NY State exam weights and alignment with IM curriculum

Grades 3-8

Historical averages 2018, 2019-2023

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About this document

This analysis shows what percentage of the grades 3-8 NYS state math exams have tested each standard on average, for each of the 2018, 2019, 2022, and 2023 NYS state exams. Further, it shows which lessons on the Illustrative Math curriculum address those standards, and what share of the total lessons they constitute.

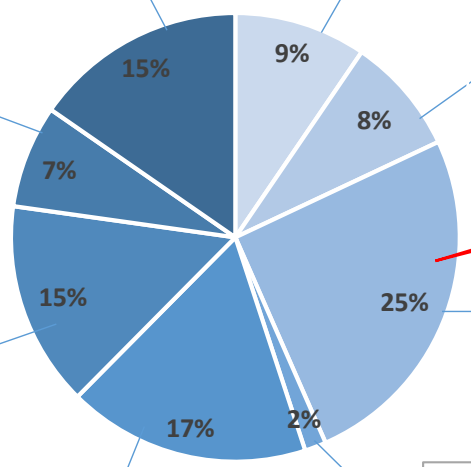
Who is this document for?: School leaders, math teachers, and instructional coaches

How can this document help you?: This can aid school leaders and teachers in planning with the new (for some schools) curriculum. The document is linked for easy navigation.

Where does this information come from?: NYS exam weights are from District Public's analysis of past NY state exams available from the NYSED here. Alignment with IM curriculum are from District Public's analysis of IM math curriculum, available here.

How to use this document – exam weights

Exam weightings by topic - historical averages since 2018



Area, surface area, and volume (NY-6.G.1-4)
Solve real-world and mathematical problems involving area, surface area, and volume.

Divide fractions; common factors & multiples (NY-6.NS.1, 4) Apply and extend previous understandings of multiplication and division to divide fractions by fractions. Compute fluently with multi-digit numbers and find common factors and multiples.

Rational numbers (NY-6.NS.5-8)
Apply and extend previous understandings of numbers to the system of rational numbers.

Dependent and independent variables (NY-6.EE.9) Represent and analyze quantitative relationships between dependent and independent variables.

One variable equations and inequalities (NY-6.EE.5-8) Reason about and solve one-variable equations and inequalities.

Ratio concepts (NY-6.RP.1-3)
Understand ratio concepts and use ratio reasoning to solve problems.

Algebraic Expressions (NY-6.EE.1-4) Apply and extend previous understandings of arithmetic to algebraic expressions.

Interpret numerical expressions, analyze patterns (NY-5.OA.1, 3) Write and interpret numerical expressions. Analyze patterns and relationships.

Percentages represent the % of total possible points testing that standard or group of standards. Look for groups of standards that are heavily weighted.

Click on the boxes to how those standards are addressed in the IM curriculum

How to use this document – IM alignment

Compare the # and % of total lessons in the IM curriculum covering this group of standards, with the historical weight of the exam for the group of standards highlighted in yellow. While alignment with the state test is just one of many considerations guiding when to teach specific lessons, teachers should note where there are many lessons covering a standard not frequently tested on the exam, or a frequently tested standard is not well covered in the curriculum.

Review the full text description of the standards

Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Ratio concepts (NY-6.RP.1-3)	Understand ratio concepts and use ratio reasoning to solve problems.	Unit 2 (17 Lessons), Unit 3 (15 Lessons), Unit 6 (3 Lessons)	38	26%	25%	
NY-6.RP.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.	6.2.1, 6.2.2, 6.2.3, 6.2.4, 6.2.5, 6.6.16, 6.9.4	7	5%	3%	5.NF.5
NY-6.RP.2	Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship.	6.2.10, 6.3.1, 6.3.5, 6.3.6, 6.3.7, 6.9.6	6	4%	6%	5.NF.3
NY-6.RP.3	Use ratio and rate reasoning to solve real-world and mathematical problems.	6.2.6, 6.2.7, 6.2.10, 6.2.12, 6.2.13, 6.2.14, 6.2.15, 6.2.16, 6.2.17, 6.3.6, 6.3.7, 6.3.8, 6.3.9, 6.3.15, 6.9.4, 6.9.5, 6.9.6	17	12%	0%	
NY-6.RP.3a	Make tables of equivalent ratios relating quantities with whole- number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.	6.2.11, 6.2.12, 6.2.13, 6.6.16, 6.6.17	5	3%	3%	
NY-6.RP.3b	Solve unit rate problems.	6.2.8, 6.2.9, 6.2.10, 6.3.5, 6.3.6, 6.3.7, 6.3.8, 6.3.9, 6.6.16, 6.6.17	10	7%	5%	
NY-6.RP.3c	Find a percent of a quantity as a rate per 100. Solve problems that involve finding the whole given a part and the percent, and finding a part of a whole given the percent.	6.3.10, 6.3.11, 6.3.12, 6.3.13, 6.3.14, 6.3.15, 6.3.16, 6.6.7, 6.9.4, 6.9.6	10	7%	4%	
NY-6.RP.3d	Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.	6.3.3, 6.3.4, 6.3.9	3	2%	4%	5.MD.1

Only unique lessons are counted within the standard group summary. Since multiple standards can be covered in a single lesson, the total number of lessons shown for a given standard group may not match up with the total of the lessons by standard shown.

Note that the number and % of lessons covering an *individual* standard (vs. a *group* of standards) may not be comparable, since lessons may cover multiple standards and thus the # and % of total lessons covering a standard will likely exceed that standard's weight on the exam, where each question is tagged to only one standard.

Take note of the prior grade standards – standards foundational to the standard indicated. Students will need a strong grasp on these standards to excel on the grade level standard.

Go Back to 6th Grade Exam Weightings

Click on the link to return to the analysis of NYS exam weights for the grade.

Exam weightings by topic - historical averages since 2018

3rd grade Math

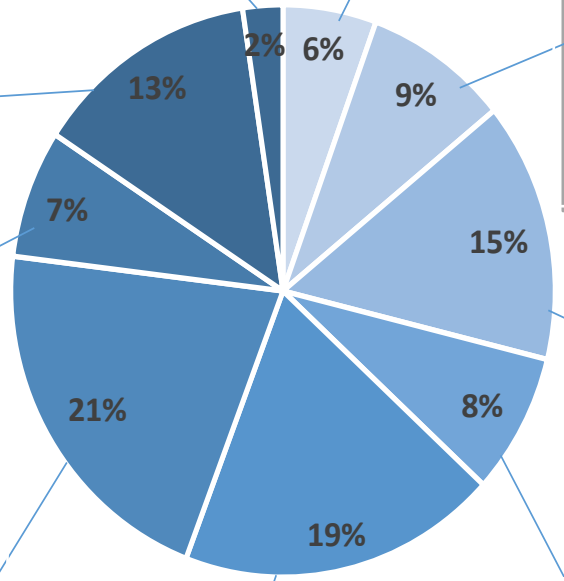
Click on topic description to see IM Curriculum Mappings

Represent and interpret data (NY-3.MD.3) Represent and interpret data. Draw a scaled picture and bar graph to respresent a data set. Generate measurement data by measuring lenghts using rulers. Plot the data. *Not tested in 2022 or 2023.*

Shapes and attributes (NY-3.G.2)
Reason with shapes and their attributes. Recognize and classify polygons. Partition shapes into parts with equal areas.

Word Problems (NY-3.OA.8-9)
Solve problems involving the four operations, and identify and extend patterns in arithmetic.

Time problems, volume and mass (NY-3.MD.1-2)
Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.



Apply Mult/Division Properties (NY-3.OA.5-6) Understand properties of multiplication and the relationship

Geometric mesurement / area, perimeter (NY-3.MD.5-7)
Geometric measurement: understand concepts of area and relate area to multiplication and to addition. Solve problems involving perimeters of polygons.

Multiplication and Division (NY-3.OA.1-4)
Represent and solve problems involving multiplication and division.

Understanding Fractions, number line (NY-3.NF.1-3)
Develop understanding of fractions as numbers.

Place Value (NY-3.NBT.1, NY-3.NBT.3-4)
Use place value understanding and properties of operations to perform

Key differences within the 2023 Exam:

* Represent and interpret data (NY-3.MD.3) was not tested on the 3rd grade exam in 2023 (also not tested in 2022).

Exam weightings by topic - historical averages since 2018

4th Grade Math

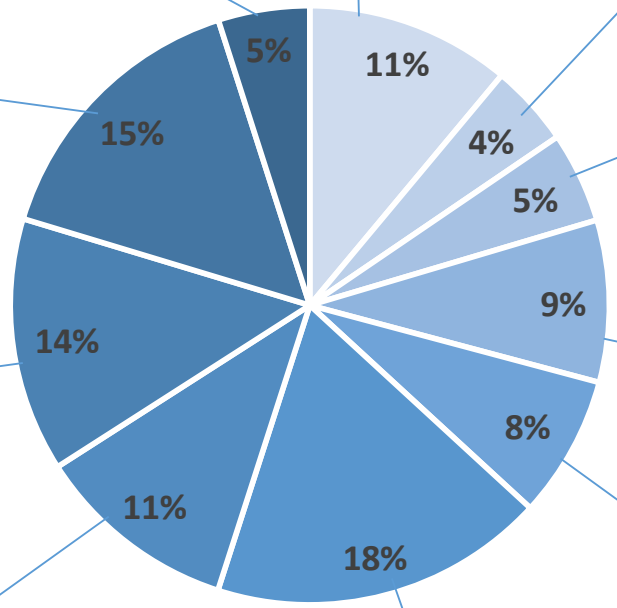
Click on topic description to see IM Curriculum Mappings

Factors & Multiples, Generate Patterns (NY-4.OA.4-5)
Gain familiarity with factors and multiples; Generate and analyze patterns.

Shapes, Draw angles (NY-3.G.1, NY-4.G.1-3) Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Represent and interpret data, perimeter (NY-3.MD.4, NY-3.MD.8)
Represent and interpret data. Recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

Operation word problems (NY-4.OA.1-3)
Use the four operations with whole numbers to solve problems.



Measurement & Conversion (NY-4.MD.1-4) Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. Represent and interpret data.

