

Knowre Math: **Grade 7** Curriculum

Chapter 1 Integer Addition and Subtraction

Lesson	Topic	NGSSS
1-1 Integers	A) Using Algebra Tiles to Model Integers	MAFS.6.NS.3.5, MAFS.6.NS.3.6.a, MAFS.6.NS.3.6.c, MAFS.6.NS.3.7.c
	B) Integers on a Number Line	
	C) Comparing and Ordering Integers	
	D) Absolute Value	
1-2 Integer Addition with Tiles	A) Using Algebra Tiles to Model Addition of Integers with the Same Sign	MAFS.7.NS.1.1.a, MAFS.7.NS.1.1.b, MAFS.7.NS.1.1.d, MAFS.7.NS.1.3
	B) Using Algebra Tiles to Model Addition of Integers with Different Signs	
1-3 Integer Addition with Number Lines	A) Using Number Lines to Model Addition of Integers with Different Signs	MAFS.7.NS.1.1.b, MAFS.7.NS.1.1.d, MAFS.7.NS.1.3
	B) Using Number Lines to Model Addition of Integers with the Same Sign	
1-4 Single-Digit Integer Addition	A) Adding One-Digit Integers	MAFS.7.NS.1.1.b, MAFS.7.NS.1.1.d, MAFS.7.NS.1.3, MAFS.7.EE.2.3
1-5 Integer Subtraction with Tiles	A) Using Algebra Tiles to Model Subtraction of Positive Integers	MAFS.7.NS.1.1.c, MAFS.7.NS.1.1.d, MAFS.7.NS.1.3
	B) Using Algebra Tiles to Model Subtraction of Integers with Different Signs	
	C) Using Algebra Tiles to Model Subtraction of Negative Integers	
1-6 Single-Digit Integer Subtraction	A) Subtracting One-Digit Integers	MAFS.7.NS.1.1.c, MAFS.7.NS.1.1.d, MAFS.7.NS.1.3, MAFS.7.EE.2.3
1-7 Multi-Digit Integer Addition and Subtraction	A) Adding Multi-Digit Integers	MAFS.7.NS.1.1.a, MAFS.7.NS.1.1.b, MAFS.7.NS.1.1.c, MAFS.7.NS.1.1.d, MAFS.7.NS.1.3, MAFS.7.EE.2.3
	B) Subtracting Multi-Digit Integers	

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Chapter 2 Integer Operations

Lesson	Topic	NGSSS
2-1 Integer Multiplication	A) Patterns in Integer Multiplication	MAFS.7.NS.1.2.a, MAFS.7.NS.1.2.c, MAFS.7.NS.1.3, MAFS.7.EE.2.3
	B) Multiplying Integers	
2-2 Integer Division	A) Patterns in Integer Division	MAFS.7.NS.1.2.b, MAFS.7.NS.1.2.c, MAFS.7.NS.1.3, MAFS.7.EE.2.3
	B) Dividing Integers	
2-3 Exponents	A) Powers with Natural Exponents	MAFS.7.NS.1.2.a, MAFS.7.NS.1.2.c, MAFS.7.NS.1.3, MAFS.7.EE.2.3
2-4 Order of Operations	A) Order of Operations with Integers	MAFS.7.NS.1.1.d, MAFS.7.NS.1.2.a, MAFS.7.NS.1.2.c, MAFS.7.NS.1.3, MAFS.7.EE.2.3
	B) Evaluating Expressions with Variables	

