Core Content

Cluster Title: Understand solving equations as a process of reasoning and explain the reasoning.
Standard: A.REI.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.
Concepts and Skills to Master
▪ Understand, apply, and explain the results of using inverse operations. ▪ Justify the steps in solving equations by applying and explaining the properties of equality, inverse and identity. ▪ Use the names of the properties and common sense explanations to explain the steps in solving an equation.

Supports for Teachers

Critical Background Knowledge	
Apply operations to rational numbers, Use order of operations, Simplify expressions using properties of algebra	
Academic Vocabulary	
Constant , Coefficient , Properties of operations & Properties of equalities, like terms, variable, evaluate, justify, viable	
Suggested Instructional Strategies	**Resources**
▪ Have students share different ways of solving equations that lead to the same answer. ▪ Find and analyze mistakes in student work samples. ▪ Partner problems: One student solves, the other writes reasons why steps work. ▪ Introduce a two column proof as a way of organizing justifications.	

Sample Formative Assessment Tasks

Skill-based Task

Justify the equation solution by writing the property or reason why each solution step works.

$3x + 7 = 12$	
$3x + 7 - 7 = 12 - 7$	
$3x + 0 = 5$	
$3x = 5$	
$(3x)(1/3) = (5)(1/3)$	
$1x = 5/3$	
$x = 5/3$	

Problem Task

When Sally picks any number between 1 and 20, doubles it, adds 6, divides by 2 and subtracts 3, she always gets the number she started with. Why? Evaluate and use algebraic evidence to support your conclusion.

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