebraic Reasoning

MA.8.AR.1.3 Rewrite the sum of two algebraic expressions having a common monomial factor as a common factor multiplied by the sum of two algebraic expressions.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Comprehension Level (Symbolizing); Secondary Taxonomy Level: Retrieval Level (Executing)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis

- I CAN compare and contrast the expanded form and factored form of algebraic expressions to explain when and why factoring is advantageous in solving mathematical problems.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Comprehension and Retrieval

- I CAN rewrite the sum of two algebraic expressions having a common monomial factor as a common factor multiplied by the sum of two algebraic expressions.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall what a monomial is and identify its components.
- I CAN recognize the terms in an algebraic expression.
- I CAN identify factors of numerical coefficients.
- I CAN recognize the greatest common factor (GCF) of two or more numbers.
- I CAN identify common variable factors in algebraic terms.
- I CAN execute the procedure of finding the GCF of monomial terms.
- I CAN recall and apply the distributive property.
- I CAN execute the procedure of dividing monomials.

Algebraic Reasoning

MA.8.AR.2.1 Solve multi-step linear equations in one variable, with rational number coefficients. Include equations with variables on both sides.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Knowledge Utilization Level (Investigating)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Knowledge Utilization

- I CAN construct and defend an argument about whether a multi-step linear equation will have one solution, no solution, or infinitely many solutions before solving it, and verify my claim through algebraic manipulation.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Knowledge Utilization

- I CAN solve multi-step linear equations in one variable, with rational number coefficients, including equations with variables on both sides.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the properties of equality (addition, subtraction, multiplication, division).
- I CAN recognize linear equations in one variable.
- I CAN identify rational number coefficients (integers, fractions, decimals).
- I CAN execute the procedure of solving one-step equations.
- I CAN execute the procedure of solving two-step equations.
- I CAN execute the procedure of applying the distributive property.
- I CAN execute the procedure of combining like terms on one side of an equation.
- I CAN execute the procedure of performing operations with rational numbers.
- I CAN identify inverse operations needed to isolate a variable.

Algebraic Reasoning

MA.8.AR.2.2 Solve two-step linear inequalities in one variable and represent solutions algebraically and graphically.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Knowledge Utilization Level (Problem Solving); Secondary Taxonomy Level: Comprehension Level (Symbolizing)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Knowledge Utilization

- I CAN investigate and construct an argument about the effect of multiplying or dividing by negative numbers when solving inequalities, and prove why the inequality symbol must reverse direction.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Knowledge Utilization and Comprehension

- I CAN solve two-step linear inequalities in one variable and represent solutions algebraically and graphically.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the inequality symbols ($<$, $>$, $\leq$, $\geq$) and their meanings.
- I CAN recognize linear inequalities in one variable.
- I CAN identify the properties of inequality (addition, subtraction, multiplication, division).
- I CAN execute the procedure of solving one-step inequalities.
- I CAN recall that multiplying or dividing by a negative number reverses the inequality symbol.
- I CAN execute the procedure of graphing solutions on a number line (open and closed circles, arrows).
- I CAN execute the procedure of performing operations with rational numbers.
- I CAN identify inverse operations needed to isolate a variable.
- I CAN recognize whether a solution set includes or excludes boundary values.

Algebraic Reasoning

MA.8.AR.2.3 Given an equation in the form of $x^2 = p$ and $x^3 = q$, where p is a whole number and q is an integer, determine the real solutions.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Knowledge Utilization Level (Problem Solving)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Knowledge Utilization

- I CAN investigate patterns in square root and cube root equations to construct and defend an argument about why square root equations have two solutions (positive and negative) while cube root equations have only one real solution.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Knowledge Utilization

- I CAN determine the real solutions given an equation in the form of $x^2 = p$ and $x^3 = q$, where p is a whole number and q is an integer.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall what square roots and cube roots are.
- I CAN recognize perfect squares and their square roots.
- I CAN recognize perfect cubes and their cube roots.
- I CAN identify whole numbers and integers.
- I CAN execute the procedure of finding the square root of a whole number.
- I CAN execute the procedure of finding the cube root of an integer.
- I CAN recall that square root equations have both positive and negative solutions.
- I CAN recall that cube root equations can have positive or negative solutions depending on the sign of q .
- I CAN calculate approximate values of non-perfect square roots and cube roots.

Algebraic Reasoning

MA.8.AR.3.1 Determine if a linear relationship is also a proportional relationship.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Analysis Level (Matching)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis

- I CAN create a general rule or principle that explains the conditions under which any linear relationship will also be proportional, and apply this rule to justify my conclusions across multiple representations.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Analysis

- I CAN determine if a linear relationship is also a proportional relationship.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the definition of a linear relationship.
- I CAN recall the definition of a proportional relationship.
- I CAN recognize the characteristics of proportional relationships (constant ratio, passes through the origin).
- I CAN identify the y-intercept of a linear relationship.
- I CAN recognize linear relationships in various forms (tables, graphs, equations, verbal descriptions).
- I CAN execute the procedure of calculating unit rate or constant of proportionality.
- I CAN recall that proportional relationships have the form $y = kx$ where k is the constant of proportionality.
- I CAN recognize that linear relationships have the form $y = mx + b$.

