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CCSSI CURRICULUM

Middle School: Mathematics Content List

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SUBJECT	TOTAL TOPIC	TOTAL DURATION
Grade 5	13	00.54.59
Grade 6	45	01.55.17
Grade 7	70	04.04.01
Grade 8	58	03.50.35
Add-On Categories	7	00.21.19
TOTAL	**193**	**11.06.11**

Mathematics

Topic Name		Duration

Grade 5

- **Number and Operations in Base Ten**

- **Understand the place value system.**

1.	Basic concept of Decimal	00.03.33
2.	Representation of a Decimal Number on the Number Line	00.03.30
3.	Rounding off Numbers	00.05.06
4.	Fractions to Decimals and Decimals to Fractions	00.06.11

- **Perform operations with multi-digit whole numbers and with decimals to hundredths.**

1.	Properties of Real Numbers: Associative Law and Existence of Identity	00.03.49
2.	Properties of Real Numbers: Existence of Inverse and Distributive Property	00.02.57
3.	Properties of Real Numbers: Closure and Commutative	00.04.46

- **Number and Operations—Fractions**

- **Use equivalent fractions as a strategy to add and subtract fractions.**

1.	Equivalent Fractions	00.04.17

Mathematics

Topic Name		Duration
•	**Apply and extend previous understandings of multiplication and division to multiply and divide fractions.**	
1.	Concept of Fraction	00.05.09
•	**Suggested Topics**	
1.	Fractions on the Number Line	00.00.00
•	**Measurement and Data**	
•	**Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.**	
1.	Volume of a Solid	00.03.55
•	**Geometry**	
•	**Graph points on the coordinate plane to solve real-world and mathematical problems.**	
1.	Cartesian Coordinate System	00.06.43
2.	Cartesian Coordinate Plane	00.05.03

Mathematics

Topic Name		Duration

Grade 6

- **Ratios and Proportional Relationships**

- **Understand ratio concepts and use ratio reasoning to solve problems.**

1.	Ratio	00.03.31

- **The Number System**

- **Apply and extend previous understandings of multiplication and division to divide fractions by fractions.**

1.	Multiplication of Fractions	00.00.00

- **Compute fluently with multi-digit numbers and find common factors and multiples.**

1.	HCF or GCF	00.03.31
2.	Factors of a Number	00.03.22
3.	LCM: Ladder or Division Method	00.03.29
4.	HCF and LCM	00.03.34
5.	LCM: The Least Common Multiple	00.04.28
6.	Even and Odd numbers	00.00.00
7.	Walk on Factors	00.00.00

Mathematics

Topic Name		Duration
8.	Walk on Multiples	00.00.00
9.	Walk on Composites	00.00.00
•	**Apply and extend previous understandings of numbers to the system of rational numbers.**	
1.	Introduction to Integers	00.03.28
2.	Representing Integers on the Number Line	00.02.28
3.	Ascending and Descending Order	00.05.51
4.	Addition of Integers	00.00.00
5.	Multiplication of Integers	00.02.00
•	**Suggested Topics**	
1.	Division of Integers	00.02.00
2.	Divisibility Rules	00.00.00
3.	Addition of Integers	00.02.00
4.	Prime Numbers	00.03.29
•	**Expressions and Equations**	
•	**Apply and extend previous understandings of arithmetic to algebraic expressions.**	
1.	Introduction to Algebra	00.03.43

Mathematics

Topic Name		Duration
•	**Reason about and solve one-variable equations and inequalities.**	
1.	Solving a Linear Equation in One Variable (Balancing Method)	00.04.08
2.	Solving a Linear Inequality in One Variable	00.05.08
•	**Represent and analyze quantitative relationships between dependent and independent variables.**	
1.	Algebraic Expressions and Equations	00.00.00
2.	Algebraic Expressions	00.07.05
•	**Geometry**	
•	**Solve real-world and mathematical problems involving area, surface area, and volume.**	
1.	Areas of Plane Figures	00.05.54
2.	Concept of Area	00.00.00
3.	Heron's formula and it's applications	00.00.00
4.	Special Right Triangles	00.00.00
5.	Quadrilateral	00.04.02
6.	Rectangle and Square Properties	00.00.00
7.	Volume of a Prism	00.04.06
8.	Regular Octahedron	00.02.30
9.	Cyclic Quadrilateral and its Properties	00.04.50

Mathematics

Topic Name		Duration
10.	Surface Area of a Pyramid	00.02.12
11.	Surface Area of a Cylinder	00.04.18
•	**Suggested Topics**	
1.	Concept of Perimeter	00.00.00
2.	Rhombus	00.00.00
3.	Measurement of Line Segment and Angle	00.03.31
•	**Statistics and Probability**	
•	**Develop understanding of statistical variability.**	
1.	Tally Marks	00.04.04
2.	Introduction to Graphs	00.06.00
3.	Introduction to Bar Graph	00.04.21
4.	Reading a Bar Graph	00.02.38
5.	Pie Chart	00.03.36
6.	Construction:Pie Chart	00.00.00

