

7.8: Simplifying Complex Fractions

Ex: (492)

$$2. \frac{\frac{1}{8}}{\frac{5}{12}} = \frac{\cancel{1}^2}{\cancel{8}_2} \left(- \frac{\cancel{12}^3}{\cancel{5}} \right) = - \frac{3}{10}$$

$$8. \frac{\frac{3}{4} - \frac{1}{2}}{\frac{3}{8} + \frac{1}{6}} = \frac{\frac{3-2}{4}}{\frac{9+4}{24}} = \frac{\frac{1}{4}}{\frac{13}{24}}$$

$$\frac{\cancel{1}}{\cancel{4}} \cdot \frac{\cancel{24}^6}{13} = \frac{6}{13}$$

$$12. \frac{\frac{7}{10} - \frac{3}{5}}{\frac{1}{2}} \quad \frac{7-6}{10} = \frac{1}{10} \quad \frac{1}{\frac{1}{2}} = \frac{1}{10} \cdot \frac{2}{1}$$

$\frac{1}{5}$

$$18. \frac{\frac{x}{2} + \frac{2}{1}}{\frac{x}{2} - \frac{2}{1}} \quad \frac{\frac{x+4}{2}}{\frac{x-4}{2}}$$

$$\frac{x+4}{\cancel{2}} \cdot \frac{\cancel{2}}{x-4} = \frac{x+4}{x-4}$$

$$\frac{(2x+1)x - \frac{1}{2x+1}}{(2x+1) \cdot \frac{1}{2x+1}} = \frac{x(2x+1) - 1}{2x+1}$$

$$\frac{(2x+1) \cdot 1 - \frac{x}{2x+1}}{(2x+1) \cdot 1} = \frac{(2x+1) - x}{2x+1}$$

$$\frac{\frac{2x^2 + x - 1}{2x+1}}{\frac{x+1}{2x+1}} = \frac{2x^2 + x - 1}{\cancel{2x+1}} \cdot \frac{\cancel{2x+1}}{x+1}$$

$$\frac{\cancel{x+1}(2x-1)}{\cancel{x+1}} = 2x-1$$

$$28. \quad \frac{3}{3 \cdot 1 - 4} = \frac{3}{\frac{3-4}{3}}$$

$$\frac{3}{-\frac{1}{3}} = 3(-3) = -9$$

$$30. \frac{\frac{m+2}{m-2}}{\frac{2m+4}{m^2-4}} = \frac{m+2}{m-2} \cdot \frac{m^2-4}{2m+4}$$

$$\frac{\cancel{(m+2)} (m+2) \cancel{(m-2)}}{\cancel{(m-2)} (2) \cancel{(m+2)}} = \frac{m+2}{2}$$

$$34. \frac{x^2 + \frac{6}{x}}{x^2 - \frac{9}{x^2}}$$

$$\frac{\frac{2x+6}{x}}{\frac{x^2-9}{x^2}}$$

$$\frac{2(x+3)}{x} \cdot \frac{x^2}{(x+3)(x-3)} = \frac{2x}{x-3}$$

$$38. \frac{\frac{2 \cdot 2}{2x} + \frac{xx}{2x}}{\frac{2 \cdot 2}{2x} - \frac{xx}{2x}} = \frac{\frac{4+x^2}{2x}}{\frac{4-x^2}{2x}}$$

$$\frac{4+x^2}{\cancel{2x}} \cdot \frac{\cancel{2x}}{4-x^2} = \frac{4+x^2}{4-x^2} = \frac{4+x^2}{(2-x)(2+x)}$$

$$\begin{array}{l}
 \frac{(x+1)4}{x} + \frac{(x)x}{(x+1)x} \\
 \text{40.} \frac{(x+6)1}{2x} + \frac{1(2x)}{(x+6)(2x)} = \frac{4(x+1) + x^2}{x(x+1)} \\
 \frac{(x+6)1}{2x} + \frac{1(2x)}{(x+6)(2x)} = \frac{(x+6) + 2x}{2x(x+6)}
 \end{array}$$

$$\frac{x^2 + 4x + 4}{x(x+1)} \cdot \frac{2x(x+6)}{3x+6}$$

$$\frac{\overset{|}{\cancel{(x+2)}}(x+2)}{\underset{|}{x}(x+1)} \cdot \frac{\overset{|}{2}\overset{|}{x}(x+6)}{3\underset{|}{\cancel{(x+2)}}}$$

$$\frac{2(x+2)(x+6)}{3(x+1)}$$