Chapter 3 Rational Numbers

Lesson	Topic	NGSSS
3-1 GCF and LCM	A) Prime and Composite Numbers	MAFS.7.EE.2.3
	B) Prime Factorization	
	C) Greatest Common Factors	
	D) Least Common Multiples	
3-2 Equivalent Fractions	A) Equivalent Fractions	MAFS.7.NS.1.2.b, MAFS.7.EE.1.2, MAFS.7.EE.2.3
3-3 Converting Fractions and Decimals	A) Writing Fractions as Decimals	
	B) Writing Decimals as Fractions	
3-4 Comparing and Ordering Rational Numbers	A) Rational Numbers on a Number Line	MAFS.7.EE.2.3
	B) Comparing and Ordering Positive and Negative Decimals	
	C) Comparing and Ordering Positive and Negative Fractions	
3-5 Adding and Subtracting Fractions	A) Using Integer Rules to Add and Subtract Fractions with Common Denominators	MAFS.7.NS.1.1.b, MAFS.7.NS.1.1.c, MAFS.7.NS.1.1.d, MAFS.7.NS.1.3, MAFS.7.EE.2.3
	B) Using Integer Rules to Add and Subtract Fractions with Different Denominators	

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3-6 Multiplying and Dividing Fractions	A) Using Integer Rules to Multiply Fractions	MAFS.7.NS.1.2.a, MAFS.7.NS.1.2.b, MAFS.7.NS.1.2.c, MAFS.7.NS.1.3, MAFS.7.EE.2.3
	B) Using Integer Rules to Divide Fractions	
3-7 Operations with Rational Numbers	A) Comparing Rational Numbers	MAFS.7.NS.1.1.b, MAFS.7.NS.1.1.c, MAFS.7.NS.1.1.d, MAFS.7.NS.1.2.a, MAFS.7.NS.1.2.b, MAFS.7.NS.1.2.c, MAFS.7.NS.1.3, MAFS.7.EE.1.2, MAFS.7.EE.2.3
	B) Adding and Subtracting Rational Numbers	
	C) Multiplying and Dividing Rational Numbers	
	D) Order of Operations and Rational Numbers	

Chapter 4 Expressions and Properties

Lesson	Topic	NGSSS
4-1 Representations of Algebraic Expressions	A) Parts of Variable Expressions	MAFS.7.EE.1.1
	B) Using Algebra Tiles to Model Algebraic Expressions	
4-2 Operations and Variable Expressions	A) Omitting Multiplication Symbols with Variables	MAFS.7.EE.1.1
	B) Coefficients	MAFS.7.EE.1.2
4-3 Algebraic Expressions	A) Writing Variable Expressions	MAFS.7.EE.1.1, MAFS.7.EE.1.2
4-4 Properties of Numbers	A) Commutative Property	MAFS.7.EE.1.1, MAFS.7.EE.1.2
	B) Associative Property	
	C) Identity Property	
	D) Inverse Property	
4-5 Modeling the Distributive Property	A) Using Algebra Tiles to Multiply a Monomial and a Binomial	MAFS.7.EE.1.1, MAFS.7.EE.1.2
	B) Using Tables to Multiply a Monomial and a Binomial	
4-6 Distributive Property	A) Using the Distributive Property to Write Equivalent Expressions	MAFS.7.EE.1.1
4-7 Simplifying Algebraic Expressions	A) Using Algebra Tiles to Combine Like Terms	MAFS.7.EE.1.1, MAFS.7.EE.1.2
	B) Simplifying Expressions with Like Terms	

