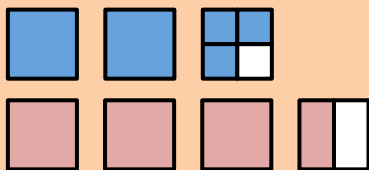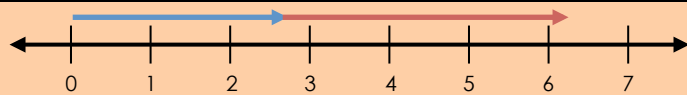## Packet 2: Fraction Addition and Subtraction

Dear Parents/Guardians,

In Fractions: Packet 1, students explore addition and subtraction of proper fractions and mixed numbers. In Lesson 1, students draw pictures and use mental math and estimation to add and subtract fractions. In Lesson 2, students add and subtract fractions, using diagrams to make sense of the need for common denominators when solving procedurally. In Lesson 3, students add and subtract mixed numbers using similar methods as in Lesson 2.
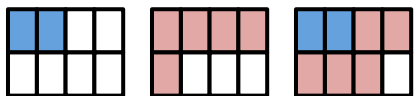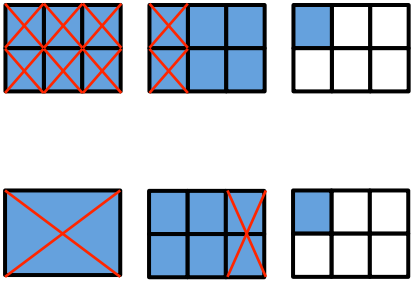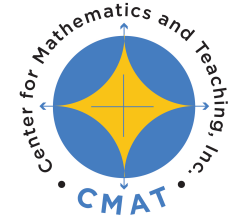
Estimating Fraction Sums and Differences

Students use number lines and area models to support their estimation of fraction sums and differences.

	Estimate $2\frac{3}{4} + 3\frac{1}{2}$.	
Area Model		The sum will be greater than 6, but less than 7.
Number Line	 Adding the two fractions give a length more than 6 but less than 7.	
Reasoning (Example)	$2 + 3 = 5$. I know $\frac{1}{2} + \frac{1}{2} = 1$. Since $\frac{3}{4}$ is greater than $\frac{1}{2}$, then $\frac{3}{4} + \frac{1}{2}$ will add up to more than 1. $2\frac{3}{4} + 3\frac{1}{2}$ will be 6 and some more.	

Adding and Subtracting Fractions and Mixed Numbers

Students will add and subtract fractions and mixed numbers using diagrams. They will use the "big 1" from Packet 1 to rename fractions to have common denominators in order to use more traditional algorithms.

Expression	Diagram	Algorithms
$\frac{1}{4} + \frac{5}{8}$	To add means to "put together." 	$\frac{1}{4} + \frac{5}{8} = \frac{2}{8} + \frac{5}{8} = \frac{7}{8}$
$2\frac{1}{6} - 1\frac{1}{3}$	To subtract means "to remove." 	Using improper fractions: $2\frac{1}{6} - 1\frac{1}{3} = \frac{13}{6} - \frac{8}{6} = \frac{5}{6}$ OR following a pictorial process: $2\frac{1}{6} - 1\frac{1}{3}$ $2 - 1 = 1$ $1 - \frac{1}{3} = \frac{2}{3}$ or $\frac{4}{6}$ $\frac{4}{6} + \frac{1}{6} = \frac{5}{6}$

By the end of the packet, your student should know…

- How to estimate the sum or difference of two fractions
  Lesson 2.1
- How to mentally add and subtract fractions and mixed numbers when appropriate
  Lessons 2.1, 2.2, and 2.3
- How to draw diagrams of fractions and mixed numbers and use the diagrams to add or subtract
  Lessons 2.1, 2.2, and 2.3
- How to add and subtract fractions and mixed numbers using the traditional algorithms
  Lessons 2.2 and 2.3

Additional Resources

- For definitions and additional notes please refer to section 2.5.