

**DOMAIN: Operations and Algebraic Thinking****CLUSTER: Write and interpret numerical expressions.** *s/a*

**Big Idea:** For a given set of numbers there are relationships that are always true, called properties, and these are the rules that govern arithmetic and algebra.

**Enduring Understandings:** There is an agreed upon order for which operations in a numerical expression are performed.

**Big Idea:** Mathematical situations and structures can be translated and represented abstractly using variables, expressions, and equations.

**Enduring Understandings:** Some mathematical phrases can be represented using a variable in an algebraic expression.

STANDARDS FOR MATHEMATICAL CONTENT	STANDARDS FOR MATHEMATICAL PRACTICE	RESOURCES	ASSESSMENTS
<p><b>5.OA.1</b> Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.</p>	<p><b>MP1</b> Make sense of problems and persevere in solving them.  <b>MP2</b> Reason abstractly and quantitatively.  <b>MP3</b> Construct viable arguments and critique the reasoning of others.  <b>MP4</b> Model with mathematics.  <b>MP5</b> Use appropriate tools strategically.  <b>MP6</b> Attend to precision.  <b>MP7</b> Look for and make use of structure.  <b>MP8</b> Look for and express regularity in repeated reasoning.</p>	<p><b>Illustrative Mathematics</b></p> <ul style="list-style-type: none"> <li>• Watch Out for Parentheses  <a href="http://www.illustrativemathematics.org/illustrations/555">http://www.illustrativemathematics.org/illustrations/555</a></li> <li>• Using Operations and Parentheses  <a href="http://www.illustrativemathematics.org/illustrations/1596">http://www.illustrativemathematics.org/illustrations/1596</a></li> </ul> <p><b>NC Department of Public Instruction</b></p> <ul style="list-style-type: none"> <li>• 5.OA.1 Task 1.doc, Target Number</li> <li>• 5.OA.1 Task 2.doc, Expression Sets</li> <li>• 5.OA.1 Task 3.doc, Leigh's Strategy  <a href="http://3-5cctask.ncdpi.wikispaces.net/5.OA.1-5.OA.2">http://3-5cctask.ncdpi.wikispaces.net/5.OA.1-5.OA.2</a></li> </ul> <p><b>My Math</b></p> <ul style="list-style-type: none"> <li>• 7-1 Hands On: Numerical Expressions</li> <li>• 7-2 Order of Operations</li> <li>• 7-4 Problem-Solving Investigation, Strategy: Work Backward</li> </ul>	<p><b>My Math</b> Assessment Master</p> <ul style="list-style-type: none"> <li>• Ch. 7, pp. 160-180</li> </ul> <p><b>My Math</b> Think Smart for the SBAC</p> <ul style="list-style-type: none"> <li>• Chapter 7 Test, p. 89</li> <li>• Chapter 7 Performance Task, p. 137</li> </ul> <p><b>My Math</b> eAssessment connectED.mcgraw-hill.com</p>

