M8 - 6.0 - Fraction Operations Review

Check on Calculator!

Every # is over 1 $4 = \frac{4}{1}$

Simplification

$\frac{2}{4} =$ Divide the top and bottom

$\frac{2 \div 2}{4 \div 2} = \frac{1}{2}$ ✓

Check on Calc or Long Div

$\frac{2}{4} = 0.5 = \frac{1}{2}$ $2\overline{)1.0}$ $\underline{-10}$ 0

Type in Question

Type in Answer

Must be same!

Expansion

$\frac{1}{2} =$ Multiply the top and bottom

$\frac{1 \times 2}{2 \times 2} = \frac{2}{4}$ ✓

(Cross-cancel)

$\frac{1}{4} \times \frac{2}{3} = \frac{1}{\cancel{4}_{2}} \times \frac{\cancel{2}^{1}}{3} = \frac{1}{6}$ ✓

$\frac{1}{\cancel{2}} \times \frac{\cancel{2}^{2}}{3} = \frac{1}{\cancel{2}} \times \frac{\cancel{2}^{2}}{3} = \frac{2}{3}$

$\frac{1}{\cancel{2}^{2}} \times \frac{\cancel{2}^{3}}{3} = \frac{1}{\cancel{2}^{2}} \times \frac{\cancel{2}^{3}}{3} = \frac{2}{3}$

Multiplying Fractions

$\frac{1}{2} \times \frac{1}{3} = \frac{1 \times 1}{2 \times 3} = \frac{1}{6}$ ✓ Multiply tops, Multiply bottoms

Dividing Fractions

$\left(\frac{1}{4}\right) \div \left(\frac{2}{3}\right) = 0.375 = \frac{3}{8}$

$\frac{1}{4} \div \frac{2}{3} = \frac{1}{4} \times \frac{3}{2} = \frac{3}{8}$ ✓ Flip second fraction and multiply

Complex Fractions

$\frac{\left(\frac{1}{2}\right)}{\left(\frac{4}{7}\right)} = \frac{1}{2} \div \frac{4}{7} = \frac{1}{2} \times \frac{7}{4} = \frac{7}{8}$

$\frac{3}{\left(\frac{5}{7}\right)} = 3 \div \frac{5}{7} = \frac{3}{1} \times \frac{7}{5} = \frac{21}{5}$

$\frac{\left(\frac{2}{3}\right)}{5} = \frac{2}{3} \div \frac{5}{1} = \frac{2}{3} \times \frac{1}{5} = \frac{2}{15}$

Adding Fractions

$\frac{2}{3} + \frac{1}{4} = \frac{4 \times 2}{4 \times 3} + \frac{1 \times 3}{4 \times 3} = \frac{8}{12} + \frac{3}{12} = \frac{11}{12}$ ✓

$LCD = 12$ (3,6,9,12 / 4,8,12)

Multiply top and bottom of first fraction by 4

Multiply top and bottom of second fraction by 3

Add numerators

OR!

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

$\frac{8}{12} + \frac{3}{12} = \frac{11}{12}$

DOWN THE PAGE!

$\frac{1}{2} + \frac{1}{3} =$ 1st Thought! $LCD = 6$ $\frac{\square}{6} + \frac{\square}{6} =$ $\frac{3 \times 1}{3 \times 2} + \frac{1 \times 2}{3 \times 2} =$ $\frac{3}{6} + \frac{2}{6} = \frac{5}{6}$ ✓

Subtracting Fractions

$\frac{1}{3} - \frac{1}{6} = \frac{2 \times 1}{2 \times 3} - \frac{1}{6} = \frac{2}{6} - \frac{1}{6} = \frac{1}{6}$ ✓

$LCD = 6$

Multiply top and bottom of first fraction by 2

Subtract numerators

$\frac{3 \times 1}{3 \times 2} + \frac{1 \times 2}{3 \times 2} =$

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

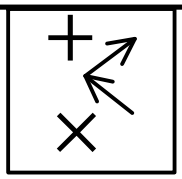
Mixed numbers to Improper Fractions

$3\frac{1}{4} = \frac{bottom \times left + top}{bottom}$

$= \frac{4 \times 3 + 1}{4} = \frac{13}{4}$

Multiply the bottom by the left and add the top (This number goes in the numerator/top)

Denominator/Bottom stays.



$\frac{13}{4} = 4.25 = 3 + \frac{1}{4} = \frac{4 \times 3}{4 \times 1} + \frac{1}{4} = \frac{12}{4} + \frac{1}{4} = \frac{13}{4} = 4.25$ ✓

Long Div/Mult

$4\overline{)13}$ $\underline{-12}$ 1 : R 3

$4 \times 3 = 12$

Improper Fractions to Mixed numbers

$\frac{13}{4} = 3\frac{1}{4}$ ← Remainder ✓

Bottom goes into top 3 times

(This number goes in front of the fraction)

Remainder goes in the numerator/top

Denominator/Bottom stays.

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

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

Add Fractions, Top & Bottom, Flip and Multiply

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

Multiply Top & Bottom by the LCD

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

$\left(\frac{x}{2} + \frac{1}{4} = \frac{3}{4}\right) \times 4$

$2x + 1 = 3$

$-1 \quad -1$

$\frac{2x}{2} = \frac{3}{2}$

$x = \frac{3}{2}$

Multiply both sides by the LCD (and simplify at the same time.)