

Maryland State Curriculum Mathematics	Boardworks Middle School Math Presentations
Grade 6	
Standard 1.0 Knowledge of algebra, patterns, and functions	
A. Patterns and Functions	
1. Identify, describe, extend, and create numeric patterns and functions	
a) Identify and describe sequences represented by a physical model or in a function table	Introducing sequences Sequences from geometrical patterns Describing and continuing sequences Mapping functions
b) Interpret and write a rule for a one-operation function table	Mapping functions
c) Complete a function table with a given two-operation rule	Mapping functions
B. Expressions, Equations, and Inequalities	
1. Write and evaluate expressions	
a) Write an algebraic expression to represent unknown quantities	Writing expressions Introducing formulas
b) Evaluate an algebraic expression	Substitution Solving simple equations Introducing formulas Using formulas
c) Evaluate numeric expressions using the order of operations	Order of operations and PEMDAS

d) Represent algebraic expressions using physical models, manipulatives, and drawings	Writing expressions Introducing formulas
2. Identify, write, solve, and apply equations and inequalities	
a) Identify and write equations and inequalities to represent relationships	Writing expressions Introducing formulas Solving linear inequalities Direct variations
b) Determine the unknown in a linear equation	Solving simple equations
c) Solve for the unknown in a one-step inequality	Solving linear inequalities Integer solutions for inequalities
d) Identify or graph solutions of a one-step inequality on a number line	Inequalities on a number line
e) Apply given formulas to a problem solving situation	Using formulas
C. Numeric and Graphic Representations of Relationships	
1. Locate points on a number line and in a coordinate plane	
a) Represent rational numbers on a number line	Ordering decimals Ordering integers Using negative numbers in context Ordering fractions Equivalent fractions, decimals and percentages
b) Graph ordered pairs in a coordinate plane	Introducing coordinates Reading and plotting graphs
c) Graph linear data from a function table	Graphs of functions

2. Analyze linear relationships	
a) Identify and describe the change represented in a graph	Interpreting graphs Distance-time graphs
b) Translate the graph of a linear relationship onto a table of values that illustrates the type of change	-
Standard 2.0 Knowledge of geometry	
A. Plane Geometric Figures	
1. Analyze the properties of plane geometric figures	
a) Identify, describe, and label points, lines, rays, line segments, vertices, angles, and planes using correct symbolic notation	Labeling lines and angles Parallel and perpendicular lines
b) Identify and describe line segments	Labeling lines and angles Parallel and perpendicular lines
c) Identify and describe the parts of a circle	Circles
2. Analyze geometric relationships	
a) Compare and classify triangles by sides	Triangles
b) Compare and classify triangles by angle measure	Triangles
c) Determine a third angle measure of a triangle given two angle measures	Angles in a triangle
d) Identify and compare the relationship between parts of a circle	Circles Circumference of a circle
C. Representation of Geometric Figures	
1. Represent plane geometric figures	
a) Draw geometric figures using a variety of tools	Constructing triangles Constructing lines and angles
b) Identify, describe, or draw a polygon	Polygons Angles in polygons Constructing triangles

c) Identify or describe angle relationships	Angles in polygons Angles in a triangle The sum of interior and exterior angles
D. Congruence and Similarity	
1. Analyze congruent figures	
a) Identify and describe congruent polygons and their corresponding parts	Congruence
E. Transformations	
1. Analyze a transformation on a coordinate plane	
a) Plot the result of one transformation (translation, reflection, rotation) on a coordinate plane	Translation Reflection Rotation
Standard 3.0 Knowledge of measurement	
B. Measurement Tools	
1. Measure in customary and metric units	
a) Select and use appropriate tools and units	Measuring angles Converting metric units Customary unit conversions Estimating measurements
2. Measure angles in polygons	Measuring angles

C. Applications in Measurement	
1. Estimate and apply measurement formulas	
a) Estimate and determine the area of a polygon	Area Area problems
b) Estimate and determine the volume of a rectangular prism	Volume
c) Estimate and determine the area of a composite figure	Area Area of irregular shapes
d) Determine missing dimension of a quadrilateral given the perimeter length	-
e) Determine the missing dimension of rectangles	-
Standard 4.0 Knowledge of statistics	
A. Data Displays	
1. Organize and display data	
a) Organize and display data to make frequency tables	Organizing data
b) Organize and display data to make stem-and-leaf plots	Appropriate graphs Calculating statistics
c) Organize and display data using a back-to-back stem-and-leaf plot	-
B. Data Analysis	
1. Analyze data	
a) Interpret frequency tables	Organizing data Histograms
b) Read and analyze circle graphs	Appropriate graphs Circle graphs

