Lesson 8: Applying the Properties of Operations to Add and Subtract Rational Numbers

Classwork

Example 1: The Opposite of a Sum is the Sum of its Opposites

Explain the meaning of “The opposite of a sum is the sum of its opposites.”Use a specific math example.

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| **Rational Number** | **Rational Number** | **Sum** | **Opposite of the Sum** |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| **Opposite Rational Number** | **Opposite Rational Number** | **Sum** |
|  |  |  |

Exercise 1

Represent the following expression with a single rational number. Simplify by using each operation to get one single rational number.

Example 2: A Mixed Number Is a Sum

Use the number line model shown below to explain and write the opposite of as a sum of two rational numbers.

The opposite of a sum (top single arrow pointing left) and the sum of the opposites correspond to the same point on the number line.

Exercise 2

Rewrite each mixed number as the sum of two signed numbers.

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Exercise 3

Represent each sum as a mixed number.

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Exercise 4

Mr. Mitchell lost pounds over the summer by jogging each week. By winter, he had gained pounds. Represent this situation with an expression involving signed numbers. What is the overall change in Mr. Mitchell’s weight?

Exercise 5

Jamal is completing a math problem and represents the expression with a single rational number as shown in the steps below. Justify each of Jamal’s steps. Then, show another way to solve the problem.