

**Richmond Public Schools**  
**Department of Curriculum and Instruction**  
**Curriculum Pacing And Resource Guide – Unit Plan**



**Course Title/ Course #: Algebra 1**

**Unit Title/ Marking Period # (MP#1): Algebraic Expressions**

**Start day:**

**Meetings (Length of Unit): 2**

<b><i>Desired Results ~ What will students be learning?</i></b>	
<b><u>Standards of Learning/ Standards</u></b>	
A.1	The student will represent verbal quantitative situations algebraically and evaluate these expressions for given replacement values of the variables.
<b><u>Essential Understandings/ Big Ideas</u></b>	
<ul style="list-style-type: none"><li>• Algebra is a tool for reasoning about quantitative situations so that relationships become apparent.</li><li>• Algebra is a tool for describing and representing patterns and relationships.</li><li>• Mathematical modeling involves creating algebraic representations of quantitative real-world situations.</li><li>• The numerical value of an expression is dependent upon the values of the replacement set for the variables.</li><li>• There are a variety of ways to compute the value of a numerical expression and evaluate an algebraic expression.</li><li>• The operations and the magnitude of the numbers in an expression impact the choice of an appropriate computational technique.</li><li>• An appropriate computational technique could be mental mathematics, calculator, or paper and pencil.</li></ul>	
<b><u>Key Essential Skills and Knowledge</u></b>	
<ul style="list-style-type: none"><li>• Translate verbal quantitative situations into algebraic expressions and vice versa.</li><li>• Model real-world situations with algebraic expressions in a variety of representations (concrete, pictorial, symbolic, verbal).</li><li>• Evaluate algebraic expressions for a given replacement set to include rational numbers.</li><li>• Evaluate expressions that contain absolute value, square roots, and cube roots.</li></ul>	

## Vocabulary

<p><u>Translating Expressions:</u></p> <p>Verbal Expression          Algebraic Expression          Equation          Inequality          Addition, more than, increased by, etc.          Subtraction, difference, decreased by, etc.          Multiplication, product, of, twice, etc.          Division, quotient, part, split evenly, etc.          Grouping symbols, "...the sum of",          "...the difference of", etc.</p>	<p><u>Order of Operations:</u></p> <p>GEMDAS          Evaluate          Grouping Symbols          Absolute Value          Square Root          Cube Root          Exponents</p>	<p><u>Substitution:</u></p> <p>Open Sentences          Replacement Set          Substitution Property</p>
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### ***Assessment Evidence ~ What is evidence of mastery? What did the students master & what are they missing?***

#### Assessment/ Evidence

<p>Mulligan Checkpoint A.1</p> <p>PowerSchool</p>
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### ***Learning Plan ~ What are the strategies and activities you plan to use?***

#### Learning Experiences/ Best Practice

<p>Create Foldable or Graphic organizers for vocabulary</p> <ul style="list-style-type: none"> <li>• Translate Expressions (words that mean addition, subtraction, multiplication, division, grouping symbols)             <ul style="list-style-type: none"> <li>○ Chart for vocab in Algebra Basics Unit Bundle (All Things Algebra)</li> <li>○ Translating Graphic Organizer Poster (All Things Algebra)</li> </ul> </li> <li>• Order of Operations (Grouping Symbols, Exponents/Roots, Multiply &amp; Divide left to right, Add &amp; Subtract left to right)             <ul style="list-style-type: none"> <li>○ Challenging example inside showing the use of each step, color coordinate by step)</li> </ul> </li> </ul> <p>All Things Algebra → Algebra Basics → Activities</p> <ul style="list-style-type: none"> <li>• Evaluating Expressions Math Lib</li> <li>• Order of Operations Math Lib</li> </ul>
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- Order of Operations Spin to Win Game
- Simplifying Expressions Bingo
- Order of Operations & Evaluating Expressions Scavenger Hunt
- Order of Operations Triples Activity
- Two-Step Equations Fly-Swatter Bingo (spiral review)

### Technology Integrations

Gizmo  
Khan Academy  
Virtual Nerd  
Discovery Education

### Resources

All Things Algebra → Algebra Basics → Unit Bundle

- Notes, homework, quizzes (problems can be used for exit tickets)

#### **Text**

- Virginia Glencoe, Algebra I, ©2012, Carter, et al,

McGraw-Hill School Education Group, page(s) 5 – 15 (variables and expressions, order of operations), pgs. 31 - 37 (evaluating expressions and equations), pgs. 75 - 80 (translating verbal expressions to algebraic expressions)

- Coach book, Virginia edition, page(s) 45 - 53

- Mulligan Math in Minutes A.1

#### **Technology**

- Gizmo

- [Order of Operations](#) (good spiral review, does not include the rigor for Algebra I)
- [Translate Expressions \(basic spiral review\)](#)
- [Translate Equations \(basic spiral review\)](#)

- Khan Academy

- [Order of Operations](#)

- Virtual Nerd

- [Variable & Expressions](#)
- [Simplifying Algebraic Expressions](#)

- PBS Learning Media

- [Algebraic Expressions](#)

**Virginia Department of Education**

[Translate & Evaluate](#)

[Evaluating and Simplifying Expressions](#)

### **Cross Curricular Connection**

Mathematicians rewrite word situations into algebraic expressions to make them simply and more direct to work with.

#### **Technology**

Algebra Expressions are needed in computer apps which are written to process real world situations.

Computers use letter variables and mathematical symbols in the Algorithms in their programs, rather than full word English sentences.

#### **Music, Fashion Design, Basketball, etc.**

<http://www.pbslearningmedia.org/collection/GTM11/>

[Cross Curricular Math Tips that Rock](#) Basic and easy ways to link any math topic to other subjects

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#### **History**

- CE.11a Production is the combining of human, natural, capital, and entrepreneurship resources to make goods or provide services. Resources available and consumer preferences determine what is produced. Consumption is the using of goods and services. Consumer preferences and price determine what is purchased and consumed.
  - Production and consumption can be represented as an algebraic expressions and evaluated for a given value to determine what should be produced.

#### **Science**

- Many expressions and equations are written and substituted into in the science curriculum. Examples include density, mass, volume and degrees.

**English**

- Students can create a venn diagram to compare and contrast expressions, equations, and inequalities. Students can also write a poem/song to help remember the order of operations.