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Chapter 5 Solving Equations

Lesson	Topic	NGSSS
5-1 Equations	A) Identifying Equations and Expressions	MAFS.7.EE.2.4.a
	B) Writing Equations	
	C) Solutions of Equations	
5-2 Introduction to Bar Models	A) Showing One-Step Equations with Bar Models	MAFS.7.EE.1.2, MAFS.7.EE.2.4.a
	B) Showing Two-Step Equations with Bar Models	
5-3 Solving One-Step Equations with Bar Models	A) Solutions of One-Step Equations in Bar Models	MAFS.7.EE.2.4.a
	B) Using Bar Models to Solve One-Step Addition Equations	
	C) Using Bar Models to Solve One-Step Subtraction Equations	
	D) Using Bar Models to Solve One-Step Multiplication Equations	
5-4 Solving One-Step Addition and Subtraction Equations	A) Inverse Operation of Addition	MAFS.7.EE.2.4.a
	B) Solving One-Step Equations with the Subtraction Property of Equality	
	C) Inverse Operation of Subtraction	
	D) Solving One-Step Equations with the Addition Property of Equality	
5-5 Solving One-Step Multiplication and Division Equations	A) Inverse Operation of Multiplication	MAFS.7.EE.2.4.a
	B) Solving One-Step Equations with the Division Property of Equality	
	C) Inverse Operation of Division	
	D) Solving One-Step Equations with the Division Property of Equality	
5-6 Solving Two-Step Equations	A) Solutions of Two-Step Equations in Bar Models	MAFS.7.EE.2.4.a
	B) Using Bar Models to Solve Two-Step Equations	
	C) Solving Two-Step Equations	
5-7 Solving Multi-Step Equations with Bar Models	A) Using Bar Models to Solve Multi-Step Equations with Variables on Both Sides	MAFS.7.EE.2.4.a
	B) Using Bar Models to Solve Multi-Step Equations with the Distributive Property	
	C) Using Bar Models to Solve Multi-Step Equations with the Distributive Property and Variables on Both Sides	
5-8 Solving Multi-Step Equations	A) Solving Multi-Step Equations	MAFS.7.EE.2.4.a
	B) Solving Equations with Variables on Both Sides	
	A) Solving Equations with Grouping Symbols in the Numerator	MAFS.7.EE.2.4.a

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5-9 Solving Equations with Rational Numbers	B) Using the Multiplicative Inverse to Solve Equations
	C) Solving Equations with Fractions
	D) Solving Equations with Decimals

Chapter 6 Solving Inequalities

Lesson	Topic	NGSSS
6-1 Inequalities	A) Reading and Writing Inequalities	MAFS.7.EE.2.4.b
	B) Solutions of Inequalities	
	C) Graphs of Inequalities	
6-2 Solving One-Step Addition and Subtraction Inequalities	A) Writing Inequalities	MAFS.7.EE.2.4.b
	B) Solutions of Inequalities	
	C) Solving One-Step Inequalities by Adding or Subtracting on Both Sides	
6-3 Solving One-Step Multiplication and Division Inequalities	A) Solving One-Step Inequalities by Multiplying or Dividing Both Sides by a Positive Number	MAFS.7.EE.2.4.b
	B) Solving One-Step Inequalities by Multiplying or Dividing Both Sides by a Negative Number	
6-4 Solving Multi-Step Inequalities	A) Solving Two-Step Inequalities	MAFS.7.EE.2.4.b
	B) Solving Multi-Step Inequalities	
	C) Solving Inequalities with Variables on Both Sides	

Chapter 7 Ratio, Proportion, and Similarity

Lesson	Topic	NGSSS
7-1 Unit Rates	A) Unit Rates	MAFS.7.RP.1.1, MAFS.7.RP.1.2.b, MAFS.7.RP.1.2.d
	B) Unit Rates from Tables and Graphs	
	C) Unit Rates to Find Values	
7-2 Proportions	A) Defining Proportions	MAFS.7.RP.1.1, MAFS.7.RP.1.2.a, MAFS.7.RP.1.2.c, MAFS.7.RP.1.3
	B) Solving Proportions	
	C) Writing Proportions	
7-3 Rate Conversions	A) Converting Units Within a Measurement System	MAFS.7.RP.1.1, MAFS.7.RP.1.2.b, MAFS.7.RP.1.2.c, MAFS.7.RP.1.3
	B) Converting Units Between Measurement Systems	
	C) Converting Rates	
7-4 Similarity	A) Angle Measures in Similar Triangles	MAFS.7.RP.1.2.a, MAFS.7.RP.1.2.b, MAFS.7.RP.1.2.c, MAFS.7.RP.1.3
	B) Side Lengths in Similar Figures	

