

Pre-algebra

Skill-BUILDER # F – 5

Adding or Subtracting Unlike Signed Fractions

Unlike fractions are fractions with different denominators. To add or subtract unlike fractions, do the following:

- Find the LCD.
- Change each fraction to an equivalent fraction with the LCD for its denominator.

Examples Add and/or subtract and simplify the final answer.

1) $\frac{3}{4} + \frac{7}{6}$

Solution:

$$\begin{aligned} 4 &= 2 \cdot 2 \\ 6 &= 2 \cdot 3 \\ \hline \text{LCD} &= 2 \cdot 2 \cdot 3 = 12 \end{aligned}$$

$$\begin{aligned} &\frac{3}{4} + \frac{7}{6} \\ &= \frac{3 \cdot 3 + 7 \cdot 2}{12} \quad \text{Change each fraction...} \\ &= \frac{9 + 14}{12} \\ &= \frac{23}{12} \end{aligned}$$

2) $-\frac{5}{8} + \frac{11}{12}$

Solution:

$$\begin{aligned} 8 &= 2 \cdot 2 \cdot 2 \\ 12 &= 2 \cdot 2 \cdot 3 \\ \hline \text{LCD} &= 2 \cdot 2 \cdot 2 \cdot 3 = 24 \end{aligned}$$

$$\begin{aligned} &-\frac{5}{8} + \frac{11}{12} \\ &= \frac{-5 \cdot 3 + 11 \cdot 2}{24} \quad \text{Change each fraction...} \\ &= \frac{-15 + 22}{24} \\ &= \frac{7}{24} \end{aligned}$$

3) $-\frac{6}{35} - \left(-\frac{11}{50}\right)$

Solution:

$$\begin{aligned} 35 &= 5 \cdot 7 \\ 50 &= 5 \cdot 5 \cdot 2 \\ \hline \text{LCD} &= 5 \cdot 7 \cdot 5 \cdot 2 = 350 \end{aligned}$$

$$\begin{aligned} &-\frac{6}{35} - \left(-\frac{11}{50}\right) \\ &= -\frac{6}{35} + \frac{11}{50} \quad \text{Add the opposite of } -\frac{11}{50}. \\ &= \frac{-6 \cdot 10 + 11 \cdot 7}{350} \quad \text{Change each fraction...} \\ &= \frac{-60 + 77}{350} \\ &= \frac{17}{350} \end{aligned}$$

4) $-\left(-\frac{1}{8}\right) - \frac{7}{6} - \frac{5}{9}$

Solution:

$$\begin{aligned} 8 &= 2 \cdot 2 \cdot 2 \\ 6 &= 2 \cdot 3 \\ 9 &= 3 \cdot 3 \\ \hline \text{LCD} &= 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 = 72 \end{aligned}$$

$$\begin{aligned} &-\left(-\frac{1}{8}\right) - \frac{7}{6} - \frac{5}{9} \\ &= \frac{1}{8} - \frac{7}{6} - \frac{5}{9} \quad \text{The opposite of } -\frac{1}{8} \text{ is } \frac{1}{8}. \\ &= \frac{1 \cdot 9 - 7 \cdot 12 - 5 \cdot 8}{72} \quad \text{Change each fraction...} \\ &= \frac{9 - 84 - 40}{72} \\ &= \frac{-115}{72} \end{aligned}$$

Pre-algebra
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Add and/or subtract.

1) $\frac{7}{8} + \frac{9}{20}$

2) $-\frac{15}{28} + \frac{8}{21}$

3) $-\frac{13}{24} - \frac{11}{30}$

4) $\frac{23}{36} - \left(-\frac{17}{40}\right)$

5) $\frac{3}{8} - \frac{7}{12} - \frac{1}{16}$

6) $-\frac{5}{18} - \left(-\frac{1}{24}\right) - \frac{7}{36}$

Pre-algebra
Skill-Builder # F – 5
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Answer Key:

1) $\frac{53}{40}$

2) $-\frac{13}{84}$

3) $-\frac{109}{120}$

4) $\frac{383}{360}$

5) $-\frac{13}{48}$

6) $-\frac{31}{72}$