2.3: ADDING AND SUBTRACTING RATIONAL NUMBERS (FRACTIONS)

To add and subtract fractions, we first need to find the lowest common denominator (LCD). Once you have the same denominator, it stays the same in the answer, and you just need to add or subtract the numerators. As usual, check to see if you can reduce the final answer. *Always change mixed fractions to improper fractions first!*

Ex.1:   Simplify

a) $\dfrac{1}{4} + \dfrac{3}{4}$

b) $\dfrac{2}{3} - \dfrac{3}{4}$

c) $-\dfrac{3}{4} - \left(\dfrac{-1}{-5}\right)$

d) $\dfrac{3}{10} - \left(-\dfrac{2}{5}\right)$

e) $-\dfrac{12}{15} + \left(\dfrac{11}{-6}\right)$

f) $-2\dfrac{2}{3} + 1\dfrac{9}{10}$

g) $1\dfrac{5}{6} - 3\dfrac{7}{8}$

h) $\left(\dfrac{-2}{5}\right) + \dfrac{-3}{-7}$

i) $-\dfrac{5}{12} + \left(\dfrac{7}{-9}\right)$

HW: ADDING AND SUBTRACTING FRACTIONS

1. a) $\dfrac{3}{4}+\dfrac{2}{3}$
    b) $\dfrac{5}{7}-\dfrac{2}{5}$
    c) $\dfrac{3}{8}-\dfrac{5}{6}$
    d) $\dfrac{-5}{12}+\left(\dfrac{-3}{8}\right)$

    e) $\dfrac{2}{-9}+\dfrac{5}{6}$
    f) $-\dfrac{4}{5}-\dfrac{2}{3}$
    g) $\dfrac{3}{-4}-\left(\dfrac{-2}{5}\right)$
    h) $-\left(\dfrac{-3}{8}\right)-\left(\dfrac{5}{-4}\right)$

2. a) $-\dfrac{2}{3}+\left(\dfrac{1}{-4}\right)$
    b) $-\left(\dfrac{-5}{6}\right)+\dfrac{3}{2}$
    c) $\left(\dfrac{3}{-8}\right)-\dfrac{3}{4}$
    d) $\dfrac{-5}{8}+\left(\dfrac{-1}{-6}\right)$

    e) $-\left(\dfrac{2}{-3}\right)-\dfrac{3}{10}$
    f) $\dfrac{3}{4}-\left(\dfrac{-5}{8}\right)$
    g) $\dfrac{9}{4}+\left(\dfrac{-7}{3}\right)$
    h) $\dfrac{-20}{6}-\left(-\dfrac{13}{3}\right)$

3. a) $\dfrac{7}{3}+\dfrac{21}{4}$
    b) $\dfrac{47}{8}-\dfrac{8}{3}$
    c) $\dfrac{13}{2}-\dfrac{49}{5}$
    d) $\dfrac{17}{5}-\dfrac{35}{4}$

    e) $-\dfrac{14}{3}+\dfrac{12}{5}$
    f) $\dfrac{9}{7}-\dfrac{9}{5}$
    g) $-\dfrac{13}{5}+\dfrac{11}{6}$
    h) $\dfrac{43}{3}+\dfrac{47}{7}$

4. a) $\dfrac{-7}{10}-\left(\dfrac{-7}{3}\right)$
    b) $\dfrac{-15}{4}-\dfrac{13}{6}$
    c) $\dfrac{13}{8}+\left(\dfrac{-3}{7}\right)$

    d) $\dfrac{25}{2}-\left(-\dfrac{13}{4}\right)$
    e) $\dfrac{-11}{4}+\left(\dfrac{-4}{3}\right)$
    f) $\dfrac{20}{9}-\left(\dfrac{-22}{3}\right)$

    g) $-\left(-\dfrac{11}{6}\right)-\left(-\dfrac{11}{-18}\right)$
    h) $\dfrac{14}{-5}+\left(\dfrac{-3}{7}\right)$
    i) $\dfrac{-3}{11}+\dfrac{16}{3}$

Answers: Adding and Subtracting Fractions

1. a) $\dfrac{17}{12}$
    b) $\dfrac{11}{35}$
    c) $-\dfrac{11}{24}$
    d) $-\dfrac{19}{24}$
    e) $\dfrac{11}{18}$
    f) $-\dfrac{22}{15}$
    g) $-\dfrac{7}{20}$
    h) $\dfrac{13}{8}$

2. a) $-\dfrac{11}{12}$
    b) $\dfrac{7}{3}$
    c) $-\dfrac{9}{8}$
    d) $-\dfrac{11}{24}$
    e) $\dfrac{11}{30}$
    f) $\dfrac{11}{8}$
    g) $-\dfrac{1}{12}$
    h) 1

3. a) $\dfrac{91}{12}$
    b) $\dfrac{77}{24}$
    c) $-\dfrac{33}{10}$
    d) $-\dfrac{107}{20}$
    e) $-\dfrac{34}{15}$
    f) $-\dfrac{18}{35}$
    g) $-\dfrac{23}{30}$
    h) $\dfrac{442}{21}$

4. a) $\dfrac{49}{30}$
    b) $-\dfrac{71}{12}$
    c) $\dfrac{67}{56}$
    d) $\dfrac{63}{4}$
    e) $-\dfrac{49}{12}$
    f) $\dfrac{86}{9}$
    g) $\dfrac{11}{9}$
    h) $-\dfrac{113}{35}$
    i) $\dfrac{167}{33}$