Adding Fractions

Preliminaries and Objectives

Preliminaries

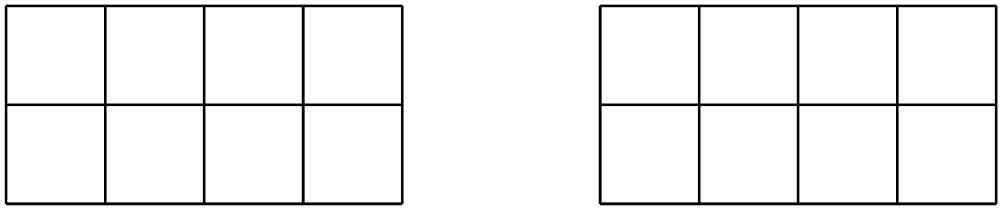
- Multiply polynomials (FOIL)
- Factor polynomials
- Combine like terms
- Reduce fractions

Objectives

- Add fractions and simplify

Adding Fractions

$$\frac{1}{2} + \frac{1}{4} =$$

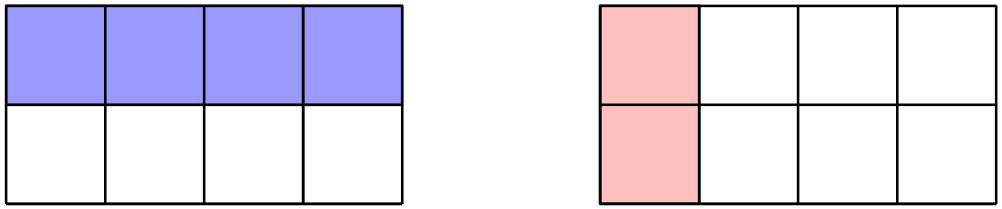


Recap

- Factor denominators
- Supply missing factors to find the Least Common Denominator
- Add fractions by adding the numerators over the common denominator
- Simplify numerator by distributing and combining like terms
- Reduce the fraction by factoring numerator and cancelling common factors

Adding Fractions

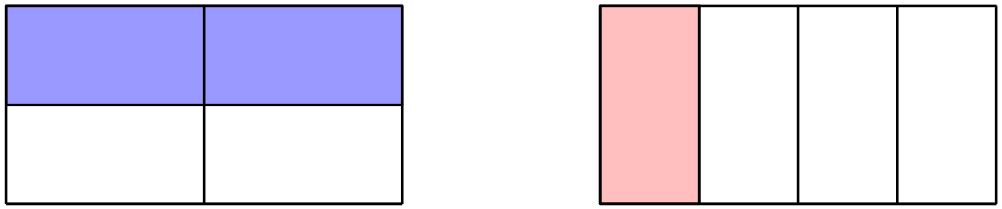
$$\frac{1}{2} + \frac{1}{4} =$$



$$\frac{4}{8} + \frac{2}{8} = \frac{6}{8}$$

Adding Fractions

$$\frac{1}{2}\cdot\frac{2}{2} + \frac{1}{4} = \frac{3}{4}$$



Process

- Factor denominators
- Supply missing factors to find the Least Common Denominator
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Example 1

$$\frac{3}{(x+1)}\cdot\frac{2}{2}+\frac{1}{2}\cdot\frac{(x+1)}{(x+1)}=\frac{6}{2(x+1)}+\frac{x+1}{2(x+1)}=\frac{x+7}{2(x+1)}$$

Example 2

$$\frac{2x-1}{x^2-1} - \frac{3-2x}{x^2+3x+2} =$$

$$\frac{2x-1}{(x+1)(x-1)} - \frac{3-2x}{(x+1)(x+2)} =$$

$$\frac{(2x-1)(x+2)}{(x+1)(x-1)(x+2)} + \frac{(-3+2x)(x-1)}{(x+1)(x+2)(x-1)} =$$

$$\frac{(2x^2+3x-2)}{(x+1)(x-1)(x+2)} + \frac{(2x^2-5x+3)}{(x+1)(x+2)(x-1)} =$$

$$\frac{(4x^2-2x+1)}{(x+1)(x-1)(x+2)}$$

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