

Mathletics

California Content Standards

Activities (Courses), Skill Quests
and eBooks



Grades 7-8

September, 2025

Mathletics

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California Content Standards

Activities (Courses), Skill Quests and eBooks

September, 2025

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Grade 7




7.RP Ratios & Proportional Relationships

Big ideas

Proportions and Samples	RP.1, RP.2, RP.3
Visualize Populations	
Probability Models	RP.1, RP.2, RP.3
Proportional Relationships	RP.1, RP.2, RP.3
Unit Rates in the World	RP.1, RP.2, RP.3
Graphing relationships	RP.1, RP.2, RP.3
2-D and 3-D Connections	
Angle Relationship	
Scale Drawings	RP.1, RP.2, RP.3
Shapes in the World	

Analyze proportional relationships and use them to solve real-world and mathematical problems

7.RP.1	
Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units	
 Activities	
Ratios & Proportional Relationships	Proportional Relationships
	Rate Word Problems
	Rates
	Average Speed
	Time Taken
 Skill Quests	
Unit rates with fractions	Solving unit rate problems involving fractions
 Ebooks	
Grade 8, Series I: Ratio, Rates and The Number Plane	Graphing ordered pairs and number patterns

7.RP.2	
Recognize and represent proportional relationships between quantities.	
 Activities	
Ratios & Proportional Relationships	$y=ax$
	Conversion Graphs
 Skill Quests	
Unit rates with fractions	Solving unit rate problems involving fractions
 Ebooks	
Grade 8, Series I: Ratio, Rates and The Number Plane	Using ratios
	Rates

7.RP.3

Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.

Activities

Ratios & Proportional Relationships

Best Buy
Commission
Percent Increase and Decrease
Percentage Word Problems
Percentage Error
Successive Discounts
Profit and Loss
Simple Interest

Skill Quests

Ratio & percent problems

Solving multi-step ratio & percent problems

Ebooks

Grade 8, Series I: Percentages

Unitary method and percentages
Problem solving and percentages

Grade 8, Series I: Percentages 2

Unitary method and percentages
Problem solving and percentages

Grade 8, Series I: Ratio, Rates and The Number Plane

Problem solving

7.NS The Number System

Big ideas

Proportions and Samples	NS.1, NS.2, NS.3
Visualize Populations	NS.1, NS.2, NS.3
Probability Models	NS.1, NS.2, NS.3
Proportional Relationships	
Unit Rates in the World	
Graphing relationships	
2-D and 3-D Connections	NS.1, NS.2, NS.3
Angle Relationship	NS.1, NS.2, NS.3
Scale Drawings	NS.2, NS.3
Shapes in the World	NS.1, NS.2, NS.3

Apply and extend previous understandings of operations with fractions



7.NS.1



Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.


Activities

The Number System

Negative or Positive?
Integers: Add and Subtract
More with Integers
Adding Integers




	Subtracting Integers
	Adding Integers: Positive, Negative or Zero
	Add Unlike Fractions
	Add Mixed Numbers: Signs Can Differ
	Subtract Unlike Fractions
	Subtract Mixed Numbers: Signs Differ
	Subtract Negative Mixed Numbers
 Skill Quests	
Opposites	Describing situations involving opposites
Add rational numbers	Opposites & absolute value
	Adding rational numbers
	Adding positive & negative fractions
	Adding positive & negative decimals
	Adding integers
Subtract rational numbers	Subtracting rational numbers: adding the inverse
	Subtracting positive & negative fractions
	Subtracting positive & negative decimals
	Subtracting integers
	Subtracting rational numbers: absolute value
Rational numbers: addition properties	Add & subtract rational numbers: properties
 Ebooks	
Grade 7, Series H: Directed Numbers	Addition of directed numbers
	Subtraction of directed numbers
Grade 7, Series H: Directed Numbers 2	Addition of directed numbers
	Subtraction of directed numbers
Grade 7, Series H: Fractions	Addition and subtraction of fractions with different denominators
Grade 7, Series H: Fractions	Addition and subtraction of fractions with different denominators

