

Module 6 Grade 4

In this unit your student will focus on Decimal Fractions:

- ✓ Students use their understanding of fractions to explore tenths.
- ✓ Students use metric measurement to see tenths in relationship to different whole units: centimeters, meters, kilograms, and liters.
- ✓ Students express tenths as decimal fractions and are introduced to decimal notation. They write statements of equivalence in unit, fraction, and decimal forms, e.g., 3 tenths = $\frac{3}{10}$ = 0.3
- ✓ Students use of metric measurement to investigate decimal fractions greater than
- ✓ Using the area model, students see that numbers containing a whole number and fractional part, i.e., mixed numbers, can also be expressed using decimal notation if the fractional part can be converted to a decimal number
- ✓ Students use place value disks to represent the value of each digit in a decimal number.
- ✓ Students write the value of a decimal number in expanded form using fractions and decimals, e.g., 2 ones 4 tenths = $(2 \frac{1}{10}) + (4 \frac{1}{10})$ and $2.4 = (2 \frac{1}{10}) + (4 \frac{1}{10})$.
- ✓ Students plot decimal numbers on the number line.
- ✓ Students identify 1 centimeter as 1 hundredth of a meter.
- ✓ Students learn the equivalence of 10 hundredths and 1 tenth and go on to represent them as both decimal fractions and as decimal numbers
- ✓ Students use area models, tape diagrams, and number disks on a place value chart to see and model the equivalence of numbers involving units of tenths and hundredths.
- ✓ Students work with concrete representations of measurements. They see measurement of length on meter sticks, of mass using a scale, and of volume using graduated cylinders. In each case, students record the measurements on a place value chart and then compare them. They use their understanding of metric measurement and decimals to answer questions such as, “Which is greater? Less? Which is longer? Shorter? Which is heavier? Lighter?”
- ✓ Students use area models and number lines to compare decimal numbers and use the $<$, $>$, and $=$ symbols to record their comparisons.

Terminology:

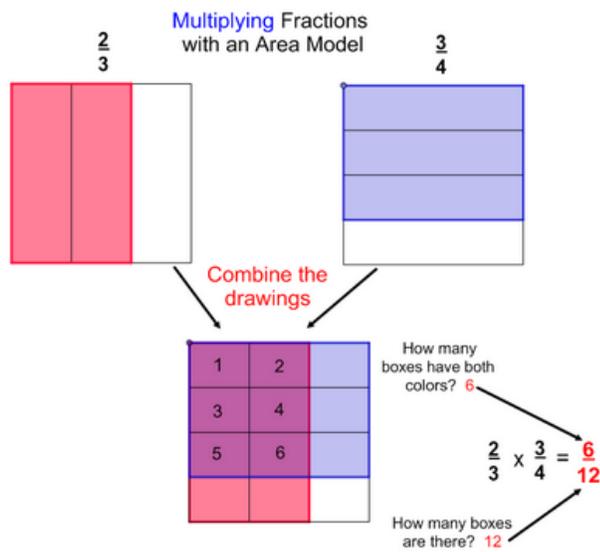
- ✓ Metric Unit – a system of measurement that includes the meter for length, the second for time, and kilograms for mass
- ✓ Decimal Notation - A representation of a fraction or other real number using the base ten and consisting of any of the digits 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, and a decimal point. Each digit to the left of the decimal point

indicates a multiple of a positive power of ten, while each digit to the right indicates a multiple of a negative power of ten. For example, the number $26\frac{37}{100}$ can be written in decimal notation as 26.37, where 2 represents 2×10 , 6 represents 6×1 , 3 represents $3 \times \frac{1}{10}$ or $\frac{3}{10}$, and 7 represents $7 \times \frac{1}{100}$ or $\frac{7}{100}$.

- ✓ Place Value Chart- The place value chart is a graphic organizer that students can use (beginning in Grade 1 with tens and ones through Grade 5 with decimals) to see the coherence of place value and operations between different units.

Hundreds	Tens	Ones

- ✓ Mixed Numbers – a mixed fraction is a whole number combined with a fraction. For example $3\frac{1}{2}$
- ✓ Area Model - An area model is a model for math problems where the length and width are configured using either multiplication, percentage or fractions to figure out the size of an area. (www.cpalms.org)

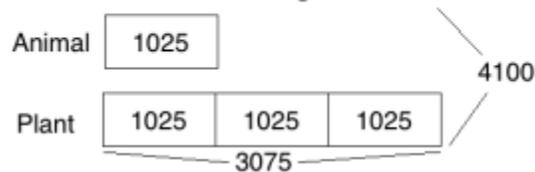


- ✓ Expanded Form - Writing a number to show the value of each digit. It is shown as a sum of each digit multiplied by its matching place value (units, tens, hundreds, etc.) (www.mathsisfun.com)

$$\begin{array}{c}
 293 \\
 \uparrow \\
 \text{Standard} \\
 \text{Notation}
 \end{array}
 =
 \underbrace{2 \times 100 + 9 \times 10 + 3}_{\text{Expanded Notation}}$$

- ✓ Tape Diagrams - Tape diagrams, also called bar models, are pictorial representations of relationships between quantities used to solve word problems.

Sam has 1025 animal stickers. He has 3 times as many plant stickers as animal stickers. How many plant stickers does Sam have? How many stickers does Sam have altogether?



- ✓ Number Disks - Number disks are non-proportional units used to further develop place value understanding.



Place Value Chart with Number Disks

Activities you can do at Home:

- ✓ Play online decimal and fraction games

- ✓ Have students compare quantities on household items (ounces, liters, kilograms, grams , etc
- ✓ Create opportunities for your student to convert fractions when helping you cook at home
- ✓ Consider reading *Full Count*