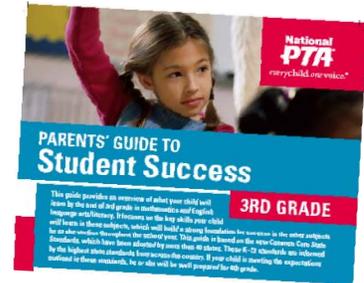


Dear Parents and Caregivers,

Thank you for continually supporting your children in learning the mathematics they need. Together our collective efforts will help them become college- and career-ready. Please find time to visit the National PTA website which has published a *Parents' Guide to Student Success*. It provides an overview of what your child needs to know by the end of third grade.

<http://pta.org/files/3rd%20Grade%20June20.pdf>

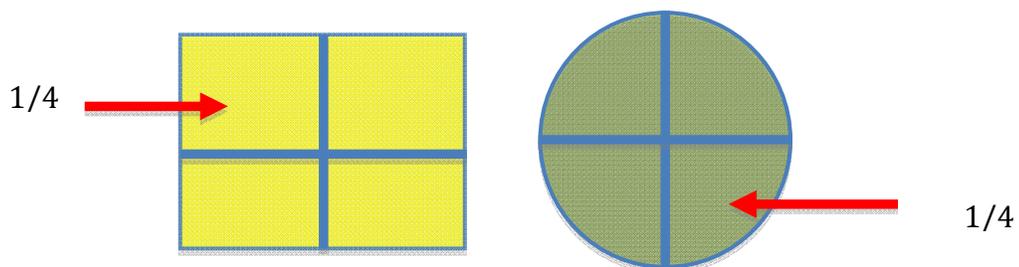


In third grade, your children will be formally introduced to the world of **fractions**. In previous years of school, they have been made aware of fractions through dividing shapes, such as rectangles and circles, into equal shares. This year they will learn to use fraction language such as **equal parts, unit, unit fractions, whole, numerator, denominator, partition, partitioning, and equivalent fractions**. They will learn how to partition (divide) a whole into equal parts. A whole can be a shape such as a square, rectangle, circle, or a line segment. It can also be any group of things considered a whole group, such as “all third-grade students” or “24 stickers.” Knowing what equal parts means and identifying the whole are critical. Having equal parts means having the same amount of something. We will be using various shapes, fraction strips or bars, number lines, and real-life objects to illustrate equal shares or parts. You will see your children use these models in their work. If a child is stuck on a fraction task, ask him or her to make a model.

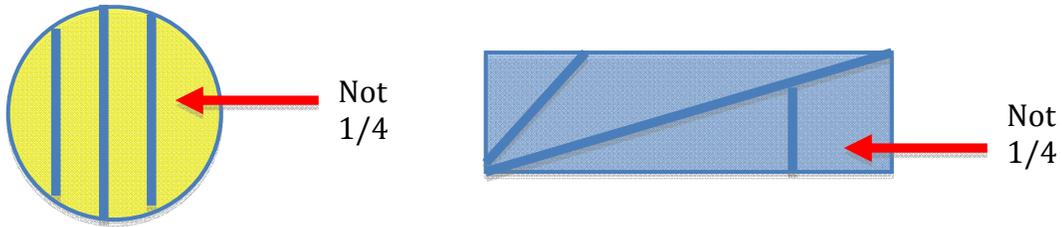
3.NF.1 Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$.

When you divide something (a whole) into equal parts (b is the number of parts), one of those parts is described by the fraction $1/b$. Your child will learn this concept without using the term $1/b$. You can help by asking what the unit fraction is when a whole has been divided into equal parts. A **unit fraction** names one equal part. The **numerator** is 1. The **denominator** tells how many equal parts there are. Examples of unit fractions are $1/2$, $1/3$, $1/4$, and $1/8$. If you partition a whole into equal parts, then one part is the unit fraction. For example, when you divide a rectangle into 4 equal parts the unit fraction is $1/4$.

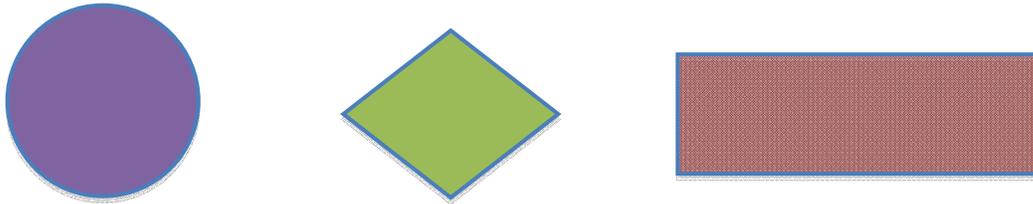
Please see illustrations below. Both shapes are divided into 4 equal parts. The part shown by each arrow is labeled as a unit fraction.



