

Math 105 Skill Builder #F - 17

Adding and Subtracting Fractions with Different Denominators - Denominators Have Common Factors

Step1 Find the LCM of the denominators of the fractions.

Step2 Write each fraction as an equivalent fraction whose denominator is the LCD. Multiply

each fraction by $\frac{a}{a}$ where a is the missing factor in that fraction's denominator.

Step3 Add or subtract the like fractions.

$$\begin{aligned}\text{Add: } \frac{1}{12} + \frac{3}{40} &= \frac{1}{12} \cdot \frac{10}{10} + \frac{3}{40} \cdot \frac{3}{3} \\ &= \frac{10}{120} + \frac{9}{120} \\ &= \frac{19}{120}\end{aligned}$$

$$\begin{aligned}\text{Subtract: } \frac{11}{12} - \frac{1}{6} &= \frac{11}{12} - \frac{1}{6} \cdot \frac{2}{2} \\ &= \frac{11}{12} - \frac{2}{12} \\ &= \frac{9}{12} \\ &= \frac{3}{4}\end{aligned}$$

Examples:

Adding and Subtracting Fractions
$\frac{2}{15} + \frac{3}{10} = \frac{2}{15} \cdot \frac{2}{2} + \frac{3}{10} \cdot \frac{3}{3} = \frac{4}{30} + \frac{9}{30} = \frac{13}{30}$
$\frac{1}{6} + \frac{3}{18} = \frac{1}{6} \cdot \frac{3}{3} + \frac{3}{18} = \frac{3}{18} + \frac{3}{18} = \frac{6}{18} = \frac{1}{3}$
$\frac{5}{28} - \frac{2}{21} = \frac{5}{28} \cdot \frac{3}{3} - \frac{2}{21} \cdot \frac{4}{4} = \frac{15}{84} - \frac{8}{84} = \frac{7}{84}$

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Perform the indicated operation:

1) $\frac{2}{5} + \frac{12}{15}$	4) $\frac{7}{8} - \frac{5}{6}$
2) $\frac{5}{14} + \frac{10}{21}$	5) $\frac{11}{12} - \frac{2}{9}$
3) $\frac{6}{25} + \frac{7}{35}$	6) $\frac{7}{18} - \frac{2}{9}$

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Answers:

1) $\frac{6}{5}$

4) $\frac{1}{24}$

2) $\frac{5}{6}$

5) $\frac{3}{4}$

3) $\frac{11}{25}$

6) $\frac{1}{6}$

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