Algebra 2 8.1

Simplify rational expressions

Simplify complex fractions

$$\frac{1}{x-3}$$

rational

simplify (a fraction)

GCF

~~X~~ Is it ever OK to divide by zero?

complex fraction

whiteboards

Answer when undefined only if they ask (for now...)

## GuidedPractice

**Simplify each expression.**

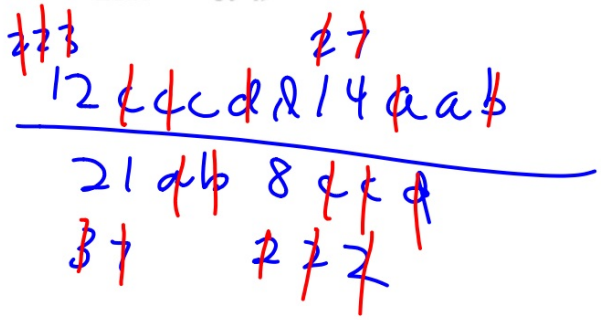
**3A.** $\dfrac{(xz - 4z)}{z^2(4 + x)}$

$\dfrac{z(x-4)}{z \cdot z(-1)(x-4)}$

$\dfrac{1}{-z} = \dfrac{-1}{z}$

## GuidedPractice

**4A.** $\frac{12c^3d^2}{21ab} \cdot \frac{14a^2b}{8c^2d}$



**4B.** $\frac{6xy}{15ab^2} \cdot \frac{21a^3}{18x^4y}$

**4C.** $\frac{16mt^2}{21a^4b^3} \div \frac{24m^3}{7a^2b^2}$

$$\frac{16mtt \cdot 7aabb}{21aaaabbb \; 24mmm}$$

$3 \neq \quad b \neq 3$

**4D.** $\frac{12x^4y^2}{40a^4b^4} \div \frac{6x^2y^4}{16a^2x}$

$$\frac{2t^2}{9a^2m^2b}$$

$$\frac{2}{9}\,\frac{t^2}{a^2m^2b}$$

## Example 5 Polynomials in the Numerator and Denominator

**Simplify each expression.**

**a.** $\dfrac{x^2 - 6x - 16}{x^2 - 16x + 64} \cdot \dfrac{x - 8}{x^2 + 5x + 6}$

$$\frac{(x-8)(x+2)}{(x-8)(x-8)} \cdot \frac{(x-8)}{(x+3)(x+2)} \qquad \frac{1}{x+3}$$

b. $\frac{x^2-16}{12y+36} \div \frac{x^2-12x+32}{y^2-3y-18}$

## GuidedPractice

**5A.** $\dfrac{8x-20}{x^2+2x-35} \cdot \dfrac{x^2-7x+10}{4x^2-16}$

**5B.** $\dfrac{x^2-9x+20}{x^2+10x+21} \div \dfrac{x^2-x-12}{6x+42}$

$1/4 \div 3/8$

Multiply by recip (why does that work?)

## Example 6 Simplify Complex Fractions

**Simplify each expression.**

**a.** $\dfrac{\dfrac{a+b}{4}}{\dfrac{a^2+b^2}{4}}$

**b.** $\dfrac{\dfrac{x^2}{x^2-y^2}}{\dfrac{4x}{y-x}}$

## GuidedPractice

**Simplify each expression.**

**6A.** $\dfrac{\dfrac{(x-2)^2}{2(x^2-5x+4)}}{\dfrac{x^2-4}{4x-10}}$

**6B.** $\dfrac{\dfrac{x^2 - y^2}{y^2 - 49}}{\dfrac{y - x}{y + 7}}$