

Questions to ask your child ...

Getting Started

- What do you need to find out?
- What do you already know?
- Can you think of a first step?
- What words or symbols do you understand or not understand?
- Have you solved similar problems that would help?

While Working

- Can you make a drawing/model/representation to explain your thinking?
- Can you explain your strategy to me?
- How can you convince me your answer makes sense?
- Has the question been answered? How do you know you are finished?
- Can someone else read your answer and understand it?

Doing More Math at Home.....

Two important goals for all students are that 1) they learn to value mathematics and 2) they become confident in their ability to do mathematics. Look for ways to point out and reinforce math skills at home while cooking, playing games, building and measuring, estimating or any other opportunities that arise!

Quotes about Representations and Fractions
Village School Parent Math Night
January 2013

“Mathematics requires representations. In fact, because of the abstract nature of mathematics, people have access to mathematical ideas only through the representations of those ideas. Although on its surface school mathematics may seem to be about facts and procedures, much of the real intellectual work of mathematics concerns the interpretation and use of representations of mathematical ideas.”

Adding it Up, Helping Children Learn Mathematics, pp. 94-95

“Fractions are a rich part of mathematics, but we tend to manipulate fractions by rote rather than try to make sense of the concepts and procedures. Researchers have concluded that this complex topic causes more trouble for elementary and middle school students than any other area of mathematics (Bezuk and Bieck 1993). Teaching fractions is therefore both important and challenging. The National Council of Teachers of Mathematics recommends that instruction in fractions emphasize equivalent forms, estimating and comparing and the reasonableness of results, not just correct answers and the steps in performing fraction algorithms.”

Math Matters: Understanding the Math You Teach, p. 73

“When students first encounter fractions in the elementary grades, they have to sort out what these numbers are and how they are different from the whole numbers they have been using. Past research has found that even in middle school, students who have not developed meaning for fractions may interpret them as two separate whole numbers. For example, in an often-cited assessment question from the National Assessment of Educational Progress (NAEP), students were asked to pick an estimate for the sum of $12/13$ and $7/8$ from four choices – 1, 2, 19, and 21. Many students added either only the numerators or only the denominators and chose 19 or 21. They didn’t think of each of these numbers as close to 1, giving a correct estimate of 2 for their sum. By using a variety of representations of fractions and percents, students learn to visualize the meaning of these numbers, their equivalents, and relationships to landmarks such as $1/2$ and 1.”

Teacher Note, Visualizing Fractions and Percents, Investigations Curriculum Grade 5, p.147

“Representations are the tools elementary students commonly use to develop [mathematical] arguments.”

Connecting Arithmetic to Algebra, p.55