

## Addition and Subtraction of Fractions

### Additions of Fractions

To add fractions with the same denominator, add the numerators and place the sum over the common denominator.

$$\frac{a}{b} + \frac{c}{b} = \frac{a+c}{b}, \text{ where } b \neq 0$$

### Subtraction of Fractions

To subtract fractions with the same denominator, subtract the numerators and place the difference over the common denominator.

$$\frac{a}{b} - \frac{c}{b} = \frac{a-c}{b}, \text{ where } b \neq 0$$

**Example 1.** Add:  $\frac{5}{16} + \frac{7}{16}$

$$\frac{5}{16} + \frac{7}{16} = \frac{5+7}{16}$$

$$= \frac{12}{16}$$

$$= \frac{3}{4}$$

All answers have to be reduced

**Example 2: MIXED NUMBER ADDITIONS**

First, multiply the denominators of the fractions by their coefficients and then add the numerators.

$$\text{Add: } 2\frac{5}{6} + 1\frac{3}{8}$$

$$\frac{17}{6} + \frac{11}{8} = \frac{68}{24} + \frac{33}{24}$$

$$= \frac{101}{24}$$

**Example 3**

$$\text{Subtract: } \frac{5}{8} - \frac{3}{8}$$

$$\frac{5}{8} - \frac{3}{8} = \frac{5-3}{8}$$

$$= \frac{1}{4}$$

**Example 4: MIXED NUMBER SUBTRACTION.**

First, multiply the denominators of the fractions by their coefficients and then add the numerators.

$$\text{Subtract: } 3\frac{5}{12} - 1\frac{3}{8}$$

$$\frac{41}{12} - \frac{11}{8} = \frac{82}{24} - \frac{33}{24}$$

$$= \frac{82-33}{24}$$

$$= \frac{49}{24}$$