Multi-digit arithmetic (NY-4.NBT.5-6)
Use place value understanding and properties of operations to perform multi-digit arithmetic.

Measure Angles (NY-4.MD.5-7)
Geometric measurement: understand concepts of angle and measure angles.

Place Value / Multi-digit whole numbers (NY-4.NBT.1-3)
Generalize place value understanding for multi-digit whole numbers.

Equivalent Fractions (NY-4.NF.1-2)
Extend understanding of fraction equivalence and ordering.

Build Fractions (NY-4.NF.3-4)
Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

Exam weightings by topic - historical averages since 2018

5th Grade Math

Click on topic description to see IM Curriculum Mappings

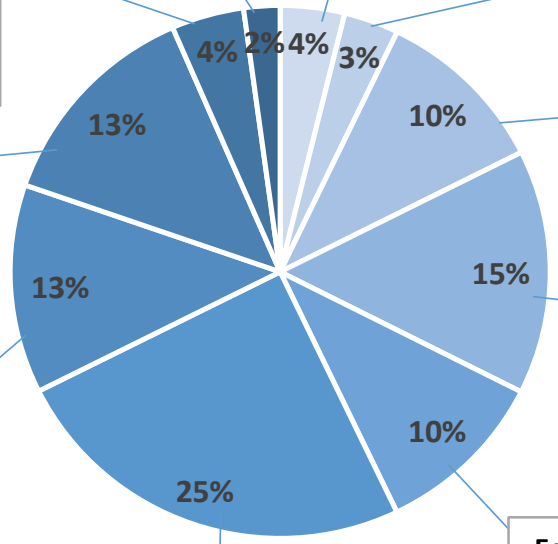
Interpret numerical expressions (NY-5.OA.1-2)
Write and interpret numerical expressions. Apply the order of operations to evaluate numerical expressions. *Not tested in 2023*

Two-dimensional figures (NY-5.G.3-4) Classify two-dimensional figures into categories based on their properties.

Measurement & Conversion (NY-4.MD.1-2) Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Decimal notation for fractions (NY-4.NF.5-7) Understand decimal notation for fractions, and compare decimal fractions. *Not tested in 2023*

Convert measurement units, represent data (NY-5.MD.1-2)
Convert like measurement units within a given measurement system. Represent and interpret data.



Operations on multi-digit numbers (NY-5.NBT.6-7) Perform operations with multi-digit whole numbers and with decimals to hundredths.

Volume (NY-5.MD.3-5)
Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

Place Value (NY-5.NBT.1-4)
Understand the place value system.

Equivalent Fractions (NY-5.NF.1-2)
Use equivalent fractions as a strategy to add and subtract fractions.

Multiply and divide fractions (NY-5.NF.3-7)
Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

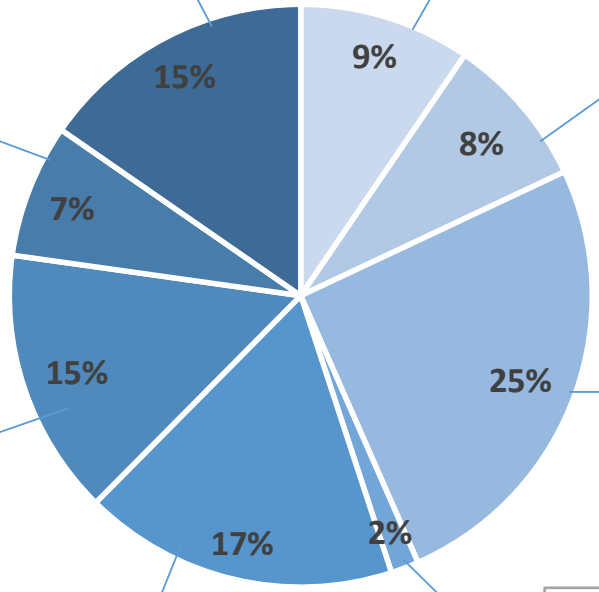
Key differences within the 2023 Exam:

* Decimal notation for fractions (NY-4.NF.5-7) and Interpret numerical expressions (NY-5.OA.1-2) were not tested in 2023 but have been tested in prior year years.

Exam weightings by topic - historical averages since 2018

6th Grade Math

Click on topic description to see IM Curriculum Mappings



Area, surface area, and volume (NY-6.G.1-4) Solve real-world and mathematical problems involving area, surface area, and volume.

Divide fractions; common factors & multiples (NY-6.NS.1, 4) Apply and extend previous understandings of multiplication and division to divide fractions by fractions. Compute fluently with multi-digit numbers and find common factors and multiples.

Rational numbers (NY-6.NS.5-8) Apply and extend previous understandings of numbers to the system of rational numbers.

Dependent and independent variables (NY-6.EE.9) Represent and analyze quantitative relationships between dependent and independent variables.

Ratio concepts (NY-6.RP.1-3) Understand ratio concepts and use ratio reasoning to solve problems.

One variable equations and inequalities (NY-6.EE.5-8) Reason about and solve one-variable equations and inequalities.

Interpret numerical expressions, analyze patterns (NY-5.OA.1, 3) Write and interpret numerical expressions. Analyze patterns and relationships.

Algebraic Expressions (NY-6.EE.1-4) Apply and extend previous understandings of arithmetic to algebraic expressions.

Exam weightings by topic - historical averages since 2018

7th Grade Math

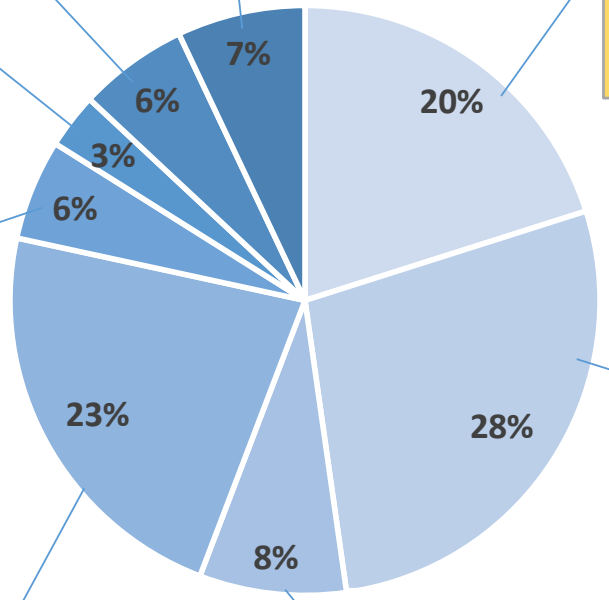
Click on topic description to see IM Curriculum Mappings

Draw comparative inferences (NY-7.SP.1-4)
Draw informal comparative inferences about two populations.

Probability and probability models (NY-7.SP.5-8)
Investigate chance processes and develop, use, and evaluate probability models.

Operations with rational numbers (NY-7.NS.1-3) Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers..

Statistical Variability (NY-6.SP.2-5) Develop understanding of statistical variability; Summarize and describe distributions.



Geometric figures; Area and volume (NY-7.G.1,4) Represent and analyze quantitative relationships between dependent and independent variables.

Proportional relationships (NY-7.RP.1-3)
Analyze proportional relationships and use them to solve real-world and mathematical problems.

Solve problems with expressions, equations (NY-7.EE.3-4) Solve real-life and mathematical problems using numerical and algebraic expressions, equations, and inequalities.

Equivalent expressions (NY-7.EE.1-2)
Use properties of operations to generate equivalent expressions.

Exam weightings by topic - historical averages since 2018

8th Grade Math

Click on topic description to see IM Curriculum Mappings

Irrational numbers (NY-8.NS.1-2) - *newly tested* **.** Know that there are numbers that are not rational, and approximate them by rational numbers.

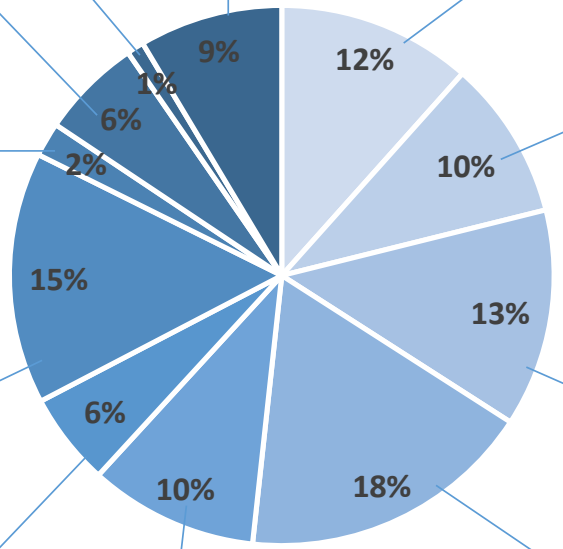
Bivariate data (NY-8.SP.1-4) Investigate patterns of association in bivariate data..

Radicals and integer exponents (NY-8.EE.1-4) Work with radicals and integer exponents.

Volume formulas (NY-8.G.9) Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.

Graph proportional relationships (NY-8.EE.5-6) Understand the connections between proportional relationships, lines, and linear equations.

Pythagorean Theorem (NY-8.G.6-8) - *newly tested* **.** Understand a proof of the Pythagorean Theorem and apply it to determine unknown side lengths in right triangles and to find the distance between two points in a coordinate system..



Linear equations (NY-8.EE.7-8) Analyze and solve linear equations and pairs of simultaneous linear equations.

Congruence and similarity (NY-8.G.1-5) Understand congruence and similarity using physical models, transparencies, or

Define and compare functions (NY-8.F.1-3) Define, evaluate, and compare functions.

Geometric figures; Area and volume (NY-7.G.2-3, NY-7.G.5-6) Draw, construct, and describe geometrical figures and describe the relationships between them. Solve real-life and mathematical problems involving angle measure, area, surface

Functional relationships (NY-8.F.4-5) Use functions to model relationships between quantities.

