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) $\dfrac{3}{4}+\dfrac{7}{6}$

Solution:

$$4 = 2 \cdot 2$$
$$6 = 2 \quad \cdot 3$$
$$LCD = 2 \cdot 2 \cdot 3 = 12$$

$$\dfrac{3}{4}+\dfrac{7}{6}$$
$$=\dfrac{3 \cdot \mathbf{3}+7 \cdot \mathbf{2}}{12} \qquad \text{Change each fraction...}$$
$$=\dfrac{9+14}{12}$$
$$=\dfrac{23}{12}$$

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

Solution:

$$8 = 2 \cdot 2 \cdot 2$$
$$12 = 2 \cdot 2 \quad \cdot 3$$
$$LCD = 2 \cdot 2 \cdot 2 \cdot 3 = 24$$

$$-\dfrac{5}{8}+\dfrac{11}{12}$$
$$=\dfrac{-5 \cdot \mathbf{3}+11 \cdot \mathbf{2}}{24} \qquad \text{Change each fraction...}$$
$$=\dfrac{-15+22}{24}$$
$$=-\dfrac{7}{24}$$

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

Solution:

$$35 = 5 \cdot 7$$
$$50 = 5 \quad \cdot 5 \cdot 2$$
$$LCD = 5 \cdot 7 \cdot 5 \cdot 2 = 350$$

$$-\dfrac{6}{35}-\left(-\dfrac{11}{50}\right)$$
$$=-\dfrac{6}{35}+\dfrac{11}{50} \qquad \text{Add the opposite of } -\dfrac{11}{50}.$$
$$=\dfrac{-6 \cdot \mathbf{10}+11 \cdot \mathbf{7}}{350} \qquad \text{Change each fraction...}$$
$$=\dfrac{-60+77}{350}$$
$$=\dfrac{17}{350}$$

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

Solution:

$$8 = 2 \cdot 2 \cdot 2$$
$$6 = 2 \qquad \cdot 3$$
$$9 = \qquad\qquad 3 \cdot 3$$
$$LCD = 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 = 72$$

$$-\left(-\dfrac{1}{8}\right)-\dfrac{7}{6}-\dfrac{5}{9}$$
$$=\dfrac{1}{8}-\dfrac{7}{6}-\dfrac{5}{9} \qquad \text{The opposite of } -\dfrac{1}{8} \text{ is } \dfrac{1}{8}.$$
$$=\dfrac{1 \cdot \mathbf{9}-7 \cdot \mathbf{12}-5 \cdot \mathbf{8}}{72} \qquad \text{Change each fraction...}$$
$$=\dfrac{9-84-40}{18}$$
$$=\dfrac{-115}{18}$$

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Add and/or subtract.

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

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

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

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

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

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

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Answer Key:

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

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

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

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

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

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