

# Grade 8 Standards Parent Resource

## **Unit 6: Functional Relationships and Linear Equations**

Unit 6 includes 2 topics of study, listed below. This resource is for Topic 2.

Topic 1

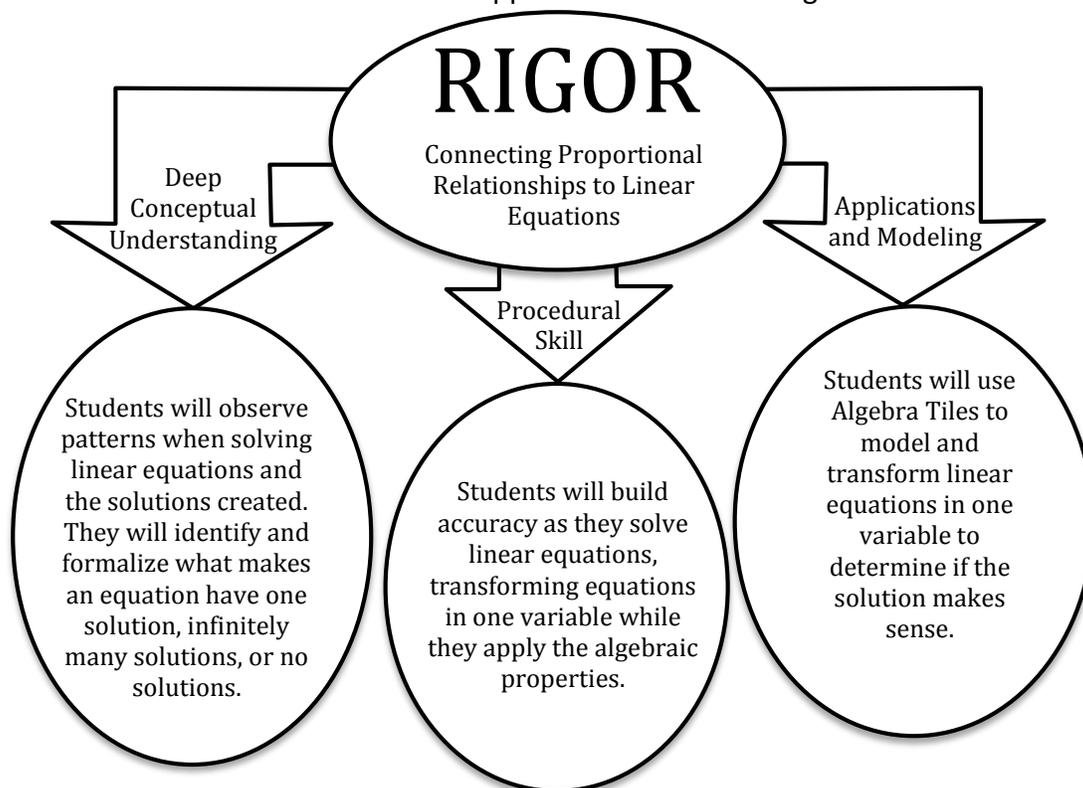
Topic 2

Connecting Proportional Relationships to Linear Equations

Solving Linear Equations

Topic	Learning Goals by <u>Common Core State Standard</u> <i>Students will be able to...</i>
Solving Linear Equations	<ul style="list-style-type: none"><li>Solve linear equations in one variable.</li><li>Give examples of linear equations in one variable with <a href="#">one solution</a>, <a href="#">infinitely many solutions</a>, or <a href="#">no solutions</a>. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form <math>x = a</math>, <math>a = a</math>, or <math>a = b</math> results (where <math>a</math> and <math>b</math> are different numbers).</li><li>Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.</li></ul> <p><i>Instructional videos in the hyperlinks above are meant to support C2.0 content, but may use vocabulary or strategies not emphasized by MCPS.</i></p>

The Common Core State Standards require a balance of three fundamental components that result in rigorous mathematics acquisition: deep conceptual understanding, procedural skill, and mathematical applications and modeling.



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Unit 6: Functional Relationships and Linear Equations    Topic 2: Solving Linear Equations

## Learning Experiences by Common Core State Standard



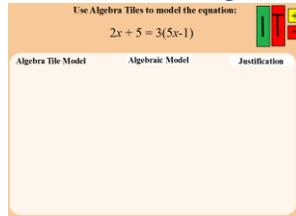
In school, your child will...



At home, your child can...

### Topic 2: Solving Linear Equations

- Solve linear equations in one variable.  
Compare the Algebra Tile Model and Algebraic Model to solve.



- Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form  $x = a$ ,  $a = a$ , or  $a = b$  results (where  $a$  and  $b$  are different numbers).

Algebra Tile Model	Algebraic Model
	$x - 5 + 2(x + 1) = 3(x - 1)$ $x - 5 + 2x + 2 = 3x - 3$ $3x - 3 = 3x - 3$ $-3 = -3$ <p>infinitely many solutions</p>

- Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

Algebraic Model	Justification
$x - 5 + 2(x + 1) = 3(x + 1)$	
$x - 5 + 2x + 2 = 3x + 3$	Distributive Property
$3x - 3 = 3x + 3$	Combine like terms
$-3 = 3$	Subtraction Property of Equality
No solution	

- Examine a linear equation and see how properties are used to transform equations. Visit the CK12 PLIX (Play Learn Interact Xplore):
  - [Multi-Step Equations](#)
- Interpret a model of a real world problem and use it to transform the algebraic equation. Visit the CK12 PLIX (Play Learn Interact Xplore):
  - [Shipments: Multi-Step Equations with Like Terms](#)  
*To access the PLIX, you will need to create a free user account.*
- Ask your child to describe to you how one can use patterns in an equation to help predict the number of solutions the equation will have.

#### Additional Resources

- [Illuminations: Algebra Tiles](#) (online tutorial)
- [LearnZillion: Determine the number of solutions an equation has by recognizing patterns](#) (video tutorial)
- [VirtualNerd: What does it mean when an equation has no solution?](#) (video tutorial)
- [KhanAcademy: Complete missing values in linear equations according to the number of solutions](#) (online check)
- [KhanAcademy: Linear equations with variables on both sides; decimals and fractions](#) (online check)
- [Linear Equations in One Variable](#) (online game)
- [Modeling Addition and Subtraction Equations](#) (online game)
- [Exploring Equations](#) (online game)
- [X Equals Algebra Game](#) (online game)

*Additional Practice links support C2.0 content, but may use vocabulary or strategies not emphasized by MCPS.*