
Understanding Steps to Solving Equations

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Subjects and Domains

- Math - Operations & Algebraic Thinking - Content
- Math - The Number System - Content
- Math - Algebra - Content

Common Core State Standards

- CCSS.Math.Content.6.EE.A.1
- CCSS.Math.Content.6.EE.A.2
- CCSS.Math.Content.6.EE.A.2a
- CCSS.Math.Content.6.EE.A.2b
- CCSS.Math.Content.6.EE.A.2c
- CCSS.Math.Content.6.EE.A.3
- CCSS.Math.Content.6.EE.A.4
- CCSS.Math.Content.6.EE.B.6
- CCSS.Math.Content.6.EE.B.7
- CCSS.Math.Practice.MP1
- CCSS.Math.Practice.MP2
- CCSS.Math.Practice.MP4
- CCSS.Math.Practice.MP6
- CCSS.Math.Content.7.EE.A.1
- CCSS.Math.Content.7.EE.A.2
- CCSS.Math.Content.7.EE.B.3
- CCSS.Math.Content.7.EE.B.4
- CCSS.Math.Content.7.EE.B.4a
- CCSS.Math.Content.8.EE.C.7
- CCSS.Math.Content.HSA-

Summary

A series of formative assessment activities (pre-test, discussion, collaborative work, post-test) where students learn to generate, match and solve linear equations that involve factorizing and using the Distributive Property.

Attributes of the Formative Assessment Process

- Clarify Intended Learning
- Elicit Evidence
- Interpret Evidence
- Act on Evidence

Specific Connection to the Formative Assessment Process

Teachers use evidence from the pre-test to inform the classroom discussion and provide scaffolding/guidance questions for the collaborative group process. Students reflect on learning in a discussion after collaborative work.

Student Engagement to the Formative Assessment Process

After an independent pre-test, students engage in a classroom discussion to clarify the intended learning and elicit and interpret evidence as to whether their initial strategies were successful. Then, students act on this evidence by adjusting their strategies in a collaborative sorting activity and independent post-test.

Specific Connection to the Common Core State Standards

The resources addresses the CCSS for Expressions and Equations and specifically the Standards for Practice 1, 2, 4, 6

Learning Goals

-
- CED.A
 - CCSS.Math.Content.HSA-CED.A.1

Students will form, match and solve linear equations involving factorizing and using the distributive law.

Success Criteria

A successful student will be able to (a) match (DOK 3) and form (DOK 4) linear equations to real-world problems, and (b) solve equations of the form $px+q=r$ and $p(x+q)=r$.

Context(s) in Which the Resource Could Be Used

This resource utilizes individual (pre/post tests), whole-class (discussions) and small group (sorting activity) settings.

Supporting Evidence

This unit was invaluable in assessing whether students can use variables to represent quantities in a real-world or mathematical context, and solve word problems leading to simple (DOK 2-3) linear equations (2-step). After these activities, a variety of students in our classes, (ELs, GATE, General Ed.) were able to quickly and accurately solve linear equations. For the GATE class, I extended the learning (DOK 3-4) by requiring students to justify their steps with number properties, i.e. distributive, properties of equality, etc.

Principles, Literature, or Research

Students must use the 4 C's (creativity, communication, critical thinking, collaboration) of the 21st century classroom to complete this activity. It also addresses the CCSS focus on the 3 R's (rigor, relevance, relationship) that should be present in every classroom today.

Grades

- 6 - Sixth Grade
- 7 - Seventh Grade
- 8 - Eighth Grade
- 9 - Ninth Grade

Intended End Users

- Student
- Teacher
- Professional Learning Community

Intended Student Populations

- English Language Learners (ELL)
- Gifted & Talented (G&T)

Media Types

- Document
- Presentation

Educational Use

- Activity
- Assessment
- Classifying
- Comparing
- Cooperative Learning
- Discussion/Debate
- Guided Questions
- Hands-On
- Interactive
- Peer Coaching
- Problem Solving
- Project
- Questioning
- Reading
- Reflection
- Writing

Technologies Required for use

in Classroom

- Document Camera
- LCD Projector

Geographics Settings

- Urban
- Suburban
- Rural

License For Primary Material

- Creative Commons
Attribution No Derivatives