

Introducing Fraction Terms and Symbols

Naming Fractions

Fraction terminology is not part of children's intuitive knowledge of fractions. Children are familiar with halves and halving. However, many children overgeneralize this understanding and refer to any fractional part as "a half." For example, a third grader told her teacher that she "split the candy bar in threes and gave each person a half." She created three equally sized parts but called them each "a half" simply because they were pieces of a whole unit.

Children can solve Equal Sharing problems and represent their solutions without using fraction terms or symbols to describe the final share. For example, a child could represent the amount one person would get by shading in the amount of one share. This approach to designating the amount of a share is perfectly appropriate in young children's early learning about fractions.

Because terminology is not intuitive, you will need to introduce this language and the logic it follows. Questioning can help children make a connection between the size of a piece and its name. A traditional line of questioning starts with "How many pieces is the whole brownie cut into?" However, because it is the size of the part that determines the fraction's name rather than the number of parts into which the whole is partitioned, this line of questioning can lead to misconceptions.

If your questions focus on the size of the part relative to the whole, rather than the number of parts into which the whole is cut, children learn to look at the relationship between a part and the whole to name the part. Asking "How many of these parts fit into the whole brownie?" prompts children to focus on the relationship between the size of a fractional part and the whole to determine the value of the fraction. If you are consistent in asking this question, children learn that naming

a fractional quantity depends on the size of the part compared to the whole, rather than the actual number of parts into which the whole is cut.

Symbolizing Fractions

We recommend that you introduce fraction terms and symbols gradually, to ensure that children's use of mathematical terms and symbols keeps pace with their developing understanding of the meaning of fractions.

You can begin by presenting fraction terminology and encouraging children to use fraction terms—usually spelled out (halves, fourths, thirds, and so on)—in combination with counting numbers (1, 2, 3, ...) to describe and quantify shares. When children understand fraction terms, distinguishing between the numerator (a counting number) and the denominator (a fraction term) in this way actually comes easily to them. For example, consider how the fraction symbol $\frac{2}{3}$ can refer to an amount of a candy bar. The numerator, 2, refers to the number of pieces in the share. The denominator, 3, refers to the size of the piece relative to the whole. To represent $\frac{2}{3}$, young children would write “2 thirds.” When children begin to independently use correct fraction terminology to describe shares, you can introduce the standard fraction symbol ($\frac{a}{b}$). If you decide to represent fractional amounts on a number line, children will be best prepared to understand how a single point can represent an amount such as $\frac{2}{3}$ when they are able to relate fractional amounts to well known benchmark fractions, such as $\frac{1}{4}$ or $\frac{1}{2}$.

Figure 1–18 shows this progression in children's use of fraction terms and symbols in the context of Equal Sharing, from pictorial to symbolic.