STANDARDS FOR MATHEMATICAL CONTENT	STANDARDS FOR MATHEMATICAL PRACTICE	RESOURCES	ASSESSMENTS
<p><b>5.OA.2</b> Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation "add 8 and 7, then multiply by 2" as <math>2 \times (8 + 7)</math>. Recognize that <math>3 \times (18932 + 921)</math> is three times as large as <math>18932 + 921</math>, without having to calculate the indicated sum or product.</p> <p><b>5.OA.2.1</b> Express a whole number in the range 2-50 as a product of its prime factors. For example, find the prime factors of 24 and express 24 as <math>2 \times 2 \times 3</math>. CA</p>	<p><b>MP1</b> Make sense of problems and persevere in solving them.</p> <p><b>MP2</b> Reason abstractly and quantitatively.</p> <p><b>MP3</b> Construct viable arguments and critique the reasoning of others.</p> <p><b>MP4</b> Model with mathematics.</p> <p><b>MP5</b> Use appropriate tools strategically.</p> <p><b>MP6</b> Attend to precision.</p> <p><b>MP7</b> Look for and make use of structure.</p> <p><b>MP8</b> Look for and express regularity in repeated reasoning.</p>	<p><b>Illustrative Mathematics</b></p> <ul style="list-style-type: none"> <li>Words to Expressions 1 <a href="http://www.illustrativemathematics.org/illustrations/556">http://www.illustrativemathematics.org/illustrations/556</a></li> <li>Video Game Scores <a href="http://www.illustrativemathematics.org/illustrations/590">http://www.illustrativemathematics.org/illustrations/590</a></li> <li>Comparing Products <a href="http://www.illustrativemathematics.org/illustrations/139">www.illustrativemathematics.org/illustrations/139</a></li> <li>Seeing is Believing <a href="http://www.illustrativemathematics.org/illustrations/1222">http://www.illustrativemathematics.org/illustrations/1222</a></li> </ul> <p><b>NC Department of Public Instruction</b></p> <ul style="list-style-type: none"> <li>5.OA.2 Task 3.doc, Seeing is Believing <a href="http://3-5cctask.ncdpi.wikispaces.net/5.OA.1-5.OA.2">http://3-5cctask.ncdpi.wikispaces.net/5.OA.1-5.OA.2</a></li> </ul> <p><b>My Math</b></p> <ul style="list-style-type: none"> <li>7-3 Write Numerical Expressions</li> <li><i>Inside a Science Museum, Real-World Problem Solving Readers Teacher Guide</i>, p. 7</li> <li><i>Water Works, Real-World Problem Solving Readers Teacher Guide</i>, p. 15</li> </ul>	<p><b>My Math</b> Assessment Master</p> <ul style="list-style-type: none"> <li>Ch. 7, pp. 160-180</li> </ul> <p><b>My Math</b> Think Smart for the SBAC</p> <ul style="list-style-type: none"> <li>Chapter 7 Test, p. 89</li> <li>Chapter 7 Performance Task, p. 137</li> </ul> <p><b>My Math</b> eAssessment connectED.mcgraw-hill.com</p>

**CLUSTER: Analyze patterns and relationships.** <sup>s/a</sup>

**Big Idea:** Relationships can be described and generalizations made for mathematical situations that have numbers or objects that repeat in predictable ways. For some relationships, mathematical expressions and equations can be used to describe how members of one set are related members of a second set.

**Enduring Understandings:** Patterns can sometimes be used to identify a relationship between two quantities. Some real-world quantities have a mathematical relationship; the value of one quantity can be found if you know the value of the other quantity. Patterns that repeat in predictable ways may be used to identify relationships.

STANDARDS FOR MATHEMATICAL CONTENT	STANDARDS FOR MATHEMATICAL PRACTICE	RESOURCES	ASSESSMENTS
<p><b>5.OA.3</b> Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.</p>	<p><b>MP1 Make sense of problems and persevere in solving them.</b>  <b>MP2 Reason abstractly and quantitatively.</b>  <b>MP3 Construct viable arguments and critique the reasoning of others.</b>  <b>MP4 Model with mathematics.</b>  <b>MP5 Use appropriate tools strategically.</b>  <b>MP6 Attend to precision.</b>  <b>MP7 Look for and make use of structure.</b>  <b>MP8 Look for and express regularity in repeated reasoning.</b></p>	<p><b>NC Department of Public Instruction</b></p> <ul style="list-style-type: none"> <li>5.OA.3 Task 1.doc, Dan's Bicycle</li> <li>5.OA.3 Task 2.doc, Farmer Brown's Barn  <a href="http://3-5cctask.ncdpi.wikispaces.net/5.OA.3">http://3-5cctask.ncdpi.wikispaces.net/5.OA.3</a></li> </ul> <p><b>My Math</b></p> <ul style="list-style-type: none"> <li>7-5 Hands On: Generate Patterns</li> <li>7-6 Patterns</li> <li>7-9 Graph Patterns</li> </ul>	<p><b>My Math Assessment Master</b></p> <ul style="list-style-type: none"> <li>Ch. 7, pp. 160-180</li> </ul> <p><b>My Math Think Smart for the SBAC</b></p> <ul style="list-style-type: none"> <li>Chapter 7 Test, p. 89</li> <li>Chapter 7 Performance Task, p. 137</li> </ul> <p><b>My Math eAssessment</b>  connectED.mcgraw-hill.com</p>

## Domain Legend

- ▲ **Major Cluster:** Areas of intensive focus, where students need fluent understanding and application of the core concepts (approximately 75%)
- s **Supporting Cluster:** Rethinking & linking; some material is being covered, but in a way that applies core understandings (s/a approximately 25%)
- a **Additional Cluster:** Expose students to other subjects, may not connect explicitly to the major work of the grade
- CA California Additions to the content standards appear in **bold**.