7.NS.2	
Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	
 Activities	
The Number System	Integers: Multiplication and Division
	Multiplying and Dividing Integers
	Multiply Two Fractions 2
	Divide Fractions by Fractions 2
	Divide Mixed Numbers with Signs
	Fractions to Decimals 2
 Skill Quests	
Multiply rational numbers	Multiplying rational numbers
	Multiplying positive & negative fractions
	Multiplying positive & negative decimals
	Multiplying integers
	Products of rational numbers: real-world contexts
Divide integers	Dividing integers
	Quotients of rational numbers: real-world contexts
Rational numbers: properties	Multiply & divide rational numbers: properties
Convert rational numbers to decimals	Use long division to convert rationals to decimals

 Ebooks	
Grade 7, Series H: Directed Numbers	Multiplication of directed numbers
	Division of directed numbers
Grade 7, Series H: Directed Numbers 2	Multiplication of directed numbers
	Division of directed numbers
Grade 7, Series H: Fractions	Multiplication of fractions
Grade 7, Series H: Fractions	Division of fractions
Grade 7, Series H: Fractions	Multiplication of fractions
	Division of fractions

7.NS.3

Solve real-world and mathematical problems involving the four operations with rational numbers.

 Activities	
The Number System	More Fraction Problems
	Integers: Order of Operations (PEDMAS)
	Integers: Operations Order
 Skill Quests	
Rational numbers problems: 4 operations	Rational numbers problems: 4 operations
 Ebooks	
Grade 7, Series H: Directed Numbers	The four operations with directed numbers
Grade 7, Series H: Directed Numbers 2	The four operations with directed numbers
Grade 7, Series H: Fractions	Fractions with mixed numbers
	Problem solving with fractions
Grade 7, Series H: Fractions	Fractions with mixed numbers
	Problem solving with fractions

7.EE Expressions & Equations




Big ideas




Proportions and Samples	EE.3
Visualize Populations	EE.3
Probability Models	EE.3
Proportional Relationships	EE.2, EE.3
Unit Rates in the World	EE.1, EE.2, EE.3, EE.4
Graphing relationships	EE.4
2-D and 3-D Connections	
Angle Relationship	
Scale Drawings	EE.2, EE.3, EE.4
Shapes in the World	

Use properties of operations to generate equivalent expressions




7.EE.1


Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.

 Activities	
Expressions & Equations	Using the Distributive Property
	Factoring
 Skill Quests	
Linear expressions: properties	Simplify algebraic expressions: add & subtract
	Distributive property: algebraic expressions
	Factoring algebraic expressions
 Ebooks	
Grade 7, Series H: Algebra Basics	

7.EE.2	
Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.	
 Activities	
Teacher directed	
 Skill Quests	
Interpret expressions	Rearranging expressions to interpret quantities
 Ebooks	
Grade 7, Series H: Algebra Basics	

Solve real-life and mathematical problems using numerical and algebraic expressions and equations

7.EE.3	
Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.	
 Activities	
Teacher directed	
 Skill Quests	
Problems with rational numbers	Solving problems with rational numbers
	Converting terminating decimals
 Ebooks	
Grade 7, Series H: Algebra Basics	
Grade 8, Series I Curriculum Ready: Equations	

7.EE.4	
Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.	
 Activities	
Expressions & Equations	Write an Equation: Word Problems
	Writing Equations
	Solve Equations: Add, Subtract 1
	Solve Equations: Add, Subtract 2
	Solve Equations: Multiply, Divide 1


	Solve Equations: Multiply, Divide 2
	Solve Two-Step Equations
	Solve Multi-Step Equations
	Solving Simple Equations
	Inequalities on a Number Line: Basics
	Inequalities on a Number Line: Mixed Basics
	Graphing Inequalities 2
	Graphing Inequalities on Number Line
	Solve One-Step Inequalities 1
	Solve One-Step Inequalities 2
 Skill Quests	
Solve 2-step equations	Solving 2-step equations: word problems
	2-step equations, positive integer coefficients
	2-step equations, integer coefficients
	2-step equations, positive rational coefficients
	2-step equations, rational coefficients
	2-step equations, distributive property
Solve 2-step inequalities	Creating & solving 2-step inequalities
	Representing inequalities
	Graphing the solution of an inequality
	Solving 2-step inequalities
 Ebooks	
Grade 8, Series I Curriculum Ready: Simplifying Algebra	



