

Standards for Mathematical Practice and Mathematical Content

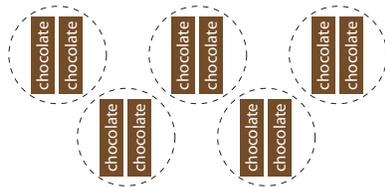
The Common Core State Standards (CCSS) for mathematics include two types of standards: one for mathematical practice (how students are able to apply and extend math principles) and one for mathematical content (what students know about math). The two are linked together while students are learning.

The Standards for Mathematical Practice are listed at the end of this section. Let's look at how a student might learn to "model with mathematics" (Practice Standard 4). This means students can use the math they know to solve problems they encounter every day. For a fifth-grade student, the following sample problems might be used to see whether he or she can model mathematical content that relates to dividing fractions. (The mathematics content standard for this new knowledge is shown in the box at top right. The practice standard shown in the sample problems is "model with mathematics.")

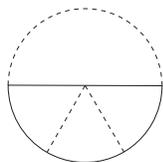
Students understand division with whole numbers from previous grades. Problems 1 and 3 review this understanding, and then extend the same thinking in problems 2 and 4 to divide a unit fraction (e.g., $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{5}$) by a whole number or vice versa.

1. (Division using whole numbers): Louis has 10 chocolate bars. He wants to share them fairly with his four friends and himself.

How many chocolate bars will each person get? ($10 \div 5 = ?$)
(Think: Divide 10 into 5 equal shares.)



2. (Division of a unit fraction by a whole number): The Jonas family has half of a large pizza. There are three people in the family. They want equal shares of the pizza.



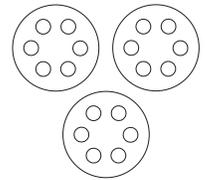
Example Standard for Fifth-Grade Mathematics

Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.

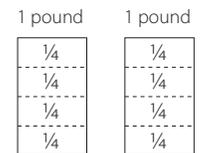
- Interpret division of a unit fraction by a nonzero whole number, and compute such quotients.
- Interpret division of a whole number by a unit fraction, and compute such quotients.
- Solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions.

What part of a pizza will each person get? ($\frac{1}{2} \div 3 = ?$)
(Think: Divide $\frac{1}{2}$ into 3 equal shares.)

3. (Division using whole numbers): Eva has 18 cupcakes. She wants to have enough plates so that she can put 6 cupcakes on a plate. How many plates will she need? ($18 \div 6 = ?$)
(Think: How many 6s are there in 18?)



4. (Division of a whole number by a unit fraction): Juan has 2 pounds of raisins and wants to put them into bags with $\frac{1}{4}$ pound of raisins in each bag. How many bags will he need? ($2 \div \frac{1}{4} = ?$)
(Think: How many $\frac{1}{4}$ s are there in 2?)



Standards for Mathematical Practice

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

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careers. In an increasingly mobile society, families with children transferring to new schools will not have to adjust to new learning expectations. Standards will be the same for all students in states adopting the CCSS, making transitions smoother for students.

- In a competitive global economy, all students must compete with not only American peers in other states, but with students from around the world. The CCSS were designed to prepare students to succeed in this environment.
- Common standards will facilitate conversation among parents, teachers, and children about high-level academic learning goals. Because common standards define exactly what students should know and be able to do at each grade level, they will help parents hold their schools accountable for teaching students in ways that support learning of the important content and skills defined by the CCSS.
- With adoption of the CCSS, states and districts can share experiences, methods of assessment, teaching practices, instructional materials, and approaches to helping parents support and reinforce learning at home.

How will the standards be assessed?

Two consortia of states—the SMART-ER Balanced Assessment Consortium and the Partnership for the Assessment of Readiness for College and Careers—have been awarded federal funding to develop an assessment system aligned with the CCSS. Different types of assessments to measure students' progress during and at the end of the school year will be designed for students in grades 3–12. These assessments will be used by states adopting the CCSS beginning in the 2014–2015 school year.

When will the CCSS be implemented?

Many states have already adopted the CCSS. A few others are in the process of doing so. Several states have posted a comparison of their current state standards against the CCSS on their websites. States are also in the process of looking at how and when

to introduce the new standards. Plans may include training for school and district staff, communicating with interested people (e.g., community members, parents, and students), and transitioning from existing to new assessment systems.

For more about the Common Core State Standards, visit <http://educationnorthwest.org/common-core/>.

What Can Parents Do To Prepare for the CCSS?

Has your state adopted, or is it planning to adopt, the CCSS? If it is, you can do the following:

- Create a study group with other parents, community members, or school staff to examine the new standards. Discuss your initial impressions or concerns about the standards, how they differ from your existing state standards, and learn how the school or district will prepare for implementation.
- Through your involvement on the site council, parent-teacher association, or other committee, ask your school administrators and teachers how they will prepare to teach to the standards and how they will measure student progress toward meeting the standards. Ask how parents and community members can provide regular feedback and support teaching and learning of the standards.
- Attend school board meetings and ask whether policies will be developed to support schools in this work.
- Talk with business and community leaders about the need for high goals and clear expectations for our children's education.
- Talk to your children about the importance of graduating from high school ready for college and career success. Discuss how the standards will be used to guide teaching and learning from kindergarten through high school.