HPISD Curriculum: Algebra I

Title	Estimated Duration	6 Weeks					
Unit 12: Properties of Exponents	2 weeks	1	2	3	4	**5**	**6**

Unit Overview

In preparation for future work with polynomials, students will learn and use properties of exponents involving products and quotients. They will learn to use zero and negative exponents and will read, write, and compute with numbers expressed in scientific notation.

Enduring Understandings

The student will understand that:	• A unique set of rules exists for multiplying and dividing with exponents. • Scientific notation is a condensed way to express very large and very small values. • Simplifying expressions allows complex statements to be condensed by way of classification and computation.

Concepts	Guiding/Essential Questions
• number • relationships • rules	• What are the rules for multiplying and dividing with exponents? • Under what circumstances is scientific notation appropriate and useful? • How are expressions that include exponents simplified?

Learning Targets

Students will manipulate expressions and equations including exponents and scientific notation fluently and accurately.

Formative Assessments	Summative Assessments
homework, quizzes	test

TEKS: Readiness Standards	TEKS: Supporting Standards
	8.1D Express numbers in scientific notation, including negative exponents, in appropriate problem situations.
	a.1 Continue to build on knowledge of number, operation, and quantitative reasoning; patterns and algebraic thinking; geometry; measurement; and probability and statistics.
	A11.A Use patterns to generate the laws of exponents and apply them in problem-solving situations.
	A.11B Analyze data and represent situations involving inverse variation using concrete models, tables, graphs, or algebraic methods.

Processes and Skills: What students should be able to DO	Facts: What students should KNOW

• Apply the properties of exponents to simplify and evaluate exponential expressions, including negative exponents.
 	
 • Convert negative exponents to positive in final answers.
 	
 • Rewrite a number as the product of a number from 1 up to 10 and a power of 10.
 • Read numbers in scientific notation.
 • Convert numbers from standard decimal notation to scientific notation and vice versa.
 • Recognize appropriate applications for scientific notation.
	• Properties of exponents:
	     o Power of Product Property
	     o Power of Quotient Property
	     o Power of a Power Property
	     o Quotient of powers Property
	     o Product of Powers Property
	     o Zero Exponent Rule
	 • The zero exponent rule is related to the identity property of division.
	 • In scientific notation numbers are written in the form $a \times 10^{b}$, where exponent b is an integer.

Topics

exponent properties involving products	zero & negative exponents	scientific notation
exponent properties involving quotients		

Language of Instruction		
power	base	standard notation
exponent	reciprocal	scientific notation

State Assessment Connections	National Assessment Connections

Resources
McDougal Littell Chapter 8