

Number Sense 201: Grades 3rd-5th

by Christina Tondevold

This course provides an opportunity to learn the fundamental mathematical progressions underlying students' understandings of number sense through the lens of multiplication, fractions, and multi-digit addition & subtraction. Topics will include child cognitive development, early numeracy, and number relationships with a focus on how those concepts extend into the upper elementary grades. Emphasis will be given to developing ideas of student mathematical development, increasing participants' content knowledge, and instructional practices that promote building students' understanding of number sense.

Based upon the research findings in:

Van de Walle, J. A. (2013). *Teaching student-centered mathematics: Grades PreK-2*. Boston, MA: Pearson Education Inc.

Van de Walle, J. A. (2013). *Teaching student-centered mathematics: Grades 3-5*. Boston, MA: Pearson Education Inc.

Carpenter, T. P., Fennema, E., Franke, M. L., & Levi, L., Empson, S. (1999). *Children's Mathematics: Cognitively Guided Instruction*. Portsmouth, NH: Heinemann.

Clements, D. & Sarama, J. (2009). *Learning and Teaching Early Math: The Learning Trajectories Approach*. New York: Routledge.

Baroody, A. J., Dowker, A., (2003). *The development of arithmetic concepts and skills: Constructing adaptive expertise*. Mahwah, NJ: Lawrence Erlbaum Associates.

Lamon, S. (2012). *Teaching Fractions and Ratios for Understanding: Essential Content Knowledge and Instructional Strategies for Teachers*. New York: Routledge.

Goals/Objectives

The following goals and objectives guide this course. Specifically, participants will have opportunities to:

- Become knowledgeable about instructional practices emphasizing that build connections around number
- Learn the content, methods, and materials necessary to teach number sense
- Become familiar with assessing through observation and using children's thinking to guide instruction
- Understand a framework for children's development of number sense
- Become more confident in one's ability to *teach* mathematics

Specifically, the course will address the following concepts:

4 Early Numeracy Concepts (Subitizing, Verbal Counting, Object Counting, and Cardinality)

4 Number Relationships (Spatial Relationships, One/Two More & Less, Benchmarks of 5 & 10, and Part-Part-Whole)

All eight ideas will be investigated in-depth with these lessons:

- What it is & Why it is so important
- Assessment Look Fors
- How the concept shows up in Addition & Subtraction, Multiplication & Division, and Fractions
- Experiences to provide your students that build the concept
- Games

Grading/Course Completion

The online program tracks your progress. In order to receive credit and/or a course completion certificate, you need to complete the course materials within 10 weeks. The course is 15 hours of instructional time. You will earn a Certificate of Completion, but you also have the option to sign up for 1 professional development credit through an accredited college. If you choose that option, you will fill out additional forms and pay \$60 directly to the college.

Different levels of registration

3 Month Access

3 Month Access is best for teachers and math coaches who want to dive into the content right away and start implementing.

In this level, you have the option to be assigned a Community Partner. This will be a person who is also enrolled in the course AND has the same role as you so that you can have someone to talk & collaborate with who is going through the same things as you....it helps to know you aren't alone in the struggles you are having with your kiddos.

You also get access to the private Build Math Minds Community (not the free Facebook one) which houses all the webinars I have done with amazing math educators (like Graham Fletcher, Cathy Fosnot, Dr. Nicki Newton), access to all the Virtual Math Summit sessions, access to the 5 Day Fact Fluency Trainings, and so much more.

In this level you are enrolled in the course for 3 months. The course content is only 7 weeks, so you will have additional time to complete any lessons you didn't do during the 7 weeks.

12 Month Access

12 Month Access is best for teachers and math coaches who plan to use the information in the videos throughout the year and may also use the videos to provide training for their staff/colleagues.

You get all the same stuff as the 3 Month Access, just longer time to access the content. If you want the ability to go back through the content throughout the year, then this level is for you.