

1. Simplify each rational expression.

<p>a) $\frac{5x}{5x} = 1$</p>	<p>b) $\frac{2 \cdot 3 \cdot 4 \cdot 5}{3 \cdot 4 \cdot 5 \cdot 6} = \frac{2}{6} = \frac{1}{3}$</p>
<p>c) $\frac{9-x}{x-9} = \frac{-x+9}{x-9} = \frac{-(x-9)}{(x-9)} = -1$</p>	<p>d) $\frac{x+7}{7+x} = \frac{(x+7)}{(x+7)} = 1$</p>
<p>e) $\frac{6x^3+18x^2}{12x} = \frac{6x^2(x+3)}{12x} = \frac{x(x+3)}{2} = \frac{x^2+3x}{2}$</p>	<p>f) $\frac{-x^2+x+56}{x^2-64} = \frac{-(x^2-x-56)}{(x-8)(x+8)} = \frac{-(x-8)(x+7)}{(x-8)(x+8)} = \frac{-(x+7)}{x+8} = \frac{-x-7}{x+8}$</p>

2. Perform each operation (multiplication or division). Simplify.

<p>a) $\frac{40 \cdot 84}{48 \cdot 90} = \frac{28}{36} = \frac{7}{9}$</p>	<p>b) $\frac{36}{52} \div \frac{18}{39} = \frac{36}{52} \cdot \frac{39}{18} = \frac{6}{4} = \frac{3}{2} = \frac{1}{2}$</p>
<p>c) $\frac{x+10}{2-x} \cdot \frac{x-2}{10+x} = \frac{x+10}{-x+2} \cdot \frac{x-2}{x+10} = \frac{x+10}{-(x-2)} \cdot \frac{x-2}{x+10} = -1$</p>	<p>d) $\frac{6x^2+5x-4}{9x^2-16} \div \frac{4x^2-1}{9x^2-24x+16} = \frac{6x^2+5x-4}{9x^2-16} \cdot \frac{9x^2-24x+16}{4x^2-1} = \frac{(3x+4)(2x-1)}{(3x-4)(3x+4)} \cdot \frac{(3x-4)(3x-4)}{(2x-1)(2x+1)} = \frac{3x-4}{2x+1}$</p>

3. Perform each operation (addition or subtraction). Simplify.

<p>a) $\frac{4}{13} + \frac{10}{13} = \frac{14}{13} = \frac{1}{13}$</p>	<p>COMMON DENOMINATOR! b) $\left(\frac{4}{12}\right) \frac{5}{16} - \frac{7}{16} \left(\frac{3}{3}\right) = \frac{20}{48} - \frac{21}{48} = \frac{-1}{48}$</p>
<p>c) $\frac{4x}{x-10} + \frac{x}{x-10} = \frac{4x+x}{x-10} = \frac{5x}{x-10}$</p>	<p>d) $\frac{3x}{x^2-2x-8} - \frac{x}{x+2} \cdot \frac{(x-4)}{(x-4)} = \frac{3x-x(x-4)}{(x-4)(x+2)} = \frac{3x-x^2+4x}{(x-4)(x+2)} = \frac{-x^2+7x}{x^2-2x-8} = \frac{-x(x-7)}{(x-4)(x+2)}$</p>