

All Math Roads Lead Back to This: A Trip Through Early Number Sense and Place Value

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Key Points:

- We must know and understand math standards—not only for our own grade level, but also for the grade levels below and above us.
- Place value refers to how we organize and group numbers.
- Number Sense is not a standard, a lesson, or a skill. It develops over time.
- Concrete-Pictorial-Abstract is a model for teaching conceptually.
- Making 10 is the foundation for mathematics—students must know how to make 10.
- Students need to see multiple representations for the mathematics they are learning.
- Students need to understand how to group objects effectively. They should be encouraged to draw objects in groups when problem solving (example: draw objects as if in a ten frame).
- Students need to be flexible with numbers—composing and decomposing in a variety of ways (example: 36 can be thought of as $30 + 6$, but also as $20 + 16$, $10 + 26$, etc.)

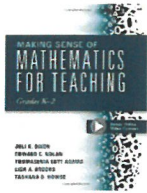
Helpful Resources:

<https://sites.google.com/site/get2mathk5/home/templates-graphic-organizers> (tons of free templates such as five and ten frame mats, etc.)

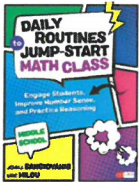
<https://gregtangmath.com/> (games, word problem generator, resources)

<https://gfletchy.com/3-act-lessons/> (progression videos and 3-Act Tasks)

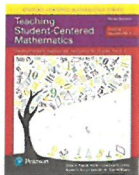
<http://math.arizona.edu/~ime/progressions/> (progressions documents for all math domains)



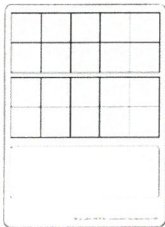
Making Sense of Mathematics for Teaching: Grades K-2 by Juli Dixon, Edward Nolan, Thomasenia Adams, Lisa Brooks, and Tashanda Howse, Solution Tree 2016



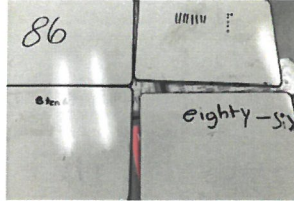
Daily Routines to Jump-Start Math Class: Engage Students, Improve Number Sense, and Practice Reasoning, Elementary School by John SanGiovanni; Corwin Press, 2020 (available in August 2019)



Teaching Student-Centered Mathematics K-2 by John A. Van de Walle; Pearson



Really Good Stuff—Double Ten Frame White Boards (blank on the back)



The Flip Game

Materials Needed: white boards (or paper) and markers

Grade Level: Can be adapted to ANY grade level

Directions:

- Students work in groups of 3-4.
- Teacher writes a number on the board in standard form.
- Each student writes the number on his/her individual white board (or paper) in a form OTHER THAN standard form. (Examples: word form, expanded form, “Funny Number”, “Number Nickname”, draw as a base ten block picture, etc.) Students keep their work covered so no one else in their group can see.
- Teacher says “SHOW!”
- All students turn their boards over and show their team.
- IF they all got a correct answer, their team gets a point. If a team member doesn’t get a correct answer, the team’s job is to help their classmate understand their mistake in a KIND way. 😊

Alternative Version:

- Round 1: Each member of the team must write the correct answer in a different form from anyone else in their group to receive a point: Example: one student draws a picture, one student writes the number in expanded form, etc.
- Round 2: Same as Round 1 EXCEPT each student CANNOT show the number in the way they did for Round 1. Example: Student A wrote the number as a “Funny Number” in round 1, so they can’t do that again in Round 2.

Points:

- Ways to earn bonus points: Being honest, being kind to your teammates, teaching your teammates
- Ways to lose points: lying, cheating, being hurtful, etc.

*Building a classroom culture through a math game! 😊