Key differences within the 2023 Exam:

* Pythagorean Theorem (NY-8.G.6-8) and Irrational numbers (NY-8.NS.1-2) were tested for the first time in 20

Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Shapes and attributes (NY-3.G.2)	Reason with shapes and their attributes. Recognize and classify polygons. Partition shapes into parts with equal areas.	Unit 7 (6 Lessons)	8	6%	6%	
NY-3.G.1	Recognize and classify polygons based on the number of sides and vertices (triangles, quadrilaterals, pentagons, and hexagons). Identify shapes that do not belong to one of the given subcategories.	3.7.1, 3.7.2, 3.7.3, 3.7.4, 3.7.5, 3.7.14	6	4%	1%	2.G.1
NY-3.G.2	Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.	3.5.1, 3.5.2	2	1%	6%	2.G.3

**** Only unique lessons are counted within the standard group summary. Since multiple standards can be covered in a single lesson, the total number of lessons shown for a given standard group may not match up with the total of the lessons by standard shown.***

Go Back to 3rd Grade Exam Weightings

Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Time problems, volume and mass (NY-3.MD.1-2)	Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.	Unit 6 (10 Lessons)	10	7%	9%	
NY-3.MD.1	Tell and write time to the nearest minute and measure time intervals in minutes. Solve one-step word problems involving addition and subtraction of time intervals in minutes.	3.6.9, 3.6.10, 3.6.11, 3.6.14, 3.6.15	5	3%	6%	2.MD.7
NY-3.MD.2	Measure and estimate liquid volumes and masses of objects using grams (g), kilograms (kg), and liters (l).	3.6.6, 3.6.7, 3.6.8, 3.6.12, 3.6.13, 3.6.14, 3.6.15	7	5%	3%	

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Geometric mesurement / area, perimeter (NY-3.MD.5-7)	Geometric measurement: understand concepts of area and relate area to multiplication and to addition. Solve problems involving perimeters of polygons.	Unit 2 (14 Lessons), Unit 4 (3 Lessons)	18	13%	15%	
NY-3.MD.5a	Recognize a square with side length 1 unit, called “a unit square,” is said to have “one square unit” of area, and can be used to measure area	3.2.2	1	1%	1%	
NY-3.MD.5b	Recognize a plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.	3.2.2, 3.2.3	2	1%	3%	
NY-3.MD.6	Measure areas by counting unit squares.	3.2.3, 3.2.4, 3.2.6, 3.2.7, 3.2.15	5	3%	3%	2.G.2
NY-3.MD.7b	Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.	3.2.5, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 3.2.15, 3.8.4	7	5%	1%	
NY-3.MD.7c	Use tiling to show in a concrete case that the area of a rectangle with whole-number side length a and side length b + c is the sum of a × b and a × c. Use area models to represent the distributive property in mathematical reasoning.	3.4.10, 3.4.11, 3.4.15	3	2%	1%	
NY-3.MD.7d	Recognize area as additive. Find areas of figures composed of non-overlapping rectangles, and apply this technique to solve real world problems.	3.2.12, 3.2.13, 3.2.14, 3.2.15, 3.8.4	5	3%	2%	

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Place Value (NY-3.NBT.1, NY-3.NBT.3-4)	Use place value understanding and properties of operations to perform multi-digit arithmetic.	Unit 3 (5 Lessons), Unit 4 (4 Lessons)	11	8%	8%	
NY-3.NBT.1	Use place value understanding to round whole numbers to the nearest 10 or 100.	3.3.13, 3.3.14, 3.3.15, 3.3.16, 3.3.21	5	3%	3%	
NY-3.NBT.3	Multiply one-digit whole numbers by multiples of 10 in the range 10-90 using strategies based on place value and properties of operations.	3.4.7, 3.4.12, 3.4.17, 3.4.19, 3.7.2, 3.7.3	6	4%	4%	
NY-3.NBT.4a	Understand that the digits of a four-digit number represent amounts of thousands, hundreds, tens, and ones.	0	0	0%	1%	2.NBT.1

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Understanding Fractions, number line (NY-3.NF.1-3)	Develop understanding of fractions as numbers.	Unit 5 (18 Lessons), Unit 8 (3 Lessons)	22	15%	19%	
NY-3.NF.1	Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b.	3.5.1, 3.5.2, 3.5.3, 3.5.4, 3.8.1, 3.8.3	6	4%	2%	2.G.3
NY-3.NF.2	Understand a fraction as a number on the number line; represent fractions on a number line.	3.5.5, 3.5.6, 3.5.7, 3.5.8, 3.5.9, 3.5.17, 3.5.18, 3.8.1, 3.8.2, 3.8.3	10	7%	4%	2.MD.6
NY-3.NF.3	Explain equivalence of fractions and compare fractions by reasoning about their size.	3.5.14, 3.5.15, 3.5.17, 3.8.2, 3.8.3	5	3%	N/A	
NY-3.NF.3a	Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.	3.5.10, 3.5.11, 3.5.12	3	2%	2%	
NY-3.NF.3b	Recognize and generate simple equivalent fractions. Explain why the fractions are equivalent.	3.5.10, 3.5.11, 3.5.12	3	2%	2%	
NY-3.NF.3c	Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.	3.5.8, 3.5.13, 3.5.14, 3.6.3	4	3%	2%	
NY-3.NF.3d	Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons rely on the two fractions referring to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions.	3.5.14, 3.5.15, 3.5.16, 3.5.17	4	3%	6%	

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Multiplication and Division (NY-3.OA.1-4)	Represent and solve problems involving multiplication and division	Unit 1 (12 Lessons)	28	20%	21%	
NY-3.OA.1	Interpret products of whole numbers.	3.1.9, 3.1.10, 3.1.11, 3.1.12, 3.1.13, 3.1.14, 3.1.16, 3.1.17, 3.1.18, 3.1.19, 3.2.1, 3.8.13	12	8%	4%	2.OA.4
NY-3.OA.2	Interpret whole-number quotients of whole numbers.	3.4.1, 3.4.2, 3.4.3, 3.4.4, 3.4.5, 3.4.6, 3.4.7, 3.4.18, 3.4.19, 3.4.22	10	7%	4%	
NY-3.OA.3	Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities.	3.1.12, 3.1.13, 3.1.14, 3.1.15, 3.1.19, 3.1.21, 3.4.1, 3.4.2, 3.4.5, 3.4.7, 3.4.13, 3.4.15,	16	11%	8%	
NY-3.OA.4	Determine the unknown whole number in a multiplication or division equation relating three whole numbers.	3.1.14, 3.1.15, 3.4.22	3	2%	4%	

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Apply Mult/Division Properties (NY-3.OA.5-6)	Understand properties of multiplication and the relationship between multiplication and division.	Unit 4 (10 Lessons), Unit 2 (5 Lessons)	19	13%	7%	
NY-3.OA.5	Apply properties of operations as strategies to multiply and divide.	3.1.20, 3.2.5, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 3.3.12, 3.4.13, 3.4.14, 3.4.15, 3.4.16, 3.4.17, 3.4.19, 3.4.20, 3.5.11	15	10%	4%	
NY-3.OA.6	Understand division as an unknown-factor problem.	3.4.6, 3.4.7, 3.4.8, 3.8.10	4	3%	4%	

**** Only unique lessons are counted within the standard group summary. Since multiple standards can be covered in a single lesson, the total number of lessons shown for a given standard group may not match up with the total of the lessons by standard shown.***

Go Back to 3rd Grade Exam Weightings

Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Word Problems (NY-3.OA.8-9)	Solve problems involving the four operations, and identify and extend patterns in arithmetic.	Unit 3 (6 Lessons), Unit 4 (4 Lessons), Unit 1 (3 Lessons)	16	11%	13%	
NY-3.OA.8	Solve two-step word problems posed with whole numbers and having whole-number answers using the four operations.	3.3.17, 3.3.18, 3.3.19, 3.3.20, 3.4.17, 3.4.21, 3.4.22, 3.7.10, 3.8.5	9	6%	8%	2.OA.1
NY-3.OA.9	Identify and extend arithmetic patterns (including patterns in the addition table or multiplication table).	3.1.14, 3.1.15, 3.1.19, 3.2.11, 3.3.2, 3.3.5, 3.4.9	7	5%	6%	2.OA.3

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Represent and interpret data ** (NY-3.MD.3)	Represent and interpret data. Draw a scaled picture and bar graph to respresent a data set. Generate measurement data by measuring lenghts using rulers. Plot the data.	Unit 1 (7 Lessons)	8	6%	2%	
NY-3.MD.3	Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in a scaled picture graph or a scaled bar graph.	3.1.2, 3.1.4, 3.1.5, 3.1.6, 3.1.7, 3.1.8, 3.1.21, 3.8.7	8	6%	2%	2.MD.1

***** NY-3.MD.3 was not tested within either the 2022 or 2023 State Exams. * Only unique lessons are counted within the standard group summary. Since multiple standards can be covered in a single lesson, the total number of lessons shown for a given standard group may not match up with the total of the lessons by standard shown.***

Go Back to 3rd Grade Exam Weightings

Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Shapes, Draw angles (NY-3.G.1, NY-4.G.1-3)	Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	Unit 7 (11 Lessons), Unit 8 (10 Lessons)	22	15%	11%	
NY-4.G.1	Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	4.7.1, 4.7.2, 4.7.3, 4.7.4, 4.7.5, 4.7.6, 4.7.10, 4.7.11, 4.7.12, 4.7.15, 4.7.16, 4.8.1, 4.8.3, 4.8.5, 4.8.6, 4.8.9, 4.9.11	17	11%	3%	
NY-4.G.2	Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.	4.7.16, 4.8.1, 4.8.2, 4.8.3, 4.8.4, 4.8.6, 4.8.9	7	5%	4%	3.G.1
NY-4.G.3	Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.	4.8.4, 4.8.5, 4.8.6, 4.8.7, 4.8.8, 4.8.9, 4.8.10	7	5%	3%	

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Represent and interpret data, perimeter (NY-3.MD.4, NY-3.MD.8) **	Represent and interpret data. Recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.	Unit 7 (10 Lessons), Unit 6 (5 Lessons)	17	11%	4%	
NY-3.MD.4	Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.	3.6.1, 3.6.2, 3.6.3, 3.6.4, 3.6.5, 3.8.14	6	4%	2%	2.MD.9
NY-3.MD.8	Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.	3.7.6, 3.7.7, 3.7.8, 3.7.9, 3.7.10, 3.7.11, 3.7.12, 3.7.13, 3.7.14, 3.7.15, 3.8.4	11	8%	2%	

