

## Grade 3 Algebra

### NCTM Standards—Algebra

Instructional programs from prekindergarten through grade 12 should enable all students to:	In grade 3 all students should:
Understand patterns, relations, and functions;	<ul style="list-style-type: none"> <li>• describe, extend, and make generalizations about numeric patterns;</li> <li>• represent and analyze patterns using words, tables, and symbols.</li> </ul>
Represent and analyze mathematical situations and structures using algebraic symbols;	<ul style="list-style-type: none"> <li>• identify such properties as communicativity and associativity and use them to compute with whole numbers;</li> <li>• represent the idea of a variable as an unknown quantity using a letter or symbol.</li> </ul>
Use mathematical models to represent and understand quantitative relationships.	<ul style="list-style-type: none"> <li>• model problem situations with objects and tables to draw conclusions;</li> <li>• begin to understand how to express mathematical relationships using equations.</li> </ul>

### NCTM Curriculum Focal Points—Algebra

Instructional programs from prekindergarten through grade 12 should enable all students to:	In grade 3 all students should:
Use number patterns to extend their knowledge of properties of numbers and operations.	<ul style="list-style-type: none"> <li>• understand properties of multiplication and the relationship between multiplication and division;</li> <li>• create and analyze patterns and relationships involving multiplication and division;</li> <li>• identify, describe, and extend numeric patterns involving all operations and nonnumeric patterns involving all operations and nonnumeric growing or repeating patterns;</li> <li>• develop an understanding of the use of a rule to describe a sequence of numbers or objects.</li> </ul>
Select and apply appropriate methods to estimate.	<ul style="list-style-type: none"> <li>• estimate sums and differences or calculate them mentally, depending on the context and the numbers involved.</li> </ul>

## Grade 3 Data Analysis

### NCTM Standards—Data Analysis

Instructional programs from prekindergarten through grade 12 should enable all students to:	In grade 3 all students should:
Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them;	<ul style="list-style-type: none"> <li>• design investigations to address a question and consider how data-collection methods affect the nature of the data set;</li> <li>• collect data using observations, surveys, and experiments;</li> <li>• represent data using tables and graphs such as line plots, bar graphs, and line graphs;</li> <li>• recognize the differences in representing categorical and numerical data.</li> </ul>
Develop and evaluate inferences and predictions that are based on data;	<ul style="list-style-type: none"> <li>• propose and justify conclusions and predictions that are based on data and design studies to further investigate the conclusions or predictions.</li> </ul>

### NCTM Curriculum Focal Points—Data Analysis

Instructional programs from prekindergarten through grade 12 should enable all students to:	In grade 3 all students should:
Collect and analyze data and make sense of and interpret information.	<ul style="list-style-type: none"> <li>• apply knowledge of addition, subtraction, multiplication, and division of whole numbers to construct and analyze frequency tables, bar graphs, picture graphs, and line plots and use them to solve problems.</li> </ul>

## Grade 3 Geometry

### NCTM Standards—Geometry

Instructional programs from prekindergarten through grade 12 should enable all students to:	In grade 3 all students should:
Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships;	<ul style="list-style-type: none"> <li>• identify, compare, and analyze attributes of two- and three-dimensional shapes and develop vocabulary to describe the attributes;</li> <li>• classify two- and three-dimensional shapes according to their properties and develop definitions of classes of shapes such as triangles and pyramids;</li> <li>• investigate, describe, and reason about the results of subdividing, combining, and transforming shapes;</li> <li>• explore congruence and similarity;</li> <li>• make and test conjectures about geometric properties and relationships and develop logical arguments to justify conclusions.</li> </ul>
Use visualization, spatial reasoning, and geometric modeling to solve problems.	<ul style="list-style-type: none"> <li>• use geometric models to solve problems in other areas of mathematics, such as number and measurement;</li> <li>• recognize geometric ideas and relationships and apply them to other disciplines and to problems that arise in the classroom or in everyday life.</li> </ul>

### NCTM Curriculum Focal Points—Geometry

Instructional programs from prekindergarten through grade 12 should enable all students to:	In grade 3 all students should:
Describe and analyze properties of two-dimensional shapes.	<ul style="list-style-type: none"> <li>• describe, analyze, compare, and classify two-dimensional shapes by their sides and angles and connect these attributes to definitions of shapes;</li> <li>• investigate, describe, and reason about decomposing, combining, and transforming polygons to make other polygons;</li> <li>• use attributes and properties of two-dimensional shapes in solving problems, including applications involving congruence and symmetry, and in developing measurement concepts and skills;</li> <li>• demonstrate understanding of two-dimensional shapes by measuring and classifying angles;</li> </ul>

<p>Develop an understanding of area and determine the areas of two-dimensional shapes.</p>	<ul style="list-style-type: none"> <li>• quantify area by finding the total number of same-sized units of area that cover the shape without gaps or overlaps;</li> <li>• understand that a square that is 1 unit on a side is the standard unit for measuring area;</li> <li>• connect area measure to the area model that they have used to represent multiplication, and they use this connection to justify the formula for the area of a rectangle.</li> </ul>
<p>Develop an understanding of linear measurement and facility in measuring lengths.</p>	<ul style="list-style-type: none"> <li>• understand linear measure as an iteration of units and use rulers and other measurement tools with that understanding;</li> <li>• understand the need for equal-length units and the use of standard units of measure (centimeter and inch);</li> <li>• estimate, measure, and compute lengths as they solve problems.</li> </ul>
<p>Form an understanding of perimeter as a measurable attribute.</p>	<ul style="list-style-type: none"> <li>• select appropriate units, strategies, and tools to solve problems involving perimeter.</li> </ul>
<p>Develop an understanding of fractions and fraction equivalence.</p>	<ul style="list-style-type: none"> <li>• understand that the size of a fractional part is relative to the size of the whole, and they use fractions to represent numbers that are equal to, less than, or greater than 1;</li> <li>• solve problems that involve comparing and ordering fractions by using models or benchmark fractions;</li> <li>• develop their facility in measuring with fractional parts of linear units.</li> </ul>