

Addition (3.1 Supplement)

A. Like Denominators:

2 eighths + 3 eighths = 5 eighths

$$2 \bullet \frac{1}{8} + 3 \bullet \frac{1}{8} = 5 \bullet \frac{1}{8} \quad \text{or} \quad \frac{2}{8} + \frac{3}{8} = \frac{5}{8}$$

Rule: To add when the denominators are the same

- a. add the numerators
- b. keep the denominator
- c. try to simplify if possible

Examples:

$$\frac{2}{6} + \frac{5}{6} = \frac{(2+5)}{6} = \frac{7}{6}$$

$$\frac{-11}{6} + \frac{3}{6} = \frac{(-11+3)}{6} = \frac{-8}{6} = -\frac{4}{3}$$

$$\frac{3}{10}a + \frac{1}{10}a = \frac{3+1}{10}a = \frac{4}{10}a = \frac{2}{5}a$$

$$\frac{5}{12} + \frac{1}{12}$$

(3.3 Supplement) Addition Using the Least Common Denominator

To add fractions when denominators are different:

- a) find the least common multiple of the denominators. That number is the least common denominator (LCD).**
- b) Multiply by 1, writing 1 in the form of n/n , to find an equivalent sum in which the LCD appears**
- c) Add fractions, and, if possible, simplify.**

Consider adding $\frac{1}{2} + \frac{1}{3}$; the LCD is 6

Rewrite $\frac{1}{2}$ as $\frac{1}{2} \cdot \frac{3}{3} = \frac{3}{6}$ Rewrite $\frac{1}{3}$ as $\frac{1}{3} \cdot \frac{2}{2} = \frac{2}{6}$

$$\frac{1}{2} + \frac{1}{3} = \frac{3}{6} + \frac{2}{6} = \frac{5}{6}$$

Add $\frac{3}{8}$ and $\frac{5}{6}$ (LCD is 24)

$$\frac{3}{8} + \frac{5}{6} = \frac{3}{8} \cdot \frac{3}{3} + \frac{5}{6} \cdot \frac{4}{4} = \frac{9}{24} + \frac{20}{24} = \frac{29}{24}$$

Add $\frac{1}{8}$ and $\frac{3}{4}$

$$\frac{1}{8} + \frac{3}{4} = \frac{1}{8} + \frac{3}{4} \cdot \frac{2}{2} = \frac{1}{8} + \frac{6}{8} = \frac{7}{8} \text{ (LCD is 8)}$$