***** NY-3.MD.4 and NY-3.MD.8 are covered within IM's 3rd Grade Math curriculum but have historically been tested on the NY State 4th Grade Math exam. * Only unique lessons are counted within the standard group summary. Since multiple standards can be covered in a single lesson, the total number of lessons shown for a given standard group may not match up with the total of the lessons by standard shown.***

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Measurement & Conversion (NY-4.MD.1-4) **	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. Represent and interpret data.	Unit 5 (12 Lessons), Unit 6 (4 Lessons)	20	13%	5%	
NY-4.MD.1	Know relative sizes of measurement units: ft., in.; km, m, cm. Know the conversion factor and use it to convert measurements in a larger unit in terms of a smaller unit: ft., in.; km, m, cm; hr., min., sec. Given the conversion factor, convert all other measurements within a single system of measurement from a larger unit to a smaller unit. Record measurement equivalents in a two-column table.	4.5.7, 4.5.8, 4.5.9, 4.5.11, 4.5.12, 4.5.14, 4.5.18	7	5%	2%	
NY-4.MD.2	Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money.	4.5.8, 4.5.9, 4.5.10, 4.5.11, 4.5.12, 4.5.13, 4.5.14, 4.5.15, 4.5.17, 4.6.12, 4.6.22, 4.6.23	12	8%	2%	3.MD.1
NY-4.MD.3	Apply the area and perimeter formulas for rectangles in real world and mathematical problems.	4.5.16, 4.5.17, 4.6.15, 4.6.22, 4.8.7, 4.8.9	6	4%	3%	3.MD.7
NY-4.MD.4	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots.	4.3.13, 4.3.14	2	1%	2%	3.MD.4

***** This topic has been tested on both the NYS 4th and 5th grade State Math Exams. * Only unique lessons are counted within the standard group summary. Since multiple standards can be covered in a single lesson, the total number of lessons shown for a given standard group may not match up with the total of the lessons by standard shown.***

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Measure Angles (NY-4.MD.5-7)	Geometric measurement: understand concepts of angle and measure angles.	Unit 7 (11 Lessons)	12	8%	9%	
NY-4.MD.5	Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement.	4.7.5, 4.7.6, 4.7.7	3	2%		
NY-4.MD.5a	Recognize an angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a “one-degree angle,” and can be used to measure angles.	4.7.7, 4.7.8, 4.7.9, 4.7.11	4	3%	2%	
NY-4.MD.5b	Recognize an angle that turns through n one-degree angles is said to have an angle measure of n degrees.	4.7.9, 4.7.10	2	1%	2%	
NY-4.MD.6	Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.	4.7.9, 4.7.10, 4.7.11, 4.7.14	4	3%	2%	
NY-4.MD.7	Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems.	4.7.8, 4.7.9, 4.7.11, 4.7.12, 4.7.13, 4.7.14, 4.7.15, 4.8.10	8	5%	3%	

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Equivalent Fractions (NY-4.NF.1-2)	Extend understanding of fraction equivalence and ordering	Unit 2 (14 Lessons), Unit 3 (3 Lessons)	19	13%	8%	
NY-4.NF.1	Explain why a fraction a/b is equivalent to a fraction (n × a)/(n × b) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.	4.2.4, 4.2.5, 4.2.7, 4.2.8, 4.2.9, 4.2.10, 4.2.11, 4.2.13, 4.2.14, 4.2.15, 4.3.15, 4.3.16, 4.9.2	13	9%	3%	3.NF.3
NY-4.NF.2	Compare two fractions with different numerators and different denominators. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.	4.2.3, 4.2.6, 4.2.12, 4.2.13, 4.2.14, 4.2.15, 4.2.16, 4.3.15, 4.9.2	9	6%	4%	3.NF.3d
NY-4.NF.3	Understand a fraction a/b with a > 1 as a sum of fractions 1/b	4.3.7, 4.9.1	2	1%		3.NF.1

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Build Fractions (NY-4.NF.3-4)	Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.	Unit 3 (18 Lessons), Unit 8 (3 Lessons)	25	17%	18%	
NY-4.NF.3a	Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.	4.3.8, 4.3.9, 4.9.2	3	2%	2%	3.NF.1
NY-4.NF.3b	Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions	4.3.7, 4.3.8, 4.9.2	3	2%	2%	3.NF.1
NY-4.NF.3c	Add and subtract mixed numbers with like denominators	4.3.9, 4.3.10, 4.3.11, 4.3.12, 4.3.14, 4.3.19, 4.4.19, 4.8.2, 4.8.7, 4.8.8, 4.9.2, 4.9.3	12	8%	2%	3.NF.1
NY-4.NF.3d	Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators.	4.3.10, 4.3.11, 4.3.12, 4.3.13, 4.3.15, 4.3.19, 4.3.20, 4.9.2, 4.9.3	9	6%	4%	3.NF.1
NY-4.NF.4a	Understand a fraction / as a multiple of 1/ .	4.3.1, 4.3.2, 4.3.3, 4.3.5, 4.3.6	5	3%	2%	
NY-4.NF.4b	Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a whole number by a fraction.	4.3.4, 4.3.5, 4.3.6, 4.8.7	4	3%	3%	
NY-4.NF.4c	Solve word problems involving multiplication of a whole number by a fraction.	4.3.2, 4.3.5, 4.3.6, 4.3.10, 4.3.18, 4.5.15	6	4%	5%	

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Place Value / Multi-digit whole numbers (NY-4.NBT.1-3)	Generalize place value understanding for multi-digit whole numbers.	Unit 4 (13 Lessons)	14	9%	11%	
NY-4.NBT.1	Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.	4.4.6, 4.4.8, 4.4.9, 4.4.10, 4.4.11, 4.9.12	6	4%	4%	3.NBT.4a
NY-4.NBT.2	Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	4.4.7, 4.4.8, 4.4.9, 4.4.10, 4.4.11, 4.4.12, 4.4.13, 4.4.14, 4.4.21	9	6%	5%	3.NBT.4b
NY-4.NBT.3	Use place value understanding to round multi-digit whole numbers to any place.	4.4.14, 4.4.15, 4.4.16, 4.4.17	4	3%	2%	3.NBT.1

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Multi-digit arithmetic (NY-4.NBT.5-6)	Use place value understanding and properties of operations to perform multi-digit arithmetic.	Unit 6 (19 Lessons), Unit 9 (6 Lessons), Unit 7 (3 Lessons)	30	20%	14%	
NY-4.NBT.5	Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	4.5.6, 4.6.5, 4.6.6, 4.6.7, 4.6.8, 4.6.9, 4.6.10, 4.6.11, 4.6.12, 4.6.21, 4.6.22, 4.6.23, 4.7.2, 4.7.9, 4.8.5, 4.9.5, 4.9.7, 4.9.8, 4.9.9, 4.9.11	20	13%	7%	3.NBT.3
NY-4.NBT.6	Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division.	4.6.13, 4.6.14, 4.6.15, 4.6.16, 4.6.17, 4.6.18, 4.6.19, 4.6.20, 4.6.21, 4.6.23, 4.7.10, 4.9.6, 4.9.7, 4.9.8, 4.9.9	15	10%	7%	3.OA.5

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Operation word problems (NY-4.OA.1-3)	Use the four operations with whole numbers to solve problems	Unit 5 (14 Lessons), Unit 6 (10 Lessons), Unit 9 (4 Lessons)	29	19%	15%	
NY-4.OA.1	Interpret a multiplication equation as a comparison. Represent verbal statements of multiplicative comparisons as multiplication equations.	4.5.2, 4.5.3, 4.5.4, 4.5.5, 4.5.6	5	3%	5%	3.OA.1
NY-4.OA.2	Multiply or divide to solve word problems involving multiplicative comparison, distinguishing multiplicative comparison from additive comparison. Use drawings and equations with a symbol for the unknown number to represent the problem.	4.5.2, 4.5.3, 4.5.4, 4.5.5, 4.5.6, 4.5.10, 4.5.14, 4.5.15, 4.5.16, 4.5.17, 4.5.18, 4.6.24, 4.9.7	13	9%	7%	3.OA.3
NY-4.OA.3	Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted.	4.1.5, 4.5.5, 4.5.10, 4.5.11, 4.5.12, 4.5.13, 4.6.12, 4.6.14, 4.6.15, 4.6.18, 4.6.19, 4.6.20, 4.6.21, 4.6.22, 4.6.24, 4.6.25, 4.9.7, 4.9.8, 4.9.9, 4.9.10	20	13%	4%	3.OA.8

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Factors & Multiples, Generate Patterns (NY-4.OA.4-5)	Gain familiarity with factors and multiples; Generate and analyze patterns.	Unit 1 (8 Lessons), Unit 6 (6 Lessons)	15	10%	5%	
NY-4.OA.4	Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.	4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 4.1.7, 4.1.8, 4.6.19, 4.9.11	10	7%	2%	3.OA.7
NY-4.OA.5	Generate a number or shape pattern that follows a given rule. Identify and informally explain apparent features of the pattern that were not explicit in the rule itself.	4.1.3, 4.6.1, 4.6.2, 4.6.3, 4.6.4, 4.6.25, 4.9.11	7	5%	3%	3.OA.9

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Convert measurement units, represent data (NY-5.MD.1-2)	Convert like measurement units within a given measurement system. Represent and interpret data.	Unit 6 (8 Lessons)	8	5%	10%	
NY-5.MD.1	Convert among different-sized standard measurement units within a given measurement system when the conversion factor is given. Use these conversions in solving multi-step, real world problems.	5.6.3, 5.6.4, 5.6.5, 5.6.6, 5.6.7	5	3%	7%	4.MD.1
NY-5.MD.2	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots.	5.6.14, 5.6.15, 5.6.21	3	2%	4%	4.MD.4

