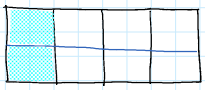
Fractions

February 1, 2017 11:44 AM



Equivalent Fractions

$\frac{2}{8} \xrightarrow{\div 2} \frac{1}{4}$

① Adding and Subtracting:

a) $\frac{7}{8} + \frac{3}{8} = \frac{10}{8}$

b) $\frac{4}{9} - \frac{3}{9} = \frac{1}{9}$

★ when you have a common den, add or subtract numerator only

② Making Equivalent Fractions:

REDUCE

a) $\frac{10}{15} \overset{\div 5}{=} \frac{2}{3}$ b) $\frac{18}{27} \overset{\div 3}{=} \frac{6}{9} \overset{\div 3}{=} \frac{2}{3}$

c) $\frac{96}{108} \overset{\div 2}{=} \frac{48}{54} \overset{\div 6}{=} \frac{8}{9}$

Find LCD You need a common denom. to ADD or SUBTRACT fractions

a) $\frac{4}{7} \overset{\times 2}{=} \frac{8}{14}$ and $\frac{9}{14}$ LCD: 14

6, 12, (18), 24
9, (18), 27

b) $\frac{5}{6} \overset{\times 3}{=} \frac{15}{18}$ and $\frac{2}{9} \overset{\times 2}{=} \frac{4}{18}$ LCD: 18

3, 6, 9, 12, (15)
5, 10, (15)

c) $\frac{2}{3} \overset{\times 5}{=} \frac{10}{15}$ and $\frac{1}{5} \overset{\times 3}{=} \frac{3}{15}$ LCD: 15

③ Conversions:

FROM Proper to Improper → Numerator > Denomin. No whole number in front.

- Numerator < Denominator
- Whole number might be present

a) $1\frac{2}{3} \overset{3 \times, +}{=} \frac{5}{3}$ b) $4\frac{1}{2} \overset{8 \times, +}{=} \frac{9}{2}$ c) $5\frac{5}{6} \overset{30 \times, +}{=} \frac{35}{6}$

From Improper to Proper

a) $\frac{7}{5} \overset{-5}{=} 1\frac{2}{5}$ b) $\frac{12}{5} \overset{-10}{=} 2\frac{2}{5}$ c) $\frac{19}{4} \overset{-16}{=} 4\frac{3}{4}$

d) $\frac{53}{14} \overset{-42}{=} 3\frac{11}{14}$ e) $\frac{49}{6} \overset{-48}{=} 8\frac{1}{6}$ f) $\frac{77}{12} \overset{-72}{=} 6\frac{5}{12}$

$77 \div 12 = 6.4$ blah...
$6 \times 12 = 72$

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$6 \times 12 = 72$

(4) Solve. Put answers in LOWEST PROPER FORM:

★ Must have a common denominator (ADD & SUBTRACT) ★

a) $\frac{3}{4} \overset{\times 2}{} + \frac{3}{8} = \frac{6}{8} + \frac{3}{8} = \frac{9}{8} \overset{-8}{} = 1\frac{1}{8}$

b) $\frac{7}{10} - \frac{3}{5} \overset{\times 2}{} = \frac{7}{10} - \frac{6}{10} = \frac{1}{10}$

c) $\frac{13}{9} + \frac{10}{9} = \frac{23}{9} \overset{-18}{} = 2\frac{5}{9}$

d) $3\frac{2}{3} \overset{9+}{\times} - 1\frac{1}{6} \overset{6+}{\times} = \frac{11}{3} \overset{\times 2}{} - \frac{7}{6}$

$\frac{22}{6} - \frac{7}{6} = \frac{15}{6} \overset{-12}{} = 2\frac{3}{6} = 2\frac{1}{2}$

(5) Multiplying Fractions:

★ No common Denominator ★

★ Always use improper form ★

a) $\frac{2}{3} \times \frac{5}{7} = \frac{10}{21}$

b) $\frac{1}{3} \times \frac{6}{8} = \frac{6 \div 6}{24 \div 6} = \frac{1}{4}$

c) $2\frac{1}{3} \overset{6+}{\times} \times \frac{4}{5} = \frac{7}{3} \times \frac{4}{5} = \frac{28}{15} \overset{-15}{} = 1\frac{13}{15}$

d) $\frac{7}{8} \times \frac{3}{1} = \frac{21}{8} \overset{-16}{} = 2\frac{5}{8}$

★ Change Whole Numbers into Fraction by making denominator 1.

★When multiplying, you can check for CROSS-CANCELING★

e) $\frac{1\cancel{3}^{\div 3}}{4} \times \frac{1}{\cancel{26}_{\div 3}} = \frac{1}{8}$

f) $\frac{2\cancel{10}^{\div 5}}{\cancel{312}^{\div 4}} \times \frac{\cancel{14}^{\div 4}}{\cancel{25}_{\div 5}5} = \frac{2}{15}$

(6) Dividing Fractions

★ Create a reciprocal of the 2nd fraction
↳ flip it!

★ Then just Multiply ★

a) $\frac{1}{4} \div \frac{3}{5}$

$\frac{1}{4} \times \frac{5}{3} = \frac{5}{12}$

b) $\frac{5}{} \div \frac{1}{9}$

$\frac{5}{1} \times \frac{9}{1} = \frac{45}{}$