7.G Geometry



Big ideas



Proportions and Samples	
Visualize Populations	
Probability Models	
Proportional Relationships	
Unit Rates in the World	
Graphing relationships	
2-D and 3-D Connections	G.1, G.2, G.3
Angle Relationship	G.5, G.6
Scale Drawings	G.1
Shapes in the World	G.1, G.2, G.3, G.4, G.5, G.6

Draw construct, and describe geometrical figures and describe the relationships between them




7.G.1	
Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	
 Activities	
Geometry 1-5	Scale Factor
	Scale Measurement

	Floor Plans
	Perimeter, Area, Dimension Change
 Skill Quests	
Scale drawings	Scale drawings
 Ebooks	
Grade 7, Series H: Algebra Basics	Scale and distance

7.G.2	
Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	
 Activities	
Teacher directed	
 Skill Quests	
Construct triangles	Triangle Inequality Theorem
	Constructing triangles with given conditions

7.G.3	
Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.	
 Activities	
Geometry 1-5	Relate Shapes and Solids
 Skill Quests	
Cross sections of 3-D figures	Describing cross sections of 3-D figures

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume

7.G.4	
Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.	
 Activities	
Geometry 4-6	Calculate Circumference of Circles
	Area: Circles 1
	Area: Circles 2
	Area: Annulus
 Skill Quests	
Circles: area & circumference	Finding the area of a circle
	Introducing the parts of a circle
	Finding the circumference of a circle
 Ebooks	
Grade 8, Series I: Circles and Cylinders	Parts of a circle
	The circumference of a circle
	The area of a circle

7.G.5

Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.

Activities

Geometry 4-6

Equal, Complement, or Supplement?

Vertically Opposite: Value of x

Skill Quests

Using angle facts to solve problems

Supplementary angles

Complementary angles

Adjacent angles

Vertical angles

Ebooks

Grade 8, Series I: Circles and Cylinders

Parts of a circle

The circumference of a circle

The area of a circle

7.G.6

Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

Activities

Geometry 4-6

Area: Triangles

Area: Squares and Rectangles

Area: Parallelograms

Area: Quadrilaterals

Area: Compound Figures

Area: Composite Shapes

Nets

Surface Area: Cuboids

Surface Area: Rectangular Prisms

Surface Area: Triangular Prisms 1

Volume of Rectangular Prisms 1

Volume of Triangular Prisms

Volume: Prisms

Skill Quests

Area, volume & surface area

Area: polygons

Solving real-life problems: area of polygons

Volume: right prisms

Surface area: rectangular & triangular prisms

Ebooks

Grade 7, Series H: Area, Volume and Capacity

Composite areas

Volume of rectangular prisms

Volume of triangular prisms

Grade 7, Series H Curriculum Ready: Area and Perimeter

Area of composite shapes

Grade 7, Series H Curriculum Ready: Solids

Volume of right prisms

Volume of rectangular prisms

Grade 9, Series J: Surface Area and Volume



Surface area of a right prism



7.SP Statistics & Probability

Big ideas



Proportions and Samples	SP.1, SP.2
Visualize Populations	SP.3, SP.4
Probability Models	SP.5, SP.6, SP.7, SP.8
Proportional Relationships	
Unit Rates in the World	
Graphing relationships	
2-D and 3-D Connections	
Angle Relationship	
Scale Drawings	
Shapes in the World	

Use random sampling to draw inferences about a population

<p>7.SP.1</p> <p>Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.</p>	
<p> Activities</p>	
<p>Teacher directed</p>	
<p> Skill Quests</p>	
Understand sampling	Understanding sampling

<p>7.SP.2</p> <p>Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.</p>	
<p> Activities</p>	
<p>Teacher directed</p>	
<p> Skill Quests</p>	
Draw inferences from samples	Drawing inferences from samples

Draw informal comparative inferences about two populations

<p>7.SP.3</p> <p>Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.</p>	
<p> Activities</p>	
<p>Teacher directed</p>	
<p> Skill Quests</p>	
Compare data distributions	Comparing data distributions

7.SP.4

Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.

