

Gaming in the Classroom - Lesson Plan

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Wii - Big Brain Academy: Wii Degree

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Grades: 5-6 Subject Area: Math

Overview

In this lesson, students will be able to order positive and negative whole number integers greatest to least and least to greatest.

A. Topic: Ordering Whole Number Integers/Concept of Integers, positive and negative whole numbers

B. Objectives: Common Core Standards

CCS 6. NS	<p>Apply and extend previous understandings of numbers to the system of rational numbers.</p> <p>5. Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.</p> <p>6. Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.</p> <p>a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$, and that 0 is its own opposite.</p> <p>7. Understand ordering and absolute value of rational numbers.</p> <p>a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. <i>For example, interpret $-3 > -7$ as a statement that -3 is located to the right of -7 on a number line oriented from left to right.</i></p> <p>b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. <i>For example, write $-3^{\circ}\text{C} > -7^{\circ}\text{C}$ to express the fact that -3°C is warmer than -7°C.</i></p> <p>c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. <i>For example, for an account balance of -30 dollars, write $-30 = 30$ to describe the size of the debt in dollars.</i></p>
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	d. Distinguish comparisons of absolute value from statements about order. <i>For example, recognize that an account balance less than -30 dollars represents a debt greater than 30 dollars.</i>
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C. Instructional Resources:

Wii Gaming System	Wii Big Brain Academy: Wii Degree
Projector/White board	Wii remote
Paper/pencil for students	Pre/Post tests if desired

D. Procedures:

1. Introduce the integer number line to students on the board. Review greater than and less than comparing symbols and meanings using whole numbers. Discuss real world uses of positive and negative integers.
2. Lead students through think alouds in ordering positive and negative integers on the board. Take initial questions from students.
3. Introduce Balloon Pop game on the Wii and discuss objectives of the game. On the screen will be a variety of balloons, each with a different integer on it. The game player tries to pop the balloons in order from least to greatest values as quickly as possible. Once you get to the Balloon Pop practice game, you need to choose the hard level in order to have both positive and negative integers on the balloons.
4. First student player comes up and uses the Wii remote to pop the balloons on the screen. Teacher is at the board talking through the integers in the balloons and the proper order to be popped. Students at their seats should attempt to order the balloons as well, by writing down the integers with the least and greatest value on the screen.
5. Students should be able to play three to five screens each in one class period. This game moves very quickly and allows each student a chance to come up and practice a few times. This also allows many opportunities for students at their seats to practice finding the least and greatest integers on the screen.
6. Be sure to change things up at some point on the board and give the students the task of ordering the integers in order from greatest to least. I was surprised at the difficulty some had at applying this skill in the opposite direction. Once we reviewed it and peers talked through how they thought about the difference, most students were able to correct previous errors in this area.

Teach:

*Suggestion: Teacher stands at the board and works first problems and then as students become comfortable, invite students to come up to the board to do problems as models for the class.

*Students who are not actively participating in the game should be at their seats doing problems. In this lesson, we found it difficult for students to write down all integers on the

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screen in order (time is too short, especially if the student playing the game goes quickly). We suggest that you have the students at their seat identify the least and greatest integer on the board and write those numbers on their paper. Collect papers at end of class and review for engagement and understanding.

*Suggestion: Have an order in place so students know who goes next- this will free up time during the lesson.

*If Pre/Post tests are going to be given, plan for these assessments during a different class time, this lesson will last for the full 45-50 minute period (in order for all students to hit the ball and fully participate). Our pre and post test data showed incredible growth immediately after the lesson, as well as retained knowledge two months later for 90% of our student sample.

*Sample game play:

Player number one takes the Wii remote and hits the button to start the first screen. The screen has five to six balloons of different sizes and colors, moving around in all states of direction, each with a different positive or negative whole number integer on it. The student just needs to aim at the balloon with the least value on it and shoot. If the student has chosen the correct balloon, they will be able to continue on to finding the next least valued balloon. If the student chooses the wrong balloon (not the least valued balloon on the screen) there will be a red X on the screen and the game moves on to a new screen immediately.

Closure:

1. Review integer placement on a number line
2. Review real world applications of integers both positive and negative (sea level, debt vs. credit)
3. Review greater than and less than ordering skills
4. Post test plans if desired

Assessment:

1. Teacher observation
2. Collect student seat work and evaluate for participation or for correct integer ordering
3. Conduct Pre/Post tests covering ordering positive and negative whole number integers

Connections:

- *Using integers in expressions and equations
- *Applying integers, positive and negative, in real world scenarios and problem solving situations
- *This lesson can be utilized with much younger students by choosing the easy and medium levels which do not include negative integers

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