Standard #: MAFS.7.EE.1.1

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Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.

Subject Area: Mathematics

Grade: 7

Domain-Subdomain: Expressions & Equations

Cluster: Level 1: Recall

Cluster: Use properties of operations to generate equivalent expressions. (Major Cluster) - Clusters should not be sorted from Major to Supporting and then taught in that order. To do so would strip the coherence of the mathematical ideas and miss the opportunity to enhance the major work of the grade with the supporting clusters.

Date Adopted or Revised: 02/14

Content Complexity Rating: Level 1: Recall - More Information

Date of Last Rating: 02/14

Status: State Board Approved

Assessed: Yes

TEST ITEM SPECIFICATIONS

Item Type(s): This benchmark may be assessed using: EE item(s)

N/A
Assessment Limits :
Expressions must be linear and contain a variable.
Calculator :
Neutral

Context :
Allowable

SAMPLE TEST ITEMS (3)

Test Item #: Sample Item 1
Question:
What is the sum of the two expressions?

$(\frac{2}{5}x+3)+(\frac{1}{5}x-1)$

Difficulty: N/A
Type: EE: Equation Editor

Test Item #: Sample Item 2
Question:
Find the difference of the two expressions.

$(\frac{2}{5}x+5)-(\frac{1}{5}x-3)$

Difficulty: N/A
Type: EE: Equation Editor

Test Item #: Sample Item 3
Question:
An expression is shown.

$2(\frac{3}{5}x+3)-(\frac{2}{3}x-1)$

Create an equivalent expression without parentheses.

Difficulty: N/A
Type: EE: Equation Editor

Related Courses

Course Number	Course Title
1205020:	M/J Grade 6 Mathematics Advanced (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1205040:	M/J Grade 7 Mathematics (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1204000:	M/J Intensive Mathematics (MC) (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
7812020:	Access M/J Grade 7 Mathematics (Specifically in versions: 2014 - 2015, 2015 - 2018, 2018 - 2019, 2019 and beyond (current))
7912115:	Fundamental Explorations in Mathematics 2 (Specifically in versions: 2013 - 2015, 2015 - 2017 (course terminated))

Related Access Points

Access Point

Access Points Number	Access Points Title
MAFS.7.EE.1.AP.1a:	Add and subtract linear expressions that include like terms.
MAFS.7.EE.1.AP.1b:	Factor and expand linear expressions.

Related Resources

Virtual Manipulative

Name	Description
Algebra Balance Scales-Negatives:	This virtual manipulative allows the learners to solve simple linear equations through the use of a balance beam. Unit blocks and *x*-boxes are placed on the pans of a balance beam to balance it.

Lesson Plan

Name	Description
Data Sets Represented in Computers:	This lesson shows how data can be represented by computers, in relation to everyday activities we may not be aware that we use computer. It gives an overview of graphing data by creating a histogram based on population data. Using the data collected, students will get a chance to hand write code to show what structure is needed for computers to collect, analyze and distribute such data. This lesson is lesson 1 of the Data Set and Deviation Statistics Unit and bridges statistical concepts of data collection, graphing and analysis with programming a computer using coding language while reinforcing foundational algebraic skills.
Gather Data For Distribution by Programming an App:	This lesson allow students to gather, calculate, and plot data using both computer code and mathematical equations. In this lesson students will create a pedometer app to demonstrate the understanding of algorithms, components (such as buttons, textboxes, sensors, etc.), and If/Then statements. This lesson uses algebraic equations and random data to access the needed components to store data in a spreadsheet.
Steps to Solving Equations:	This lesson unit is intended to help you assess how well students are able to form and solve linear equations involving factorizing and using the distributive law. In particular, this unit aims to help you identify and assist students who have difficulties in using variables to represent quantities in a real-world or mathematical problem and solving word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$.
Total Recall:	Using the notion of a broken robot, this lesson provides opportunities for students to apply different strategies and properties to expand, add, subtract, or multiply to determine equivalent expressions. The students will analyze their procedures and answers.
Using Positive and Negative Numbers in Context:	This lesson unit is intended to help you assess how well students are able to understand and use directed numbers in context. It is intended to help identify and aid students who have difficulties in ordering, comparing, adding, and subtracting positive and negative integers. Particular attention is paid to the use of negative numbers on number lines to explore the following structures: • starting temperature + change in temperature = final temperature • final temperature – change in temperature = starting temperature • final temperature – starting temperature = change in temperature

