



Bridging for Math Strength Resources

[Standards of Learning Curriculum Framework](#)

Standard of Learning (SOL) 7.1a Investigate and describe the concept of negative exponents for powers of ten.



Student Strengths	Bridging Concepts	Standard of Learning
The student can recognize, identify, create, and extend number patterns found in numbers and tables.	The student will recognize and represent patterns with whole number exponents and perfect squares.	Students can investigate and describe the concept of negative exponents for powers of ten.

Understanding the Learning Trajectory

Big Ideas:

- Patterns are found in powers of 10.

Formative Assessment:

- VDOE Just in time Quick Check [SOL 7.1a](#) (Word) / [PDF](#) / [Desmos](#)

Important Assessment Look Fors:

- The student can represent negative powers of ten in decimal and fraction form
- The student can represent positive powers of ten in integer form
- The student can identify and describe patterns between powers of ten and the fraction and decimal equivalents.

Purposeful Questions:

- What is the pattern you recognize between a positive power of ten and its value?
- What is the pattern you recognize between the negative power of ten and its decimal value?
- How can the pattern shown help you answer the other power of ten questions?

Bridging Activity to Support Standard	Instructional Tips
Routine Clothesline Math	With Clothesline Math, students can order powers of ten and equivalent representations in ascending or descending order. The students can also discover and continue patterns regarding powers of ten.
Rich Tasks Powers of Ten Task	The student must make connections between the various numerical representations of powers of ten and use charts, tables or words to justify their reasoning.
Games/Tech Desmos 7.1a Powers of Ten Desmos: Powers of 10: Discovering Patterns	Students view the Eames "Powers of Ten" video, then explore the meanings of positive and negative powers of ten. Students identify equivalent representations of negative and positive powers of ten. Students use patterns to make connections between the various representations.
Other Resources: • VDOE Mathematics Instructional Plans (MIPS) ◦ 7.1a – Powers of Ten (Word) / PDF Version • VDOE Algebra Readiness Formative Assessments ◦ SQL 7.1a (Word) / PDF Version • VDOE Algebra Readiness Remediation Plans ◦ Scientific Notation (Word) / PDF Version • VDOE Word Wall Cards: Grade 7 (Word) (PDF) ◦ Powers of Ten • Desmos Activity ◦ 7.1 Powers of Ten Learning Trajectory Resources: Charles, R. (2005). Big ideas and understandings as the foundation for elementary and middle school mathematics. <i>Journal of Mathematics Education Leadership</i>, 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). <i>Elementary and Middle School Mathematics: Teaching Developmentally</i>. (10th edition) New York: Pearson (2019:9780134802084) VDOE Curriculum Framework for All Grades - Standard of Learning Curriculum Framework (SOL)	