



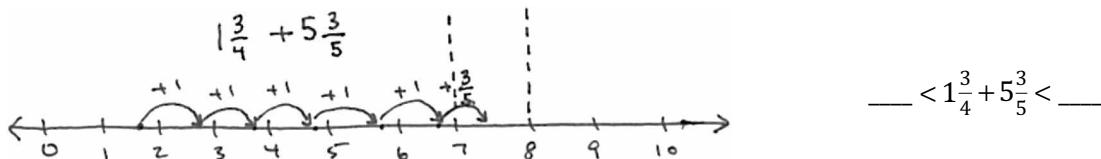
Topic B

Making Like Units Numerically

5.3H, 5.3K

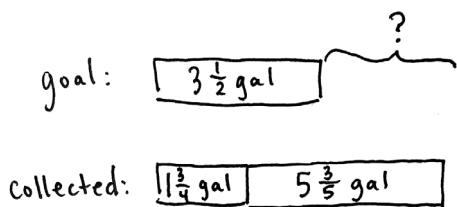
Focus Standards:	5.3H	Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations.
	5.3K	Add and subtract positive rational numbers fluently.
Instructional Days:	5	
Coherence	-Links from:	G4–M5 Fraction Equivalence, Ordering, and Operations
	-Links to:	G5–M1 Place Value and Decimal Fractions
		G5–M4 Multiplication and Division of Fractions and Decimal Fractions

In Topic B, students use the number line when adding and subtracting fractions greater than or equal to 1. The number line helps students see that fractions are analogous to whole numbers. The number line makes it clear that numbers on the left are smaller than numbers on the right, which leads to an understanding of integers in Grade 6. Using this tool, students recognize and manipulate fractions in relation to larger whole numbers and to each other. For example, “Between which two whole numbers does the sum of $1\frac{3}{4}$ and $5\frac{3}{5}$ lie?”



This leads to an understanding of and skill with solving more complex problems often embedded within multi-step word problems:

Cristina and Matt's goal is to collect a total of $3\frac{1}{2}$ gallons of sap from the maple trees. Cristina collected $1\frac{3}{4}$ gallons. Matt collected $5\frac{3}{5}$ gallons. By how much did they beat their goal?



$$\begin{aligned} 1\frac{3}{4} + 5\frac{3}{5} - 3\frac{1}{2} &= 3 + \left(\frac{3 \times 5}{4 \times 5}\right) + \left(\frac{3 \times 4}{5 \times 4}\right) - \left(\frac{1 \times 10}{2 \times 10}\right) \\ &= 3 + \frac{15}{20} + \frac{12}{20} - \frac{10}{20} \\ &= 3\frac{17}{20} \end{aligned}$$

Cristina and Matt beat their goal by $3\frac{17}{20}$ gallons.

Word problems are a part of every lesson. Students are encouraged to utilize strip diagrams, which facilitate analysis of the same part–whole relationships they have worked with since Grade 1.

A Teaching Sequence Toward Mastery of Making Like Units Numerically

- Objective 1:** Add fractions to and subtract fractions from whole numbers using equivalence and the number line as strategies.
(Lesson 6)
- Objective 2:** Add fractions making like units numerically.
(Lesson 7)
- Objective 3:** Add fractions with sums greater than 2.
(Lesson 8)
- Objective 4:** Subtract fractions making like units numerically.
(Lesson 9)
- Objective 5:** Subtract fractions greater than or equal to 1.
(Lesson 10)