Mathematics

Topic Name		Duration

Grade 7

- **Ratios and Proportional Relationships**

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

1.	Ratio	00.03.31
2.	Equivalent Ratios	00.00.00
3.	Proportion	00.04.42
4.	Direct and Inverse Proportion	00.03.53

- **The Number System**

- **Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.**

1.	Properties of Real Numbers: Associative Law and Existence of Identity	00.03.49
2.	Concept of Fraction	00.05.09
3.	Multiplication of Fractions	00.00.00
4.	Properties of Real Numbers: Closure and Commutative	00.04.46
5.	Introduction to Rational Numbers	00.06.40
6.	Arithmetic Operations	00.00.00

Mathematics

Topic Name		Duration
•	**Expressions and Equations**	
•	**Use properties of operations to generate equivalent expressions.**	
1.	Algebraic Expressions and Equations	00.00.00
2.	Introduction to Algebra	00.03.43
•	**Solve real-life and mathematical problems using numerical and algebraic expressions and equations.**	
1.	Solving Linear Equations	00.00.00
2.	Solving a System of Linear Equations: Graphically	00.04.56
3.	Solving a System of Linear Equations in Two Variables: Elimination Method	00.05.47
4.	Solving a System of Linear Equations in Two Variables: Cross Multiplication Method	00.05.47
5.	Equations Reducible to a Pair of Linear Equations in Two Variables	00.00.00
•	**Geometry**	
•	**Draw, construct and describe geometrical figures and describe the relationships between them.**	
1.	Geometric figures and their dimensions	00.00.00
2.	Geometrical Shapes	00.04.56

Mathematics

Topic Name		Duration
3.	Translation	00.04.22
4.	Construction: Angle Bisector and an Angle of 30°	00.02.44
5.	Construction: Angles of Measure 90° and 45°	00.04.05
6.	Construction: Congruent Angle and Angles of Measure 60° and 120°	00.03.22
7.	Construction: Right-Angled Triangle	00.03.17
8.	Triangle	00.03.51
9.	Types of Triangles	00.04.02
10.	Important Points Associated with a Triangle	00.05.04
11.	Construction of a Triangle (SSS Criterion)	00.06.00
12.	Construction of a Triangle (ASA Criterion)	00.03.25
13.	Construction of a Triangle (SAS Criterion)	00.04.55
14.	Introduction to a Prism	00.05.31
15.	Introduction to Pyramid	00.04.32
16.	Types of Pyramids	00.00.00

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

1.	Circle	00.03.42
2.	Area of a Circle	00.02.44
3.	Definition of Pi (π)	00.03.14
4.	Angle	00.03.47
5.	Types of Angles Formed by a Transversal	00.04.15

Mathematics

	Topic Name	Duration
6.	Surface Area of Rectangular Solids	00.04.26
7.	Surface Area of a Cylinder	00.04.18
8.	Surface Area of a Sphere	00.04.19
9.	Surface Area of a Right Prism	00.02.54
10.	Surface Area of a Pyramid	00.02.12
11.	Surface Area of a Cone	00.04.18
12.	Volume of a Solid	00.03.55
13.	Volume of a Prism	00.04.06
14.	Areas of Plane Figures	00.05.54
15.	Area of the frame	00.02.17
16.	Surface Area of Composite Objects: Cylinder and Sphere	00.04.48
17.	Surface Area of a Hollow Object: Cylinder	00.04.24
18.	Surface Area of Composite Objects: Prism and Pyramid	00.03.32
19.	Surface Area of Composite Objects: Rectangular Prism and Triangular Prism	00.03.24
20.	Surface Area of Composite Objects: Hemisphere and Cone	00.04.06
21.	Surface Area of Composite Objects: Cylinder and Cone	00.04.47
22.	Volume of Composite Objects: Rectangular Prism and Triangular Prism	00.03.40

- **Suggested Topics**

1.	Construction: Quadrilateral	00.00.00

Mathematics

	Topic Name	Duration
2.	Construction of quadrilateral (Two adjacent sides and three angles are known)	00.00.00
3.	Construction of a Quadrilateral (Three adjacent sides and two angles are known)	00.00.00
4.	Construction of a Triangle (Given: Base, Vertical Angle, and the Corresponding Altitude)	00.04.10
5.	Construction of a Triangle given its Base, a Base Angle and the Difference of Lengths of the Other Two Sides	00.03.41
6.	Construction of a Triangle (Given: Base, Vertical Angle, and the Corresponding Median)	00.03.59
7.	Construction of a Triangle (Given: Base Angles and Perimeter)	00.04.47
8.	Construction of a Triangle of Area Equal to the Area of a Given Quadrilateral	00.03.10
9.	Euclid's Geometry	00.04.18

- **Statistics and Probability**

- **Investigate chance processes and develop, use, and evaluate probability models.**

1.	Introduction to Probability	00.05.01
2.	Introduction to Experimental Probability	00.03.55
3.	Probability	00.00.00
4.	Application of Probability Tree	00.03.27

