Bridging for Math Strength Resources

Standards of Learning Curriculum Framework

Standard of Learning (SOL) 2.1a Read, write, and identify the place and value of each digit in a three-digit numeral, with and without models.

Student Strengths	Bridging Concepts	Standard of Learning
Students can organize objects into groups of tens and ones, and determine the total value without counting. Students can read, write, and identify the place and value of each digit in a two-digit numeral, with and without models.	The students can organize objects into groups of hundreds, tens, and ones, and determine the total value without counting all.	The students can read, write, and identify the place and value of each digit in a three-digit numeral, with and without models.

Understanding the Learning Trajectory

Big Ideas:

- The value of each digit in a number depends on its position in that number.
- Numbers are based on powers of ten. The value of each place is 10 times the value of the digit to the right.
- The structure of numbers is based on unitizing amounts into groups of ones, tens, hundreds, etc.
  Math Strength Instructional Video 2.1a↗

Formative Assessment:

- VDOE Just in Time Mathematics Quick Check 2.1a (PDF)
- VDOE Just in Time Mathematics Quick Check 2.1a (Desmos)

Important Assessment Look Fors:

- Students count one hundred as a single unit.
- Students compose and decompose numbers into ones, tens, and hundreds.
- Students know the number of hundreds that can be made from any group of tens and the number of tens left over.
- Students determine the total value of a group of hundreds, tens, and ones by reorganizing them into all possible hundreds, then all possible tens, with leftover ones.
- Students describe any 3 digit number in terms of its value in hundreds, tens, and ones.

Purposeful Questions:

- How many groups of ones, tens, and hundreds make this number?
- How do the digits in this number relate to the groups of hundreds, tens, and ones in this number?
- How can the hundreds, tens, and ones in this number be regrouped to represent an equivalent value?

Bridging Activity to Support Standard	Instructional Tips
Routine: Alike and Different Henrico County Schools	Prior to presenting these slides anticipate what you think your students may think and say. Give students independent think time and then also partner/small group time to share their thinking. Monitor their discussions and select which students' strategies you want to share with the whole group. Be aware that sharing misconceptions can be powerful IF the classroom is safe. Have students rephrase one another's thinking. Less of the teacher talking and more of the students talking may empower students as leaders.
Rich Task: Three Composing/ Decomposing Problems Illustrative Mathematics	Have students identify the place value blocks they will be using to represent/model these numbers. Encourage them to think about multiple ways to represent numbers with the blocks. Ask questions that encourage them to think about the structure of numbers. How many ones show the same value as a ten unit? How many ones show the same value as a hundred unit? How many ten units show the same value as a hundred unit? Show me how you know. Students should count, reorganize, and analyze place value models, not just observe during lessons.
Games/Tech: Race to 100 Henrico County Public Schools Desmos 2.1a Type Value of 3-digit Numbers Desmos 2.1a Polygraph: 3-Digit Place Value	Model this game to the whole class or within a small group with another student. Unifix cubes, base ten blocks, or coloring in the hundreds template may be used. The focus is on naming the representations not on adding. Students can use a variety of dice to change the level of the game. For a video explanation, you can watch this. Students type numbers represented by base-10 block pictures The main purpose of a Desmos Polygraph is for students to experience and understand the need for academic vocabulary. When used at the beginning of a unit, student questions are often constructed with informal language. As the playing continues, the teacher plays a key role in helping students infuse academic vocabulary into their questions. Students develop language to be able to describe three-digit numbers

Other Resources:

- VDOE Mathematics Instructional Plans (MIPS
  - 2.1a – Close to 500 (word)/ PDF Version
- VDOE Word Wall Cards
  - Grade 2 (Word) | (PDF)
- VDOE Instructional Videos for Teachers
  - Developing Early Number Sense (grades K-2)

Learning Trajectory Resources:

Charles, R. (2005). Big ideas and understandings as the foundation for elementary and middle school mathematics. *Journal of Mathematics Education Leadership*, *7*(3), NCSM.

Clements, D. H., & Sarama, J. (2019). Learning and teaching with learning trajectories [LT]2. Marsico Institute, Morgridge College of Education, University of Denver. https://www.learningtrajectories.org/

Common Core Standards Writing Team. (2019). Progressions for the Common Core State Standards for Mathematics. Tucson, AZ: Institute for Mathematics and Education, University of Arizona.

Richardson, K. (2012). How Children Learn Number Concepts: A Guide to Critical Learning Phases. Bellingham: Math Perspectives Teacher Development Center.

Van De Walle, J., Karp, K. S., & Bay-Williams, J. M. (2018). *Elementary and Middle School Mathematics: Teaching Developmentally.* (10th edition) New York: Pearson (2019:9780134802084)

VDOE Curriculum Framework for All Grades - Standard of Learning Curriculum Framework (SOL)