c) Interpret data from a stem-and-leaf plot	Appropriate graphs Calculating statistics
2. Describe a set of data	
a) Apply measures of central tendency (mean, median, mode)	Calculating the mean Finding the median Finding the mode
Standard 5.0 Knowledge of probability	
B. Theoretical Probability	
1. Determine the probability of one simple event comprised of equally likely outcomes	
a) Express the probability of an event as a fraction.	Calculating probability part 1 The probability scale
b) Express the probability of an event as a decimal	Calculating probability part 1 The probability scale
c) Express the probability of an event as a percent	Calculating probability part 1 The probability scale
C. Experimental Probability	
1. Analyze the results of a probability experiment	
a) Make predictions and express the experimental probability as a fraction, a decimal, or a percent	Experimental probability
2. Conduct a probability experiment	Experimental probability
3. Compare outcomes of theoretical probability with the results of experimental probability	Experimental probability
4. Describe the difference between theoretical and experimental probability	Experimental probability

Standard 6.0 Knowledge of number relationships and computation/arithmetic	
A. Knowledge of Number and Place Value	
1. Apply knowledge of rational numbers and place value	
a) Read, write, and represent whole numbers	Place value Ordering integers
b) Read, write, and represent integers	Place value Ordering integers Using negative numbers in context
c) Identify and determine equivalent forms of fractions as decimals, as percents, and as ratios	Equivalent fractions Equivalent fractions, decimals and percentages Fractions and decimals Introducing percentages Ratio and rate
d) Compare and order fractions, decimals alone or mixed together, with and without relational symbols (<, >, =)	Ordering fractions Ordering decimals Equivalent fractions Fractions and decimals Inequalities
e) Compare and order integers	Ordering integers Using negative numbers in context
B. Number Theory	
1. Apply number relationships	
a) Determine prime factorizations for whole numbers and express them using exponential form	Prime factorization

C. Number Computation	
1. Analyze number relations and compute	
a) Add and subtract fractions and mixed numbers and express answers in simplest form	Adding and subtracting simple fractions Methods for adding and subtracting fractions
b) Multiply fractions and mixed numbers and express in simplest form	Multiplying fractions
c) Multiply decimals	Mental multiplication Written methods for multiplication Multiplying and dividing by 0.1 and 0.01 Multiplying by numbers between 0 and 1
d) Divide decimals	Written methods for division Mental division Multiplying and dividing by 0.1 and 0.01
e) Determine a percent of a whole number	Introducing percentages Calculating percentages mentally Calculating percentages on paper Calculating percentages with a calculator
f) Simplify numeric expressions using the properties of addition and multiplication	Properties of numbers
2. Estimation	
a) Determine the approximate products and quotients of decimals	Estimation and approximation Using a calculator
3. Analyze ratios, proportions, and percents	
a) Represent ratios in a variety of forms	Ratio and rate
b) Use ratios and unit rates to solve problems	Ratio and rate

Grade 7	
Standard 1.0 Knowledge of algebra, patterns, and functions	
A. Patterns and Functions	
1. Identify, describe, extend, and create linear patterns and functions	
a) Complete a function table with a given two-operation rule	Mapping functions
b) Identify and extend a geometric sequence	Sequences from geometrical patterns Describing and continuing sequences
c) Describe how a change in one variable in a linear function affects the other variable in a table of values	Mapping functions
B. Expressions, Equations, and Inequalities	
1. Write and evaluate expressions	
a) Write an algebraic expression to represent unknown quantities	Writing expressions Introducing formulas
b) Evaluate algebraic expressions	Introducing formulas Solving simple equations Substitution Writing expressions
c) Evaluate numeric expressions using the order of operations	Order of operations and PEMDAS
d) Simplify algebraic expressions represented as physical models by combining like terms	-
2. Identify, write, solve, and apply equations and inequalities	
a) Write equations and inequalities to represent relationships	Introducing formulas Solving linear inequalities

b) Determine the unknown in a linear equation	Solving simple equations Substitution
c) Solve for the unknown in an inequality	Integer solutions for inequalities Solving linear inequalities
d) Identify or graph solutions of inequalities on a number line	Inequalities on a number line
e) Apply given formulas to a problem solving situation	Introducing formulas Using formulas
C. Numeric and Graphic Representations of Relationships	
1. Locate points on a number line and in a coordinate plane	
a) Represent rational numbers on a number line	Ordering decimals Ordering integers Ordering fractions Using negative numbers in context Equivalent fractions, decimals and percentages
b) Graph ordered pairs in a coordinate plane	Introducing coordinates Reading and plotting graphs
c) Graph linear equations with one operation in a coordinate plane	Graphs of functions Direct variations
2. Analyze linear relationships	
a) Identify and describe the change represented in a table of values	-
b) Describe the rate of change of a linear relationship by a table of values and a graph	-