Activities

Statistics & Probability

Mean

Median

Mode

Data Extremes and Range

Skill Quests

Draw comparative inferences

Drawing comparative inferences

Ebooks

Grade 7, Series H Curriculum Ready: Data for statistics

Measures of central tendency

Investigate chance processes and develop, use, and evaluate probability models

7.SP.5

Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around $\frac{1}{2}$ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.

Activities

Statistics & Probability

Chance Dial

Probability Scale

Skill Quests

Introduction to probability

Introducing probability

Ebooks

Grade 6, Series G: Chance and Probability

Chance and data

7.SP.6

Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.

Activities

Statistics & Probability

Find the Probability

Simple Probability

Introductory Probability

Skill Quests

Probability of chance events

Probability of chance events: relative frequency

Ebooks

Grade 6, Series G: Chance and Probability

Chance and data

7.SP.7

Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.

Activities

Statistics & Probability

Probability Tables

👑 Skill Quests	
Determine the probability of events	Theoretical probability
	Predicting outcomes of chance experiments
	Finding the complement of an event
Observe frequencies in data	Finding the approximate probability
	Comparing observed frequency & expected frequency
📖 Ebooks	
Grade 6, Series G: Chance and Probability	Chance and data

7.SP.8	
Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.	
📋 Activities	
Statistics & Probability	Counting Principle
	Counting Techniques 1
	Dice and Coins
	Probability- Replacement
	Probability-No Replacement
👑 Skill Quests	
Probability: compound events	Investigating mutually exclusive events
	Calculating probabilities of compound events
Sample spaces for compound events	Representing sample spaces & identifying outcomes
Independent & dependent compound events	Independent & dependent compound events
📖 Ebooks	
Grade 6, Series G: Chance and Probability	Chance and data
Grade 8, Series I Curriculum Ready: Probability	Independent and dependent events

Grade 8

8.NS The Number System

Big ideas

Interpret Scatter Plots	
Data, Graphs and Tables	
Data Explorations	
Linear Equations	
Multiple Representations of Functions	
Slopes and Intercepts	
Cylindrical Investigations	NS.1, NS.2
Pythagorean Explorations	NS.1, NS.2
Big and Small Numbers	NS.1, NS.2
Shape, Number, and Expressions	NS.1, NS.2
Transformational Geometry	

Know that there are numbers that are not rational, and approximate them by rational numbers

8.NS.1	
Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.	
Activities	
The Number System	Irrational Numbers
	Fraction to Terminating Decimal
	Repeating Decimals
Skill Quests	
Rational & irrational numbers	Describing properties of irrational numbers
	Classifying real numbers
	Converting repeating decimals to rational numbers
	Repeating & terminating decimals as fractions
Ebooks	
Grade 9 Curriculum Ready: Decimals	Recurring decimals

8.NS.2

Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2).

Activities

The Number System

Estimating Square Roots

Skill Quests

Approximate irrational numbers

Comparing irrational numbers

Locating irrational numbers on a number line

Approximating the value of an irrational number

Finding square roots of non-perfect squares

8.EE Expressions & Equations

Big ideas

Interpret Scatter Plots	EE.2, EE.5
Data, Graphs and Tables	EE.2, EE.5
Data Explorations	EE.2, EE.5
Linear Equations	EE.5, EE.7, EE.8
Multiple Representations of Functions	EE.5, EE.6, EE.7
Slopes and Intercepts	EE.5
Cylindrical Investigations	
Pythagorean Explorations	EE.1, EE.2
Big and Small Numbers	EE.1, EE.2, EE.3, EE.4
Shape, Number, and Expressions	EE.1, EE.2
Transformational Geometry	

Work with radicals and integer exponents

8.EE.1

Know and apply the properties of integer exponents to generate equivalent numerical expressions.

