

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, $\frac{2}{3} + \frac{5}{4} = \frac{8}{12} + \frac{15}{12} = \frac{23}{12}$. (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, $\frac{2}{3} + \frac{5}{4} = \frac{8}{12} + \frac{15}{12} = \frac{23}{12}$. (In general, $a/b + c/d = (ad + bc)/bd$.)	$1\frac{1}{4} + \frac{3}{4}$ $2\frac{3}{4} + 5\frac{1}{4}$ $2\frac{5}{8} + \frac{7}{8}$ $\frac{5}{6} + 2\frac{5}{6}$ $3\frac{3}{5} + 2\frac{3}{4}$ $6\frac{1}{2} + 3\frac{2}{5}$	These number talks encourage students to combine fractions to make whole units, now taking into consideration mixed numbers. They will help students solidify their understanding of equivalent fractions.
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, $\frac{2}{3} + \frac{5}{4} = \frac{8}{12} + \frac{15}{12} = \frac{23}{12}$. (In general, $a/b + c/d = (ad + bc)/bd$.)	$10\frac{5}{8} - \frac{5}{8}$ $1\frac{1}{4} - \frac{3}{4}$ $1\frac{5}{6} - \frac{2}{3}$ $9\frac{1}{3} - \frac{5}{6}$ $7\frac{1}{4} - \frac{2}{3}$ $1\frac{3}{4} - 1\frac{2}{3}$	These number talks encourage students to separate fractions to find familiar fractional parts. These will also help students solidify their understanding of equivalent fractions.
5.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.	$\frac{1}{2} \times 3$ $3 \times \frac{1}{2}$ $\frac{3}{8} \times \frac{2}{3}$ $\frac{2}{3} \times \frac{3}{8}$	These number talks are designed to give students practice reasoning about multiplying fractions. If these problems are presented in pairs, you can engage students in a discussion about the commutative property of multiplication and how it applies to fractions in order to apply and extend their understanding of multiplication.

5.NF.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.	$\frac{1}{6} \div 3$ $3 \div \frac{1}{6}$ $10 \div \frac{1}{2}$ $\frac{1}{2} \div 10$ $5 \div \frac{1}{2}$ $\frac{1}{2} \div 5$	These number talks were designed to engage students in using the relationship between division and multiplication, in order to work with simple fraction division problems. Having seen that division of a whole number by a whole number is the same as multiplying the number by a unit fraction, they can extend the same reasoning to division of a unit fraction by a whole number.
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