Standard 2.0 Knowledge of geometry	
A. Plane Geometric Figures	
1. Analyze the properties of plane geometric figures	
a) Identify and describe angles formed by intersecting lines, line segments, and rays	Calculating angles
b) Identify angles formed when two parallel lines are cut by a transversal	Angles made with parallel lines
c) Identify the parts of right triangles	Triangles
2. Analyze geometric relationships	
a) Determine a missing angle measurement using the sum of the interior angles of polygons.	The sum of interior and exterior angles
b) Determine the measurements of angles formed by intersecting lines, line segments, and rays.	Calculating angles
c) Describe the relationship between the legs and hypotenuse of right triangles	Pythagorean Theorem Pythagorean triples Identifying right triangles Calculating sides of right triangles
C. Representation of Geometric Figures	
1. Represent plane geometric figures	
a) Construct geometric figures using a variety of construction tools - Construct a circle using a given line segment as the radius in whole number inches or centimeters	-
b) Construct geometric figures using a variety of construction tools - Construct a line segment congruent to a given line segment	Drawing lines and angles Constructing lines and angles
c) Construct geometric figures using a variety of construction tools - Construct a perpendicular bisector to a given line segment or a bisector of a given angle	Constructing lines and angles

D. Congruence and Similarity	
1. Apply the properties of congruent polygons	
a) Determine the congruent parts of polygons	Congruence
b) Identify and describe similar polygons and their corresponding parts	Congruence Dilation
E. Transformations	
1. Analyze a transformation on a coordinate plane	
a) Identify, describe, and plot the results of one transformation on a coordinate plane	Translation Rotation Reflection
b) Identify and describe transformations that result in rotational and reflectional symmetry	Rotational symmetry Reflection symmetry
Standard 3.0 Knowledge of measurement	
C. Applications in Measurement	
1. Estimate and apply measurement formulas	
a) Estimate and determine the area of quadrilaterals	Area Area problems
b) Determine the surface area of geometric solids	Surface area
c) Estimate pi using physical models	Circumference of a circle
d) Estimate and determine the volume of a triangular prism	Volume
2. Analyze measurement relationships	
a) Determine a missing dimension for a figure using a scale.	Scale drawings Using scale factors Finding missing lengths

b) Determine the distance between 2 points using a drawing and a scale	Scale drawings Using scale factors
Standard 4.0 Knowledge of statistics	
A. Data Displays	
1. Organize and display data	
a) Organize and display data using back-to-back stem-and-leaf plots	-
b) Organize and display data to make circle graphs	Appropriate graphs Circle graphs
B. Data Analysis	
1. Analyze data	
a) Recognize and analyze faulty interpretation or representation of data	Misleading graphs Population and sampling
b) Determine the best choice of a data display	Appropriate graphs
c) Analyze misleading data representation	Misleading graphs
2. Describe a set of data	
a) Analyze measures of central tendency to determine or apply mean, median, mode	Calculating the mean Finding the median Finding the mode Calculating statistics
Standard 5.0 Knowledge of probability	
A. Sample Space	
1. Identify a sample space	
a) Determine the number of outcomes	Probability diagrams

B. Theoretical Probability	
1. Determine the probability of an event comprised of no more than 2 independent events	
a) Express the probability of an event as a fraction, a decimal, or a percent	Calculating probability part 1 Calculating probability part 2 The probability scale
C. Experimental Probability	
1. Analyze the results of a survey or simulation	
a) Make predictions and express the probability of the results as a fraction, a decimal with no more than 2 decimal places, or a percent	Calculating probability part 1 Experimental probability
2. Conduct a probability experiment	Experimental probability
3. Compare outcomes of theoretical probability with the results of experimental probability	Experimental probability
4. Describe the difference between theoretical and experimental probability	Experimental probability
Standard 6.0 Knowledge of number relationships and computation/arithmetic	
A. Knowledge of Number and Place Value	
1. Apply knowledge of rational numbers and place value	
a) Read, write, and represent whole numbers	Place value Ordering integers
b) Express decimals using expanded form	-
c) Determine equivalent forms of rational numbers expressed as fractions, decimal, percents, and ratios	Equivalent fractions Equivalent fractions, decimals and percentages Fractions and decimals Introducing percentages Ratio and rate

