Integer Rules

**Lesson Summary** Students will formulate rules and apply them to simplify adding integers with like and unlike signs.

**Major Topic and SOL**

Math SOL (2009) 8.3.a

**Length of Unit** 80 minutes

**Student Objectives**

 **In Mathematics the student will be able to:**

* Determine patterns of addition integer equations
* Formulate rules for adding integers
* Apply rules to simplify expressions involving adding integers

**In Language the students will be able to:**

* Discuss patterns and rules
* Use the key vocabulary to find the sum of integers

**21st Century Skills**

* Critical-thinking and Problem Solving
* Communication
* Collaboration

**Assessment Evidence**

* Journal Entry closure activity:
	+ What are the rules for adding integers?
	+ What models can you use?
* Participation during discussion within groups
* Worksheets
* Quiz in 2 days

**Supplies/Materials/Technology**

* Document Reader or Overhead Projector
* Adding integers worksheet

**Lesson Plan**

 **Motivation & Building Background:**

* Review representing integers with clue words (down is negative).
* Students will make connection with patterns and developing rules by discussing examples such as 4+4+4=12=3(4) and 5+5=10=2(5).

 **Presentation**

* Place 6 adding positive integer equations and 6 adding negative integer equations on overhead.
	+ Give students 2 minutes to write any patterns that they discovered.
	+ The students will then discuss within their 3 to 4 heterogeneous groups the patterns they found and develop a unified rule.
	+ This will take 3 minutes.
	+ Walk around room to make sure each member is participating and to provide hints to those that are “stuck”.
	+ One member from each group will discuss the rule that they developed.
	+ One unified rule will be placed in the students’ notes after all groups have presented their rules.
	+ Adding Integers with Like Signs Worksheet will be completed in class.
* Place 12 adding integers with unlike signs (6 with the positive integer being the greatest and 6 with the negative integer being the greatest) equations.
	+ The students will discuss as before with the like signs examples, but the times will increase by 1 to 2 minutes.
	+ Adding integers with Unlike Signs Worksheet will be completed in class.
* Modeling with zero pairs by drawing positive and negative tiles and by heaps and holes will be demonstrated.
	+ The students will go back to their worksheets and model (odd numbers with tiles and even with heaps and holes).
	+ This will serve as a check for their worksheets.
* Students will discuss “who won” for each set of problems from the worksheets after determining how many are left standing in the spotlight from the positive and negative teams.

**Practice/Application**

* Adding Like Integer Worksheet
* Adding Unlike Integer Worksheet