Algebraic Reasoning

MA.8.AR.3.2 Given a table, graph or written description of a linear relationship, determine the slope.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Retrieval Level (Executing)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Comprehension

- I CAN explain the relationship between slope in different representations (table, graph, written description) and describe how the slope represents the rate of change in real-world contexts.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Retrieval

- I CAN determine the slope given a table, graph or written description of a linear relationship.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the definition of slope (rate of change, rise over run).
- I CAN recognize linear relationships in tables, graphs, and written descriptions.
- I CAN identify two points on a graph or in a table.
- I CAN recall the slope formula: $m = (y_2 - y_1)/(x_2 - x_1)$.
- I CAN execute the procedure of calculating rise (change in y) and run (change in x).
- I CAN execute the procedure of subtracting integers and rational numbers.
- I CAN execute the procedure of dividing rational numbers.
- I CAN identify key information in a written description that indicates rate of change.
- I CAN recognize positive, negative, zero, and undefined slopes.

Algebraic Reasoning

MA.8.AR.3.3 Given a table, graph or written description of a linear relationship, write an equation in slope-intercept form.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Comprehension Level (Symbolizing)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis Level (Matching)

- I CAN compare and contrast multiple linear relationships represented in different forms (table, graph, written description) and explain how the slope and y-intercept relate to the context and structure of each representation.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Comprehension (Symbolizing)

- I CAN write an equation in slope-intercept form given a table, graph or written description of a linear relationship.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the slope-intercept form of a linear equation ($y = mx + b$).
- I CAN identify the components of slope-intercept form (m = slope, b = y-intercept).
- I CAN recognize linear relationships in tables, graphs, and written descriptions.
- I CAN execute the procedure of determining the slope from a table, graph, or written description.
- I CAN identify the y-intercept from a graph (where the line crosses the y-axis).
- I CAN execute the procedure of finding the y-intercept from a table.
- I CAN recognize key words in written descriptions that indicate slope and y-intercept.
- I CAN execute the procedure of substituting values into the slope-intercept form.

Algebraic Reasoning

MA.8.AR.3.4 Given a mathematical or real-world context, graph a two-variable linear equation from a written description, a table or an equation in slope-intercept form.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Comprehension Level (Symbolizing)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis

- I CAN critique another student's graph of a two-variable linear equation from a written description, table, or equation in slope-intercept form, identify any errors in their graphing process, and explain how to correct the mistakes.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Comprehension

- I CAN graph a two-variable linear equation from a written description, a table or an equation in slope-intercept form given a mathematical or real-world context.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall how to plot points on a coordinate plane.
- I CAN recognize linear equations in slope-intercept form ($y = mx + b$).
- I CAN identify the x-axis and y-axis on a coordinate plane.
- I CAN execute the procedure of finding the y-intercept from an equation or table.
- I CAN execute the procedure of determining the slope from an equation, table, or written description.
- I CAN execute the procedure of using slope (rise over run) to find additional points.
- I CAN execute the procedure of creating a table of values from an equation or written description.
- I CAN identify key information in written descriptions that represents slope and y-intercept.
- I CAN recall that two points are needed to graph a line.
- I CAN recognize patterns in tables that represent linear relationships.

Algebraic Reasoning

MA.8.AR.3.5 Given a real-world context, determine and interpret the slope and y -intercept of a two-variable linear equation from a written description, a table, a graph or an equation in slope-intercept form.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Comprehension Level (Integrating)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis

- I CAN analyze multiple real-world linear relationships to form conclusions about how different slopes and y -intercepts affect the context, and create general principles for interpreting these values across various situations.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Comprehension

- I CAN determine and interpret the slope and y -intercept of a two-variable linear equation from a written description, a table, a graph or an equation in slope-intercept form given a real-world context.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the slope-intercept form of a linear equation ($y = mx + b$).
- I CAN recognize slope and y -intercept in an equation, table, graph, or written description.
- I CAN execute the procedure of calculating slope from two points, a table, or a graph.
- I CAN identify the y -intercept from a graph (where the line crosses the y -axis).
- I CAN execute the procedure of finding the y -intercept from a table or equation.
- I CAN recall that slope represents rate of change.
- I CAN recall that y -intercept represents the starting value or initial amount.
- I CAN identify key vocabulary in real-world contexts (per, each, initial, starting amount, rate).
- I CAN recognize the independent and dependent variables in a real-world context.

Algebraic Reasoning

MA.8.AR.4.1 Given a system of two linear equations and a specified set of possible solutions, determine which ordered pairs satisfy the system of linear equations.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Retrieval Level (Executing)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Comprehension

- I CAN explain why an ordered pair that satisfies both equations in a system represents the intersection point of the two lines, and describe the relationship between algebraic and graphical solutions.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Retrieval

- I CAN determine which ordered pairs satisfy the system of linear equations given a system of two linear equations and a specified set of possible solutions.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall what an ordered pair is and identify its components (x, y).
- I CAN recognize a system of two linear equations.
- I CAN identify the variables in a linear equation.
- I CAN execute the procedure of substituting values into an equation.
- I CAN execute the procedure of evaluating expressions with rational numbers.
- I CAN recognize when an ordered pair makes an equation true.
- I CAN recall that a solution to a system must satisfy both equations.
- I CAN execute the procedure of solving linear equations to verify equality.