	Ordering fractions Equivalent fractions Inequalities Fractions and decimals Equivalent fractions, decimals and percentages Ordering decimals Ordering integers
d) Compare, order, and describe rational numbers with or without relational symbols ($<$, $>$, $=$)	Ordering integers
e) Express whole numbers and decimals in scientific notation	Scientific notation
C. Number Computation	
1. Analyze number relations and compute	
a) Add, subtract, multiply, and divide integers	Adding and subtracting integers Adding and subtracting integers activities Mental addition and subtraction Written methods for addition and subtraction Multiplying and dividing integers Mental multiplication Mental division Written methods for multiplication Written methods for division Mental math puzzles
b) Add, subtract, and multiply positive fractions and mixed numbers	Adding and subtracting simple fractions Methods for adding and subtracting fractions Finding a fraction of an amount Multiplying fractions
c) Divide fractions and mixed numbers	Dividing by fractions

d) Calculate powers of integers and square roots of perfect square whole numbers	Square roots Cubes and cube roots Powers
e) Use the laws of exponents to simplify expressions	Powers
f) Identify and use the properties of addition and multiplication to simplify expressions	Properties of numbers
g) Determine percent of a number	Introducing percentages Calculating percentages mentally Calculating percentages on paper Calculating percentages with a calculator
2. Estimation	
a) Determine approximate sums, differences, products, and quotients	Estimation and approximation Using a calculator
3. Analyze ratios, proportions, or percents	
a) Determine equivalent ratios	Ratio and rate Ratio and proportion problems
b) Determine and use rates, unit rates, and percents as ratios in the context of a problem	Ratio and rate
c) Determine rate of increase and decrease, discounts, simple interest, commission, sales tax	Percentage change Percentages and inverse operations
d) Determine percent of a number	Introducing percentages Calculating percentages mentally Calculating percentages on paper Calculating percentages with a calculator

Grade 8	
Standard 1.0 Knowledge of algebra, patterns, and functions	
A. Patterns and Functions	
1. Identify, describe, extend, and create patterns, functions and sequences	
a) Determine the recursive relationship of arithmetic sequences represented in words, in a table or in a graph	Describing and continuing sequences
b) Determine the recursive relationship of geometric sequences represented in words, in a table, or in a graph	Describing and continuing sequences
c) Determine whether relationships are linear or nonlinear when represented in words, in a table, symbolically, or in a graph	Describing and continuing sequences
d) Determine whether relationships are linear or nonlinear when represented symbolically	-
B. Expressions, Equations, and Inequalities	
1. Write, simplify, and evaluate expressions	
a) Write an algebraic expression to represent unknown quantities	Writing expressions Introducing formulas
b) Evaluate an algebraic expression	Introducing formulas Solving simple equations Substitution Writing expressions
c) Evaluate numeric expressions using the order of operations	Order of operations and PEMDAS
d) Simplify algebraic expressions by combining like terms	Combining like terms
e) Describe a real-world situation represented by an algebraic expression	Writing expressions Introducing formulas Deriving formulas

2. Identify, write, solve, and apply equations and inequalities	
a) Write equations or inequalities to represent relationships	Introducing formulas Solving linear inequalities Deriving formulas Sequences from practical contexts
b) Solve for the unknown in a linear equation	Solving simple equations Combining like terms Multiplying algebraic terms Dividing algebraic terms Factoring expressions Equations involving parentheses and division
c) Solve for the unknown in an inequality	Solving linear inequalities
d) Identify or graph solutions of inequalities on a number line	Inequalities on a number line
e) Identify equivalent equations	Writing expressions
f) Apply given formulas to a problem-solving situation	Using formulas
g) Write equations and inequalities that describe real-world problems	Introducing formulas Solving linear inequalities Deriving formulas Sequences from practical contexts
C. Numeric and Graphic Representations of Relationships	
1. Locate points on a number line and in a coordinate plane	
a) Graph linear equations in a coordinate plane	Graphs of functions The equation of a straight line
2. Analyze linear relationships	

a) Determine the slope of a graph in a linear relationship	The equation of a straight line
b) Determine the slope of a linear relationship represented numerically or algebraically	The equation of a straight line
Standard 2.0 Knowledge of geometry	
A. Properties of Plane Geometric Figures	
1. Analyze the properties of plane geometric figures	
a) Identify and describe geometric relationships between angles formed when parallel lines are cut by a transversal.	Angles made with parallel lines
b) Identify and describe the relationship among the parts of a right triangle	Pythagorean Theorem Pythagorean triples Identifying right triangles Calculating sides of right triangles
2. Analyze geometric relationships	
a) Determine the measurements of angles formed by parallel lines cut by a transversal	Angles made with parallel lines
b) Apply right angle concepts to solve real-world problems	-
c) Determine whether three given side lengths form a right triangle	Pythagorean triples
C. Representation of Geometric Figures	
1. Represent plane geometric figures	
a) Draw quadrilaterals	Quadrilaterals
b) Construct perpendicular line segments	Parallel and perpendicular lines
c) Construct triangles	Constructing triangles
D. Congruence and Similarity	
1. Apply the properties of similar polygons	
a) Determine similar parts of polygons	Congruence

