Representing, Identifying, and Comparing Integers

Summary

Use integers to represent real-world situations. Read and identify integers. Locate integers on a number line. Compare and order integers.

Main Core Tie

Mathematics Grade 6
Strand: THE NUMBER SYSTEM (6.NS) Standard 6.NS.5

Materials

- Worksheets: " Integers In Our World", " Representing Integers Using Physical Models", " Comparing Integers", " Integers and Their Opposites" journal entry
- Integers Choice Board project
- Student Response Cards
- Ti-73 calculators with Numline Application

Background for Teachers

Enduring Understanding (Big Ideas):
Integers
Essential Questions:
How can integers be represented by models and realworld situations?
How can a number line help in comparing integers?
How can I recognize integers and their opposites with and without the number line?
Skill Focus:
Comparing integers and identifying their opposites. Finding the sum of additive inverses.
Vocabulary Focus:
Integer, positive number, negative number, opposite.
Ways to Gain/Maintain Attention (Primacy):
Hypothesizing, cooperative discussion, story, technology, writing, manipulative, movement.

Instructional Procedures

Starter:
Order these rational numbers with and without a number line: 1 4/5 , 0, 7/8 , 1.5
Lesson Segment 1(Launch): How can integers be represented by models and real-world situations?
Tell students you will be placing numbers in two columns. As you place the numbers in the columns, they should be trying to discover why certain numbers are placed in column 1 and others in column 2, so that they will be able to suggest a number for each column. Put three or four numbers in each column. Then, ask students if they think they are ready to suggest a number for each column. If they suggest a positive integer for column 1 and a negative number for column 2, tell then they are correct, but don't tell them why. If they don't suggest positive and negative integers, tell them they are incorrect without telling them why. After 2-4 students have suggested numbers, ask teams to discuss what they think might be the common characteristic for the numbers in each column. Ask one or two students to tell the class the common characteristic their teams discussed. Have the other students use their Agree-Disagree- Unsure Response Cards (attached) to indicate their agreement to the ideas suggested by the two students. Write "positive integers" above column 1 and "negative integers above column 2. Use this two-column comparison.

After agreeing that these are either

positive or negative integers, tell students you are going to suggest a real-world situation for four of the numbers in the columns, underlining the words that suggest whether the numbers will be positive or negative integers then you'll be asking them to write some integers and situation for each of the other numbers in the chart.

You could write statements such as:

I invited 10 friends to my party. (10)

The temperature dropped 4 degrees in an hour. (-4)

The Sears Tower in Chicago is (1,353)

Yellowstone Falls drops 308 feet. (-308)

I threw a touchdown pass for 25 yards

I lost $12.00

Give the students the " Integers In Our World" (attached). Ask them to write the numbers in the chart that have been shown. Then, have two students on each team work for a few minutes to write real-world situations for the positive integers and the other two work together to write situations for the negative integers. Student pairs then share their ideas. Each person may choose to use the ideas from the others or write their own situations.

Use Algeblocks and the Basic Mat worksheet, " Representing Integers With Physical Models", attached or Two-Color Counters on the worksheet. Have them make up the last three situations. Represent all models using an integer.

Go over the Choice Board project (attached). Give the students a due date.

Lesson Segment 2: How can a number line help in comparing integers?

Show students the number line as you explain that the further to the right you move on the number line, the greater the number's value. Tell them you will give them a number, and you want them to "aim" for a number that is greater using their arms to pretend they are holding a bow and arrow. Say a number and have them aim. Choose a student to tell what number he/she is aiming for. Select several students to respond as you give different numbers and ask them to aim at a number that is greater or a number that is less.

"Use Four-Corners", where one person from each team goes to a corner to meet with others their to discuss and work through one problem on the Comparing Integers worksheet. The students then return to their seats and teach the team their problem.

Have students use their Agree/Disagree/Unsure response cards as you show them these statements. Discuss each referring to the number line.

$-9 < -10$

$0 < -5$

$-6 > -8$

$7 = -7$

$12 < 15$

$-8 > 1$

Lesson Segment 3: How can I recognize integers and their opposites with or without a number line?

Ask students to compare the numbers in this two-column comparison chart as you give pairs of numbers. Tell them to touch their elbow when they think they can put a pair of numbers in the chart. Then, have the students all write three more pairs of numbers.

Have them look at the number line and the distance each number is from its opposite. Have students

set up the Numline App on the TI-73. Give students a number to draw/label and have them draw/label its opposite. Have them sketch a few opposite pairs on graphs on the back of the Comparing Numbers worksheet.

Ask students to use their calculators to add a few integral opposite pairs looking for a pattern. Tell students that two numbers whose sum is 0 are called opposite or additive inverses. Have each student list 5 pairs that are additive inverses and check their sum on their calculators.

Because the he sum of a number and its additive inverse is always zero, we call additive inverse numbers "a zero pair". Use the back of the basic mat worksheet and Algeblocks or two-color counters to model adding opposite integers focusing on "a zero pair" as they model, sketch and represent. Have students complete the attached Integers and Opposites Journal Page.

Assign any text practice as needed.

Assessment Plan

Performance, observation, questions, project.

Bibliography

This lesson plan was created by Linda Bolin.

Authors

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