**ADDITIONAL SUPPORT**

ESSENTIAL QUESTIONS	LANGUAGE OBJECTIVES AND SUPPORTS	KEY VOCABULARY
<ol style="list-style-type: none"> <li>1. How is the value of a numerical expression found?</li>   <li>2. How can a rule be found and written as an expression?</li>   <li>3. How are rules for number patterns represented on the coordinate plane?</li>   <li>4. How are patterns used to solve problems?</li> </ol>	<ol style="list-style-type: none"> <li>1. Students will explain orally and in writing the sequences they followed in determining the values of numerical expressions, using target vocabulary and complex sentences. <b>(Teacher may refer students to math word wall for support.)</b></li>   <li>2. Students will explain in writing how a rule can be found and written as an expression by using indicative verbs in declarative sentences. <b>(Teachers may allow students time to orally rehearse their answer with a partner before engaging in writing.)</b></li>   <li>3. Students will sequentially explain to a small group how to graph ordered pairs that follow a rule using targeted mathematical language and complex sentences. <b>(Teacher may refer students to math word wall for support.)</b></li> </ol>	Algebraic expressions Coordinate plane Data Distributive Property Evaluate Graph Linear Equation Numerical Expression Order of operations Ordered pair Origin Parenthesis (parentheses) Perpendicular Sequence Table Term Variable x-axis y-axis x-coordinate y-coordinate

## DAILY/WEEKLY ROUTINES

- Head Problems
- Number Talks
- SuDoku helps develop logical reasoning and provides a sense of achievement. Example site: <http://www.dailysudoku.com/sudoku/kids/>
- Daily Oral Language with CGI Problems
- Get the Goof from Success for All: Teacher posts student work with an error, and the students write and explain the error.

## LITERATURE CONNECTIONS

- *Amanda Bean's Amazing Dream* by Cindy Neuschwander
- *Two of Everything* by Lily Toy Hong
- *The Fly on the Ceiling: A Math Myth* by Dr. Julie Glass
- *Spaghetti and Meatballs for All* by Marilyn Burns
- *Wild Fibonacci: Nature's Secret Code Revealed* by Joy Hulme
- *How Do You Know What Time It Is?* By Robert E. Wells

DIFFERENTIATION 

FRONT LOADING <sup>1</sup>	ENRICHMENT <sup>2</sup>	INTERVENTION <sup>3</sup>
<p><b>My Math</b>  <b>Each chapter includes:</b> (at beginning of chapter)</p> <ul style="list-style-type: none"> <li>• My Math Words</li> <li>• My Vocabulary Cards</li> <li>• My Foldables</li> </ul> <p><b>Each lesson includes:</b> (at beginning of lesson)            ELL Instructional Strategy</p>	<p><b>Illustrative Mathematics</b></p> <ul style="list-style-type: none"> <li>• Bowling for Numbers  <a href="http://www.illustrativemathematics.org/illustrations/969">http://www.illustrativemathematics.org/illustrations/969</a></li> </ul> <p><b>My Math</b>  <b>Each lesson includes:</b>            Beyond Level Hands-On Activity (found after Practice &amp; Apply)</p>	<p><b>My Math</b>  <b>Each lesson includes:</b></p> <ul style="list-style-type: none"> <li>• Approaching Level Hands-On Activity (found after Practice &amp; Apply)</li> </ul> <p><b>Each formative assessment includes:</b></p> <ul style="list-style-type: none"> <li>• Tier 2 Strategic Intervention</li> </ul>

Key:

<sup>1</sup>: Front Loading refers to materials that can be used before the lesson begins to prepare students for success, which may be helpful for English learners, students with disabilities or low achieving students.

<sup>2</sup>: Enrichment refers to materials that can be used with students who are ready to have their thinking extended, which may be helpful for gifted and talented and high achieving students, or any students who are ready for more depth and complexity.

<sup>3</sup>: Intervention refers to materials that can be used after the lessons with students who are needing additional positive experiences with the mathematics, low achieving students who would benefit from another approach, or students who have gaps in their knowledge.

For more information on Differentiation, please refer to: The California Framework, Universal Access section:

<http://www.cde.ca.gov/ci/ma/cf/documents/aug2013univeresaccess.pdf>