Activities

Expressions & Equations 1-3

The Zero Exponent

Simplifying with Exponent Laws 1

Multiplication with Exponents

Exponent Notation

Properties of Exponents

Exponent Notation and Algebra

Exponent Laws with Brackets

Negative Exponents

Integer Exponents


Exponent Laws and Algebra




Exponent Form to Numbers




Skill Quests

Properties of integer exponents

Using exponent notation

	Product of powers, numerical base
	Product of powers, algebraic base
	Quotient of powers, numerical base
	Quotient of powers, algebraic base
	Power of a power, numerical base
	Power of a power, algebraic base
	Zero exponents, numerical base
	Zero exponents, algebraic base
	Negative exponents, numerical base
	Negative exponents, algebraic base
	Simplifying expressions, numerical base
	Simplifying expressions, algebraic base
 Ebooks	
Grade 9 Curriculum Ready: Indices	

8.EE.2	
Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.	
 Activities	
Expressions & Equations 1-3	Square Roots 1
	Square and Cube Roots
 Skill Quests	
Square & cube roots	Investigating square roots & cube roots
	Squares & square roots
	Evaluating expressions with square & cube roots
	Square roots of fractions & decimals
	Cubes & cube roots
 Ebooks	
Grade 7, Series H: Special Numbers, Factors and Multiples	Square numbers
	Triangular numbers

8.EE.3	
Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other.	
 Activities	
Expressions & Equations 1-3	Scientific Notation
	Scientific Notation 1
	Scientific Notation 2
	Scientific notation to decimal
	Ordering Scientific Notation
 Skill Quests	
Write numbers in scientific notation	Introducing scientific notation
	Converting scientific notation to standard form
	Converting standard form to scientific notation
 Ebooks	
Grade 9 Curriculum Ready: Indices	Using our knowledge

8.EE.4

Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.

Activities

Teacher directed

Skill Quests

Calculations in scientific notation

Calculations in scientific notation

Ebooks

Grade 9 Curriculum Ready: Indices

Using our knowledge

Understand the connections between proportional relationships, lines, and linear equations

8.EE.5

Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.

Activities

Expressions & Equations 5-8

$y=ax$

Skill Quests

Proportional relationships

Graphing proportional relationships

Comparing proportional relationships

Ebooks

Grade 8, Series I Curriculum Ready: Linear Relationships

8.EE.6

Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b .

Activities

Expressions & Equations 5-8

Determining a Rule for a Line

Slope

Slope of a Line

Equation of a Line 1

Which Straight Line?

Equation from Point and Gradient

Modeling Linear Relationships

Skill Quests

Understand slope & y-intercept

Using similar triangles to understand slope

Writing equations of proportional relationships

Writing equations of nonproportional relationships

Identifying the slope in an equation or graph

Identifying the y-intercept on a graph

Graphing equations in slope-intercept form

Graphing equations not in slope-intercept form

Finding the y-intercept algebraically

Ebooks

Grade 8, Series I Curriculum Ready: Linear Relationships

Analyze and solve linear equations and pairs of simultaneous linear equations

8.EE.7

Solve linear equations in one variable.

Activities

Expressions & Equations 5-8

Equations with Grouping Symbols

Equations with Fractions

Equations with Decimals

Equations to Solve Problems

Equations: Variables, Both Sides

Solving More Equations

Skill Quests

Solution types of linear equations

Solution types of linear equations

Solve linear equations

Solving 3-step linear equations

Solving linear equations, variables on both sides

Solving linear equations, distributive property

Using substitution to check solutions

Ebooks

Grade 8, Series I Curriculum Ready: Equations

8.EE.8

Analyze and solve pairs of simultaneous linear equations.