Algebraic Reasoning

MA.8.AR.4.2 Given a system of two linear equations represented graphically on the same coordinate plane, determine whether there is one solution, no solution or infinitely many solutions.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Analysis Level (Matching)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis

- I CAN create a general rule that explains the relationship between the slopes and y-intercepts of two linear equations and the number of solutions their system will have, and apply this principle to predict solutions before graphing.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Analysis

- I CAN determine whether there is one solution, no solution or infinitely many solutions given a system of two linear equations represented graphically on the same coordinate plane.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall what a system of linear equations is.
- I CAN recognize linear equations graphed on a coordinate plane.
- I CAN identify the point of intersection of two lines on a graph.
- I CAN recognize parallel lines (lines that never intersect).
- I CAN recognize when two lines are the same line (coincident lines).
- I CAN recall that intersecting lines have one solution.
- I CAN recall that parallel lines have no solution.
- I CAN recall that coincident lines (same line) have infinitely many solutions.
- I CAN identify ordered pairs on a coordinate plane.

Algebraic Reasoning

MA.8.AR.4.3 Given a mathematical or real-world context, solve systems of two linear equations by graphing.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Knowledge Utilization Level (Problem Solving)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Knowledge Utilization

- I CAN evaluate whether graphing is the most efficient method for solving a given system of linear equations compared to other methods, and justify my choice based on the characteristics of the equations and context.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Knowledge Utilization

- I CAN solve systems of two linear equations by graphing given a mathematical or real-world context.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall what a system of linear equations is.
- I CAN recognize linear equations in various forms (slope-intercept, standard form).
- I CAN execute the procedure of graphing a linear equation from slope-intercept form.
- I CAN execute the procedure of graphing a linear equation from a table of values.
- I CAN execute the procedure of plotting points accurately on a coordinate plane.
- I CAN identify the point of intersection of two lines on a graph.
- I CAN recognize when lines are parallel (no solution) or coincident (infinitely many solutions).
- I CAN recall that the solution to a system is the ordered pair where the lines intersect.
- I CAN interpret the meaning of a solution in the context of a real-world problem.

Functions

MA.8.F.1.1 Given a set of ordered pairs, a table, a graph or mapping diagram, determine whether the relationship is a function. Identify the domain and range of the relation.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Analysis Level (Matching); Secondary Taxonomy Level: Retrieval (Recognizing)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis

- I CAN create a general rule or principle that explains when a relation will or will not be a function across all representations (ordered pairs, tables, graphs, mapping diagrams), and use this principle to justify my conclusions.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Analysis and Retrieval

- I CAN determine whether the relationship is a function and identify the domain and range of the relation given a set of ordered pairs, a table, a graph or mapping diagram.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the definition of a function (each input has exactly one output).
- I CAN recall the definition of a relation.
- I CAN recognize ordered pairs and identify the x-value (input) and y-value (output).
- I CAN identify the domain (set of all input values/x-values).
- I CAN identify the range (set of all output values/y-values).
- I CAN recognize when an input value is repeated in a set of ordered pairs, table, or mapping diagram.
- I CAN execute the vertical line test on a graph.
- I CAN list elements of a set without repetition.

Functions

MA.8.F.1.2 Given a function defined by a graph or an equation, determine whether the function is a linear function. Given an input-output table, determine whether it could represent a linear function.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Analysis Level (Matching)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis

- I CAN form conclusions about the characteristics that define linear functions across all representations (graphs, equations, tables) and create a general principle for identifying linear functions in any form.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Analysis

- I CAN determine whether the function is a linear function given a function defined by a graph or an equation, and determine whether it could represent a linear function given an input-output table.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the definition of a linear function.
- I CAN recognize the characteristics of a linear graph (straight line).
- I CAN recall the forms of linear equations ($y = mx + b$, $Ax + By = C$).
- I CAN identify whether an equation has variables raised to the first power only.
- I CAN execute the procedure of calculating rate of change (slope) from a table.
- I CAN recognize when a table shows a constant rate of change.
- I CAN identify the degree of terms in an equation (exponents on variables).
- I CAN recall that linear functions have a constant rate of change.
- I CAN recognize non-linear characteristics (curves, exponents other than 1, variable products).

Functions

MA.8.F.1.3 Analyze a real-world written description or graphical representation of a functional relationship between two quantities and identify where the function is increasing, decreasing or constant.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Analysis Level (Matching)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis

- I CAN analyze multiple real-world functional relationships to form conclusions about what causes functions to increase, decrease, or remain constant, and create general principles that connect the behavior of functions to their real-world contexts.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Analysis

- I CAN analyze a real-world written description or graphical representation of a functional relationship between two quantities and identify where the function is increasing, decreasing or constant.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the definition of a function.
- I CAN recognize a functional relationship between two quantities.
- I CAN identify the independent variable (x-axis) and dependent variable (y-axis) on a graph.
- I CAN recall that an increasing function has y-values that go up as x-values increase.
- I CAN recall that a decreasing function has y-values that go down as x-values increase.
- I CAN recall that a constant function has y-values that stay the same as x-values increase.
- I CAN identify intervals on a graph (portions or sections of the function).
- I CAN recognize key vocabulary in written descriptions that indicate increasing, decreasing, or constant behavior.
- I CAN interpret graphs in real-world contexts.

