

AA PREP—INTRODUCTION TO RATIONALS LECTURE

EX 1: Simplify each rational expression.

<p>a) $\frac{x}{x} = 1$</p>	<p>b) $\frac{\overset{1}{2} \cdot \overset{1}{3} \cdot \overset{1}{4} \cdot \overset{1}{8}}{\overset{1}{2} \cdot \overset{1}{3} \cdot \overset{1}{4} \cdot \overset{1}{8}} = \frac{120}{120} = 1$</p>
<p>c) $\frac{(x+4)}{(x+4)} = 1$</p>	<p>d) $\frac{x-8}{8-x} = \frac{x-8}{-x+8} = \frac{\cancel{(x-8)}}{-\cancel{(x-8)}} = -1$</p>
<p>e) $\frac{(x+4)}{4x} = \frac{x+4}{4x}$</p>	<p>f) $\frac{(x^2+2x-35)}{(x^2-25)} = \frac{\cancel{(x+7)} \cdot \cancel{(x-5)}}{\cancel{(x-5)} \cdot (x+5)} = \frac{x+7}{x+5}$</p>

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

<p>a) $\frac{3 \cdot 15 \cdot 8 \cdot 4}{12 \cdot 25 \cdot 5} = \frac{15 \cdot 8}{2 \cdot 25} = \frac{12}{5}$ OR $2 \frac{2}{5}$</p>	<p>b) $\frac{14}{11} \div \frac{21}{55} = \frac{14}{11} \cdot \frac{55}{21} = \frac{10}{3}$ OR $3 \frac{1}{3}$</p>
<p>c) $\frac{x-6}{x+2} \cdot \frac{x+2}{6-x} = \frac{\cancel{x-6}}{\cancel{x+2}} \cdot \frac{\cancel{x+2}}{-\cancel{(x-6)}} = -1$</p>	<p>d) $\frac{x^2-x-6}{x^2-4} \div \frac{x^2-9}{x^2-4x+4} = \frac{x^2-x-6}{x^2-4} \cdot \frac{x^2-4x+4}{x^2-9} = \frac{\cancel{(x-3)} \cdot \cancel{(x+2)}}{\cancel{(x-2)} \cdot \cancel{(x+2)}} \cdot \frac{\cancel{(x-2)} \cdot \cancel{(x-2)}}{\cancel{(x-3)} \cdot (x+3)} = \frac{x-2}{x+3}$</p>

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

<p>a) $\frac{2}{7} + \frac{3}{7} = \frac{5}{7}$</p>	<p>b) $\left(\frac{4}{4}\right) \frac{1}{3} - \frac{7}{4} \left(\frac{3}{3}\right) = \frac{4}{12} - \frac{21}{12} = \frac{-17}{12}$</p>
<p>c) $\frac{5}{x-4} + \frac{6}{x-4} = \frac{11}{x-4}$</p>	<p>d) $\frac{\cancel{(x-3)}}{\cancel{(x-3)}} \frac{4}{x+1} - \frac{3}{x^2-2x-3} = \frac{4(x-3) - 3}{(x-3)(x+1)} = \frac{4x-12-3}{(x-3)(x+1)} = \frac{4x-15}{(x-3)(x+1)}$ OR $\frac{4x-15}{x^2-2x-3}$</p>