



5th Grade Math Newsletter

This document was created to give families and students a better understanding of the math concepts that are covered in 5th Grade Math Unit 1: Understanding Place Value. Please use this information to better support your child's learning at home. ☺

Vocabulary: Words to know

- **Thousandths**
- **Hundredths**
- **Tenths**
- **Place Value**
- **Decimal Fraction**
- **Exponents**
- **Digit**
- **Product**
- **Factors**
- **Equation**

Thousandths - one of 1,000 equal parts; thousandth's place (in decimal notation) the position of the third digit to the right of the decimal point

Hundredths - one of 100 equal parts; hundredth's place (in decimal notation) the position of the second digit to the right of the decimal point

Tenths - one of 10 equal parts; tenth's place (in decimal notation) the position of the first digit to the right of the decimal point

Place Value - the value of the place of a digit (0-9) in a number

Decimal Fraction - a fractional number with a denominator of 10 or a power of 10 (10, 100, 1,000). It can be written with a decimal point.

Exponent - tells the number of times the base is multiplied by itself Example: 10^4 - the 4 is the exponent and tells us the 10 (base) is multiplied 4 times ($10 \times 10 \times 10 \times 10$)

Equation - statement that two mathematical expressions have the same value

Place Value Charts are a very useful mathematical tool. They help us organize the digits of a number based on their value. →

Example: The digit 3, when placed in the tens column, has much less of a value than a 3 that is placed in the ten thousands column (1,000 times less to be exact!)

hundred millions	ten millions	millions	hundred thousands	ten thousands	thousands	hundreds	tens	units	• decimal	tenths	hundredths	thousandths	ten thousandths

Multiplication and Division Patterns on the Place Value Chart

When we **multiply** a **decimal fraction** by a power of 10, the **product** will be larger than the original number; therefore we are shifting to the left on the place value chart. The number of times we shift to the left depends on the power of 10. If multiplying by 10, we shift one place to the left. If multiplying by 100, we shift two places to the left and if multiplying by 1,000, we shift three places to the left and so on.

Try it Out! Record the **digits** of the first factor on the top row of the **place value** chart. Draw arrows to show how the value of each digit changes when you multiply or divide. Record the product on the second row of the place value chart.

Example: $3.452 \times 10 = 34.52$ (34.52 is 10 times greater than 3.452.)

			3	4	5	2							
			3	4	5	2							

When we **divide** a **decimal fraction** by a power of 10, the **product** will be smaller than the original number; therefore we are shifting to the right on the place value chart. The number of times we shift to the right depends on the power of 10. If dividing by 10, we shift one place to the right. If dividing by 100, we shift two places to the right and if dividing by 1,000, we shift three places to the right and so on.

Example: $345 \div 100 = 3.45$ (3.45 is 10 times smaller than 345, or $\frac{1}{10}$ as much)

	3	4	5										
				3	4	5							

Vocabulary: Words to know

- Word Form
- Unit Form
- Decimal Fraction
- Standard Form
- Less than
- Greater than

Decimal Fraction - A fractional number with a denominator of 10 or a power of 10 (10, 100, 1,000) that can be written with a decimal point.

Standard form - A number written with one digit for each place value. Example: 52.64 or 52

Expanded form - A way to write numbers that shows the place value of each digit.

Example: $52.64 = 5 \times 10 + 2 \times 1 + 6 \times 0.1 + 4 \times 0.01$
 $5 \times 10 + 2 \times 1 + 6 \times (s) + 4 \times (t)$

Unit form - A way to show how many of each size unit are in the number. 52.64 = 5 tens 2 ones 6 tenths 4 hundredths 52 ones 64 hundredths

Greater than symbol (>)

Less than symbol (<)

Comparing Decimal Fractions

$$67.223 < 67.232$$

Strategy 1: Use a place value chart to compare the decimal fractions.

	6	7	.	2	2	3
	6	7	.	2	3	2

The place value chart shows that 67.223 is less than 67.232 because the digit 2 in the hundredths place in 67.223 is less than the digit 3 in the hundredths place in 67.232.

Strategy 2: Use unit form to compare decimal fractions.

$$67.223 = 67 \text{ ones } 223 \text{ thousandths}$$

$$67.232 = 67 \text{ ones } 232 \text{ thousandths}$$

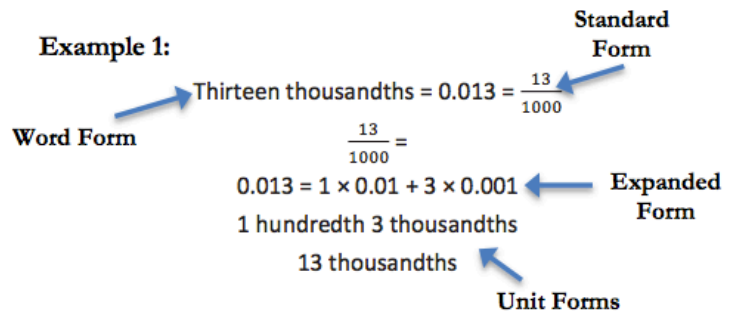
67 ones is the same but 223 thousandths is less than 232 thousandths.

+ How you can help at home:

- When given a multi-digit number with decimal digits, ask your student what each digit represents (e.g., "What is the value of the 4 in the number 37.346?")
- Help practice writing numbers correctly by saying multi-digit decimal numbers and having your student write them down. Students can create their own place value charts to help

Different Ways of Naming a Decimal Fraction

Example 1:



Example 2:

Word Form: Twenty-five and four hundred thirteen thousandths

Standard Form: $25 \frac{413}{1000} = 25.413$

Expanded Forms: (with fractions or with decimals)

$$25 \frac{413}{1000} = 2 \times 10 + 5 \times 1 + 4 \times \left(\frac{1}{10}\right) + 1 \times \left(\frac{1}{100}\right) + 3 \times \left(\frac{1}{1000}\right)$$

$$25.413 = 2 \times 10 + 5 \times 1 + 4 \times 0.1 + 1 \times 0.01 + 3 \times 0.001$$

Unit Forms:

2 tens 5 ones 4 tenths 1 hundredth 3 thousandths
 25 ones 413 thousandths

Application Problem and Answer

Mr. Pham wrote 2.619 on the board. Christy says its two and six hundred nineteen thousandths. Amy says its 2 ones 6 tenths 1 hundredth 9 thousandths. Who is right? Use words and numbers to explain your answer.

$$2.619 = 2 \frac{619}{1000} = \text{two and six hundred nineteen thousandths}$$

$$2 \frac{619}{1000} = 2 \times 1 + 6 \times \left(\frac{1}{10}\right) + 1 \times \left(\frac{1}{100}\right) + 9 \times \left(\frac{1}{1000}\right)$$

2 ones 6 tenths 1 hundredth 9 thousandths

Both Amy and Christy are correct. Christy chose to represent the number in word form and Amy has chosen unit form. Both are equal to 2.619.