

Table 1. Progress to Algebra in Grades K–8

| K | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|--|---|---|--|--|--|--|
| Know number names and the count sequence | Represent and solve problems involving addition and subtraction | | Represent & solve problems involving multiplication and division | Use the four operations with whole numbers to solve problems | Understand the place value system | Apply and extend previous understandings of multiplication and division to divide fractions by fractions | | |
| Count to tell the number of objects | Understand and apply properties of operations and the relationship between addition and subtraction | Represent and solve problems involving addition and subtraction | Understand properties of multiplication and the relationship between multiplication and division | Generalize place value understanding for multi-digit whole numbers | Perform operations with multi-digit whole numbers and decimals to hundredths | Apply and extend previous understandings of numbers to the system of rational numbers | Apply and extend previous understanding of operations with fractions to add, subtract, multiply, and divide rational numbers | Work with radical and integer exponents |
| Compare numbers | | Add and subtract within 20 | Multiply & divide within 100 | Use place value understanding and properties of operations to perform multi-digit arithmetic | Use equivalent fractions as a strategy to add and subtract fractions | | | |
| Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from | Add and subtract within 20 | Understand place value | Solve problems involving the four operations, and identify & explain patterns in arithmetic | | Apply and extend previous understandings of multiplication and division to multiply and divide fractions | Understand ratio concepts and use ratio reasoning to solve problems | Analyze proportional relationships and use them to solve real-world and mathematical problems | Understand the connections between proportional relationships, lines, and linear equations |
| Work with numbers 11-19 to gain foundations for place value | Work with addition and subtraction equations | Use place value understanding and properties of operations to add and subtract | Develop understanding of fractions as numbers | Extend understanding of fraction equivalence and ordering | | | | |
| | Extend the counting sequence | Measure and estimate lengths in standard units | Solve problems involving measurement and estimation of intervals of time, liquid volumes, & masses of objects | Build fractions from unit fractions by applying and extending previous understandings of operations | Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition | Apply and extend previous understandings of arithmetic to algebraic expressions | Use properties of operations to generate equivalent expressions | Analyze and solve linear equations and pairs of simultaneous linear equations |
| | Understand place value | Relate addition and subtraction to length | | | | Reason about and solve one-variable equations and inequalities | Define, evaluate, and compare functions | |
| | Use place value understanding and properties of operations to add and subtract | | Geometric measurement: understand concepts of area and relate area to multiplication and to addition | | | Represent and analyze quantitative relationships between dependent and independent variables | Solve real-life and mathematical problems using numerical and algebraic expressions and equations | Use functions to model relationships between quantities* |
| | Measure lengths indirectly and by iterating length units | | | Understand decimal notation for fractions, and compare decimal fractions | Graph points in the coordinate plane to solve real-world and mathematical problems* | | | |

*Indicates a cluster that is well thought of as part of a student's progress to algebra, but that is currently not designated as Major by one or both of the assessment consortia in their draft materials. Apart from the two asterisked exceptions, the clusters listed here are a subset of those designated as Major in both of the assessment consortia's draft documents.