Mathematics

Topic Name		Duration
•	**Statistics**	
•	**Suggested Topics**	
1.	Pictograph and its Interpretation	00.04.06
2.	Graphical Method for Finding Median of Grouped Data	00.05.36

Grade 8

•	**The Number System**	
•	**Know that there are numbers that are not rational, and approximate them by rational numbers.**	
1.	Basic concept of Decimal	00.03.33
2.	Irrational Numbers: Geometrical Representation	00.03.48
3.	Irrational Number on the Number Line	00.06.42
•	**Expressions and Equations**	
•	**Work with radicals and integer exponents.**	
1.	Definition of Pi (π)	00.03.14
2.	Squares and Square Roots	00.02.58
3.	Finding Cube Roots	00.04.21
4.	Cubes and Cube roots	00.00.00

Mathematics

Topic Name		Duration
5.	SQUARE RIDER	00.00.00
6.	Cube Root of a Number	00.04.28
7.	Exponent Rule (Power Rule)	00.01.50
8.	Exponent Rule: Multiplication and Division	00.04.13
•	**Understand the connections between proportional relationships, lines, and linear equations.**	
1.	The Slope of a Straight Line	00.04.49
2.	Equation of a Straight Line: Point-Slope Form and Two-Point Form	00.05.45
3.	Slope Intercept Form of a Straight Line	00.04.10
•	**Analyze and solve linear equations and pairs of simultaneous linear equations.**	
1.	Solving a Linear Equation in One Variable (Balancing Method)	00.04.08
2.	Addition of Polynomials	00.00.00
3.	Solving a System of Linear Equations in Two Variables: Elimination Method	00.05.47
4.	Solving a System of Linear Equations in Two Variables: Cross Multiplication Method	00.05.47
5.	Solving a System of Linear Equations: Graphically	00.04.56

Mathematics

Topic Name		Duration
•	**Functions**	
•	**Define, evaluate, and compare functions.**	
1.	Function	00.05.32
•	**Use functions to model relationships between quantities.**	
1.	Function	00.05.32
•	**Geometry**	
•	**Understand congruence and similarity using physical models, transparencies, or geometry software.**	
1.	Congruent Figures	00.07.12
2.	Congruence of Triangles	00.08.47
3.	Congruent and Similar Solids	00.00.00
4.	Similarity	00.08.28
5.	Similar Triangles	00.04.06
6.	Criteria for Similarity of Triangles	00.04.00
7.	Similarity in Right Triangles	00.05.44
8.	Similarity in Right Triangles: (Corollaries)	00.06.23
9.	Reflection	00.03.17
10.	Rotation	00.00.00

Mathematics

Topic Name		Duration
11.	Translation of Axes	00.05.15
12.	Angle	00.03.47
13.	Types of Angles Formed by a Transversal	00.04.15
14.	Intersecting Lines, Parallel Lines and Transversal	00.04.47
15.	Lines and Angles	00.03.46
16.	Triangle Angle Sum Theorem: Illustration	00.03.45
17.	Exterior Angle Theorem	00.03.00
18.	Application of ASA Criterion for Congruence of Triangles	00.03.27
19.	Application of SSS and SAS Criteria for Congruence of Triangles	00.04.42
20.	Application of RHS Criterion for Congruence	00.01.45

- **Understand and apply the Pythagorean Theorem.**

1.	Pythagoras' Theorem	00.02.39
2.	Converse of Pythagoras' Theorem	00.03.11
3.	Converse of Pythagoras' Theorem: Illustration	00.02.23
4.	Distance Formula in 3-D	00.04.49
5.	Application of Distance Formula in 3-D	00.06.13
6.	Derivation of Distance Formula 2-D	00.03.53
7.	Application of Distance Formula in 2-D	00.03.18

Mathematics

Topic Name		Duration
•	**Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.**	
1.	Volume of a Cone	00.03.03
2.	Volume of a Cylinder	00.04.25
3.	Volume of a Sphere	00.02.52
4.	Volume of Composite Objects: Cylinder and Hemisphere	00.04.27
5.	Volume of Composite Objects: Cylinder, Cone and Hemisphere	00.03.12
6.	Volume of Hollow objects: Cylinder and Sphere	00.05.20
7.	Volume of Composite Objects: Hemisphere and Cone	00.03.21
8.	Volume of Composite Objects: Hemisphere and Cone (Ice Cream Cone)	00.04.28
•	**Suggested Topics**	
1.	Proving Lines Parallel	00.00.00
2.	Tessellations	00.05.02

Add-On Categories

•	**Symmetry**	
1.	Introduction to Symmetry	00.03.31
2.	Symmetry	00.03.38

Mathematics

Topic Name		Duration
•	**Comparing Quantities**	
1.	Percentage	00.02.09
2.	Discount and Percentage	00.03.05
3.	Percentage: Illustration	00.02.14
4.	Simple and Compound Interest	00.03.16
5.	Profit and Loss	00.03.26
TOTAL TOPIC IN MIDDLE SCHOOL MATHEMATICS – 193		**11.06.11**