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7-5 Scale	A) Determining Scale	MAFS.7.RP.1.2.b, MAFS.7.RP.1.2.c, MAFS.7.RP.1.3, MAFS.7.G.1.1
	B) Using Scale	

Chapter 8 Percents

Lesson	Topic	NGSSS
8-1 Fractions, Decimals, and Percents	A) Converting Between Fractions and Percents	MAFS.7.EE.2.3
	B) Converting Between Decimals and Percents	
	C) Using Division to Convert Fractions to Percents	
8-2 Proportions with Percents	A) Percent Proportions	MAFS.7.RP.1.2.c, MAFS.7.RP.1.3
8-3 Proportions with Equations	A) Percent Equations	MAFS.7.RP.1.2.c
8-4 Reasoning with Percents	A) Mental Math to Find a Percent of a Number	MAFS.7.NS.1.3, MAFS.7.EE.1.2, MAFS.7.EE.2.3
	B) Estimating with Percents	
8-5 Percent Change	A) Amount of Change	MAFS.7.EE.1.2
	B) Percent Change	
8-6 Discounts and Markups	A) Discount	MAFS.7.RP.1.3, MAFS.7.EE.1.2
	B) Markup	

Chapter 9 Graphs and Functions

Lesson	Topic	NGSSS
9-1 Coordinate Plane	A) Identifying Quadrants and Axes of Coordinate Planes	MAFS.6.NS.3.6.b, MAFS.6.NS.3.6.c
	B) Graphing Points	
	C) Writing the Coordinates of Points	
	D) Identifying Quadrants and Axes from Coordinates	
9-2 Relations	A) Representing Relations in Different Forms	MAFS.8.F.1.1
	B) Input and Output	
9-3 Domain and Range	A) Independent and Dependent Variables	MAFS.8.F.1.1
	B) Domain and Range	
	C) Relations and Functions	
9-4 Linear Functions	A) Graphs of Linear Functions	MAFS.6.EE.3.9
	B) Using Linear Functions to Complete Tables	
	C) Graphing Linear Functions	

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	D) Writing Linear Functions	
	E) Identifying Intercepts	
9-5 Direct Variation Graphs	A) Graphs of Direct Variation B) Equations of Direct Variation	MAFS.7.RP.1.2.b, MAFS.7.RP.1.2.c, MAFS.7.RP.1.2.d
9-6 Direct Variation Tables and Equations	A) Tables of Direct Variation B) Direct Variation Equations and Coordinate Pairs	MAFS.7.RP.1.2.b, MAFS.7.RP.1.2.c

Chapter 10 Angles and Triangles

Lesson	Topic	NGSSS
10-1 Points and Lines	A) Points	MAFS.4.G.1.1
	B) Lines	
	C) Rays	
	D) Segments	
10-2 Angles	A) Parts of Angles	MAFS.7.G.2.5
	B) Naming Angles	
	C) Adjacent Angles	
	D) Angle Measures	
10-3 Complementary and Supplementary Angles	A) Complementary Angles	MAFS.7.G.2.5
	B) Supplementary Angles	
10-4 Linear Pairs and Vertical Angles	A) Linear Pairs	MAFS.7.G.2.5
	B) Vertical Angles	
10-5 Lengths of Sides in Triangles	A) Relationship Among Side Lengths in a Triangle	MAFS.7.G.1.2
	B) Possible Lengths of Longest or Shortest Sides in a Triangle	
10-6 Angle Measures in Triangles	A) Sum of the Measure of Interior Angles of a Triangle	MAFS.7.G.1.2
	B) Finding a Missing Angle Measure in a Triangle	

Chapter 11 Area, Surface Area, and Volume

Lesson	Topic	NGSSS
11-1 Area of Polygons	A) Areas of Triangles and Quadrilaterals	MAFS.7.G.2.6
	B) Solving Area Equations to Find Missing Measurements	
	A) Parts of Circles	MAFS.7.G.2.4

