

ADDITION AND SUBTRACTION OF FRACTIONS

- To add (or subtract) fractions having the **same denominator**, simply add (or subtract) the numerators without changing the denominator.

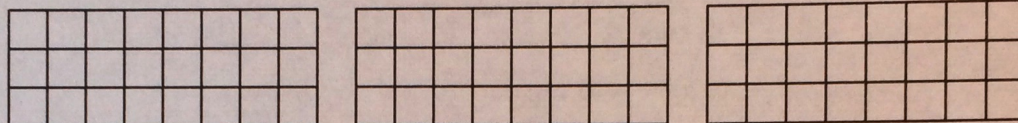
$$\text{Ex.: } \frac{3}{7} + \frac{2}{7} = \frac{3+2}{7} = \frac{5}{7} \qquad \frac{7}{9} - \frac{2}{9} = \frac{7-2}{9} = \frac{5}{9}$$

- To add (or subtract) fractions having **different denominators**, first rewrite them using a common denominator and then add (or subtract) the fractions

$$\text{Ex.: } \frac{5}{14} + \frac{3}{21} = \frac{15}{42} + \frac{6}{42} = \frac{21}{42} = \frac{1}{2} \qquad \frac{9}{12} - \frac{5}{8} = \frac{18}{24} - \frac{15}{24} = \frac{3}{24} = \frac{1}{8}$$

The final result is always stated as an irreducible fraction.

- 1.** Represent each of the following additions in the figures below and then find the sums.



a) $\frac{1}{2} + \frac{1}{4} =$ _____ b) $\frac{3}{4} + \frac{1}{6} =$ _____ c) $\frac{1}{8} + \frac{1}{2} + \frac{1}{4} =$ _____

- 2.** Perform each of the following additions or subtractions and give the result in the form of an irreducible fraction.

a) $\frac{7}{8} + \frac{3}{8} =$ _____ b) $\frac{5}{6} + \frac{3}{4} =$ _____ c) $\frac{5}{9} + \frac{7}{6} =$ _____
 d) $\frac{11}{4} - \frac{2}{7} =$ _____ e) $\frac{3}{4} - \frac{2}{3} =$ _____ f) $\frac{11}{15} - \frac{7}{10} =$ _____

- 3.** Perform each of the following additions or subtractions and give the result in the form of an irreducible fraction.

a) $\frac{3}{4} + \frac{7}{8} - \frac{5}{6} =$ _____ b) $\frac{8}{15} + \frac{7}{10} - \frac{3}{5} =$ _____
 c) $\frac{8}{9} + \frac{5}{6} - \frac{3}{4} =$ _____ d) $\frac{11}{14} + \frac{3}{7} - \frac{4}{21} =$ _____
 e) $\frac{7}{8} - \frac{3}{4} + \frac{11}{12} =$ _____ f) $\frac{11}{12} + \frac{7}{15} - \frac{17}{30} =$ _____

- 4.** Perform each of the following additions or subtractions and give the result in the form of an irreducible fraction.

a) $1 + \frac{2}{5} =$ _____ b) $3 - \frac{8}{9} + \frac{1}{3} =$ _____ c) $2 + \frac{1}{8} - \frac{5}{6} =$ _____

- 5.** The following procedure is used to write a fraction greater than 1 in the form of a **mixed fraction**. $\frac{7}{3} = \frac{6}{3} + \frac{1}{3} = 2 + \frac{1}{3} = 2\frac{1}{3}$.

Write each of the following fractions as a mixed fraction.

a) $\frac{28}{3} =$ _____ b) $\frac{25}{9} =$ _____ c) $\frac{35}{12} =$ _____ d) $\frac{36}{5} =$ _____

- 6.** The following procedure is used to write a mixed fraction in the form of an **improper fraction**. $5\frac{3}{4} = 5 + \frac{3}{4} = \frac{20}{4} + \frac{3}{4} = \frac{23}{4}$.

Write each of the following fractions as an improper fraction.

a) $2\frac{2}{3} =$ _____ b) $5\frac{3}{7} =$ _____ c) $2\frac{7}{8} =$ _____ d) $1\frac{8}{9} =$ _____