

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



Course Title/ Course #: Math 8 Pre-Algebra

Unit Title/ Marking Period # (MP): Order of Operations and Evaluating Expressions

Start day: 6

Meetings (Length of Unit): 7 Days

<i>Desired Results ~ What will students be learning?</i>
<u>Standards of Learning/ Standards</u>
8.1a Simplify numerical expressions involving positive exponents, using rational numbers, order of operations, and properties of operations with real numbers.
8.4 Apply the order of operations to evaluate expressions for given replacement values of variables.
<u>Essential Understandings/ Big Ideas</u>
What is the role of the order of operations when simplifying numerical expressions? The order of operations prescribes the order to use to simplify numerical expressions.
What is the role of the order of operations when evaluating expressions? The order of operations ensures only one correct answer for an expression.
<u>Key Essential Skills and Knowledge</u>
<ul style="list-style-type: none">• Simplify numerical expressions containing 1) exponents (where the base is a rational number and the exponent is a positive whole number); 2) fractions, decimals, integers and square roots of perfect squares; and 3) grouping symbols (no more than two embedded grouping symbols). Order of operations and properties of operations with real numbers should be used.• Substitute numbers for variables in algebraic expressions and simplify the expressions using order of operations. Exponents are positive and limited to whole numbers less than 4. Square roots are limited to perfect squares.

- Apply the order of operations to evaluate formulas. Problems will be limited to positive exponents. Square roots may be included in the problem but are limited to perfect squares.

Vocabulary

Simplify Expression Numerical Expression Order of Operations Rational Numbers Brackets Absolute Value Square Root	Associative Commutative Distributive Inverse Algebraic Expression Variable Substitute Evaluate	
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Assessment Evidence ~ What is evidence of mastery? What did the students master & what are they missing?

Assessment/ Evidence

Mulligan Checkpoint 8.1a
 Mulligan Checkpoint 8.4
 Interactive Achievement
 HCPS Mini Quizzes
 White Board Checks to ensure students are using order of operations correctly.

Learning Plan ~ What are the strategies and activities you plan to use?

Learning Experiences/ Best Practice

8.1a:
 Create a foldable or graphic organizer for the order of operations to include all the steps. [Math = Love Foldable from Blog](#).
 Give students several examples to work on-allow to work on whiteboards so you can quick check.
 From HCPS resource 8.1a Rolling Dice Activity in Pairs.
 Give students several order of operation problems that have been worked out already. Have the students find the errors and explain how to fix it.
 Gizmo

8.4:
 Guided note sheet or foldable for evaluating expressions with variables.

Have students work in pairs or groups on the HCPS activity-replacement values puzzle.
Play the Derby Relay in groups from the VDOE lesson plan

Stations:

1. Math games (under resources)
2. VDOE lesson plan for 8.1a-Pre-cut them and mix them up in baggies (3 sets for each station).
3. VDOE lesson plan for 8.4 (exit ticket portion)
4. VDOE lesson plan for 8.4 Number Cube Evaluating Problems

Technology Integrations

Gizmo
Educational Games-under resources
Compass Learning
Allen Teachers
Brain Pop
Khan Academy

Resources

Text

Glencoe Pre-Algebra pages:
5-9 (Words and Expressions)
11-16 (Variables and Expressions)
481-485 (Powers and Exponents)
Mulligan Math in Minutes 8.1a and 8.4
SOL Coach Book Va Edition: pages 10-13, 45-49

Technology

Gizmo-[Order of Operations](#) - Interactive Instructional Resource
Compass Learning-<https://www.thelearningodyssey.com> - M7015, M7018, M7103, M7121, M8084, M8087
Allen Teachers-[Order of Operations](#)-TEI Practice
Allen Teachers-[Order of Operations 2](#)-TEI Practice
Allen Teachers-[Order of Operations 3](#)-TEI practice

Virginia Department of Education

VDOE-[Order of Operations](#)-Lesson Plan

VDOE-[Evaluating Expressions](#)-Lesson Plan

Other Sites

HCPS - [Order of Operations](#) - Instructional materials, practice page, assessments

HCPS - [Evaluating Expressions](#) - Instructional materials, practice page, assessments

Illuminations-[Order of Operations Bingo](#)

Math-Play: [Evaluating Expressions Basketball Game](#)-Educational Review Game

Cross Curricular Connection

English-Have students explain in complete sentences why a certain expression was not done correctly. Have them explain the steps the correct way.