E. Transformations	
1. Analyze a transformation on a coordinate plane	
a) Identify, describe, and plot the results of multiple transformations on a coordinate plane	Translation Rotation Reflection Dilation Combining transformations
Standard 3.0 Knowledge of measurement	
C. Applications in Measurement	
1. Estimate and apply measurement formulas	
a) Estimate and determine the circumference or area of a circle	Circumference of a circle Area of a circle
b) Estimate and determine area of a composite figure	Area Area of irregular shapes
c) Estimate and determine the volume of a cylinder	Cylinders, cones and spheres
d) Determine the volume of cones, pyramids, and spheres	Cylinders, cones and spheres Volume Formulas for shapes
e) Determine the surface area of cylinders, prisms, and pyramids	Cylinders, cones and spheres Surface area
2. Analyze measurement relationships	
a) Use proportional reasoning to solve measurement problems	Using scale factors Dividing in a given ratio Ratio and proportion problems

Standard 4.0 Knowledge of statistics	
A. Data Displays	
1. Organize and display data	
a) Organize and display data to make circle graphs	Circle graphs Appropriate graphs
b) Organize and display data to make box-and-whisker plots	Quartiles and box plots
c) Organize and display data to make a scatter plot	Scatter plots
B. Data Analysis	
1. Analyze data	
a) Interpret tables	Organizing data Histograms
b) Interpret box-and-whisker plots	Quartiles and box plots
c) Interpret scatter plots	Scatter plots
d) Interpret circle graphs	Circle graphs Appropriate graphs
e) Analyze multiple box-and-whisker plots using the same scale	Quartiles and box plots
Standard 5.0 Knowledge of probability	
A. Sample Space	
1. Identify a sample space	
a) Describe the difference between independent and dependent events	-
b) Determine the number of outcomes	Probability diagrams
B. Theoretical Probability	
1. Determine the probability of an event comprised of no more than 2 independent events	
a) Express the probability of an event as a fraction, a decimal, or a percent	The probability scale Calculating probability part 1 Calculating probability part 2
2. Determine the probability of a second event that is dependent on a first event of equally likely outcomes	

a) Express the probability as a fraction, a decimal, or a percent	The probability scale Calculating probability part 1
C. Experimental Probability	
1. Analyze the results of a survey or simulation	
a) Make predictions and express the probability of the results as a fraction, a decimal with no more than 2 decimal places, or a percent	Calculating probability part 1 Experimental probability
2. Conduct a probability experiment	Experimental probability
3. Compare outcomes of theoretical probability with the results of experimental probability	Experimental probability
4. Describe the difference between theoretical and experimental probability	Experimental probability
Standard 6.0 Knowledge of number relationships and computation/arithmetic	
A. Knowledge of Number and Place Value	
1. Apply knowledge of rational numbers and place value	
a) Read, write, and represent rational numbers	Place value Powers Scientific notation
b) Compare, order, and describe rational numbers with and without relational symbols (<, >, =)	Ordering decimals Ordering integers Ordering fractions Absolute value Inequalities Fractions and decimals Equivalent fractions Equivalent fractions, decimals and percentages Introducing percentages

C. Number Computation	
1. Analyze number relations and compute	
a) Add, subtract, multiply and divide integers	Adding and subtracting integers Adding and subtracting integers activities Mental addition and subtraction Written methods for addition and subtraction Multiplying and dividing integers Mental multiplication Mental division Written methods for multiplication Written methods for division Mental math puzzles
b) Calculate powers of integers and square roots of perfect square whole numbers	Square roots Cubes and cube roots Powers
c) Identify and use the laws of exponents to simplify expressions	Powers
d) Use properties of addition and multiplication to simplify expressions	Properties of numbers
2. Estimation	
a) Estimate the square roots of whole numbers	Square roots Estimation and approximation
3. Analyze ratios, proportions, and percents	
a) Determine unit rates	Ratio and rate
b) Determine or use percents, rates of increase and decrease, discount, commission, sales tax, and simple interest in the context of a problem	Percentage change Percentages and inverse operations
c) Solve problems using proportional reasoning	Ratio and rate Direct proportion Using scale factors Ratio and proportion problems Dividing in a given ratio