Helping your child understand what **equal parts** means is very important in understanding the concept of unit fractions. If the whole is not divided into equal parts, then one part is not considered $\frac{1}{4}$. See the following illustrations:



PRACTICE: Practice partitioning these shapes into equal parts with your child and let him/her name the unit fraction. For 2 parts it is $\frac{1}{2}$; for 4 parts it is $\frac{1}{4}$; for 3 parts it is $\frac{1}{3}$.



Same amounts can look different. The picture below is from the Common Core State Standards Writing Team Progression: Numbers-Fractions (August, 2011). It shows that the unit fraction $\frac{1}{4}$ can be represented in many ways. A shape can be partitioned in several ways to show that same fraction. The first two representations are the most common ways that students show $\frac{1}{4}$ in a picture. Talk with your child and ask why the other three pictures are representations of $\frac{1}{4}$ also.

Area representations of $\frac{1}{4}$

In each representation the square is the whole. The two squares on the left are divided into four parts that have the same size and shape, and so the same area. In the three squares on the right, the shaded area is $\frac{1}{4}$ of the whole area, even though it is not easily seen as one part in a division of the square into four parts of the same shape and size.

Picture above from CCSSM 3-5, Number: Fractions Progression

Responses and questions. You want to hear that the shaded part takes up the same amount of space or area in each figure. For the first and second drawings, children can fold paper to show there are four parts exactly the same size. In the third drawing, the two shaded parts would make one square similar to the second picture when put together; in the fourth, they make one column similar to the first. In figure five there are 16 small squares, all the same size. There are four sets of four squares, including the shaded ones, so the shaded ones are $\frac{1}{4}$ of the figure.

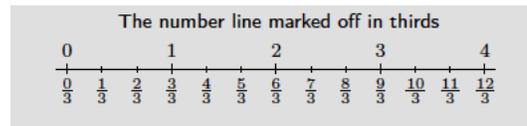
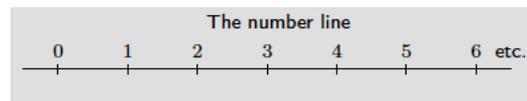
Remember to ask your child to explain why the parts are equal or not. Always find opportunities for him/her to explain and justify his/her thinking. Please listen carefully to your child's explanations. Avoid giving him/her the answers. Instead, ask questions to help the child think through the math. Use questions such as "Say more about that", "What do you mean by that?", "Can you show me?", "How are these alike?" This way, you are teaching perseverance in problem solving. Encourage children to use the math vocabulary as often as possible. Use real-world situations that will require children to reason regarding equal shares, to make the concept of fractions more meaningful for them.

Here are links to websites where your child can practice or find problems and/or activities on unit fractions/fractions. He/she will find these sites enjoyable. Scroll down and look for fractions practice.

- www.k-5mathteachingresources.com/3rd-grade-number-activities.html,
- www.ixl.com/math/grade-3 (paid site)

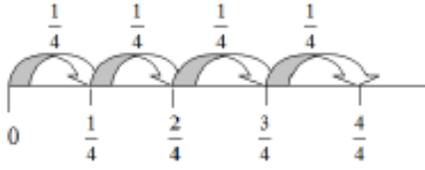
3.NF.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram.

Teaching unit fractions **using the number line** is somewhat new. In this case, it is critical for children to see that the space between 0 and 1 defines the whole, which is 1, and can be partitioned equally in many ways. Numbers representing the same amount are spaced equally on a number line, just as they are on a ruler. Please see the illustration below. (These pictures are from the Common Core State Standards Writing Team-Progressions: Numbers-Fractions, August 2011). The top shows whole numbers evenly spaced.



The bottom shows thirds marked on a number line. When your child understands unit fractions, he/she can use this knowledge to build other fractions. Unit fractions are the building blocks of fractions. He/she learns that $\frac{2}{3}$ is actually putting two $\frac{1}{3}$'s together. In this example, the numerator 2 tells him/her that there are two of the unit $\frac{1}{3}$ in the fraction $\frac{2}{3}$. Symbolically $\frac{2}{3} = \frac{1}{3} + \frac{1}{3} = 2 \times \frac{1}{3}$. He/she will know that every fraction can be expressed or decomposed as a sum of unit fractions. In the bottom illustration children can see that $\frac{3}{3}$ is the same as 1. Fractions for numbers greater than 1 such as $\frac{5}{3}$ can be written this way:

$$\frac{5}{3} = \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} \text{ or } 5 \times \left(\frac{1}{3}\right).$$



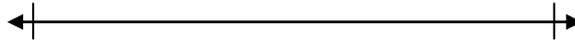
(Image from the CCSS Writing Team Progression, August 2011)

Your child can practice learning about fractions on number lines by doing this activity with you. It is from K-5 Math Teaching Resources. Try it!

Number Line Roll

Materials: ruler, dice

1. Draw a six-inch number line that begins with 0 and ends with 1.
2. Roll a die. Divide your number line into this number of equal segments.
3. Label the segments as fractions and explain the reasoning and what the fractions mean.
4. Repeat until you have four different number lines.



From www.k-5mathteachingresources.com.

Third Grade Teacher