

Figure 8.8. Operating on Integers Lesson Plan – Day 2

Date: 10/11

Standards:

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.

Highlighted Standards for Mathematical Practice:

SMP1: Make sense of problems and persevere in solving them

SMP2: Reason abstractly and quantitatively

SMP4: Model with Mathematics

SMP5: Use appropriate tools strategically.

SMP8: Look for and express regularity in repeated reasoning.

Know:

- Vocabulary: absolute value, integer, negative, number system, opposite, positive, zero pair
- The layout of a number line
- How to model integers and integer operations with two-colored counters and number lines
- Notation

Understand:

- A negative in mathematics always means “the opposite.”
- Mathematical operations apply to and follow the same patterns within our number systems and mathematical disciplines.

Be able to Do:

- Model integers and integer operations in different ways
- Apply integers to and solve real world situations

Whole Class

1. Highlight great explanations of adding to zero from yesterday's group task #3.
2. Review vocabulary and notation with white boards
3. Review zero pairs (adding to zero) with number lines and 2-color counters on white boards. Ask if anyone is beginning to prefer a method yet.
4. Will everything always equal zero when you add integers? What do you think? Can you give an example when it wouldn't equal zero? Introduce and model context problems.

Small Groups

Readiness differentiation based on exit card and small group observations:

- 1 – Given contexts that build up to 3 addends, write equations and use models as needed to solve. Work with a partner or alone as preferred.
- 2 – Begin with representing contexts with an integer value. Next, given contexts, write equations and use models to solve. Work with partners. Partners can float to teacher group as needed.
- 3 – Begin with representing contexts with an integer value. Next, given contexts, write equations and use models to solve. Work with teacher to begin, release students to work in pairs or triads as they are ready.

Whole Class Discussion:

1. Yippees and Yikes – what went well, what didn't go well, what do we still need to work on?
2. Pros and Cons of the number line and 2-color counters? Any preference?

Exit Card:

Describe a situation that could be represented by a sum of -15

Describe a situation that could be represented by a sum of $+10$

Solve the following problem:

The average temperature in Minneapolis in the winter is about 19° Fahrenheit (which is -7° Celcius). One very cold day, the temperature was 25° below the average (Fahrenheit). What was the temperature that day?	
Make Sense: Diagrams or number line	Notation: Write it in math

Final solution:	

Formative Assessment: Small group work monitoring, Yippees and yikes

Check for Understanding: Small group sheets, Exit cards

