Module 6   **Computational Fluency of Fractions**
Lesson 3   **Subtracting Fractions with Unlike Denominators**

Challenge Problems

6.3

Set 1

1   Grace subtracted $\dfrac{12}{15}$ and $\dfrac{3}{5}$ and said that the answer was $\dfrac{9}{10}$. Find and explain Grace's error.

2   Joel found $\dfrac{3}{4} - \dfrac{2}{3}$ using 12 as the common denominator. Josiah found $\dfrac{3}{4} - \dfrac{2}{3}$ using 24 as the common denominator. Show how both Joel and Josiah got the same answer.

Set 1

1. Grace subtracted the numerators to find the numerator in the difference and subtracted the denominators to find the denominator in the difference. Grace should have found a common denominator before subtracting. The correct solution follows:

$$\frac{12}{15} - \frac{3}{5} = \frac{12}{15} - \frac{3 \cdot 3}{5 \cdot 3}$$

$$= \frac{12}{15} - \frac{9}{15} = \frac{3}{15} = \frac{1}{5}$$

2. Joel used the least common denominator, 12.

$$\frac{3}{4} - \frac{2}{3}$$

$$\frac{3 \cdot 3}{4 \cdot 3} - \frac{2 \cdot 4}{3 \cdot 4}$$

$$\frac{9}{12} - \frac{8}{12}$$

$$\frac{1}{12}$$

Josiah used another common denominator, 24.

$$\frac{3}{4} - \frac{2}{3}$$

$$\frac{3 \cdot 6}{4 \cdot 6} - \frac{2 \cdot 8}{3 \cdot 8}$$

$$\frac{18}{24} - \frac{16}{24}$$

$$\frac{2}{24}$$

$$\frac{1}{12}$$