

**TITLE: The Sum of Our Integer Intelligence**

**GRADE: Grade 7**

**CONNECTIONS OF  
LESSON TO SMART  
CONCEPTS AND OHIO  
STANDARDS:**

**SMART Concept:**

**State of Ohio Academic  
Content Standard:**

Number, Number Sense and  
Operations Standard

**Benchmark:**

- Clarify problem-solving situation and identify potential solution processes; consider different strategies and approaches to a problem, restate problem from various perspectives.
- Apply and adapt problem-solving strategies to solve a variety of problems, including unfamiliar and non-routine problem situations.
- Use more than one strategy to solve a problem, and recognize there are advantages associated with various methods.
- Communicate mathematical thinking to others and analyze the mathematical thinking and strategies of others.
- Recognize and use mathematical language and symbols when reading, writing and conversing with others.

**Grade Level Indicator:**

7N5 Explain the meaning and effect of adding, subtracting, multiplying and dividing integers; e.g., how adding two integers can result in a lesser value  
7N6 Simplify numerical expressions involving integers and use integers to solve real-life problems  
7N8 Develop and analyze algorithms for computing with percents and integers, and demonstrate fluency in their use

**Mathematical Processes Standard**

**Benchmark:**

**Source:**

Annette Brewer, Maureen Hahn, Elizabeth Fach, Robin Graves, Michelle Malhester – Maryland  
<http://www.nsa.gov/programs/mepp/ms/prealg06.pdf>  
SMART Consortium-MIGG

**Common Misconceptions and/or Errors:**

\* Students may believe they can add two negative numbers using their face value, and combining them to obtain a positive number.

**Lesson Summary:**

The students will work in teams to apply the rules for the addition of integers and graphing ordered pairs in a coordinate plane through the use of seven learning stations based on the seven intelligences identified by Dr. Howard Gardner. Each station contains one or more performance tasks and scoring keys or rubrics.

**Estimated Time duration:**

Each station requires 20-25 minutes (Total: 175 minutes or ~5 class sessions)

**Materials/Equipment Needed:**

**Teacher:**

The full lesson can be found at this website:  
<http://www.nsa.gov/programs/mepp/ms/prealg06.pdf>  
Overhead transparency with Howard Gardener's seven Intelligences (see appendix)  
7 intelligence stations complete with appropriate performance task, answer key and supplies per station (see appendix)

**Student:**

Pencil  
Paper

**TITLE: The Sum of Our Integer Intelligence**

**GRADE: Grade 7**

Scissors

Tape

**Pre-Assessment:**

**Pre-Assessment Scoring**

**Rubric:**

This lesson would be used as a culminating activity to a unit on addition of integers. Students need a working knowledge of: the rules for the addition of integers, estimation, and how to

plot an ordered pair on a coordinate plane.

**Post-Assessment:**

**Post-Assessment Scoring Rubric:**

Information on individual stations (found in the appendix) includes the description of a performance task for students to complete as a form of assessment.

**Post-Assessment Scoring Rubric:**

Information on individual stations also includes scoring criteria and/or a rubric to determine student progress.

### **Key Vocabulary:**

Integers - the natural numbers, the negatives of these numbers, and zero

Absolute value - the nonnegative value for any real number

Coordinate plane – formed by the intersection of two number lines at the point (0,0)

Ordered pair – a pair of numbers, in specific order, where the first number indicates the location of a point in the coordinate plane along the x- axis and the second number indicates the location of that point in the coordinate along the y-axis

### **Steps for Instruction:**

1. Set up the seven intelligence stations around the room (see appendix)
2. Show the overhead transparency outlining Gardner’s multi-intelligence to the class and facilitate a discussion to generate student exposure to the topic.
3. Divide the class into teams of four students each.
4. Designate a specific station as the starting point for each team.

Refer to this website link for complete lesson information:

<http://www.nsa.gov/programs/mepp/ms/prealg06.pdf>

### **Differentiated Instruction:**

#### **Intervention:**

\* For students who have difficulty with the concept of integers, it may be necessary to lead them through one or more stations explaining each station in detail.

\* If students continue to have difficulty grasping the concept of working with integers, lessen the number of stations they must work through.

\* Assign students to groups based on balancing ability levels (group higher students with struggling students) so they can help each other.

#### **Enrichment:**

\* Create word problems that use addition of integers in real life situations that students may encounter.

\* Make up a new round of stations that use integer addition.

#### **Extensions:**

\* Create a new area of “intelligence” that would intrigue students, and design an activity to support it.

\* Create a new activity for one of Gardner’s seven intelligence types that attends to a higher level on Bloom’s Taxonomy.

\* Have students complete the student survey (see appendix).

### **Homework Suggestions and Home Connections:**

\* Have students create 5 problems related to the poem or song they created, and have the parents read/sing the poem/song and solve the problems the students wrote to correspond to the work.

### **Interdisciplinary Connection:**

\* This lesson lends itself to connections with Language Arts, physical education, dram and the performance arts as evidenced in several of the station activities.

### **Technology Connection:**

\* Graph the ordered pairs using a computer program or graphing calculator

### **General Tips:**

\*Many of the stations require adequate time for the teacher to prepare the station for student use. Here are some tips to help you gauge preparation time:

Bingo Station – Logical/mathematical

You will need to copy the Bingo cards and task worksheet for each student

Coordinate Pairs – Visual/spatial

You will need to copy both student worksheets

Rap/Song - Musical/Rhythmic

You will need to copy the rubric for each student to use

Game – Interpersonal

Be sure to have necessary supplies at the station (scissors, tape, etc.)

You will need to copy the rubric for each group

Have tag board available for use as a game board

Poem – Verbal/Linguistic

You will need to copy the rubric for each student

Rock Pattern – Body/Kinesthetic

You will need to create the rocks as described on the 1st worksheet

You will need to create a “river” path with blue paper

You will need to copy the worksheet for each group

Journal Entry – Interpersonal

Be sure to supply notebook/lined paper for student use

You will need to copy the rubric for each student

\*\*NOTE: If you need to use fewer stations during the class time, you could modify this lesson and assign the poem, rap/song or journal for homework.

\* Several of the station activities could be used as individual assessments for one class period.

\* If there are a lot of students absent from a class one day, these activities could be used to structure a review of integers within a whole class setting instead of setting up individual stations around the room.

### **Appendix:**