Arithmetic with Fractions

Get a common denominator to add or subtract the following fractions.

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

(2) $\frac{7}{x+2} - 8$

(3) $1 + \frac{1}{y} - \frac{1}{z}$

1. Multiplying Fractions

Multiply without simplifying.

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

(5) $\frac{7}{x+2} \cdot 8$

(6) $\frac{3x}{7z} \cdot \frac{1}{x^2} \cdot 4$

2. Dividing with Fractions

(7) $\frac{\frac{3}{5}}{\frac{4}{x}}$

(8) $\frac{7}{x+2} \div 8$

(9) $\dfrac{\frac{1}{x}}{\frac{1}{x}}$

(10) $\dfrac{3x}{7z} \div (\dfrac{1}{x^2} \div 4)$

(11) Here's a good question for you: is $\dfrac{\frac{a}{b}}{c}$ the same as $\dfrac{a}{\frac{b}{c}}$?

3. Canceling in Fractions

Cancel as much as possible. If it's not possible to cancel anything, say so.

(12) $\dfrac{3x^2 + x}{x}$

(13) $\dfrac{3 + 6x}{x}$

(14) $\dfrac{3 + 6x}{3}$

(15) $\dfrac{3 + 6x}{1 + x}$

(16) $\dfrac{3 + 6x}{1 + 2x}$

(17) $\dfrac{3 + 6x}{3 - 6x}$

(18) $\dfrac{3+6x}{-3-6x}$

(19) $\dfrac{x+y}{y}$

(20) $\dfrac{b}{b-a}$

(21) $\dfrac{3a^2-2a}{xa}$

(22) $\dfrac{4y-8}{y-2}$

(23) $\dfrac{x-2}{x^2-4}$

4. Summary

You've practiced all of these techniques one at a time. Can you combine them?

(24) Simplify $\dfrac{\frac{1}{x+h}-\frac{1}{x}}{h}$.

(25) Simplify $\dfrac{1}{x+2}-\dfrac{1}{x-1}$.

(26) Simplify $\dfrac{x+\frac{1}{x-2}}{x}$.

(27) Simplify $\dfrac{2}{x}+\dfrac{1}{(x-1)^2}$.

(28) Simplify $\dfrac{x}{y}+\dfrac{y}{z}+\dfrac{z}{x}$.

(29) Simplify $\dfrac{a-b}{\frac{a}{b}-\frac{b}{a}}$.

(30) True or false? $\dfrac{x}{x+y}=1+\dfrac{x}{y}$.

(31) True or false? $\dfrac{x+y}{x}=1+\dfrac{y}{x}$.