

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



Course Title/ Course #: Pre-Algebra Math 8

Unit Title/ Marking Period # (MP): Multi-Step Equations and Inequalities/MP1

Start day: 13

Meetings (Length of Unit): 19 days

Desired Results ~ What will students be learning?

Standards of Learning/ Standards

8.15 a) Solve multi-step linear equations in one variable on one and two sides of the equation.

8.15 b) Solve two-step linear inequalities and graph the results on a number line.

8.15 c) Identify properties of operations used to solve an equation.

Essential Understandings/ Big Ideas

How does the solution to an equation differ from the solution to an inequality? While a linear equation has only one replacement value for the variable that makes the equation true, an inequality can have more than one.

Key Essential Skills and Knowledge

- Solve two-to-four step linear equations in one variable using concrete materials, pictorial representations, and paper and pencil illustrating the steps performed.
- Solve two-step inequalities in one variable by showing the steps and using algebraic sentences.
- Graph solutions to two-step linear inequalities on a number line.

- Identify properties of operations used to solve an equation from among:
 - the commutative properties of addition and multiplication;
 - the associate properties of addition and multiplication;
 - the distributive property;
 - the identity properties of addition and multiplication;
 - the zero property of multiplication;
 - the additive inverse properties of addition and multiplication.

Vocabulary

Equation Inequality Multi-Step Equation Inverse Operation Commutative Property Associative Property Distributive Property	Identity Property Inverse Property Zero Property of Multiplication Term Like Terms	
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Assessment Evidence ~ What is evidence of mastery? What did the students master & what are they missing?

Assessment/ Evidence

Mulligan Checkpoint 8.15
 Interactive Achievement
 Compass Learning
 HCPS Mini-Quizzes
 Exit Tickets-Ask students to describe the difference between an equation and an inequality. They can use answers to examples if needed.
 Students need to be able to look at different steps to an equation and identify which property was used to simplify that step of the equation.
 Ask students to describe what the number line looks like for each of the inequality symbols (shaded vs. un-shaded and why).
 Whiteboard Checks during guided practice.
 Ensure that students are checking their work. Look for them plugging their answers back in for self-checking.

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

Learning Experiences/ Best Practice

- Use National Library of Virtual Manipulatives ([NLVM](#)) to balance two-step equations for review. This leads to discussion of what an equation is and what inverses are. When solving equations, explain the properties that were used at each step as reinforcement.
- Create a foldable or guided note sheet for combining like terms. Use different colors for variables and terms so students can easily combine them.
- Use Algebra Tiles to model combining like terms. Have students draw what they are modeling on white boards. [Illuminations](#) has an interactive algebra tiles sight.
- Create a foldable or guided note sheet for distributive property. Use whiteboards to allow students to practice and hold their answers up to assess students on understanding.
- Use Algebra Tiles to model multi-step equations with variables on one side and variables on both sides.
- Have students complete the Gizmo Explore Learning activity.
- Use [NLVM](#) to balance multi-step equations. Have students come up to work the problems and other students can use whiteboards.
- Create foldable graphing numbers on the number line which will include the different inequality symbols. On the inside practice graphing numbers.
- Create foldable or note sheet for solving two step inequalities. Make sure to discuss what the answers to an inequality suggest.
- Use Whiteboards to practice solving and graphing inequalities.
- Have students complete the [Baseball Jersey's Task](#) in which they create an equation to see which company has the cheaper price.

- Review the properties of real numbers by using the [VDOE lesson plan](#).
- Give students several examples of equations that have each step shown. Have them name the property that was used to solve that step of the equation. **Strategy:** Have children black out what is identical from one step to another. This allows the children to focus on what is different from one step to the next, which will help them identify the property.

Technology Integrations

Gizmo
Compass Learning
Allen Teachers
Brain Pop
Khan Academy
NLVM
Illuminations

Resources

Text

Glencoe Pre-Algebra pages:

180-185 (Simplifying Expressions by Combining Like Terms)

186-191 (Solving Equations by Adding and Subtracting)

193-198 (Solving Equations by Multiplying or Dividing)

201-206 (Solving Two Step Equations)

230-235 (Solving Equations with Variables on Each Side)

243-249 (Solving Inequalities)

250-255 (Solving Multi-Step Equations and Inequalities)

Mulligan Math in Minutes 8.15

SOL Coach Book Va Edition: pages 178-190

Technology

Gizmo-[solving and modeling two step equations](#)-Interactive Instructional Resource

NLVM: [Interactive Balance Scales](#)-Online Instructional Tool

Compass Learning-<https://www.thelearningodyssey.com> - M7296, 76262, MA7146, MA7154, M8111, M8103, M8031

Allen Teachers-[Solve Equations](#)-TEI Practice

Allen Teachers-[Solve Two Step Equation](#)-TEI Practice

Virginia Department of Education

VDOE-[solving multi-step equations](#)-Lesson Plan

VDOE-[Solving and Graphing Inequalities](#)-Lesson Plan

VDOE-[Properties](#)-Lesson Plan

Other Sites

HCPS: [Equations and Inequalities](#) Instructional materials, practice page, assessments

HCPS: [Properties](#) Instructional materials, practice page, assessments

Illuminations: [Algebra Tiles](#)-Interactive and instructional sight using Algebra Tiles

Inside Mathematics [Performance Tasks](#)

Cross Curricular Connection

English-Have students write to an absent students about how to solve a multi-step equation or two-step inequality.

Science-Relate to Physical Science and solving Distance/Time equations.

