HPISD Grade 4 Mathematics

UNIT NAME	ESTIMATED DURATION	9 WEEKS			
UNIT 1: NUMBERS AND OPERATIONS	**5 WEEKS**	**1**	2	3	4

Unit Overview

Place value using whole numbers through 1,000,000,000, and decimals to the hundredths, comparing, ordering, rounding, addition and subtraction of whole numbers and decimals.

Enduring Understandings

The student will understand that:	• The structure of place value remains consistent as numbers increase in value • Meaningful problems can be solved with addition and subtraction • A line can be used to represent numbers, their properties, and their relationship to one another

Concepts

- Base 10 Number System
- Whole number place value through one billion and decimals to the hundredths, including interpreting place value position to right and left
- Comparing/ordering whole numbers to one billion and decimals to the hundredths using concrete and visual models
- Adding/subtracting whole numbers to one billion and decimals to the hundredths
- Rounding whole numbers to nearest hundred thousand

Guiding/Essential Questions

1. How are greater numbers written?
2. How can whole numbers be compared and ordered?

Learning Targets / Learning Progressions

Learning Targets	Learning Progressions
<u>Prerequisite:</u> • The student will describe the mathematical relationships found in the base-10 place-value system through the 100,000's place. <u>Learning Target:</u> • The students will use place value and properties of numbers to read, write, compare, and order whole numbers through one billion and decimals to the hundredths place <u>5th Grade Connection:</u> • The student will compare and order two decimals to thousandths and represent comparisons using the symbols <,=,>	• Identify the difference in value of each place value position up to one billion. • Describe the difference between place and value, place meaning the "words" , whereas value meaning the "numbers" Ex. 3<u>4</u>7,258 **place** is ten thousands, **value** is 40,000 • Define place value vocabulary: standard form, word form and expanded notation • Recognize numbers represented in standard form, word form and expanded notation • Compare two multi-digit numbers based on meanings of the digits in each place using <, =, or > • Interpret the value of each place-value position as 10 times the position to the right and 1/10 th the value of the place to the left.
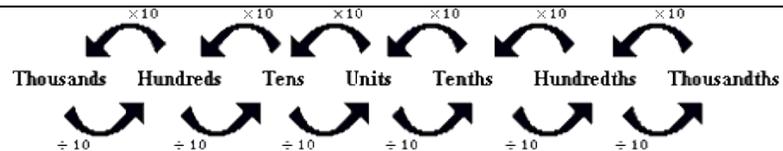
Place Value

Billions			Millions			Thousands			Ones			Decimals		
Hundred Billions	Ten Billions	One Billion	Hundred Millions	Ten Millions	One Million	Hundred Thousands	Ten Thousands	One Thousand	Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths

- Recall vocabulary: sum, difference, inverse operations
- Add and subtract whole numbers using the standard algorithm
- Solve one-step and two step problems with addition and subtraction
- Recall the Properties of addition
- Recognize the relationship between addition and subtraction

Properties of Addition

Commutative Property	Associative Property	Identity Property
You can change the order of addends.	You can change the grouping of addends.	Adding 0 to a number doesn't change a number.
$4 + 7 = 7 + 4$	$3 + (7 + 29) = (3 + 7) + 29$	$n + 0 = n$

- Construct a T- chart in order to line up decimals for addition and subtraction

Prerequisite:
- The student will solve using mental math and fluency one-step and two-step problems involving addition and subtraction within 1,000
- The student will use strategies based on place value, properties of operations, and the relationship between addition and subtraction

Learning Targets:
- The student will develop and use strategies and methods for whole number computations and decimal sums and differences in order to solve problems with efficiency and accuracy.

5th Grade Connection:
- The student will estimate to determine solutions to mathematical and real-world problems involving addition, and subtraction

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Prerequisite:
- The student will round to the nearest 10, 100, or 1,000 or use compatible numbers to estimate a solution involving whole numbers

Learning Target:
- The student will round, compare and order whole numbers to the hundred thousands place and decimals to the hundredths using concrete and visual models

5th Grade Connection:
- The student will compare and order two decimals to thousandths and represent comparisons using the symbols >, <, or =

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- Round whole numbers to a given place value through the 1,000's place
- Create a T chart to list decimal numbers and their value in order from least to greatest
- Determine the corresponding decimal to the tenths place on a number line.
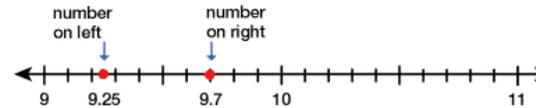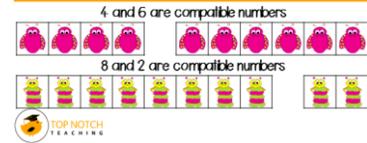

$9.25 < 9.7$

Mental Maths
Compatible Numbers

Numbers that when added produce a 'tidy sum' - usually ending in a zero.

Use strips of 10 that can be broken up to show the compatible numbers.

4 and 6 are compatible numbers

8 and 2 are compatible numbers

TOP NOTCH TEACHING

Formative Assessments	Summative Assessments

TEKS: Readiness Standards	TEKS: Supporting Standards
- Represent the value of the digit in **whole numbers** through 1,000,000,000 and **decimals** to the hundredths using expanded notation and numerals. **4.2B** - **Add and subtract whole numbers and decimals** to the hundredths place using the standard algorithm **4.4A**	- Interpret the value of each place-value position as 10 times the position to the right and as one-tenth of the value of the place to its left. **4.2A** - Compare and order whole numbers to 1,000,000,000 and represent comparisons using the symbols >, <, or =. **4.2C** - Round whole numbers to a given place value through the hundred thousands place. **4.2D** - Round to the nearest 10, 100, or 1,000 or use compatible numbers to estimate solutions involving whole numbers. **4.4G**

TEKS Process Standards

Apply mathematics to problems arising in everyday life, society, and the workplace. **4.1A**
Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. **4.1B**
4.1C select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems. **4.1C**
Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate. **4.1D**
Create and use representations to organize, record, and communicate mathematical ideas. **4.1E**
Analyze mathematical relationships to connect and communicate mathematical ideas. **4.1F**
Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication. **4.1G**

Processes and Skills: **What students should be able to DO**	Facts: **What students should KNOW**
Use place value charts and number lines: - Compare two multi-digit numbers using appropriate symbols - Order multi-digit numbers - Round whole numbers up to hundred thousands place - Interpret the value of each place value position - Use compatible numbers to estimate solutions involving whole numbers - Write numbers in expanded form - Add and subtract whole numbers	- The digits 0,1,2,3,4,5,6,7,8, and 9 are the building blocks for numbers. The place that a digit occupies in a numeral gives the digit value - Place value can be used to compare and order numbers - The value of any place in a number is ten times the value of the place to the right and 1/10 the value of the place to the left - To use expanded notation and numerals to represent the value of digits in whole numbers through one billion - Rounding whole numbers is a process for finding the multiple of 10, 100, and so on closest to a given number - There is more than one way to estimate a sum or difference - The standard addition and subtraction algorithms breaks the calculation into simpler calculation using place value

Topics

Addition and Subtraction Place value Rounding Whole numbers	

Language of Instruction

billions
compare (greater than, less than)
digit
expanded form
hundred thousands
millions
order
period
place value
ten thousands
thousands
whole numbers

State Assessment Connections	National Assessment Connections

Resources

Envisions 2.0
Topic 1: Place Value
Topic 2: Adding and Subtracting Whole Numbers and Decimals