Geometric Reasoning

MA.7.GR.1.3 Explore the proportional relationship between circumferences and diameters of circles. Apply a formula for the circumference of a circle to solve mathematical and real-world problems.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Comprehension Level (Integrating); Secondary Taxonomy Level: Knowledge Utilization Level (Problem Solving)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis

- I CAN analyze how changes in the diameter or radius of a circle affect the circumference, generalize the multiplicative relationship, and explain why this proportional relationship remains constant for all circles.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Comprehension and Knowledge Utilization

- I CAN explore the proportional relationship between circumferences and diameters of circles, and apply a formula for the circumference of a circle to solve mathematical and real-world problems.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recognize a circle and identify its center.
- I CAN identify the diameter of a circle.
- I CAN identify the radius of a circle.
- I CAN recall that the diameter is twice the radius ($d = 2r$).
- I CAN recall that π (pi) represents the constant ratio of circumference to diameter.
- I CAN recall the formula for circumference using diameter: $C = \pi d$.
- I CAN recall the formula for circumference using radius: $C = 2\pi r$.
- I CAN execute multiplication with π (using 3.14 or the π button).
- I CAN label answers with appropriate linear units.

Geometric Reasoning

MA.7.GR.1.4 Explore and apply a formula to find the area of a circle to solve mathematical and real-world problems.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Comprehension Level (Integrating); Secondary Taxonomy Level: Knowledge Utilization Level (Problem Solving)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis

- I CAN analyze how changes in the radius of a circle affect the area, compare the rate of change between radius and area, and explain why doubling the radius results in quadrupling the area.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Comprehension and Knowledge Utilization

- I CAN explore and apply a formula to find the area of a circle to solve mathematical and real-world problems.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recognize a circle and identify its center.
- I CAN identify the radius of a circle.
- I CAN identify the diameter of a circle.
- I CAN recall that the radius is half the diameter ($r = d \div 2$).
- I CAN recall the formula for the area of a circle: $A = \pi r^2$.
- I CAN execute the procedure to square a number.
- I CAN execute multiplication with π (using 3.14 or the π button).
- I CAN apply the formula when given the radius or diameter.
- I CAN label answers with appropriate square units.

Geometric Reasoning

MA.7.GR.1.5 Solve mathematical and real-world problems involving dimensions and areas of geometric figures, including scale drawings and scale factors.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Knowledge Utilization Level (Problem Solving)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Knowledge Utilization

- I CAN determine the most appropriate scale factor for creating a scale drawing based on specific constraints (such as paper size, level of detail needed, or practical limitations), and justify my decision with mathematical reasoning.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Knowledge Utilization

- I CAN solve mathematical and real-world problems involving dimensions and areas of geometric figures, including scale drawings and scale factors.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recognize a scale drawing as a proportional representation of an actual object or space.
- I CAN identify the scale factor in a scale drawing.
- I CAN recall that scale factor is the ratio of corresponding dimensions.
- I CAN execute multiplication to find dimensions using a scale factor.
- I CAN execute division to find actual dimensions from a scale drawing.
- I CAN recall that area changes by the square of the scale factor.
- I CAN apply area formulas for various geometric figures.
- I CAN set up and solve proportions involving scale.
- I CAN identify appropriate units for scaled and actual measurements.

Geometric Reasoning

MA.7.GR.2.1 Given a mathematical or real-world context, find the surface area of a right circular cylinder using the figure's net.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Comprehension Level (Integrating); Secondary Taxonomy Level: Retrieval Level (Executing)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis

- I CAN analyze how changes in the radius or height of a cylinder affect the surface area, compare the impact of each dimension, and explain which dimension has a greater effect on the total surface area.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Comprehension and Retrieval

- I CAN given a mathematical or real-world context, find the surface area of a right circular cylinder using the figure's net.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recognize a right circular cylinder and identify its parts.
- I CAN identify the radius and height of a cylinder.
- I CAN recognize a net as a two-dimensional representation of a three-dimensional figure.
- I CAN identify the shapes that make up a cylinder's net (two circles and one rectangle).
- I CAN recall the formula for the area of a circle: $A = \pi r^2$.
- I CAN recognize that the rectangle's length equals the circumference of the circular base.
- I CAN recall the formula for circumference: $C = 2\pi r$ or $C = \pi d$.
- I CAN execute multiplication to find the area of the rectangular portion.
- I CAN execute addition to combine the areas of all parts of the net.
- I CAN label answers with appropriate square units.

Geometric Reasoning

MA.7.GR.2.2 Solve real-world problems involving surface area of right circular cylinders.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Knowledge Utilization Level (Problem Solving)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Knowledge Utilization

- I CAN evaluate multiple cylinder designs with different dimensions to determine which design minimizes or maximizes surface area for a specific real-world purpose (such as packaging efficiency or material cost), and justify my decision with calculations.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Knowledge Utilization

- I CAN solve real-world problems involving surface area of right circular cylinders.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recognize right circular cylinders in real-world contexts.
- I CAN identify the radius and height of a cylinder from a problem or diagram.
- I CAN recall the formula for the area of a circle: $A = \pi r^2$.
- I CAN recall the formula for circumference: $C = 2\pi r$.
- I CAN recall that surface area includes two circular bases and one rectangular lateral surface.
- I CAN execute the procedure to find the surface area of a cylinder: $SA = 2\pi r^2 + 2\pi rh$.
- I CAN identify when a problem requires finding total surface area versus lateral surface area.
- I CAN execute multiplication and addition with π .
- I CAN interpret solutions in the context of the real-world problem.
- I CAN label answers with appropriate square units.