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11-2 Circumference of Circles	B) Relationship Between Radius and Diameter	
	C) Circumference	
11-3 Area of Circles	A) Areas of Circles from Radius	MAFS.7.G.2.4
	B) Areas of Circles from Diameter	
11-4 Naming Three-Dimensional Solids	A) Bases of Solids	MAFS.7.G.1.3
	B) Naming Solids	
	C) Cross Sections of Solids	
11-5 Surface Area of Cylinders and Right Prisms	A) Lateral Faces of Prisms	MAFS.7.G.2.6
	B) Surface Areas of Prisms	
	C) Surface Areas of Cylinders	
11-6 Volume of Cylinders and Right Prisms	A) Volumes of Prisms	MAFS.7.G.2.6
	B) Volumes of Cylinders	
11-7 Surface Area of Right Pyramids	A) Lateral Faces of Pyramids	MAFS.7.G.2.6
	B) Slant Height	
	C) Surface Areas of Pyramids	
11-8 Volume of Pyramids and Cones	A) Volumes of Pyramids	MAFS.7.G.2.6
	B) Volumes of Cones	

Chapter 12 Probability

Lesson	Topic	NGSSS
12-1 Outcomes	A) Numbers that Represent Probability	MAFS.7.SP.3.5
	B) Possible Outcomes	
	C) Events	
	D) Favorable Outcomes	
	E) Likely and Unlikely Events	
12-2 Experimental Probability	A) Equation for Experimental Probability	MAFS.7.SP.3.6, MAFS.7.SP.3.7.b
	B) Experimental Probability of Single Event	
	C) Experimental Probability of Multiple Events	
12-3 Theoretical Probability	A) Equation for Theoretical Probability	MAFS.7.SP.3.6, MAFS.7.SP.3.7.a, MAFS.7.SP.3.7.b
	B) Theoretical Probability of Single Event	
	C) Theoretical Probability of Multiple Events	
	A) Tree Diagrams and Outcomes of Independent Events	MAFS.7.SP.3.8.b, MAFS.7.SP.3.8.c
	B) Tables and Outcomes of Independent Events	

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12-4 Compound Independent Events	C) Using Multiplication to Count Outcomes for Independent Events	
12-5 Compound Dependent Events	A) Tree Diagrams and Outcomes of Dependent Events	MAFS.7.SP.3.8.b, MAFS.7.SP.3.8.c
	B) Using Multiplication to Count Outcomes for Dependent Events	
12-6 Compound Probability	A) Probability Notation for Compound Events	MAFS.7.SP.3.7.a, MAFS.7.SP.3.8.a, MAFS.7.SP.3.8.b, MAFS.7.SP.3.8.c
	B) Probability of Independent Events	
	C) Probability of Dependent Events	

Chapter 13 Data Analysis

Lesson	Topic	NGSSS
13-1 Populations, Samples, and Bias	A) Population	MAFS.7.SP.1.1, MAFS.7.SP.1.2
	B) Samples	
	C) Data Sets from Random Representative Samples	
13-2 Making Inferences From Data	A) Samples and Conclusions	MAFS.7.SP.1.1, MAFS.7.SP.1.2
	B) Samples and Predictions	
	C) Supporting Predictions and Conclusions	
13-3 Measures of Center	A) Mean	MAFS.7.SP.2.4
	B) Median	
	C) Mean and Median of Same Data Set	
13-4 Measures of Variation	A) Range	MAFS.7.SP.1.1, MAFS.7.SP.2.3, MAFS.7.SP.2.4
	B) MAD	
	C) Quartiles and IQR	
	D) Measures of Variation and Measures of Center	
13-5 Comparative Inferences	A) Dot Plots and Measures of Center and Variability	MAFS.7.SP.1.1, MAFS.7.SP.1.2, MAFS.7.SP.2.3, MAFS.7.SP.2.4
	B) Mean as a Multiple of MAD	
	C) Making Statements about Data Sets from Measures of Center and Variability	