Activities

Expressions & Equations 5-8

Solve Systems by Graphing

Linear Modelling

Simultaneous Equations 1

Simultaneous Equations 2

Simultaneous Linear Equations

Skill Quests

Identify solutions, systems of equations

Identifying solutions, systems of equations

Solve systems of equations

Solving systems of equations graphically

Solving systems of equations using elimination

Solving systems of equations using substitution

Checking the solution of a system of equations

Write & solve systems of equations

Writing & solving systems of equations

Ebooks

Grade 9 Curriculum Ready: Linear Relationships




Thinking more



8.F Functions



Big ideas


Interpret Scatter Plots	F.1, F.2, F.3
Data, Graphs and Tables	F.3, F.4, F.5
Data Explorations	F.1, F.2, F.3, F.4, F.5
Linear Equations	F.2, F.4, F.5
Multiple Representations of Functions	
Slopes and Intercepts	
Cylindrical Investigations	
Pythagorean Explorations	
Big and Small Numbers	
Shape, Number, and Expressions	
Transformational Geometry	

Define, evaluate, and compare functions




8.F.1 Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.	
 Activities	
Functions	Function Rules and Tables
	Vertical Line Test
 Skill Quests	
Identify functions	Identifying functions
 Ebooks	
Grade 6, Series G Curriculum Ready: Patterns and Algebra	Patterns and functions
Grade 10 Curriculum Ready: Functions	Definition of functions




8.F.2 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	
 Activities	
Teacher directed	
 Skill Quests	
Compare functions	Comparing functions represented in different ways

8.F.3 Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.	
 Activities	
Functions	Find the Function Rule
 Skill Quests	

Interpret $y = mx + b$ as linear	Represent linear relationships in different forms
	Equations of linear & non-linear relationships
 Ebooks	
Grade 9: Linear and Non-linear Relationships	

Use functions to model relationships between quantities

8.F.4	
Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.	
 Activities	
Teacher directed	
 Skill Quests	
Rate of change & initial value	Rate of change & initial value
 Ebooks	
Grade 8, Series I Curriculum Ready: Linear Relationships	
Grade 8, Series I Curriculum Ready: Straight Lines	

8.F.5	
Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	
 Activities	
Functions	Travel Graphs
	Line Graphs: Interpretation
 Skill Quests	
Distance-time graphs	Distance-time graphs
 Ebooks	
Grade 8, Series I Curriculum Ready: Linear Relationships	
Grade 8, Series I Curriculum Ready: Straight Lines	



8.G Geometry



Big ideas




Interpret Scatter Plots	
Data, Graphs and Tables	
Data Explorations	
Linear Equations	
Multiple Representations of Functions	
Slopes and Intercepts	
Cylindrical Investigations	G.6, G.7, G.8, G.9
Pythagorean Explorations	G.7, G.8
Big and Small Numbers	

Shape, Number, and Expressions	G.6, G.7, G.8, G.9
Transformational Geometry	G.1, G.2, G.3, G.4, G.5, G.6, G.7, G.8

Understand congruence and similarity using physical models, transparencies, or geometry software

<p>8.G.1</p> <p>Verify experimentally the properties of rotations, reflections, and translations.</p>	
 Activities	
Geometry 1-5	Transformations: Coordinate Plane
	Rotations: Coordinate Plane
 Skill Quests	
Introduction to rigid transformations	Translating points on the coordinate plane
	Reflecting points across the x- or y-axis
	Rotating points about the origin
Preserved properties: length	Preserved properties: length
Preserved properties: angles	Preserved properties: angles
Preserved properties: parallel lines	Preserved properties: parallel lines

<p>8.G.2</p> <p>Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.</p>	
 Activities	
Geometry 1-5	Congruent Figures (Dot Grid)
	Congruent Figures (Grid)
 Skill Quests	
Congruency: rigid transformations	Congruency: rigid transformations

<p>8.G.3</p> <p>Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.</p>	
 Activities	
Geometry 1-5	Transformations: Coordinate Plane
	Rotations: Coordinate Plane
	Scale Factor
 Skill Quests	
Transformations, coordinates	Dilations, coordinates
	Translations, coordinates
	Rotations, coordinates
	Reflections, coordinates
	Sequences of transformations
 Ebooks	
Grade 7, Series H Curriculum Ready: Polygons	Transformations
	Transformations on the Cartesian Plane

8.G.4

Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.