Geometric Reasoning

MA.7.GR.2.3 Solve mathematical and real-world problems involving volume of right circular cylinders.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Knowledge Utilization Level (Problem Solving)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Knowledge Utilization

- I CAN evaluate multiple cylinder designs with different dimensions to determine which design maximizes volume while meeting specific constraints (such as limited height, radius, or surface area), and justify my decision with calculations and reasoning.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Knowledge Utilization

- I CAN solve mathematical and real-world problems involving volume of right circular cylinders.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall that volume measures the amount of space inside a three-dimensional figure.
- I CAN recognize right circular cylinders in mathematical and real-world contexts.
- I CAN identify the radius and height of a cylinder.
- I CAN recall the formula for the area of a circle: $A = \pi r^2$.
- I CAN recall the formula for volume of a cylinder: $V = \pi r^2 h$ or $V = Bh$.
- I CAN execute the procedure to square the radius.
- I CAN execute multiplication with π and other values.
- I CAN identify given information and what the problem is asking me to find.
- I CAN interpret solutions in the context of the problem.
- I CAN label answers with appropriate cubic units.

Geometric Reasoning

MA.8.GR.1.1 Apply the Pythagorean Theorem to solve mathematical and real-world problems involving unknown side lengths in right triangles.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Knowledge Utilization Level (Problem Solving)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Knowledge Utilization

- I CAN evaluate multiple approaches for solving a right triangle problem, determine which strategy is most efficient based on the given information, and justify my choice using mathematical reasoning.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Knowledge Utilization

- I CAN apply the Pythagorean Theorem to solve mathematical and real-world problems involving unknown side lengths in right triangles.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the Pythagorean Theorem ($a^2 + b^2 = c^2$).
- I CAN recognize right triangles and identify the right angle.
- I CAN identify the hypotenuse (the longest side opposite the right angle).
- I CAN identify the legs of a right triangle.
- I CAN execute the procedure of squaring numbers.
- I CAN execute the procedure of finding square roots.
- I CAN execute the procedure of solving equations for an unknown variable.
- I CAN execute the procedure of adding and subtracting with rational numbers.
- I CAN recognize when to apply the Pythagorean Theorem in real-world contexts.

Geometric Reasoning

MA.8.GR.1.2 Apply the Pythagorean Theorem to solve mathematical and real-world problems involving the distance between two points in a coordinate plane.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Knowledge Utilization Level (Problem Solving)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Knowledge Utilization

- I CAN investigate and construct an argument about the relationship between the Pythagorean Theorem and the distance formula, proving why they are mathematically equivalent methods for finding distance in a coordinate plane.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Knowledge Utilization

- I CAN apply the Pythagorean Theorem to solve mathematical and real-world problems involving the distance between two points in a coordinate plane.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the Pythagorean Theorem ($a^2 + b^2 = c^2$).
- I CAN recognize right triangles formed by two points in a coordinate plane.
- I CAN identify ordered pairs on a coordinate plane.
- I CAN execute the procedure of finding horizontal distance (change in x) between two points.
- I CAN execute the procedure of finding vertical distance (change in y) between two points.
- I CAN execute the procedure of squaring numbers.
- I CAN execute the procedure of finding square roots.
- I CAN execute the procedure of subtracting integers and rational numbers.
- I CAN recognize that the distance between two points is the hypotenuse of a right triangle.
- I CAN plot points on a coordinate plane.

Geometric Reasoning

MA.8.GR.1.3 Use the Triangle Inequality Theorem to determine if a triangle can be formed from a given set of sides. Use the converse of the Pythagorean Theorem to determine if a right triangle can be formed from a given set of sides.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Knowledge Utilization Level (Decision Making)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Knowledge Utilization

- I CAN investigate and construct an argument about the relationship between the Triangle Inequality Theorem and the converse of the Pythagorean Theorem, explaining how they work together to classify triangles and justify when each theorem should be applied.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Knowledge Utilization

- I CAN use the Triangle Inequality Theorem to determine if a triangle can be formed from a given set of sides and use the converse of the Pythagorean Theorem to determine if a right triangle can be formed from a given set of sides.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the Triangle Inequality Theorem (the sum of any two sides must be greater than the third side).
- I CAN recall the Pythagorean Theorem ($a^2 + b^2 = c^2$).
- I CAN recall the converse of the Pythagorean Theorem (if $a^2 + b^2 = c^2$, then the triangle is a right triangle).
- I CAN identify the longest side in a set of three side lengths.
- I CAN execute the procedure of adding side lengths.
- I CAN execute the procedure of comparing values using inequality symbols.
- I CAN execute the procedure of squaring numbers.
- I CAN recognize when three values satisfy an equation or inequality.
- I CAN identify right triangles and their characteristics.