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Volume (NY-5.MD.3-5)	Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.	Unit 1 (12 Lessons), Unit 8 (5 Lessons), Unit 4 (4 Lessons)	21	14%	15%	
NY-5.MD.3	Recognize volume as an attribute of solid figures and understand concepts of volume measurement.	5.1.1, 5.1.2, 5.4.9, 5.8.18	4	3%	1%	3.MD.5
NY-5.MD.3b	Recognize that a solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.	5.1.2	1	1%	1%	3.MD.5
NY-5.MD.4	Measure volumes by counting unit cubes, using cubic cm, cubic in., cubic ft., and improvised units.	5.1.2, 5.1.3, 5.1.7	3	2%	3%	3.MD.6
NY-5.MD.5	Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.	5.1.10, 5.1.11, 5.1.12, 5.4.9, 5.4.18, 5.4.20, 5.4.21, 5.8.6, 5.8.7, 5.8.8, 5.8.9	11	7%		3.MD.7
NY-5.MD.5a	Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area	5.1.4, 5.1.6	2	1%	3%	3.MD.7
NY-5.MD.5b	Apply the formulas V = L × W × H and V = B × H for rectangular prisms to find volumes of right rectangular prisms with whole- number edge lengths in the context of solving real world and mathematical problems.	5.1.5, 5.1.6	2	1%	2%	3.MD.7
NY-5.MD.5c	Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.	5.1.8, 5.1.9, 5.1.10	3	2%	5%	3.MD.7

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Equivalent Fractions (NY-5.NF.1-2)	Use equivalent fractions as a strategy to add and subtract fractions.	Unit 6 (9 Lessons), Unit 8 (3 Lessons)	12	8%	10%	
NY-5.NF.1	Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.	5.6.8, 5.6.9, 5.6.10, 5.6.11, 5.6.12, 5.6.13, 5.6.14, 5.8.10, 5.8.11, 5.8.17	10	7%	4%	4.NF.1
NY-5.NF.2	Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.	5.6.9, 5.6.11, 5.6.12, 5.6.15, 5.6.21	5	3%	6%	4.NF.3d

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Multiply and divide fractions (NY-5.NF.3-7)	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	Unit 3 (19 Lessons), Unit 2 (17 Lessons), Unit 6 (7 Lessons)	48	32%	25%	
NY-5.NF.3	Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers.	5.2.1, 5.2.2, 5.2.3, 5.2.4, 5.2.5, 5.2.6, 5.2.7, 5.2.10, 5.2.11, 5.2.15, 5.4.16, 5.8.14	12	8%	2%	
NY-5.NF.4	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number or a fraction.	5.2.8, 5.2.12, 5.2.13, 5.2.14, 5.2.15, 5.2.16, 5.2.17, 5.3.6, 5.3.7, 5.3.17, 5.3.18, 5.3.19, 5.4.8, 5.5.20, 5.6.15, 5.6.21, 5.8.13	17	11%	1%	4.NF.4
NY-5.NF.4a	Interpret the product (a/b) × q as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations a × q ÷ b.	5.2.7, 5.2.8, 5.2.10, 5.2.15, 5.3.1, 5.3.2, 5.3.3, 5.3.4, 5.3.7, 5.3.8	10	7%	1%	4.NF.4
NY-5.NF.4b	Find the area of a rectangle with fractional side lengths by tiling it with rectangles of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.	5.2.9, 5.2.10, 5.2.11, 5.2.12, 5.2.13, 5.2.15, 5.2.16, 5.3.5, 5.3.6	9	6%	2%	4.NF.4
NY-5.NF.5	Interpret multiplication as scaling (resizing).	5.6.20	1	1%	1%	4.OA.1
NY-5.NF.5a	Compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.	5.6.16, 5.6.17, 5.6.18	3	2%	2%	4.OA.1
NY-5.NF.5b	Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case). Explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence a/b = (a×b)/(n×n) to the effect of multiplying a/b by 1.	5.6.17, 5.6.19, 5.6.20	3	2%	3%	4.OA.1

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NY-5.NF.6-7 shown on next page

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Multiply and divide fractions (NY-5.NF.3-7)	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	Unit 3 (19 Lessons), Unit 2 (17 Lessons), Unit 6 (7 Lessons)	48	32%	25%	
NY-5.NF.6	Solve real world problems involving multiplication of fractions and mixed numbers.	5.3.8, 5.3.9, 5.3.17, 5.3.18, 5.3.19	5	3%	5%	4.NF.4c
NY-5.NF.7	Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.	5.3.15, 5.3.16, 5.3.17, 5.3.18, 5.3.19	5	3%	1%	
NY-5.NF.7a	Interpret division of a unit fraction by a non-zero whole number, and compute such quotients	5.3.11, 5.3.12	2	1%	2%	
NY-5.NF.7b	Interpret division of a whole number by a unit fraction, and compute such quotients.	5.3.13, 5.3.14, 5.3.16, 5.3.20	4	3%	1%	
NY-5.NF.7c	Solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions.	5.3.15, 5.3.19	2	1%	5%	

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Place Value (NY-5.NBT.1-4)	Understand the place value system.	Unit 5 (12 Lessons), Unit 6 (6 Lessons)	18	12%	13%	
NY-5.NBT.1	Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.	5.5.1, 5.5.3, 5.5.4, 5.5.21, 5.6.1, 5.6.2, 5.6.5, 5.6.6	8	5%	4%	4.NBT.1
NY-5.NBT.2	Use whole-number exponents to denote powers of 10. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10.	5.6.2, 5.6.3, 5.6.4, 5.6.6	4	3%	2%	
NY-5.NBT.3	Read, write, and compare decimals to thousandths.	5.5.2, 5.5.4, 5.5.5, 5.5.7, 5.5.10, 5.5.26	6	4%		
NY-5.NBT.3a	Read and write decimals to thousandths using base-ten numerals, number names, and expanded form.	5.5.3, 5.5.4	2	1%	4%	4.NBT.2a
NY-5.NBT.3b	Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	5.5.5, 5.5.6, 5.5.8, 5.5.9	4	3%	2%	4.NBT.2b
NY-5.NBT.4	Use place value understanding to round decimals to any place.	5.5.7, 5.5.8, 5.5.10	3	2%	1%	4.NBT.3

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Operations on multi-digit numbers (NY-5.NBT.6-7)	Perform operations with multi-digit whole numbers and with decimals to hundredths.	Unit 5 (16 Lessons), Unit 4 (8 Lessons), Unit 8 (5 Lessons)	30	20%	13%	
NY-5.NBT.6	Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	5.4.11, 5.4.12, 5.4.13, 5.4.14, 5.4.15, 5.4.16, 5.4.20, 5.4.21, 5.8.4, 5.8.5, 5.8.8, 5.8.16	12	8%	5%	4.NBT.6
NY-5.NBT.7	Using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between operations: • add and subtract decimals to hundredths; • multiply and divide decimals to hundredths. Relate the strategy to a written method and explain the reasoning used.	5.5.11, 5.5.12, 5.5.13, 5.5.14, 5.5.15, 5.5.16, 5.5.17, 5.5.18, 5.5.19, 5.5.20, 5.5.21, 5.5.22, 5.5.23, 5.5.24, 5.5.25, 5.5.26, 5.7.13, 5.8.12	18	12%	8%	4.NF.5

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Decimal notation for fractions ** (NY-4.NF.5-7)	Understand decimal notation for fractions, and compare decimal fractions.	Unit 4 (5 Lessons), Unit 3 (4 Lessons)	11	7%	4%	
NY-4.NF.5	Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.	4.3.16, 4.3.17, 4.3.18, 4.3.19, 4.4.2, 4.4.5, 4.9.1, 4.9.3	8	5%	2%	3.NF.3
NY-4.NF.6	Use decimal notation for fractions with denominators 10 or 100.	4.4.1, 4.4.2, 4.4.5, 4.9.3	4	3%	2%	
NY-4.NF.7	Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions.	4.4.2, 4.4.3, 4.4.4, 4.4.5, 4.9.3	5	3%	1%	

***** Standards NY-4.NF.5-7 are covered within IM's 4th Grade Math Curriculum but have historically been tested on the NY State 5th Grade Math exam. This topic was not tested on the 2023 State exam but has been tested in all prior years. * Only unique lessons are counted within the standard group summary. Since multiple standards can be covered in a single lesson, the total number of lessons shown for a given standard group may not match up with the total of the lessons by standard shown.***

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Interpret numerical expressions ** (NY-5.OA.1-2)	Write and interpret numerical expressions. Apply the order of operations to evaluate numerical expressions.	Unit 1 (4 Lessons), Unit 2 (3 Lessons)	14	9%	2%	
NY-5.OA.1	Apply the order of operations to evaluate numerical expressions.	5.1.6, 5.1.10, 5.2.13, 5.5.18	4	3%	1%	
NY-5.OA.2	Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.	5.1.4, 5.1.6, 5.1.9, 5.1.10, 5.2.6, 5.2.8, 5.4.3, 5.4.11, 5.4.17, 5.5.17, 5.5.23, 5.7.12	12	8%	1%	

***** This topic was not tested on the 2023 NY State 5th Grade State exam (on 6th grade exam last year) but has been tested in prior years. * Only unique lessons are counted within the standard group summary. Since multiple standards can be covered in a single lesson, the total number of lessons shown for a given standard group may not match up with the total of the lessons by standard shown.***

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Two-dimensional figures (NY-5.G.3-4)	Classify two-dimensional figures into categories based on their properties.	Unit 7 (5 Lessons)	6	4%	4%	
NY-5.G.3	Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.	5.7.4, 5.7.6, 5.7.7, 5.7.8, 5.8.4	5	3%	1%	4.G.2
NY-5.G.4	Classify two-dimensional figures in a hierarchy based on properties.	5.7.4, 5.7.5, 5.7.6, 5.7.7, 5.7.8, 5.8.4	6	4%	3%	

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Divide fractions; common factors & multiples (NY-6.NS.1, 4)	Apply and extend previous understandings of multiplication and division to divide fractions by fractions. Compute fluently with multi-digit numbers and find common factors and multiples.	Unit 4 (14 Lessons), Unit 7 (3 Lessons)	17	12%	9%	
NY-6.NS.1	Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions.	6.4.3, 6.4.4, 6.4.5, 6.4.6, 6.4.7, 6.4.8, 6.4.9, 6.4.10, 6.4.11, 6.4.12, 6.4.13, 6.4.14, 6.4.16, 6.4.17	14	10%	6%	5.NF.7
NY-6.NS.4	Find the greatest common factor of two whole numbers less than or equal to 100. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor other than 1. Find the least common multiple of two whole numbers less than or equal to 12.	6.7.16, 6.7.17, 6.7.18	3	2%	4%	4.OA.4

