Subtracting Integers

Lesson Overview

This introductory lesson introduces the concept of subtraction as addition of the additive inverse. Students will use number lines and two color counters to find the difference between two integers.

Standards Addressed

7.NS.1 Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their different and apply this principle in real-world contexts.

Disciplinary Literacy Best Practices

Quick Write

Lesson Plan

Time Required: One 80-minute Class Periods

Disciplinary Vocabulary: integers, additive inverse, number line, negative, absolute value

Materials:

- Playing Cards
- Dry Erase Boards and Markers
- Two Color Counters

Assessment: Quick Write

Engage

- Teacher asks: "What is a negative number? Is it possible to subtract 7 from 5? When I owe someone money, do I have positive money or negative money?"
- Students explore the idea of adding and subtracting integers. Can we have less than nothing (zero)? Can we subtract from less than nothing (zero)? Can we add to, or increase, less than nothing (zero)?

Explore

- Students will explore integer chips and number lines to help solve adding and subtracting integers.
- A number plus its opposite equals zero. [5 + (-5) = 0] If I had 5 dollars and spent five dollars, what am I left with? No money… zero money.
- Teacher writes two problems on the board: [-7 + -2= -9 and -7 + 2 = -5]
- What other problems have we seen where 7 and 2 are the same as 9? … where 7 and 2 are the same as 5?
    - Same signs- add and keep same sign:
    - Different signs- subtract and keep the sign of the number with the greatest absolute value. Since the absolute value of 7 is larger than the absolute value of 2, and 7 is negative; the answer will be negative.
- Students use integer chips. Yellow represents positive numbers; red represents negative numbers.
- Show me -8 with your chips.
- Show me 3 with your chips.
- Now combine -8 + 3… the three positives cancel out with three of the negatives.
- What's left? 5 negative chips, so -8 + 3 = -5
- Students practice adding integers and then move to subtraction.
- Have students complete 5 + (-2) and 5 - 2. What connection can we make to adding negatives?
- What about subtracting a negative? 5- (-2)
    - If adding a negative is the same as subtraction, then subtracting a negative is the same as addition! This is an example of an additive invers. (Also, a connection can be made to using double negatives in English.)
- Students complete various subtraction problems
- Show students how to use integer chips without actually having the chips (draw them!)
- Students complete integer card game and record results.

Explain

- Quick Write: Write a letter to your younger sibling or cousin explaining how to add and subtract integers.

Extend

- Students complete the Card Deck Activity to practice subtraction of integers.
- Provide each group of two or three students a deck of playing cards and recording grid.
- For the first 12 minutes, students will be adding integers so all problems will be addition. After 12 minutes, all problems will be subtraction problems instead.
- Red = negative, Black = positive; you must write the problem in the same order in which the problems were drawn. Jack = 11, Queen= 12, King= 13, Ace= 1

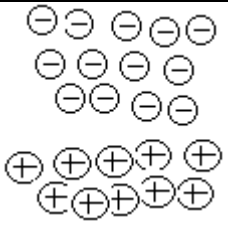
Teacher Biographical Information

Lesson Author:

Chelsea Walmsley is a 2nd year math teacher in Dorchester 4. She has taught for 3 years and resides in Summerville, SC.

Card Deck Activity:

Red = negative, Black = positive; you must write the problem in the same order in which the problems were drawn. Jack = 11, Queen= 12, King= 13, Ace= 1

Card One	Card Two	Problem	Work	Answer
(EX) Red King (13)	Black 10	-13 + 10		-3