Geometric Reasoning

MA.8.GR.1.4 Solve mathematical problems involving the relationships between supplementary, complementary, vertical or adjacent angles.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Knowledge Utilization Level (Problem Solving)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Knowledge Utilization

- I CAN evaluate multiple angle relationships present in a complex diagram, determine which relationships are most efficient to use for finding unknown angles, and justify my strategic choices.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Knowledge Utilization

- I CAN solve mathematical problems involving the relationships between supplementary, complementary, vertical or adjacent angles.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the definition of supplementary angles (two angles that sum to 180°).
- I CAN recall the definition of complementary angles (two angles that sum to 90°).
- I CAN recall the definition of vertical angles (opposite angles formed by intersecting lines that are congruent).
- I CAN recall the definition of adjacent angles (two angles that share a common side and vertex).
- I CAN recognize supplementary, complementary, vertical, and adjacent angles in diagrams.
- I CAN execute the procedure of adding angle measures.
- I CAN execute the procedure of subtracting angle measures.
- I CAN execute the procedure of solving equations for unknown variables.
- I CAN identify known and unknown angle measures in a diagram.

Geometric Reasoning

MA.8.GR.1.5 Solve problems involving the relationships of interior and exterior angles of a triangle.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Knowledge Utilization Level (Problem Solving)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Knowledge Utilization

- I CAN investigate the relationship between interior and exterior angles of triangles to construct and defend a proof explaining why an exterior angle equals the sum of the two non-adjacent interior angles.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Knowledge Utilization

- I CAN solve problems involving the relationships of interior and exterior angles of a triangle.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall that the sum of interior angles in a triangle is 180° .
- I CAN recall the definition of an exterior angle of a triangle.
- I CAN recall that an exterior angle equals the sum of the two non-adjacent (remote) interior angles.
- I CAN recall that an exterior angle and its adjacent interior angle are supplementary (sum to 180°).
- I CAN recognize interior and exterior angles in triangle diagrams.
- I CAN identify known and unknown angle measures in a diagram.
- I CAN execute the procedure of adding angle measures.
- I CAN execute the procedure of subtracting angle measures.
- I CAN execute the procedure of solving equations for unknown variables.

Geometric Reasoning

MA.8.GR.1.6 Develop and use formulas for the sums of the interior angles of regular polygons by decomposing them into triangles.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Knowledge Utilization Level (Experimenting); Secondary Taxonomy Level: Comprehension Level (Integrating)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Knowledge Utilization

- I CAN investigate the relationship between the number of sides in a polygon and the sum of its interior angles to construct a mathematical proof that explains why the formula $(n - 2) \times 180^\circ$ works for all polygons.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Knowledge Utilization and Comprehension

- I CAN develop and use formulas for the sums of the interior angles of regular polygons by decomposing them into triangles.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall that the sum of interior angles in a triangle is 180° .
- I CAN recognize regular polygons and identify the number of sides.
- I CAN recall the names of polygons (triangle, quadrilateral, pentagon, hexagon, etc.).
- I CAN execute the procedure of decomposing polygons into triangles from a single vertex.
- I CAN execute the procedure of counting the number of triangles formed in a polygon.
- I CAN execute the procedure of multiplying to find total angle sum.
- I CAN recognize patterns in sequences of numbers.
- I CAN execute the procedure of using formulas to calculate values.
- I CAN identify the relationship between the number of sides and the number of triangles formed $(n - 2)$.

Geometric Reasoning

MA.8.GR.2.1 Given a preimage and image generated by a single transformation, identify the transformation that describes the relationship.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Analysis Level (Matching)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis

- I CAN analyze multiple examples of transformations to form conclusions and create general principles that explain the defining characteristics of each transformation type (translation, reflection, rotation, dilation) and how to distinguish between them.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Analysis

- I CAN identify the transformation that describes the relationship given a preimage and image generated by a single transformation.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the definition of a transformation.
- I CAN recall the definitions of preimage and image.
- I CAN recognize the four types of transformations (translation, reflection, rotation, dilation).
- I CAN recall the characteristics of a translation (slide - same size, same orientation).
- I CAN recall the characteristics of a reflection (flip - same size, opposite orientation).
- I CAN recall the characteristics of a rotation (turn - same size, different orientation around a point).
- I CAN recall the characteristics of a dilation (enlargement or reduction - different size, same shape).
- I CAN identify corresponding points between a preimage and image.
- I CAN recognize lines of symmetry or axes of reflection on a coordinate plane.

Geometric Reasoning

MA.8.GR.2.2 Given a preimage and image generated by a single dilation, identify the scale factor that describes the relationship.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Analysis Level (Matching)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis

- I CAN analyze multiple dilations to form conclusions about how scale factors affect the size and position of images, and create general principles that explain when dilations result in enlargements, reductions, or congruent figures.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Analysis

- I CAN identify the scale factor that describes the relationship given a preimage and image generated by a single dilation.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the definition of a dilation (transformation that produces an image similar to the preimage but of a different size).
- I CAN recall the definition of scale factor (ratio of corresponding side lengths).
- I CAN recognize corresponding sides and vertices between a preimage and image.
- I CAN execute the procedure of measuring or calculating side lengths.
- I CAN execute the procedure of writing ratios.
- I CAN execute the procedure of dividing to find a scale factor (image length $\div$ preimage length).
- I CAN recall that a scale factor greater than 1 represents an enlargement.
- I CAN recall that a scale factor between 0 and 1 represents a reduction.
- I CAN recall that a scale factor of 1 represents a congruent figure.

Geometric Reasoning

MA.8.GR.2.3 Describe and apply the effect of a single transformation on two-dimensional figures using coordinates and the coordinate plane.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Comprehension Level (Integrating); Secondary Taxonomy Level: Retrieval Level (Executing)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis

- I CAN analyze patterns in how coordinates change across multiple transformations to form general rules that predict coordinate changes for any transformation type (translation, reflection, rotation, dilation).

