

Standard Addressed by these Number Talks:

5.NF.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, $2/3 + 5/4 = 8/12 + 15/12 = 23/12$. (In general, $a/b + c/d = (ad + bc)/bd$.)

5.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

5.NF.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.

Pose these number sentences to students and ask them to solve them mentally. The student's role is to demonstrate fluent strategies for solving these problems. The teacher's role is to pose the problem, give students a few minutes to solve the problems and then lead a discussion about how they solved the problems. Teachers will need to write down students' thinking using number sentences that will show how students solved the problems. You need not pose all at once, but instead do a few each week during the unit (posing one problem in one setting, or a string of problems that build on each other in one setting or over the course of a week). Conversations may range from 10-20 minutes in length. See the article *Number Talks Build Numerical Reasoning* (October 2011 • teaching children mathematics) for more information.

Standard	Number Talk Problem Sets	Rationale
5.NF.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, $2/3 + 5/4 = 8/12 + 15/12 = 23/12$. (In general, $a/b + c/d = (ad + bc)/bd$.)	$1/2 + 1/2$ $3/4 + 1/4$ $1/2 + 1/4$ $1/2 + 3/4$ $1/2 + 1/4 + 1/8$ $1/4 + 1/8$ $1/4 + 1/8 + 1/8$ $3/4 + 1/8$ $3/4 + 1/8 + 1/8$ $3/4 + 3/8$ $2/3 + 1/2$ $1/2 + 5/6$ $1/2 + 1/6$ $1/2 + 1/3 + 1/6$ $3/4 + 2/3$ $2/3 + 3/5$ $2/3 + 1/4$	<p>These number talks encourage students to combine fractions to make whole units.</p> <p>They will help students solidify their understanding of equivalent fractions.</p>

<p>5.NF.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, $2/3 + 5/4 = 8/12 + 15/12 = 23/12$. (In general, $a/b + c/d = (ad + bc)/bd$.)</p>	$1/2 - 1/4$ $3/4 - 1/2$ $5/6 - 1/2$ $2/3 - 1/2$ $3/4 - 3/8$ $1/2 - 1/6$	<p>These number talks encourage students to separate fractions to find familiar fractional parts. These will also help students solidify their understanding of equivalent fractions.</p>
<p>5.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.</p>	$1/2 \times 2$ $1/2 \times 4$ $1/2 \times 1/2$ $1/2 \times 1/4$ $1/5 \times 10$ $3/5 \times 10$ $1/5 \times 5/8$ $3/5 \times 5/8$	<p>These number talks support student use of relational thinking. Posing these problems in pairs or in related strings will help students make connections and use the relationships evident in the problems.</p>
<p>5.NF.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.</p>	$4 \div 1/2$ $4 \div 1/4$ $4 \div 3/4$ $1/2 \div 1/2$ $3/4 \div 1/4$ $1/2 \div 2$ $1/3 \div 4$ $5/6 \div 5$ $5/8 \div 5$ $3/4 \div 3/8$	<p>It is really tempting to teach students the traditional algorithm for dividing fractions (just invert and multiply), but your goal here is to really see if students understand what happens when we divide by a fraction and when we divide a fraction by a whole number. The goal of the Common Core is not to teach procedures, but to teach conceptual understanding.</p> <p>If students are struggling, they may need more work with word problems involving division of fractions. You may ask them, what the word problem might be for these number sentences to get them to reason more deeply about what is happening when we divide by a fraction. (i.e. for the first problem: $4 \div 1/2$, the problem might be: Mrs. Smith needed 4 cups of water for her play dough recipe. She only had a $1/2$ cup measuring cup. How many $1/2$ cups will she need to make her recipe?). Putting the problems in a context may help students to develop deeper understanding.</p>