

# Subtracting Integers with Counters <---Sketch Title



**Sketch Filename:** SubIntegers.gsp

**Movie Filename:** SubIntegers.mov

**Math Concept(s)**

**Suggested Grades**

**Sketchpad Level**

Integers Subtraction

7  
 8  
 9 Applied

Easy  
- drag points and click buttons

Beginner  
Intermediate  
Experienced

## Learning Goals:

- Explore and practice integer subtraction
- Recognize the significance of the Zero Principle in subtraction
- Recognize the relationship between addition and subtraction of integers

## “Sketchy” Description:

- This 10-page sketch includes
- Demonstration and exploration of the Zero Principle using the “Zero Tool”
  - Exploration and practice of integer subtraction with and without the Zero Principle
  - Discover the relationship between integer addition and subtraction
  - Self-checking practice for reinforcement
  - Related resources Leading Math Success: Notable Strategies (2004) Grade 7 Lessons 18-29 (Term 3)

## Lesson Plan Suggestions

- description of how the sketch might be used in each of the three lesson parts - *Minds On, Action!, Consolidate.*
- includes student groupings, instructional strategies, and connections to manipulatives or other technologies.

**Minds On** - Whole class demonstration of colour counters to represent integers (using the GSP sketches or overhead projector if preferred)

- Demonstrate the Zero Principle as adding pairs of positive and negative counters (using the GSP sketches or overhead projector if preferred)
- Using the GSP sketches students work individually or in pairs to explore various representations of negative and positive values

**Action!** - Using the GSP sketches students work individually or in pairs to:

- Investigate and practice integer subtraction with and without using the Zero Principle
- Explore and recognize the inverse relationship between integer addition and subtraction

**Consolidation** - As a whole class activity conduct a Think-Pair-Share: Have students think about and record in their math journals any confusions, conclusions, and discoveries; Share with a partner then open the discussion to the entire class. The teacher may want to extend/clarify the discussion through demonstration with money exchange or a human number line (see extension activity).

## Extensions:

- Explore addition and subtraction using a human number line. Create a number line on the classroom floor spanning from approximately -10 to +10. Have students “walk the line” to represent various expressions. For example  $(+5) + (-2)$ : starting at zero a student walks forward five steps (+5); the student then walks backwards two steps (-2); thus the student will be standing on (+3). To reinforce the directionality of integers it is important that students walk forward and walk backwards. During this exercise it is also important to further explore/reinforce the inverse relationship when subtracting integers (e.g.,  $(-4) - (-3) = (-4) + (+3)$ ).

## Questions or activities for students/parents to explore together: