

Operating On Integers Unit Design

Unit Title: *Operating on Integers*

Standards Addressed (from Common Core State Standards, NGO and CCSSO, 2010):

Understand that positive and negative numbers are used together to describe quantities having opposite directions or values

Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers (*Integers only in this unit*); represent addition and subtraction on a horizontal or vertical number line diagram.

Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers (*Integers only in this unit*).

By the end of the unit, what will students come to...

Know	Understand	Be Able to Do
<p>Vocabulary: absolute value, integer, negative, number system, opposite, positive, zero pair</p> <p>The layout of a number line</p> <p>How to model integers and integer operations with two-colored counters and number lines</p> <p>Notation of absolute value and integers</p> <p>How to add, subtract, multiply and divide integers</p>	<p>A negative in mathematics always means “the opposite.”</p> <p>Any number is a member of one or more number systems, and each number system has clearly defined properties including basic operations.</p> <p>Mathematical operations apply to and follow the same patterns within our number systems and mathematical disciplines.</p>	<p>Model integers and integer operations in different ways</p> <p>Apply and compute operations with Integers</p> <p>Explain the relationships between positive and negative numbers</p> <p>Apply integers to and solve real world situations</p>

Pre-Assessment Ideas:

Frayer Times 4: **Vocabulary:** 16 **problems** ($5 + 3$; $5 + (-3)$; $-5 + 3$; $-5 + (-3)$). This pattern with addition is repeated with subtraction, multiplication and division); **Short answer:** Describe what a negative means in mathematics, and how you can see this meaning on a number line, in operations, and anywhere else. **Representations:** Show any methods, pictures or rules that you know about working with integers.

Summative Assessment Ideas:

You are a Target store manager in charge of balancing your store's inventory and budget. You will calculate a month's inventory purchasing and sales using your knowledge of integers (since for the IRS everything rounds to the nearest dollar). You will give a monthly summary including your balance sheet and written explanation of the balance to your boss.

Formative Assessment Ideas:

Guided practice, independent practice, classroom observations, exit cards, modeling, mini-quiz over addition/subtraction and multiplication/division

Resources:

Number lines, two-color counters, chart paper (construction paper), markers