

Lesson 1 is THE HUMAN NUMBER LINE for our topic “Using Manipulatives and/or Technology. By actually moving on the number line, students will hopefully get a better understanding of the addition of positive and negative integers, satisfying the following objectives of the workshop:

- *develop higher-level knowledge of math content for the public schools
- *develop presentations for classrooms, to share with peers

Name: Ellen Montgomery

Grade Level/Subject: Pre-Algebra

Topic: The Human Number Line

Objectives (P.A.S.S.): Content Standard 2: Number Sense

- 1.a. Compare and order rational numbers
- 1.b. Use the basic operations on rational numbers

Introduction: Students often struggle to learn operations with rational numbers. In an attempt to help understanding of the concept, I tried this suggestion of a human number line.

Instructional process:

Material needed: masking tape
2 pairs of scissors
black permanent mark
5 X 7 cards
clear, wide packing tape
large unused floor space (though a hallway may suffice if no classes would be disturbed)

Ahead of time, I cut the note cards in half, numbering them with the integers from -10 to 10. These were used for the coordinates on the number line.

I made several others for adding, 2 or 3 of each integer, including absolute values. Depending on how much time you have, you may, as I did, want to have the long strip for the number line already on the floor, also.

I chose to allow the students to measure each unit as 12 inches (this allowed for body width), cutting short tabs of masking tape and placing them perpendicular to the line of masking tape. Ten feet in both directions worked well. As the unit tabs went down, others used the prepared integers from -10 to 10, placing them as coordinates to the number line, securing them with the clear, wide packing tape.

With the number line in place, I gave each of two students an integer, telling them to get in their own position. They were then to step forward (above the line) if they were the larger of the two integers, and backward (below the line) if they were the smaller integer.

The rest of the class could challenge for 2 points if they chose. Then a new pair stepped up with two new integer cards, and repeated the process. We kept up with the points.

As they began to get a feel for what they were doing, we moved into addition of integers. They found their initial position with the first card, and as they were given the second card they moved to the right if it was positive, and to the left if it was negative. The rest of the class could still challenge (and they had more reason to do so for awhile). I eventually moved them to the chalkboard, and they drew a number line on the chalkboard. I expected them to recognize the pattern, but few were able to. I eventually just gave them the rules for addition.

Closure: This exercise took three days. I continued to send them to the chalkboard for review for another day in order for them to get the addition rules established in their minds before introducing the rules for multiplication and division. I have delayed subtraction until they have established the rules of multiplication and division.

Assessment: Each night they had a few problems from the textbook to work on their own.

Modifications/Accommodations: The only modification this required was to allow the sharper students to get the answer without using the number line.

Reflection: I was somewhat disappointed that my students were not able to recognize the pattern of adding two negatives or a negative and a positive. Next time I will not spend so much class time on the exercise, though I did feel it was a worth a day or two.