

# Math Tips for Parents

## Fifth Grade Module 1

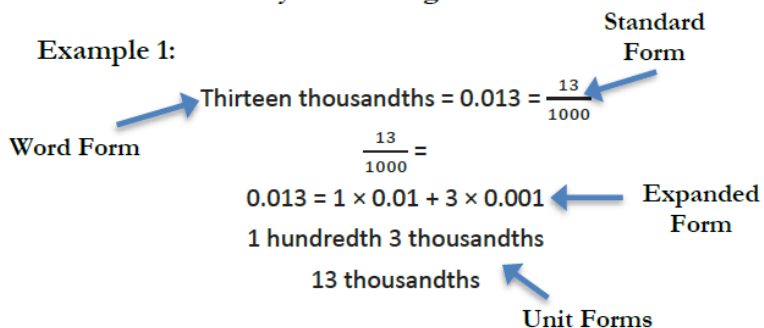
### Place Value and Decimal Fractions

In this Module, students' understanding of the patterns in the base ten system are extended from Grade 4's work with place value of multi-digit whole numbers and decimals to hundredths to the thousandths place. In Grade 5, students deepen their knowledge through a more generalized understanding of the relationships between and among adjacent places on the place value chart, e.g., 1 tenth times any digit on the place value chart moves it one place value to the right.

#### Key Standards:

- Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and  $\frac{1}{10}$  of what it represents in the place to its left.
- Explain patterns in the number of zeroes of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
- Read, write and compare decimals to thousandths.
- Use place value understanding to round decimals to any place.
- Add, subtract, multiply and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.
- Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

#### *Different ways of naming a decimal fraction*



Decompose—showing the different ways a number can be separated into the most of each place value unit.

tens	ones	tenths	hundredths
5	2	9	
	52	9	
		529	

$52.9 = 5$  tens 2 ones 9 tenths  
52 ones 9 tenths  
529 tenths

# Fifth Grade Module 1

## Terms, Phrases and Strategies in this Module:

**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 ( $10 \times 10 \times 10 \times 10$ )

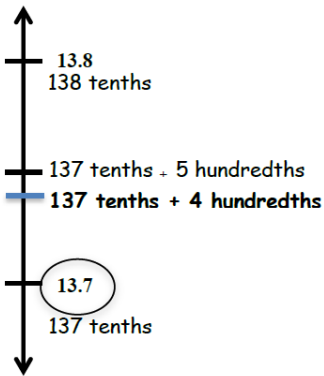
**Equation:** statement that two mathematical expressions have the same value, indicated by use of the symbol  $=$ ; e.g.,  $12 = 4 \times 2 + 4$

**Millimeter:** a metric unit of length equal to one thousandth of a meter

**Standard Form:** a number written in the format: 135

**Expanded Form:** e.g.,  $100 + 30 + 5 = 135$

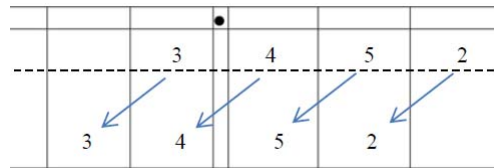
**Unit Form:** e.g.,  $3.21 = 3 \text{ ones } 2 \text{ tenths } 1 \text{ hundredth}$



A decimal number has two digits to the right of its decimal point. If we round it to the nearest tenth, the result is 13.7.

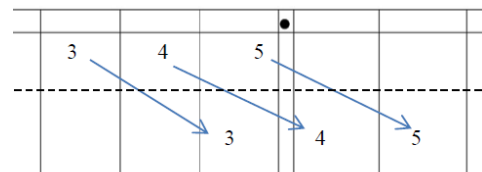
What is the **maximum** possible value of this number? Include the mid-point on your number line.

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.



$$3.452 \times 10 = 34.52$$

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..



$$345 \div 100 = 3.45$$

# Fifth Grade Module 1

## 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.

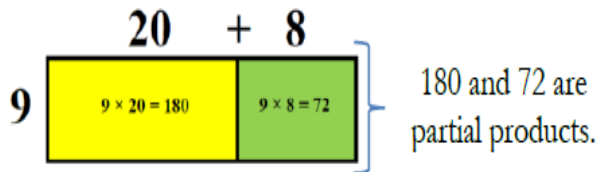
$$67.223 = 67 \text{ ones } 223 \text{ thousandths}$$

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

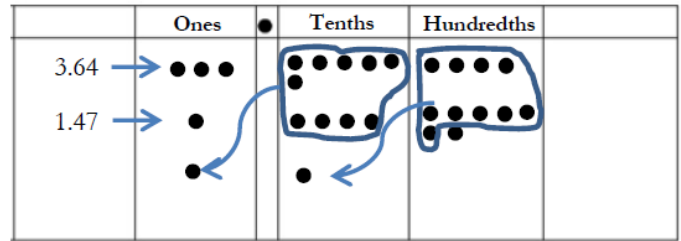
67 ones is the same but 223 thousandths is less than 232 thousandths.

**Area Model** – a graphic organizer that organizes the partial products

Example:

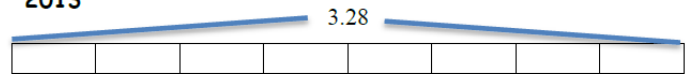


$$3.64 + 1.47 = \underline{\quad\quad}$$



$$\begin{array}{r} 3.64 \\ + 1.47 \\ \hline 5.11 \end{array} \quad \left. \vphantom{\begin{array}{r} 3.64 \\ + 1.47 \\ \hline 5.11 \end{array}} \right\} \text{Algorithm}$$

2013



The segment is divided into 8 equal parts since the cost of a gallon of milk in 2013 was 8 times as much as in 1950.

1950 - The cost of a gallon of milk in 1950 is one of the 8 parts.

$$\begin{aligned} & 3.28 \div 8 \\ & = (32 \text{ tenths} \div 8) + (8 \text{ hundredths} \div 8) \\ & = 4 \text{ tenths} + 1 \text{ hundredth} \\ & = 0.41 \end{aligned}$$

**Milk costs \$0.41 a gallon in the 1950's.**

## How you can help at home....

- Create number cubes or spinners and have the student identify the place value and value of different digits in that number.
- Roll or pick numbers to create decimals. Add, subtract, multiply or divide the decimals.
- Find the batting averages or other statistics in the sports section of a newspaper and add or subtract the statistics.
- Estimate and find the sums and differences of items at the store and in restaurants.
- Practice basic addition, subtraction, multiplication and division facts.
- Roll or pick numbers to create decimals. Compare and order the numbers.
- Choose a four-digit number. Multiply and divide by powers of 10, (10, 100, 1,000, etc.) by moving the decimal point left or right as appropriate.