Problem-Solving Task

Name	Description
Equivalent Expressions?:	Students are asked to determine if two expressions are equivalent and explain their reasoning.
Miles to Kilometers:	In this task students are asked to write two expressions from verbal descriptions and determine if they are equivalent. The expressions involve both percent and fractions. This task is most appropriate for a classroom discussion since the statement of the problem has some ambiguity.

Formative Assessment

Name	Description
Equivalent Perimeters:	Students are asked to solve a geometric problem by simplifying an algebraic expression.
Equivalent Rational Expressions:	Students are given a polynomial with rational coefficients and asked to identify equivalent expressions from a given list.

Factored Forms:	Students are given two expressions and asked to rewrite each in factored form using the fewest number of terms.
Identify Equivalent Multistep Expressions:	Students are given an expression and are asked to identify expressions equivalent to it.

Assessment

Name	Description
Sample 1 - Seventh Grade Math State Interim Assessment:	This is a State Interim Assessment for seventh grade.
Sample 2 - Seventh Grade Math State Interim Assessment:	This is a State Interim Assessment for seventh grade.
Sample 3 - Seventh Grade Math State Interim Assessment:	This is a State Interim Assessment for seventh grade.

Tutorial

Name	Description
Solving Equations With the Variable on Both Sides.:	This video models solving equations in one variable with variables on both sides of the equal sign.

Unit/Lesson Sequence

Name	Description
Variables and Patterns of Change: Translating Words Into Symbols; Linear Equations:	Lesson Plan 1: Miles of Tiles - The Pool Border Problem, students will recognize patterns and represent situations using algebraic notation and variables. Lesson Plan 2: Cups and Chips - Solving Linear Equations Using Manipulatives, students use manipulatives to represent visually the steps they take to obtain a solution to an algebraic equation. They develop an understanding of the connections between the solution involving manipulatives and the symbolic solution. Students work in teams of four. Site includes a Topic Overview, Lesson Plans, Student Work, Teaching Strategies, Resources, and a video of Workshop 1; Part 1.

Student Resources

Name	Description
Algebra Balance Scales-Negatives:	This virtual manipulative allows the learners to solve simple linear equations through the use of a balance beam. Unit blocks and *x*-boxes are placed on the pans of a balance beam to balance it.
Equivalent Expressions?:	Students are asked to determine if two expressions are equivalent and explain their reasoning.
Miles to Kilometers:	In this task students are asked to write two expressions from verbal descriptions and determine if they are equivalent. The expressions involve both percent and fractions. This task is most appropriate for a classroom discussion since the statement of the problem has some ambiguity.
Solving Equations With the Variable on Both Sides.:	This video models solving equations in one variable with variables on both sides of the equal sign.

Parent Resources

Name	Description
Algebra Balance Scales-Negatives:	This virtual manipulative allows the learners to solve simple linear equations through the use of a balance beam. Unit blocks and *x*-boxes are placed on the pans of a balance beam to balance it.
Equivalent Expressions?:	Students are asked to determine if two expressions are equivalent and explain their reasoning.
Miles to Kilometers:	In this task students are asked to write two expressions from verbal descriptions and determine if they are equivalent. The expressions involve both percent and fractions. This task is most appropriate for a classroom discussion since the statement of the problem has some ambiguity.
Solving Equations With the Variable on Both Sides.:	This video models solving equations in one variable with variables on both sides of the equal sign.