Three Stage Learning Process to Deepen Understanding of Math
By Karen Gambolati

The understanding of strategies and concepts is very important when learning Math. Even more important than that is the deeper understanding of the beginning concepts that give us “Number Sense.” Number Sense provides us with a foundation to build upon when developing problem solving skills in other areas. There are three stages that students go through in order to deepen their understanding of math concepts. All three stages require teacher modeling problems for students to solve using various concrete objects so that they own and understand the concept. With practice, some students may learn one stage faster than another. It is important to keep in mind that all students acquire new skills at a different pace and for this reason exposures will vary for each skill. However, each consecutive stage builds upon students’ understanding of the previous stage and therefore must be taught in sequence. Students must demonstrate mastery in one stage before being exposed to the subsequent stage. Although stages must be taught in sequence, they should not be taught in complete isolation, as linking one stage to the next allows for students to make meaningful connections. At any time, however, there may be a need to go back and reteach a stage to a student or group of students if more practice is needed.

Stage One - Concrete

- Basic Level
- Doing
- Guided Practice
- Concrete materials - chips, cubes, blocks (manipulatives)

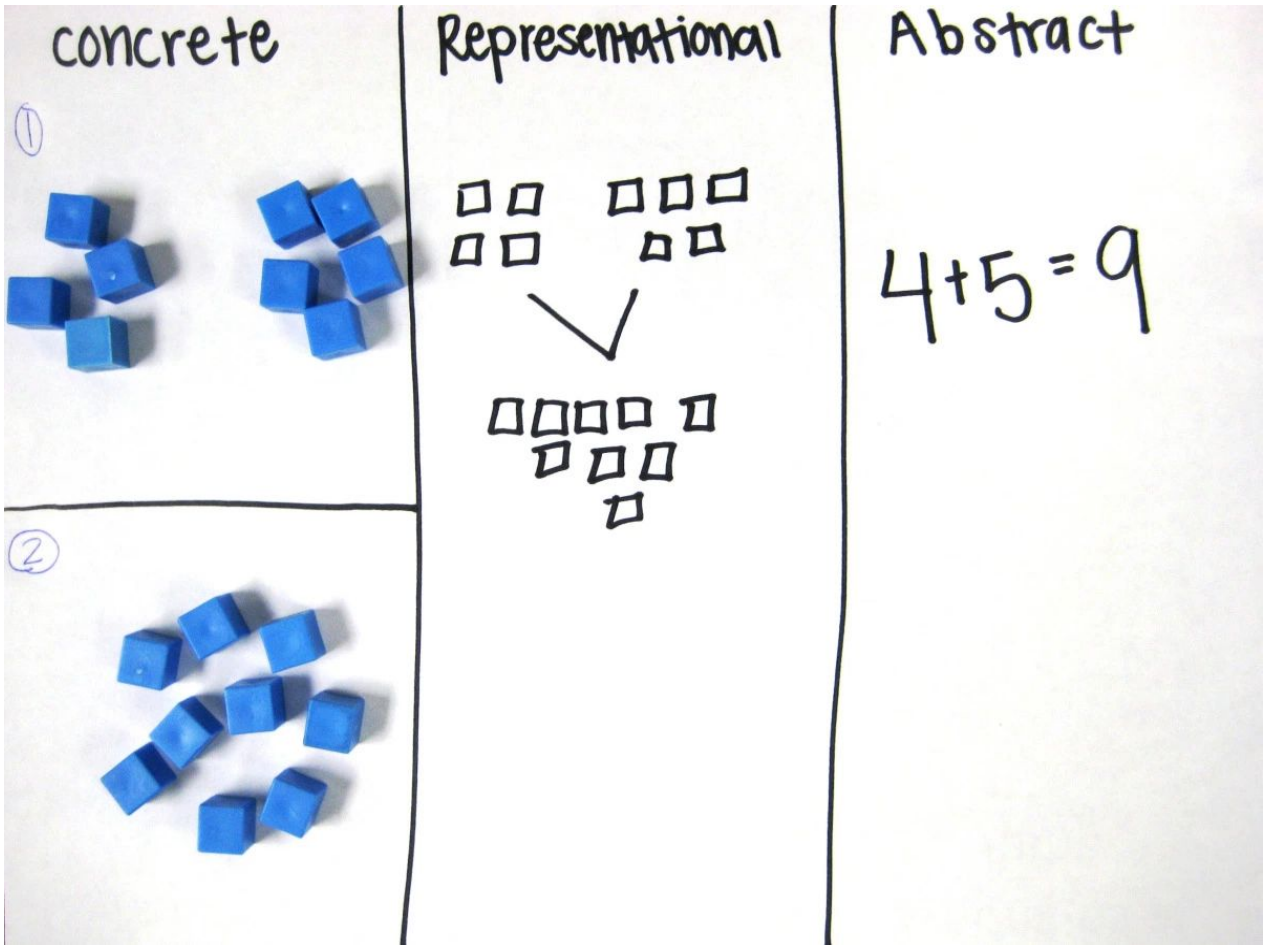
Stage Two - Representational (Semi - concrete) / Pictorial

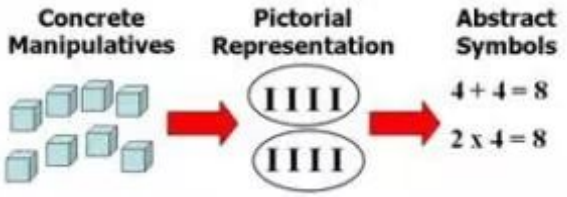
- Seeing
- Drawings, diagrams, or sketches (tallies, circle or dots)
- Begin to internalize - solving process

Stage Three - Abstract

- Symbolic
- Numbers and symbols (+,-)
- Doing Math in your head

Students’ thorough understanding at all three stages will be demonstrated by their ability to explain what they are doing at each stage. This will give them the level of conceptual understanding needed to solve real life problems.


concrete
Representational
Abstract
1
4+5=9
2


Concrete Manipulatives
Pictorial Representation
Abstract Symbols
IIII
IIII
4 + 4 = 8
2 x 4 = 8