



The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important “processes and proficiencies” with longstanding importance in mathematics education. They are sometimes referred to as the *8 Standards for Mathematical Practice*. In this and subsequent issues you will find excerpts from these practices as well as brief sketches from the **Conference Board of Mathematical Science** of the Common Core State Standards for Mathematical Practice as they apply to teaching in elementary school.

### 5. Use appropriate tools strategically.

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include such things as pencil and paper, concrete models, a ruler, protractor and/or a calculator. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. They detect possible errors by strategically using estimation and other mathematical knowledge. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

Math drawings, such as drawings of tens and ones or hundreds, tens, and ones, can be an especially valuable tool in elementary school. Students use math drawings strategically when they use them to make sense of numerical work and not just for rote calculations. Elementary school students also need to learn to use tools such as rulers and protractors. Teachers should know how to guide students to make strategic use of these tools. Technology tools can also be used effectively in elementary schools, and teachers need to think carefully about how and when to use such tools. A common assertion in elementary schools is that children should not use calculators until they have memorized all of the number combinations for the four operations. However, elementary school students can use calculators effectively for problem solving to tackle mathematics for which they understand the operation but do not yet have facility with the computation. For example, children who understand the concept of multiplication but who have not yet mastered a means for multiplying multi-digit numbers can use calculators to determine how many times their heart beats in a day, week, month, or year after counting the number of beats in a minute. Thus, teachers need to have opportunities to think carefully about using technology tools strategically.

#### Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.



**Try this!**

**Eight children are sharing 10 brownies so that each gets the same amount. How much can each child have? Show your work and explain your thinking.**