

Solving Equations Using Algebra Tiles

STRAND: Patterns, Functions and Algebra

STRAND CONCEPT: Equality/Solving Equations

SOL: 6.13, 7.12

Remediation Plan Summary

Students model and solve equations, using algebra tiles.

Common Errors and Misconceptions

- Students may experience difficulty moving from solving using the concrete materials to solving numerically. It's important to link the two methods together before releasing students to solve solely using algebraic methods

Materials

- Classroom set of algebra tiles (teacher made – template attached) Recommended to make two copies per set. One color for positive and second color for negative

Introductory Activity

If students are not familiar with algebra tiles, introduce them during the warm-up. An introduction to algebra tiles pieces may be found by visiting <https://mathbits.com/MathBits/AlgebraTiles/AlgebraTiles/AlgebraTiles.html> and displaying the video to the entire class.

Be sure to review the terms of use of material from the MathBits.com site:

<https://www.mathbits.com/MathBits/TermsOfUse/termsOfUse.htm>

Plan for Instruction

- Depending on the teacher's comfort level with algebra tiles, the teacher may continue to engage students in a review of the following:
 - Addition of integers
 - Subtraction of integers
 - Multiplication of Integers
 - Division of Integers
- Teacher should have students practice the following using algebra tiles and engage students in a whole class discussion to review the solutions.
 - $-5 + 12$ $8 - 12$ $-3(7)$ $24 \div (-3)$
 - $9 + (-2)$ $17 - (-5)$ $4(5)$ $-14 \div (2)$
- Introduce students to solving one and two step equations using algebra tiles. Following introduction teacher should have the students practice solving one and two step equations using algebra tiles. Followed by engaging students in a whole class discussion to review the solutions.
 - $d + 3 = 8$ $g - 12 = 10$ $2x + 1 = 5$ $4x - 4 = 20$
 - $-2x - 4 = 12$ $6x = 30$ $8x - 10 = 30$ $3x + 10 = 8x$

AR Remediation Plan – Equality/Solving Equations

- Introduce students to solving equations involving the distributive property using algebra tiles. Followed by providing students with the opportunity to practice solving using algebra tiles.
 - $3(x + 2) = 12$ $2(2x - 1) = 10$ $3(x - 5) = 9$
- Teacher may wish use http://media.mivu.org/mvu_pd/a4a/homework/applets_two_step.html#top to provide students with additional practice solving two step equations with visuals.
- Teacher may also wish to engage students in additional practice opportunities using National Council of Teachers of Mathematics (NCTM) Illuminations <https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Algebra-Tiles/>

Pulling It All Together (Reflection)

- Ask students to draw and solve the following equations using algebra tiles:
 - $4y - 18 = 6$
 - $8p + 3 = -21$

Note: The following pages are intended for classroom use for students as a visual aid to learning

Virginia Department of Education 2018

Algebra Tiles Template

1	1	1	1	1	1	1
1	1	1	1	1	1	1
1	1	x		x		
1	1	x		x		
x	x	x^2		x^2		
x	x	x^2		x^2		