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Rational numbers (NY-6.NS.5-8)	Apply and extend previous understandings of numbers to the system of rational numbers.	Unit 7 (15 Lessons)	15	10%	8%	
NY-6.NS.5	Understand that positive and negative numbers are used together to describe quantities having opposite directions or values. Use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.	6.7.1, 6.7.5	2	1%	1%	
NY-6.NS.6	Understand a rational number as a point on the number line. Use number lines and coordinate axes to represent points on a number line and in the coordinate plane with negative number coordinates.	6.7.1, 6.7.2, 6.7.4, 6.7.7, 6.7.14	5	3%	1%	5.G.1
NY-6.NS.6a	Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line. Recognize that the opposite of the opposite of a number is the number itself, and that 0 is its own opposite.	6.7.2, 6.7.4, 6.7.7	3	2%	0%	5.G.1
NY-6.NS.6b	Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane. Recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.	6.7.11, 6.7.14	2	1%	2%	5.G.1
NY-6.NS.6c	Find and position integers and other rational numbers on a horizontal or vertical number line. Find and position pairs of integers and other rational numbers on a coordinate plane.	6.7.2, 6.7.11, 6.7.12, 6.7.13, 6.7.15	5	3%	2%	5.G.1

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NY-6.NS.7-8 shown on next page

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Rational numbers (NY-6.NS.5-8)	Apply and extend previous understandings of numbers to the system of rational numbers.	Unit 7 (15 Lessons)	15	10%	8%	
NY-6.NS.7	Understand ordering and absolute value of rational numbers.	6.7.4, 6.7.6, 6.7.7	3	2%		5.NBT.3b
NY-6.NS.7a	Interpret statements of inequality as statements about the relative position of two numbers on a number line.	6.7.3, 6.7.9	2	1%	1%	5.NBT.3b
NY-6.NS.7b	Write, interpret, and explain statements of order for rational numbers in real-world contexts.	6.7.3, 6.7.8	2	1%	1%	5.NBT.3b
NY-6.NS.7c	Understand the absolute value of a rational number as its distance from 0 on the number line. Interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.	6.7.6, 6.7.13	2	1%	1%	5.NBT.3b
NY-6.NS.7d	Distinguish comparisons of absolute value from statements about order.	6.7.6, 6.7.7	2	1%	1%	5.NBT.3b
NY-6.NS.8	Solve real-world and mathematical problems by graphing points on a coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.	6.7.11, 6.7.13, 6.7.14, 6.7.15, 6.7.19	5	3%	1%	5.G.2

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Ratio concepts (NY-6.RP.1-3)	Understand ratio concepts and use ratio reasoning to solve problems.	Unit 2 (17 Lessons), Unit 3 (15 Lessons), Unit 6 (3 Lessons)	38	26%	25%	
NY-6.RP.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.	6.2.1, 6.2.2, 6.2.3, 6.2.4, 6.2.5, 6.6.16, 6.9.4	7	5%	3%	5.NF.5
NY-6.RP.2	Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠0, and use rate language in the context of a ratio relationship.	6.2.10, 6.3.1, 6.3.5, 6.3.6, 6.3.7, 6.9.6	6	4%	6%	5.NF.3
NY-6.RP.3	Use ratio and rate reasoning to solve real-world and mathematical problems.	6.2.6, 6.2.7, 6.2.10, 6.2.12, 6.2.13, 6.2.14, 6.2.15, 6.2.16, 6.2.17, 6.3.6, 6.3.7, 6.3.8, 6.3.9, 6.3.15, 6.9.4, 6.9.5, 6.9.6	17	12%	0%	
NY-6.RP.3a	Make tables of equivalent ratios relating quantities with whole- number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.	6.2.11, 6.2.12, 6.2.13, 6.6.16, 6.6.17	5	3%	3%	
NY-6.RP.3b	Solve unit rate problems.	6.2.8, 6.2.9, 6.2.10, 6.3.5, 6.3.6, 6.3.7, 6.3.8, 6.3.9, 6.6.16, 6.6.17	10	7%	5%	
NY-6.RP.3c	Find a percent of a quantity as a rate per 100. Solve problems that involve finding the whole given a part and the percent, and finding a part of a whole given the percent.	6.3.10, 6.3.11, 6.3.12, 6.3.13, 6.3.14, 6.3.15, 6.3.16, 6.6.7, 6.9.4, 6.9.6	10	7%	4%	
NY-6.RP.3d	Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.	6.3.3, 6.3.4, 6.3.9	3	2%	4%	5.MD.1

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Algebraic Expressions (NY-6.EE.1-4)	Apply and extend previous understandings of arithmetic to algebraic expressions.	Unit 6 (9 Lessons), Unit 1 (6 Lessons)	16	11%	17%	
NY-6.EE.1	Write and evaluate numerical expressions involving whole-number exponents.	6.1.17, 6.1.18, 6.6.12, 6.6.13, 6.6.14, 6.6.15	6	4%	4%	5.NBT.2
NY-6.EE.2	Write, read, and evaluate expressions in which letters stand for numbers.	6.6.10, 6.6.11, 6.6.19	3	2%		5.OA.1
NY-6.EE.2a	Write expressions that record operations with numbers and with letters standing for numbers.	6.1.5, 6.1.9, 6.1.18, 6.6.6	4	3%	5%	5.OA.1
NY-6.EE.2b	Identify parts of an expression using mathematical terms (term, coefficient, sum, difference, product, factor, and quotient); view one or more parts of an expression as a single entity.	6.7.10	1	1%	1%	5.OA.1
NY-6.EE.2c	Evaluate expressions given specific values for their variables. Include expressions that arise from formulas in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order (Order of Operations).	6.1.5, 6.1.6, 6.1.9, 6.1.10, 6.6.6, 6.6.14, 6.6.15	7	5%	2%	5.OA.1
NY-6.EE.3	Apply the properties of operations to generate equivalent expressions.	6.6.10, 6.6.11	2	1%	4%	5.OA.2
NY-6.EE.4	Identify when two expressions are equivalent.	6.5.13, 6.6.8, 6.6.10, 6.6.11	4	3%	2%	5.OA.2

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
One variable equations and inequalities (NY-6.EE.5-8)	Reason about and solve one-variable equations and inequalities.	Unit 6 (10 Lessons), Unit 7 (3 Lessons)	13	9%	15%	
NY-6.EE.5	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	6.6.2, 6.6.3, 6.6.4, 6.6.5, 6.6.8, 6.6.15, 6.7.9, 6.7.10	8	5%	4%	
NY-6.EE.6	Use variables to represent numbers and write expressions when solving a real-world or mathematical problem. Understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.	6.6.1, 6.6.3, 6.6.4, 6.6.5, 6.6.6, 6.6.7, 6.7.8, 6.7.10	8	5%	3%	
NY-6.EE.7	Solve real-world and mathematical problems by writing and solving equations of the form x + p = q;,x - p = q , px = q and p/x = q for cases in which p, q and x are all nonnegative rational numbers.	6.6.3, 6.6.4, 6.6.5, 6.6.7, 6.6.19	5	3%	7%	
NY-6.EE.8	Write an inequality of the form x > c, x ≥ c, x ≤ c, or x < c to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of these forms have infinitely many solutions; represent solutions of such inequalities on a number line.	6.7.8, 6.7.9, 6.7.10	3	2%	2%	

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Dependent and independent variables (NY-6.EE.9)	Represent and analyze quantitative relationships between dependent and independent variables.	Unit 6 (4 Lessons)	4	3%	7%	
NY-6.EE.9	Use variables to represent two quantities in a real-world problem that change in relationship to one another. Given a verbal context and an equation, identify the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.	6.6.16, 6.6.17, 6.6.18, 6.6.19	4	3%	7%	5.OA.3

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Area, surface area, and volume (NY-6.G.1-4)	Solve real-world and mathematical problems involving area, surface area, and volume.	Unit 1 (17 Lessons), Unit 4 (3 Lessons)	22	15%	15%	
NY-6.G.1	Find area of triangles, trapezoids, and other polygons by composing into rectangles or decomposing into triangles and quadrilaterals. Apply these techniques in the context of solving real-world and mathematical problems.	6.1.2, 6.1.3, 6.1.4, 6.1.5, 6.1.6, 6.1.7, 6.1.8, 6.1.9, 6.1.10, 6.1.11, 6.1.19, 6.4.14	12	8%	5%	5.NF.4
NY-6.G.2	Find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.	6.1.15, 6.4.14, 6.4.15, 6.4.17	4	3%	4%	5.MD.5
NY-6.G.3	Draw polygons in the coordinate plane given coordinates for the vertices. Use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.	6.7.15, 6.7.19	2	1%	3%	5.G.2
NY-6.G.4	Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.	6.1.12, 6.1.13, 6.1.14, 6.1.15, 6.1.16, 6.1.18, 6.1.19	7	5%	3%	5.MD.5

