Lesson 2.3

Subtracting Rational Numbers (Fractions)

Essential Question

How can you use what you know about subtracting integers to subtract rational numbers?

Key Idea

Subtracting Rational Numbers

Words To subtract rational numbers, use the same rules for signs as you used for integers.

Numbers $\frac{2}{5}-\left(-\frac{1}{5}\right)=\frac{2}{5}+\frac{1}{5}=\frac{2+1}{5}=\frac{3}{5}$

$= \frac{2-(-1)}{5} = \frac{2+1}{5} = \frac{3}{5}$

1) Improper fractions
2) Common denominator
3) Combine numerators
4) Simplify

Example 1:

Subtract. Write fractions in simplest form.

a) $\frac{7}{1}-\frac{5}{7}$

$\frac{7}{1}\cdot\frac{7}{7}-\frac{5}{7}$

$\frac{49}{7}-\frac{5}{7}$

$\frac{49-5}{7}$

$\frac{44}{7}=6\frac{2}{7}$

Either answer is okay, sometimes matters for story problems

b) $-5\frac{9}{10}-7\frac{3}{5}$

$-\frac{59}{10}-\frac{38}{5}\cdot\frac{2}{2}$

$-\frac{59}{10}+\frac{-76}{10}$

$\frac{-59+(-76)}{10}$

$-\frac{135}{10}=-13\frac{5}{10}=-13\frac{1}{2}$

$38 \times 2 = 76$

$59 + 76 = 135$

1. $\frac{1}{3} - \left(-\frac{1}{3}\right)$

$\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$

2. $-3\frac{1}{3} - \frac{5}{6}$

$-\frac{10}{3} \cdot \frac{2}{2} - \frac{5}{6}$

$-\frac{20}{6} - \frac{5}{6}$

$\frac{-20-5}{6}$

$-\frac{25}{6} = -4\frac{1}{6}$

3. $4\frac{1}{2} - 5\frac{1}{4}$

$\frac{9}{2} \cdot \frac{2}{2} - \frac{21}{4}$

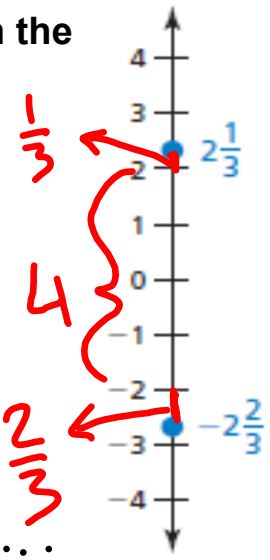
$\frac{18}{4} + \frac{-21}{4}$

$\frac{18+(-21)}{4}$

$-\frac{3}{4}$

Example 2:

Find the distance between the two numbers on the number line.



$2\frac{1}{3} - \left(-2\frac{2}{3}\right)$

$4 + \frac{1}{3} + \frac{2}{3}$

$4 + 1 = 5$

$\frac{7}{3} + \left(-\frac{8}{3}\right)$

$\frac{15}{3} = 5$

If you're given a visual resource... use it!