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Comprehension and Retrieval

- I CAN describe and apply the effect of a single transformation on two-dimensional figures using coordinates and the coordinate plane.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the four types of transformations (translation, reflection, rotation, dilation).
- I CAN recognize ordered pairs and identify x-coordinates and y-coordinates.
- I CAN execute the procedure of plotting points on a coordinate plane.
- I CAN identify the x-axis, y-axis, and origin on a coordinate plane.
- I CAN execute the procedure of applying translations by adding or subtracting from coordinates.
- I CAN execute the procedure of reflecting points across the x-axis or y-axis.
- I CAN execute the procedure of rotating points 90° , 180° , or 270° around the origin.
- I CAN execute the procedure of applying dilations by multiplying coordinates by a scale factor.
- I CAN recognize corresponding vertices between a preimage and image.

Geometric Reasoning

MA.8.GR.2.4 Solve mathematical and real-world problems involving proportional relationships between similar triangles.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Knowledge Utilization Level (Problem Solving)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Knowledge Utilization

- I CAN evaluate multiple methods for solving similar triangle problems, determine which approach is most efficient based on the given information and context, and justify my strategic choice using mathematical reasoning.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Knowledge Utilization

- I CAN solve mathematical and real-world problems involving proportional relationships between similar triangles.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the definition of similar triangles (same shape, corresponding angles congruent, corresponding sides proportional).
- I CAN recognize similar triangles in diagrams and real-world contexts.
- I CAN identify corresponding sides in similar triangles.
- I CAN recall what a proportional relationship is.
- I CAN execute the procedure of writing proportions using corresponding sides.
- I CAN execute the procedure of solving proportions using cross-multiplication.
- I CAN execute the procedure of calculating scale factors.
- I CAN identify known and unknown side lengths in similar triangles.
- I CAN interpret the meaning of a solution in the context of a real-world problem.

Data Analysis and Probability

MA.7.DP.1.4 Use proportional reasoning to construct, display and interpret data in circle graphs.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Comprehension Level (Integrating); Secondary Taxonomy Level: Retrieval Level (Executing)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis

- I CAN analyze multiple data sets to determine when a circle graph is the most appropriate display compared to other data representations (such as bar graphs or histograms), and justify my reasoning based on the nature and purpose of the data.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Comprehension and Retrieval

- I CAN use proportional reasoning to construct, display and interpret data in circle graphs.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recognize a circle graph (pie chart) as a visual representation of data.
- I CAN recall that a circle contains 360 degrees.
- I CAN recall that a circle graph shows parts of a whole.
- I CAN execute division to find the proportion or percentage each category represents.
- I CAN set up and solve proportions to find the degree measure for each sector.
- I CAN execute multiplication to calculate degrees (proportion $\times$ 360°).
- I CAN use a protractor or compass to draw sectors with specific angle measures.
- I CAN label sectors with categories and percentages or values.
- I CAN interpret what each sector represents in the context of the data.

Data Analysis and Probability

MA.7.DP.1.5 Given a real-world numerical or categorical data set, choose and create an appropriate graphical representation.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Knowledge Utilization Level (Decision Making)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Knowledge Utilization

- I CAN investigate how different graphical representations of the same data set can emphasize different aspects or lead to different interpretations, and construct an argument about the importance of selecting appropriate displays to accurately communicate data.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Knowledge Utilization

- I CAN given a real-world numerical or categorical data set, choose and create an appropriate graphical representation.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recognize numerical data versus categorical data.
- I CAN identify different types of graphical representations (bar graph, histogram, line plot, box plot, circle graph, line graph).
- I CAN recall the characteristics and purposes of each type of graph.
- I CAN identify the context and purpose of displaying the data.
- I CAN execute procedures to create bar graphs for categorical data.
- I CAN execute procedures to create histograms for numerical data with intervals.
- I CAN execute procedures to create box plots to show distribution.
- I CAN execute procedures to create circle graphs to show parts of a whole.
- I CAN label axes, titles, and scales appropriately on graphs.

Data Analysis and Probability

MA.8.DP.1.1 Given a set of real-world bivariate numerical data, construct a scatter plot or a line graph as appropriate for the context.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Knowledge Utilization Level (Decision Making); Secondary Taxonomy Level: Comprehension Level (Symbolizing)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Knowledge Utilization

- I CAN investigate multiple sets of bivariate data to construct an argument about when scatter plots versus line graphs are most appropriate, and develop criteria for making graphing decisions in various real-world contexts.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Knowledge Utilization and Comprehension

- I CAN construct a scatter plot or a line graph as appropriate for the context given a set of real-world bivariate numerical data.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the definition of bivariate data (data with two variables).
- I CAN recognize the independent variable and dependent variable in a data set.
- I CAN identify ordered pairs from a data table.
- I CAN execute the procedure of plotting points on a coordinate plane.
- I CAN recall when to use a scatter plot (data shows individual measurements without a continuous connection).
- I CAN recall when to use a line graph (data shows change over time with continuous connection).
- I CAN execute the procedure of labeling axes with appropriate scales and titles.
- I CAN execute the procedure of creating an appropriate scale for given data.
- I CAN recognize real-world contexts that involve relationships between two quantities.