Activities

Geometry 1-5

Similar Figures 1

Skill Quests

Similarity: transformations

Introducing similarity

Similarity: transformations

Ebooks

Grade 7, Series H Curriculum Ready: Polygons

Transformations

Transformations on the Cartesian Plane

8.G.5

Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.

Activities

Geometry 1-5

Angles and Parallel Lines

Angles on Parallel Lines

Introduction to Angles on Parallel Lines 1

Parallel Lines

Vertically Opposite: Angles: Unknown Values

Vertically Opposite: Value of x

Using Similar Triangles

Similar Triangles

Angle Measures in a Triangle

Exterior Angles of a Triangle

Angle Sum of a Triangle

Pythagorean Theorem

Skill Quests

Triangles & angle relationships

Angle sum theorem

Exterior angle theorem

Angle relationships: parallel lines, transversal

Using scale to analyze similar triangles

Identifying similar triangles

Ebooks

Grade 7, Series H Curriculum Ready: Angles and Polygons

Angle sum of a triangle

External angle of a triangle

Understand and apply the Pythagorean Theorem

8.G.6

Explain a proof of the Pythagorean Theorem and its converse.

Activities

Geometry 6-9

Pythagorean Triads


Skill Quests	
The Pythagorean Theorem & its converse	Identifying the hypotenuse, right triangles
	Identifying right triangles, Pythagorean Theorem
	Pythagorean triples
Ebooks	
Grade 8, Series I: Pythagoras' theorem	

8.G.7	
Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	
Activities	
Geometry 6-9	Pythagorean: Find a Short Side (integers only)
	Pythagorean: Find a Short Side (rounding needed)
	Pythagorean: Find a Short Side (decimal values)
	Pythagorean Theorem
	Find Slant Height
Skill Quests	
Apply the Pythagorean Theorem	Pythagorean Theorem: missing short side
	Pythagorean Theorem: missing hypotenuse
	Pythagorean Theorem: missing side
	Pythagorean Theorem in 2-D & 3-D
Ebooks	
Grade 8, Series I: Pythagoras' theorem	

8.G.8	
Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	
Activities	
Geometry 6-9	Distance Between Two Points
Skill Quests	
Distance between two points	Finding the distance between two points
Ebooks	
Grade 8, Series I: Pythagoras' theorem	

Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres

8.G.9	
Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	
Activities	
Geometry 6-9	Volume: Cylinders
	Volume: Cones
	Volume: Spheres
Skill Quests	
Volume: cones, cylinders & spheres	Volume: cones
	Volume: cylinders



	Volume: spheres
 Ebooks	
Grade 8, Series I: Circles and Cylinders	The volume of a cylinder
Grade 9 Curriculum Ready: Measuring Solids	Volume of basic solids
	Cones
	Spheres



8.SP Statistics & Probability

Big ideas

Interpret Scatter Plots	SP.1, SP.2, SP.3
Data, Graphs and Tables	SP.3, SP.4
Data Explorations	SP.1, SP.2, SP.3, SP.4
Linear Equations	
Multiple Representations of Functions	
Slopes and Intercepts	SP.1, SP.2, SP.3
Cylindrical Investigations	
Pythagorean Explorations	
Big and Small Numbers	
Shape, Number, and Expressions	
Transformational Geometry	

Investigate patterns of association in bivariate data

8.SP.1	
Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	
 Activities	
Statistics & Probability	Data Analysis: Scatter Plots
	Scatter Plots
 Skill Quests	
Use & interpret scatter plots	Using & interpreting scatter plots

8.SP.2	
Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	
 Activities	
Teacher directed	
 Skill Quests	
Estimate the line of best fit	Estimating the line of best fit

8.SP.3

Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.

Activities

Teacher directed

Skill Quests

Interpret the line of best fit

Interpreting the line of best fit

Ebooks

Grade 8, Series I Curriculum Ready: Straight Lines

8.SP.4

Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables.

Activities

Statistics & Probability

Probability Tables

Relative Frequency

Two-way Table Probability

Skill Quests

Two-way tables

Constructing & interpreting two-way tables

Ebooks

Grade 8, Series I Curriculum Ready: Probability

Two-way table probabilities



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