

factor primes
most of

Algebra 2 8.2

Determine the LCM of polynomials

Add and subtract rational expressions

LCM

denominator

numerator

complex fraction

whiteboards

$$\begin{array}{r} 18, 15 \\ \hline 18 \quad 15 \\ 36 \quad 30 \\ 48 \quad 45 \\ 72 \quad 60 \\ \textcircled{90} \quad : \quad \textcircled{90} \end{array}$$

$$18 = (2)(3 \cdot 3)$$

$$15 = (3)(5)$$

$$2 \cdot 5 \cdot 3 \cdot 3$$

LCM

22 24
2 (11) (2 · 2 · 2) 3

$$22 \cdot 24 = 528$$

$$11 \cdot 8 \cdot 3$$

$$\frac{3}{3} \cdot \frac{1}{2} + \frac{1}{3} \cdot \frac{2}{2} = \frac{5}{6}$$

$$\frac{3}{6} + \frac{2}{6} = \frac{5}{6}$$

Here's where it is going...

Numbers

$$\frac{5}{6} + \frac{2}{3} = \frac{5}{6} + \frac{4}{6} = \frac{9}{6} = \frac{3}{2}$$

Polynomials

$$\frac{3}{x^2 - 3x + 2} + \frac{5}{2x^2 - 2}$$
$$= \frac{23}{18}$$

$$\frac{4}{4} \cdot \frac{2}{10} + \frac{3}{8} \cdot \frac{5}{5} = \frac{8}{40} + \frac{15}{40}$$

1. What denominator will work? (LCM)
2. What do I need? (FFOO)
3. Combine terms (EWE, whatever)
4. Simplify

$$\frac{23}{40}$$

$$\frac{\frac{5a^3}{5a^3} \cdot \frac{a^2}{16b^2} - \frac{8x}{5a^3b} \cdot \frac{16b}{16b}}{\frac{5a^3}{5a^3}} = \frac{15a^5}{80a^3b^2} - \frac{128bx}{80a^3b^2} = \frac{15a^5 - 128bx}{80a^3b^2}$$

$\frac{2222b^2}{5a^3b}$

$$\frac{16b^2(?)}{16b^2} = \frac{80a^3b^2}{16b^2}$$

$$5a^3b(?) = 80a^3b^2$$

$$33B. \frac{x-8}{4x^2+21x+5} + \frac{6}{12x+3} \cdot \frac{(x+5)}{(x+5)}$$

$$\frac{3(4x+1)(x+5)}{3(4x+1)(x+5)} \cdot \frac{6(x+5)}{3(4x+1)(x+5)}$$

$$\frac{20}{120}$$

$$(4x^2 + 20x)(x+5)$$

$$4x(x+5) + 1(x+5)$$

$$\frac{3(x-8)}{3(4x+1)(x+5)} + \frac{6(x+5)}{3(4x+1)(x+5)}$$

$$= \frac{3x - 24 + 6x + 30}{3(4x+1)(x+5)} = \frac{9x + 6}{3(4x+1)(x+5)}$$

$$\boxed{19-330}$$

GuidedPractice

Simplify each expression.

Subtraction: be careful

3A. $\frac{x-1}{x^2-x-6} - \frac{4}{5x+10}$

Example 4 Complex Fractions with Different LCDs

Simplify $\frac{1 + \frac{1}{x}}{1 - \frac{x}{y}}$.

Isn't this code for division?

Reminder: the fraction bar is a grouping symbol

- simplify numerator and denom. first
- mult by recip

· **Guided Practice**

Simplify each expression.

4A. $\frac{1 - \frac{y}{x}}{\frac{1}{y} + \frac{1}{x}}$

4B. $\frac{\frac{c}{d} - \frac{d}{c}}{\frac{d}{c} + 2}$