Data Analysis and Probability

MA.8.DP.1.2 Given a scatter plot within a real-world context, describe patterns of association.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Comprehension Level (Integrating)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Analysis

- I CAN analyze multiple scatter plots from various real-world contexts to form general conclusions about what types of relationships produce positive, negative, linear, or nonlinear associations, and explain the reasoning behind these patterns.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Comprehension

- I CAN describe patterns of association given a scatter plot within a real-world context.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall what a scatter plot is and recognize its components.
- I CAN identify the independent and dependent variables on a scatter plot.
- I CAN recall the types of associations (positive, negative, no association).
- I CAN recall the forms of associations (linear, nonlinear).
- I CAN recall the strength of associations (strong, weak).
- I CAN recognize when data points cluster around a pattern.
- I CAN identify outliers in a scatter plot.
- I CAN recognize upward trends (positive association) and downward trends (negative association).
- I CAN interpret scatter plots in the context of real-world situations.

Data Analysis and Probability

MA.8.DP.1.3 Given a scatter plot with a linear association, informally fit a straight line.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Retrieval Level (Executing)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Comprehension

- I CAN explain why a line of best fit should be drawn so that it balances the data points above and below the line, and describe how the line represents the overall trend of the relationship between the two variables.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Retrieval

- I CAN informally fit a straight line given a scatter plot with a linear association.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall what a scatter plot is and recognize its components.
- I CAN recognize a linear association in a scatter plot.
- I CAN identify positive and negative associations.
- I CAN recall that a line of best fit shows the general trend of the data.
- I CAN execute the procedure of drawing a straight line through or near data points.
- I CAN recognize when data points are balanced above and below a line.
- I CAN identify the general direction (slope) of a linear pattern.
- I CAN execute the procedure of using a straightedge or ruler to draw a line.
- I CAN recognize that the line should pass through the "middle" of the data points.

Data Analysis and Probability

MA.8.DP.2.1 Determine the sample space for a repeated experiment.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Retrieval Level (Executing)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Comprehension

- I CAN explain the relationship between the number of trials in a repeated experiment and the size of the sample space, and describe how organized methods (tree diagrams, tables, lists) help ensure all outcomes are identified.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Retrieval

- I CAN determine the sample space for a repeated experiment.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the definition of sample space (the set of all possible outcomes).
- I CAN recall the definition of an experiment in probability.
- I CAN recognize what a repeated experiment is (conducting the same experiment multiple times).
- I CAN identify the possible outcomes of a single trial.
- I CAN execute the procedure of listing outcomes systematically.
- I CAN execute the procedure of creating organized lists (tree diagrams, tables, organized lists).
- I CAN execute the procedure of using the counting principle to verify the total number of outcomes.
- I CAN recognize when all possible outcomes have been identified.
- I CAN recall that outcomes can be represented using ordered pairs, tables, or lists.

Data Analysis and Probability

MA.8.DP.2.2 Find the theoretical probability of an event related to a repeated experiment.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Retrieval Level (Executing)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Comprehension

- I CAN explain the relationship between sample space, favorable outcomes, and theoretical probability in repeated experiments, and describe why theoretical probability may differ from experimental results.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Retrieval

- I CAN find the theoretical probability of an event related to a repeated experiment.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the definition of theoretical probability (number of favorable outcomes divided by total number of possible outcomes).
- I CAN recall the formula for probability: $P(\text{event}) = \text{favorable outcomes} / \text{total outcomes}$.
- I CAN recognize what a repeated experiment is.
- I CAN execute the procedure of determining the sample space for a repeated experiment.
- I CAN identify favorable outcomes for a specific event.
- I CAN execute the procedure of counting the number of favorable outcomes.
- I CAN execute the procedure of counting the total number of possible outcomes.
- I CAN execute the procedure of simplifying fractions.
- I CAN recall that probability is expressed as a fraction, decimal, or percentage between 0 and 1.

Data Analysis and Probability

MA.8.DP.2.3 Solve real-world problems involving probabilities related to single or repeated experiments, including making predictions based on theoretical probability.

MARZANO TAXONOMY LEVEL: Primary Taxonomy Level: Knowledge Utilization Level (Problem Solving)

LEARNING PROGRESSION:

ENRICHMENT: Identified Taxonomy Level: Knowledge Utilization

- I CAN evaluate different probability scenarios in real-world contexts to determine which outcomes are most likely, assess the reasonableness of predictions, and justify strategic decisions based on theoretical probability.

STANDARD DECONSTRUCTED: Identified Taxonomy Level: Knowledge Utilization

- I CAN solve real-world problems involving probabilities related to single or repeated experiments, including making predictions based on theoretical probability.

FOUNDATIONAL SKILLS: Identified Taxonomy Level: Retrieval

- I CAN recall the definition of theoretical probability.
- I CAN recall the formula for probability: $P(\text{event}) = \text{favorable outcomes} / \text{total outcomes}$.
- I CAN recognize single experiments and repeated experiments in real-world contexts.
- I CAN execute the procedure of determining the sample space.
- I CAN execute the procedure of finding theoretical probability.
- I CAN execute the procedure of multiplying probability by the number of trials to make predictions.
- I CAN identify favorable outcomes for a specific event.
- I CAN execute the procedure of calculating with fractions, decimals, and percentages.
- I CAN interpret probability in the context of real-world situations.