Notes

Name: _____ Date: _____ Period: _____

7.2 Adding and Subtracting Rational Expressions

Remember the rules for adding and subtracting fractions: use smiley face method or make sure both fractions have the same denominator before you combine the numerator and keep the denominator the same.

Examples of adding and subtracting fractions:

$\frac{3}{4}+\frac{1}{6}=\frac{3\times3}{4\times3}+\frac{1\times2}{6\times2}$ {multiply by $\frac{3}{3}$ and $\frac{2}{2}$}

$=\frac{9}{12}+\frac{2}{12}=\frac{11}{12}$ {add the numerators}

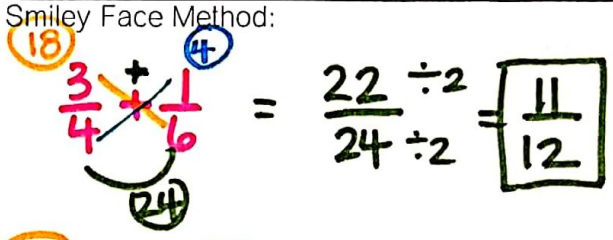
$\frac{7}{10}-\frac{13}{20}$

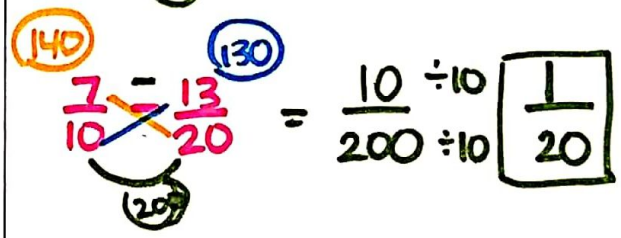
The LCD is 20...

$\frac{7}{10}-\frac{13}{20}=\frac{7\times2}{10\times2}-\frac{13}{20}=$

$\frac{14}{20}-\frac{13}{20}=\frac{14-13}{20}=\frac{1}{20}$

Smiley Face Method:





Adding/Subtracting Rational Expressions with **Like** Denominators.

Example 1: Add.

$\frac{3}{2x}+\frac{5}{2x}=\frac{8}{2x}=\frac{4}{x}$

Example 2: Subtract. (don't forget to change the sign of all terms in the second polynomial in the numerator.

$\frac{5b-2}{9b+45}-\frac{b-2}{9b+45}=\frac{(5b-2)+(b+2)}{9b+45}=\frac{4b}{9b+45}$

Adding/Subtracting Rational Expressions with **Unlike** Denominators

Be sure to factor the denominators first. Then multiply the fractions top and bottom to get the denominators the same. You are only allowed to multiply (not add or subtract).

Example 3: Add.

$\frac{2}{4x+12}+\frac{7}{x+3}=\frac{2}{4(x+3)}+\frac{4\cdot7}{4(x+3)}=\frac{2+28}{4(x+3)}=\frac{30}{4(x+3)}=\frac{15}{2(x+3)}$

Example 4: Subtract.

$\frac{7}{(x+2)} - \frac{4}{(x-5)}$ $\quad (x-5)(x+2)$

$= \frac{7(x-5) - 4(x+2)}{(x-5)(x+2)} = \frac{7x-35-4x-8}{(x-5)(x+2)}$

$= \boxed{\frac{3x-43}{(x-5)(x+2)}}$

Practice: Adding & subtracting

① $\frac{5}{6x} - \frac{2}{3}$

② $\frac{5}{4x} + \frac{7}{12x}$

③ $\frac{7}{x+2} - \frac{4}{3x+6}$

④ $\frac{2}{5x-20} + \frac{7}{x-4}$

⑤ $\frac{3}{y+3} + \frac{2y}{y^2+7y+12}$

⑥ $\frac{2}{x-3} - \frac{1}{x+7}$

⑦ $\frac{3}{(x+2)} + \frac{4}{(x-7)}$ $\quad (x-7)(x+2)$

$\frac{3(x-7) + 4(x+2)}{(x-7)(x+2)}$

$\frac{3x-21+4x+8}{(x-7)(x+2)} = \boxed{\frac{7x-13}{(x-7)(x+2)}}$

⑧ $\frac{6x-7}{x^2+6x+5} + \frac{4}{x+5}$

7.1/7.2 Homework

Simplifying #3, 6, 9
Multiply/Divide #3, 4, 7
Add/subtract #2, 5, 6

} on the worksheets from 12/10