Bridging for Math Strength Resources
Standards of Learning Curriculum Framework

Standard of Learning (SOL) 4.1c Round whole numbers expressed through millions to the nearest thousand, ten thousand, and hundred thousand.

Student Strengths	Bridging Concepts	Standard of Learning
Students can round 4-digit numbers or less to the nearest ten, hundred, and thousand.	Students can read, write, and identify the place value up to a six-digit whole number. Students are familiar with representing numbers on a number line.	Students can round whole numbers expressed through millions to the nearest thousand, ten thousand, and hundred thousand.

Understanding the Learning Trajectory

Big Ideas:
- A strong understanding of place value is important for the development of number sense when exploring problems that involve rounding numbers. (Georgia Standards of Excellence Curriculum Framework, Unit 1, Number and Operations in Base Ten)
- The use of a number line to determine which multiple a number is closer to is a strategy that develops a conceptual understanding of rounding instead of learning rules or mnemonics when rounding to a specific place value. (Georgia Standards of Excellence Curriculum Framework, Unit 1, Number and Operations in Base Ten)
- The concept of estimation and rounding are similar in many ways. Estimation is flexible thinking of friendly numbers to make mental computation easier or to compare it to a reference. When estimating there isn't always one correct answer, but instead the purpose of creating that friendly number should be considered. Looking at the number 327, an estimation could be 300, 325, 330, or even 350. The estimations 325 and 350 are not the nearest ten or hundred but could be considered when estimating the number 327 depending on the purpose of the estimation. When rounding a number, students identify the closest multiple of a specific place value. Rounding is also used as a way of creating a friendly number and could be used for mental computation. (Elementary and Middle School Mathematics, John Van de Walle)

Formative Assessment:
- VDOE Just in time Quick Check SOL 4.1c PDF / Desmos

- The student can round a number to a specific place value.
- The student can identify various numbers that would round to a specific place value.
- The student can identify a range of numbers that would round to a special place value.
- The student is able to use a model to represent a conceptual understanding of rounding whole numbers to the nearest thousand, ten-thousand, or hundred-thousand.
- The student is able to justify why the number rounds to the closest multiple of thousand, ten-thousand, or hundred-thousand when rounding to a specific place value.
- When rounding to a specific place value, the student can identify the multiples of thousand, ten-thousand, or hundred thousand that a given number is between and can justify which multiple the given number rounds to.

Purposeful Questions:

- Can you create a model, such as a number line, to represent which underlined thousand the number 4,527,093 is closest to when rounding to the nearest thousand? (The underlined word can be interchangeable with other place values such as ten-thousand or hundred thousand).
- Is the number 345,568 closest to 346,000 or 345,000 when rounding to the nearest thousand? Can you identify the range of numbers that would round to 346,000 when rounding to the nearest thousand?
- Can you round this number to the nearest thousand, ten-thousand, and/or hundred thousand?
- Can you identify a number that would have the same answer when rounded to the nearest thousand and the nearest ten-thousand?

Bridging Activity to Support Standard	Instructional Tips
Routine Open Middle	Open Middle is a number sense routine that allows students to create multiple numbers as a solution. Using the digits 0 to 9, place a digit in each box to make three-digit numbers that round to 500 when rounding to the nearest hundred. Several possible answers can extend to determining the range of numbers that round to 500. **ROUNDING 2** Directions: Using the digits 0 to 9 at most one time each, place a digit in each box to make the greatest possible three-digit number that still rounds (to the nearest hundred) to 500. This number sense routine can be extended to creating larger numbers that round to a specific place value to identify the range of numbers that round nearest thousand, ten thousand, and hundred thousand.
Rich Tasks What's the Range? (Henrico County Public Schools)	Below are three leveled tasks students can explore when finding the range of numbers that round to a special value. These tasks are real-world scenarios that are leveled based on the place value.

What's the Range? - Level 1

Amy bought a new laptop computer for college. The cost of the laptop computer can be rounded to $3,000. What might the exact cost of the laptop computer be? Name as many possible amounts as you can. Explain your thinking using pictures, words, and symbols.

What's the Range?- Level 2

John shared with his neighbor that he purchased a used car for his college-bound son. The cost of the car can be rounded to $12,000. What might the exact cost of the car be? Name as many possible amounts as you can. Explain your thinking using pictures, words, and symbols.

What's the Range? - Level 3

The Jones family purchased a new house. The price of the house can be rounded to $250,000. What might the exact cost of the house be? Name as many possible amounts as you can. Explain your thinking using pictures, words, and symbols.

Rounding on the Number Line Adapted from Illustrative Mathematics	This task helps students understand the concept of rounding a given number to multiple place values to determine the closest multiple. The number line is a strategy that students can use when rounding to any given place and should be used to develop a conceptual understanding of rounding whole numbers. This task can be extended to numbers expressed through millions to determine the closest multiple of thousand, ten-thousand, or hundred-thousand.
Games/Tech Desmos 4.1c Which is Closer?	This activity has students using the number line to determine which number is closer. Students will also make their own number lines to determine whether students have rounded correctly and to round themselves.

Other Resources:
- VDOE Mathematics Instructional Plans (MIPS)
  - 4.1c - Rounding: Identifying the Range (Word) / PDF Version

  - 4.1c - Rounding Match (Word) / PDF Version

- VDOE Word Wall Cards: Grade 4 (Word) | (PDF)

- ○ Place value position
- ○ Round
- ● [Virtual Manipulatives Base Ten Blocks](#)

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)