Name:	Date:	Period:

7.3 Complex Fractions Notes

Complex Fractions	• A **complex fraction** is a fraction in which the numerator and denominator both contain fractions. • To **simplify** a complex fraction means to rewrite as a single fraction with no fractions in the numerator or denominator.
How to Simplify Complex Fractions	1. COMBINE to a single fraction in the numerator and a single fraction in the denominator. 2. REWRITE the fraction as division, and multiply by the reciprocal. 3. SIMPLIFY! (factor) 7.1 notes
Warm up	$\frac{9/16}{27/8}$ $\frac{9}{16} \div \frac{27}{8} \rightarrow \frac{9}{16} \cdot \frac{8}{27} \rightarrow \frac{1}{6}$
Examples	**Directions:** Simplify. Assume non-zero denominators (do not need to list excluded values)

1. $\frac{\frac{6}{xy}}{\frac{3y}{8x^3}}$

$\frac{6}{xy} \cdot \frac{8x^3}{3y}$

$\frac{16x^2}{y^2}$

2. $\frac{\frac{18p}{8p-2}}{\frac{4p^2}{4p-1}} \rightarrow \frac{18p}{8p-2} \div \frac{4p-1}{4p^2}$

$\frac{18p}{2(4p-1)} \cdot \frac{4p-1}{4p^2}$

$\frac{9}{4p}$

LCD: $3x$ $\quad \frac{x}{3}\cdot\frac{x}{x}-\frac{3}{x}\cdot\frac{3}{3}$

Numerator $\rightarrow$ $\frac{x^2-9}{3x}$

3. $\dfrac{\frac{x}{3}-\frac{3}{x}}{\frac{x-3}{x}}$

$$\frac{x^2-9}{3x}\cdot\frac{x}{x-3}$$

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

$$\frac{x+3}{3}$$

4. $\dfrac{\frac{1}{4}+\frac{1}{4v}}{\frac{1}{v}+\frac{1}{4}}$

numerator ÷ denominator

LCD: $4v$ $\quad$ LCD: $4v$

$\frac{1}{4}\cdot\frac{v}{v}+\frac{1}{4v}$ $\quad$ $\frac{14}{v4}+\frac{1}{4}\frac{v}{v}$

$$\frac{v+1}{4v} \div \frac{4+v}{4v}$$

$$\frac{v+1}{4v}\cdot\frac{4v}{4+v}$$

$$\frac{v+1}{v+4}$$

5. $\dfrac{\frac{5}{4}}{\frac{20}{n-4}-\frac{5}{4n-16}}$

$4(n-4)$ $\quad$ Denominator LCD: $4(n-4)$

$$\frac{20}{n-4}\cdot\frac{4}{4}-\frac{5}{4(n-4)}$$

$$\frac{80-5}{4(n-4)}$$

$$\frac{5}{4}\cdot\frac{4(n-4)}{75}$$

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$$\frac{n-4}{15}$$

6. $\dfrac{\frac{a^2}{a+3}+\frac{a^2}{5a+15}}{\frac{a}{a+3}+\frac{1}{5}}$

Numerator $\quad$ Denominator LCD: $5(a+3)$

$\frac{a^2}{a+3}+\frac{a^2}{5(a+3)}$ $\quad$ $\frac{5a}{5(a+3)}+\frac{a+3}{5(a+3)}$

LCD: $5(a+3)$ $\quad$ $\frac{6a+3}{5(a+3)}$

$\frac{5a^2}{5(a+3)}+\frac{a^2}{5(a+3)}$

$$\frac{6a^2}{5(a+3)} \div \frac{3(2a+1)}{5(a+3)}$$

$$\frac{2\,6a^2}{5(a+3)}\cdot\frac{5(a+3)}{3(2a+1)}$$

$$\frac{2a^2}{(2a+1)}$$