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Operations with rational numbers (NY-7.NS.1-3)	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	Unit 5 (15 Lessons), Unit 9 (3 Lessons)	21	15%	20%	
NY-7.NS.1a	Describe situations in which opposite quantities combine to make 0.	7.5.2, 7.5.3	2	1%	2%	6.NS.5
NY-7.NS.1b	Understand addition of rational numbers; p + q is the number located a distance |q| from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.	7.5.1, 7.5.2, 7.5.3	3	2%	2%	6.NS.5
NY-7.NS.1c	Understand subtraction of rational numbers as adding the additive inverse, p – q = p + (–q). Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.	7.5.1, 7.5.3, 7.5.5, 7.5.6, 7.5.7, 7.6.18	6	4%	3%	6.NS.5
NY-7.NS.1d	Apply properties of operations as strategies to add and subtract rational numbers.	7.5.3	1	1%	1%	6.NS.5
NY-7.NS.2a	Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1)(–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.	7.5.8, 7.5.9	2	1%	0%	6.NS.1
NY-7.NS.2b	Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then –(p/q) = (–p)/q = p/(–q). Interpret quotients of rational numbers by describing real- world contexts.	7.5.11	1	1%	1%	6.NS.1
NY-7.NS.2c	Apply properties of operations as strategies to multiply and divide rational numbers.	7.5.9, 7.5.10	2	1%	1%	6.NS.1
NY-7.NS.2d	Convert a fraction to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.	7.4.5, 7.5.1, 7.8.16, 7.9.4	4	3%	2%	6.NS.1
NY-7.NS.3	Solve real-world and mathematical problems involving the four operations with rational numbers.	7.5.7, 7.5.12, 7.5.13, 7.5.14, 7.5.15, 7.5.16, 7.5.17, 7.9.3, 7.9.6	9	6%	9%	6.NS.3

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Proportional relationships (NY-7.RP.1-3)	Analyze proportional relationships and use them to solve real-world and mathematical problems.	Unit 4 (15 Lessons), Unit 2 (14 Lessons), Unit 9 (8 Lessons), Unit 3 (4 Lessons), Unit 5 (3 Lessons)	44	31%	28%	
NY-7.RP.1	Compute unit rates associated with ratios of fractions.	7.2.8, 7.4.2, 7.4.3, 7.9.5	4	3%	5%	6.RP.2
NY-7.RP.2	Recognize and represent proportional relationships between quantities.	7.2.2, 7.2.3, 7.2.4, 7.2.5, 7.2.6, 7.2.7, 7.2.8, 7.2.9, 7.2.10, 7.2.11, 7.2.12, 7.2.13, 7.2.14, 7.2.15, 7.3.3, 7.4.3, 7.4.4, 7.4.5, 7.5.9, 7.5.12, 7.5.14, 7.9.3, 7.9.5	23	16%	0%	
NY-7.RP.2a	Decide whether two quantities are in a proportional relationship.	7.2.2, 7.2.3, 7.2.10, 7.3.1, 7.3.3, 7.3.5, 7.3.7	7	5%	2%	
NY-7.RP.2b	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	7.2.2, 7.2.3, 7.2.5	3	2%	6%	6.RP.3a
NY-7.RP.2c	Represent a proportional relationship using an equation.	7.2.4, 7.2.5, 7.2.6, 7.3.5	4	3%	4%	
NY-7.RP.2d	Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate.	7.2.11	1	1%	1%	
NY-7.RP.3	Use proportional relationships to solve multistep ratio and percent problems.	7.3.5, 7.4.6, 7.4.7, 7.4.8, 7.4.9, 7.4.10, 7.4.11, 7.4.12, 7.4.13, 7.4.14, 7.4.15, 7.4.16, 7.9.1, 7.9.2, 7.9.3, 7.9.4, 7.9.6, 7.9.8, 7.9.13	19	13%	11%	6.RP.3c

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Equivalent expressions (NY-7.EE.1-2)	Use properties of operations to generate equivalent expressions.	Unit 6 (5 Lessons)	6	4%	8%	
NY-7.EE.1	Add, subtract, factor, and expand linear expressions with rational coefficients by applying the properties of operations.	7.6.18, 7.6.19, 7.6.20, 7.6.21, 7.6.22, 7.9.7	6	4%	6%	6.EE.3
NY-7.EE.2	Understand that rewriting an expression in different forms in real-world and mathematical problems can reveal and explain how the quantities are related.	7.6.12	1	1%	3%	6.EE.4

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Solve problems with expressions, equations (NY-7.EE.3-4)	Solve real-life and mathematical problems using numerical and algebraic expressions, equations, and inequalities. Use variables to represent quantities in a real-world or mathematical problem.	Unit 6 (16 Lessons), Unit 5 (4 Lessons)	24	17%	23%	
NY-7.EE.3	Solve multi-step real-world 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. Assess the reasonableness of answers using mental computation and estimation strategies.	7.3.11, 7.5.12, 7.5.17, 7.6.2, 7.6.3, 7.6.4, 7.6.5, 7.6.6, 7.6.11, 7.6.12	10	7%	11%	
NY-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.	7.5.15, 7.6.5, 7.6.9, 7.6.11, 7.6.12, 7.6.13, 7.6.15, 7.7.5, 7.9.3	9	6%		6.EE.7
NY-7.EE.4a	Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.	7.5.15, 7.5.16, 7.6.4, 7.6.5, 7.6.7, 7.6.8, 7.6.9, 7.6.10, 7.6.11, 7.6.12, 7.9.7	11	8%	6%	6.EE.7
NY-7.EE.4b	Solve word problems leading to inequalities of the form $px + q > r$, $px + q \geq r$, $px + q \leq r$, or $px + q < r$, where p, q, and r are rational numbers. Graph the solution set of the inequality on the number line and interpret it in the context of the problem.	7.6.14, 7.6.16, 7.6.17	3	2%	6%	6.EE.8

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Geometric figures; Area and volume (NY-7.G.1,4)	Draw, construct, and describe geometrical figures and describe the relationships between them. Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	Unit 1 (13 Lessons), Unit 3 (9 Lessons), Unit 9 (4 Lessons)	27	19%	5%	
NY-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.	7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5, 7.1.6, 7.1.7, 7.1.8, 7.1.9, 7.1.10, 7.1.11, 7.1.12, 7.1.13, 7.2.1, 7.3.6, 7.3.11, 7.9.4, 7.9.13	18	13%	5%	
NY-7.G.4	Apply the formulas for the area and circumference of a circle to solve problems.	7.3.3, 7.3.4, 7.3.5, 7.3.7, 7.3.8, 7.3.9, 7.3.10, 7.3.11, 7.9.4, 7.9.11, 7.9.12	11	8%	2%	

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Statistical Variability (NY-6.SP.2-5) **	Develop understanding of statistical variability; Summarize and describe distributions.	Unit 8 (16 Lessons)	16	11%	3%	
NY-6.SP.2	Understand that a set of quantitative data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.	6.8.4, 6.8.5, 6.8.7, 6.8.8, 6.8.11, 6.8.18	6	4%	0%	5.MD.2
NY-6.SP.3	Recognize that a measure of center for a quantitative data set summarizes all of its values with a single number while a measure of variation describes how its values vary with a single number.	6.8.6, 6.8.9, 6.8.10, 6.8.11	4	3%	1%	
NY-6.SP.4	Display quantitative data in plots on a number line, including dot plots, and histograms.	6.8.3, 6.8.4, 6.8.5, 6.8.6, 6.8.7, 6.8.8, 6.8.16, 6.8.17	8	5%	1%	5.MD.2
NY-6.SP.5a	Report the number of observations.	6.8.3, 6.8.4	2	1%	1%	
NY-6.SP.5c	Calculate range and measures of center, as well as describe any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.	6.8.9, 6.8.10, 6.8.11, 6.8.12, 6.8.13, 6.8.14, 6.8.15, 6.8.16, 6.8.18	9	6%	1%	

***** Standards NY-6.SP.2-5 are covered within IM's 6th Grade Math Curriculum but have historically been tested on the NY State 7th Grade Math Exam. * Only unique lessons are counted within the standard group summary. Since multiple standards can be covered in a single lesson, the total number of lessons shown for a given standard group may not match up with the total of the lessons by standard shown.***

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Draw comparative inferences (NY-7.SP.1-4)	Draw informal comparative inferences about two populations.	Unit 8 (10 Lessons)	11	8%	6%	
NY-7.SP.1	Construct and interpret box-plots, find the interquartile range, and determine if a data point is an outlier.	7.8.12, 7.8.13, 7.8.14, 7.8.15, 7.8.20	5	3%	2%	6.SP.4
NY-7.SP.2	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. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.	7.8.13, 7.8.14, 7.8.15, 7.8.16, 7.8.17, 7.8.20	6	4%	3%	
NY-7.SP.3	Informally assess the degree of visual overlap of two quantitative data distributions.	7.8.11, 7.8.18	2	1%	1%	6.SP.2
NY-7.SP.4	Use measures of center and measures of variability for quantitative data from random samples or populations to draw informal comparative inferences about the populations.	7.8.15, 7.8.16, 7.8.18, 7.8.19, 7.8.20, 7.9.3	6	4%	1%	6.SP.1c

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Probability and probability models (NY-7.SP.5-8)	Investigate chance processes and develop, use, and evaluate probability models.	Unit 8 (11 Lessons)	11	8%	7%	
NY-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 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	7.8.2, 7.8.3, 7.8.4, 7.8.5, 7.8.6	5	3%	1%	
NY-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. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.	7.8.1, 7.8.3, 7.8.4, 7.8.5, 7.8.6	5	3%	2%	
NY-7.SP.7a	Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.	7.8.3, 7.8.20	2	1%	0%	
NY-7.SP.7b	Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?	7.8.4, 7.8.5, 7.8.6	3	2%	2%	
NY-7.SP.8a	Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.	7.8.9	1	1%	1%	6.SP.8
NY-7.SP.8b	Represent sample spaces for compound events using methods such as organized lists, sample space tables, and tree diagrams. For an event described in everyday language, identify the outcomes in the sample space which compose the event.	7.8.8, 7.8.9	2	1%	2%	6.SP.8
NY-7.SP.8c	Design and use a simulation to generate frequencies for compound events.	7.8.6, 7.8.7, 7.8.10	3	2%		6.SP.8

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Radicals and integer exponents (NY-8.EE.1-4)	Work with radicals and integer exponents.	Unit 7 (15 Lessons), Unit 8 (7 Lessons)	22	17%	12%	
NY-8.EE.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions.	8.7.2, 8.7.3, 8.7.4, 8.7.5, 8.7.6, 8.7.7, 8.7.8, 8.7.11, 8.7.14	9	7%	6%	
NY-8.EE.2	Use square root and cube root symbols to represent solutions to equations of the form x2 = p and x3 = p, where p is a positive rational number. Know square roots of perfect squares up to 225 and cube roots of perfect cubes up to 125. Know that the square root of a non-perfect square is irrational.	8.8.2, 8.8.3, 8.8.4, 8.8.5, 8.8.10, 8.8.12, 8.8.13	7	5%	1%	
NY-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.	8.7.9, 8.7.10, 8.7.11, 8.7.12, 8.7.14, 8.7.16	6	5%	1%	
NY-8.EE.4	Perform multiplication and division with numbers expressed in scientific notation, including problems where both standard decimal form and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities. Interpret scientific notation that has been generated by technology.	8.7.10, 8.7.11, 8.7.12, 8.7.13, 8.7.14, 8.7.15, 8.7.16	7	5%	4%	

