MA 130 SECTION 6.2 ADDITION & SUBTRACTION OF RATIONAL NUMBERS

HOMEWORK: 1 – 37 odd

OBJECTIVES:

- Develop and explain algorithms for arithmetic with fractions (rational numbers).
- Employ pictorial models to represent arithmetic with fractions (rational numbers).

1. Adding & Subtracting Fractions (Rational Numbers) that have Like Denominators:

Addition: $\frac{a}{c} + \frac{b}{c} = \frac{a + b}{c}$ Subtraction: $\frac{d}{f} - \frac{e}{f} = \frac{d - e}{f}$

2. Adding Elementary Fractions That Have Unlike Denominators

A. The National Assessment of Education Progress reports that 30% of 7th graders in the US think that

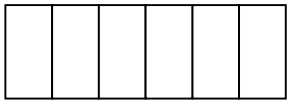
$$\frac{1}{2} + \frac{1}{3} = \frac{2}{5}$$

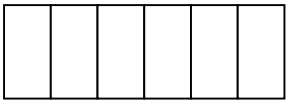
B. Let's discuss ways to help you convince your future elementary and middle school students that this is not true!!

Shade 1/2 of this fraction bar Shade 1/3 of this fraction bar

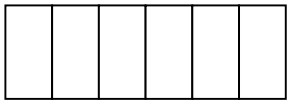
The "problem" with this problem is that the two units have different denominations. Thus, we must find a common denominator. Your students should have already been introduced to the concept of LCM. Define the LCD as the LCM (2, 3).

Show that the fractions 1/2 and 1/3 have equivalent fraction representations with fraction bars divided into 6 pieces.





Draw and shade a fraction bar to represent the sum.



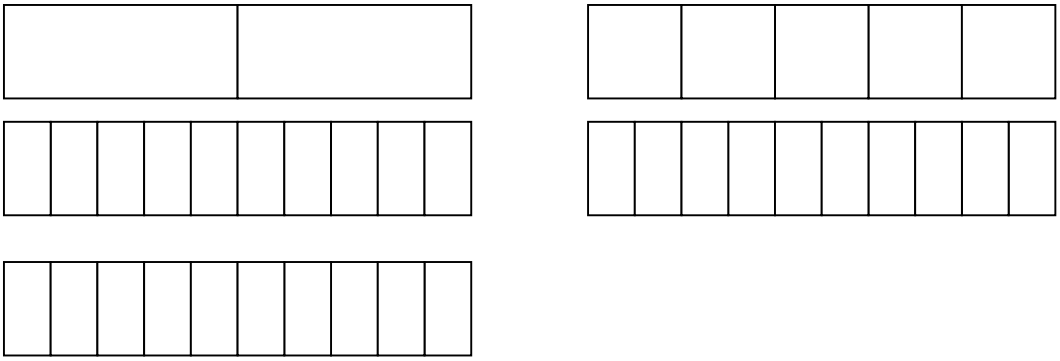
C. The Addition of Rational Numbers That Have Unlike Denominators:

To add rational numbers $\frac{a}{b} + \frac{c}{d}$ in which b > 0, d > 0, and b $\neq$ d:

1. Rename each fraction with the LCM(b, d)
2. Add the resulting fraction using the addition rule for like denominators

3. Subtracting Elementary Fractions That Have Unlike Denominators

Use fraction bars to solve $\frac{1}{2} - \frac{1}{5}$.



4. Adding & Subtracting Mixed Numbers

A. Method 1 (Regrouping)

i. $3\frac{5}{12} + 7\frac{2}{3}$

ii. $7\frac{5}{12} - 5\frac{2}{3}$

B. Method 2 (Improper Fractions)

i. $3\frac{5}{12} + 7\frac{2}{3}$

ii. $7\frac{5}{12} - 5\frac{2}{3}$