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Graph proportional relationships (NY-8.EE.5-6)	Understand the connections between proportional relationships, lines, and linear equations.	Unit 3 (8 Lessons), Unit 2 (3 Lessons)	11	8%	10%	
NY-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.	8.3.2, 8.3.3, 8.3.4, 8.3.6	4	3%	6%	7.RP.2c
NY-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.	8.2.10, 8.2.11, 8.2.12, 8.3.7, 8.3.10, 8.3.11, 8.3.14	7	5%	4%	7.RP.2b

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Linear equations (NY-8.EE.7-8)	Analyze and solve linear equations and pairs of simultaneous linear equations.	Unit 4 (14 Lessons)	16	12%	13%	
NY-8.EE.7	Solve linear equations in one variable.	8.4.3, 8.4.4, 8.4.5, 8.4.6, 8.4.9	5	4%	1%	7.EE.1
NY-8.EE.7a	Recognize when linear equations in one variable have one solution, infinitely many solutions, or no solutions. Give examples and show which of these possibilities is the case by successively transforming the given equation into simpler forms.	8.4.7, 8.4.8	2	2%	3%	7.EE.1
NY-8.EE.7b	Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and combining like terms.	8.4.6	1	1%	5%	7.EE.1
NY-8.EE.8	Analyze and solve pairs of simultaneous linear equations.	8.4.9, 8.4.10, 8.4.11, 8.4.12, 8.4.13, 8.4.14, 8.4.15	7	5%		7.EE.2
NY-8.EE.8a	Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously. Recognize when the system has one solution, no solution, or infinitely many solutions.	8.3.13, 8.3.14, 8.4.12, 8.4.13	4	3%	0%	7.EE.2
NY-8.EE.8b	Solve systems of two linear equations in two variables with integer coefficients: graphically, numerically using a table, and algebraically. Solve simple cases by inspection.	8.4.12, 8.4.15	2	2%	3%	7.EE.2
NY-8.EE.8c	Solve real-world and mathematical problems involving systems of two linear equations in two variables with integer coefficients.	8.4.15, 8.4.16	2	2%	2%	7.EE.2

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Define and compare functions (NY-8.F.1-3)	Define, evaluate, and compare functions.	Unit 5 (9 Lessons)	10	8%	18%	
NY-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.	8.5.1, 8.5.2, 8.5.3, 8.5.4, 8.5.5, 8.5.17, 8.9.4	7	5%	4%	
NY-8.F.2	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	8.5.7, 8.5.8	2	2%	5%	7.RP.2b
NY-8.F.3	Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line. Recognize examples of functions that are linear and non-linear.	8.5.4, 8.5.7, 8.5.8, 8.5.18	4	3%	10%	7.EE.4a

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Functional relationships (NY-8.F.4-5)	Use functions to model relationships between quantities.	Unit 5 (6 Lessons)	6	5%	10%	
NY-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.	8.5.8, 8.5.9, 8.5.10, 8.5.11	4	3%	8%	7.RP.2b
NY-8.F.5	Describe qualitatively the functional relationship between two quantities by analyzing a graph. Sketch a graph that exhibits the qualitative features of a function that has been described in a real-world context.	8.5.5, 8.5.6, 8.5.10	3	2%	2%	7.RP.2d

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Congruence and similarity (NY-8.G.1-5)	Understand congruence and similarity using physical models, transparencies, or geometry software.	Unit 1 (15 Lessons), Unit 2 (8 Lessons)	25	19%	15%	
NY-8.G.1	Verify experimentally the properties of rotations, reflections, and translations.	8.1.2, 8.1.3, 8.1.4, 8.1.6, 8.1.11, 8.1.14, 8.3.8	7	5%	1%	
NY-8.G.1a	Verify experimentally lines are mapped to lines, and line segments to line segments of the same length.	8.1.7, 8.1.8, 8.1.9, 8.1.10, 8.1.13	5	4%	1%	
NY-8.G.1c	Verify experimentally parallel lines are mapped to parallel lines.	8.1.9	1	1%	1%	
NY-8.G.2	Know that a two-dimensional figure is congruent to another if the corresponding angles are congruent and the corresponding sides are congruent. Equivalently, two two-dimensional figures are congruent if one is the image of the other after a sequence of rotations, reflections, and translations. Given two congruent figures, describe a sequence that maps the congruence between them on the coordinate plane.	8.1.11, 8.1.12, 8.1.13, 8.1.15, 8.2.6, 8.2.7	6	5%	4%	
NY-8.G.3	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	8.1.5, 8.1.6, 8.2.4, 8.2.5, 8.2.12	5	4%	5%	
NY-8.G.4	Know that a two-dimensional figure is similar to another if the corresponding angles are congruent and the corresponding sides are in proportion. Equivalently, two two-dimensional figures are similar if one is the image of the other after a sequence of rotations, reflections, translations, and dilations. Given two similar two-dimensional figures, describe a sequence that maps the similarity between them on the coordinate plane.	8.2.6, 8.2.7, 8.2.9	3	2%	2%	
NY-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.	8.1.14, 8.1.15, 8.1.16, 8.2.8, 8.2.13, 8.9.2	6	5%	3%	7.G.5

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Pythagorean Theorem (NY-8.G.6-8) **	Understand a proof of the Pythagorean Theorem and apply it to determine unknown side lengths in right triangles and to find the distance between two points in a coordinate system.	Unit 8 (6 Lessons)	6	5%	2%	
NY-8.G.6	Understand a proof of the Pythagorean Theorem and its converse.	8.8.7, 8.8.9	2	2%	1%	7.G.6
NY-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.	8.8.6, 8.8.7, 8.8.8, 8.8.10, 8.8.16	5	4%	1%	
NY-8.G.8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system	8.8.11	1	1%	1%	

***** Pythagorean Theorem was tested for the first time on the NYS 8th Grade State Exam in 2023 * Only unique lessons are counted within the standard group summary. Since multiple standards can be covered in a single lesson, the total number of lessons shown for a given standard group may not match up with the total of the lessons by standard shown.***

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Volume formulas (NY-8.G.9)	Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.	Unit 5 (10 Lessons)	10	8%	6%	
NY-8.G.9	Given the formulas for the volume of cones, cylinders, and spheres, solve mathematical and real-world problems.	8.5.13, 8.5.14, 8.5.15, 8.5.16, 8.5.17, 8.5.18, 8.5.19, 8.5.20, 8.5.21, 8.5.22	10	8%	6%	7.G.4

**** Only unique lessons are counted within the standard group summary. Since multiple standards can be covered in a single lesson, the total number of lessons shown for a given standard group may not match up with the total of the lessons by standard shown.***

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Irrational numbers (NY-8.NS.1-2) **	Know that there are numbers that are not rational, and approximate them by rational numbers.	Unit 8 (7 Lessons)	7	5%	1%	
NY-8.NS.1	Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion eventually repeats. Know that other numbers that are not rational are called irrational.	8.8.14, 8.8.15	2	2%	1%	7.NS.2
NY-8.NS.2	Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line, and estimate the value of expressions.	8.8.1, 8.8.4, 8.8.5, 8.8.12, 8.8.13	5	4%	1%	

***** Irrational Numbers was tested for the first time on the NYS 8th Grade State Exam in 2023 * Only unique lessons are counted within the standard group summary. Since multiple standards can be covered in a single lesson, the total number of lessons shown for a given standard group may not match up with the total of the lessons by standard shown.***

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Bivariate data (NY-8.SP.1-4)	Investigate patterns of association in bivariate data.	Unit 6 (10 Lessons)	10	8%	9%	
NY-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.	8.6.1, 8.6.2, 8.6.3, 8.6.4, 8.6.5, 8.6.6, 8.6.7, 8.6.8	8	6%	3%	
NY-8.SP.2	Understand 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.	8.6.4, 8.6.5, 8.6.6, 8.6.8	4	3%	3%	
NY-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.	8.6.3, 8.6.6, 8.6.8	3	2%	3%	
NY-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.	8.6.9, 8.6.10	2	2%	1%	

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Standard	Description	Illustrative Math - Lessons *	# Lessons	Pct of Total Lessons	Historical Exam Weight	Prior Grade Standard(s)
Geometric figures; Area and volume (NY-7.G.2-3, 5-6) **	Draw, construct, and describe geometrical figures and describe the relationships between them. Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	Unit 7 (16 Lessons), Unit 9 (3 Lessons)	23	18%	7%	
NY-7.G.2	Draw triangles when given measures of angles and/or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	7.3.2, 7.7.6, 7.7.7, 7.7.8, 7.7.9, 7.7.10, 7.7.17	7	5%	2%	
NY-7.G.3	Describe the two-dimensional shapes that result from slicing three-dimensional solids parallel or perpendicular to the base.	7.7.11, 7.7.13	2	1%	1%	
NY-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.	7.7.2, 7.7.3, 7.7.4, 7.7.5	4	3%	1%	
NY-7.G.6	Solve real-world and mathematical problems involving area of two-dimensional objects composed of triangles and trapezoids.	7.1.6, 7.2.8, 7.3.6, 7.7.12, 7.7.13, 7.7.14, 7.7.15, 7.7.16, 7.7.17, 7.9.4, 7.9.5, 7.9.9	12	8%	2%	

***** Standards NY-7.G.2-6 are covered within IM's 7th Grade Math Curriculum but have been historically tested on the NY State 8th Grade Math Exam. * Only unique lessons are counted within the standard group summary. Since multiple standards can be covered in a single lesson, the total number of lessons shown for a given standard group may not match up with the total of the lessons by standard shown.***

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