

Bewerkingen met breuken

BREUKEN OPTELLEN EN AFTREKKEN

Stap 1: vereenvoudigen

Stap 2: gelyknamig maken

Stap 3: tellers optellen/aftrekken
noemer behouden

$$\begin{aligned}\rightarrow \frac{3}{8} + \frac{4}{9} &= \frac{27}{72} + \frac{32}{72} \\ &= \frac{27 + 32}{72} = \frac{59}{72}\end{aligned}$$

$$\begin{aligned}\frac{14}{9} - \frac{3}{4} &= \frac{56}{36} - \frac{27}{36} \\ &= \frac{56 - 27}{36} = \frac{29}{36}\end{aligned}$$

$$\begin{aligned}\rightarrow \frac{8}{9} - \frac{4^2}{6_3} &= \frac{8}{9} - \frac{6}{9} \\ &= \frac{8 - 6}{9} = \frac{2}{9}\end{aligned}$$

$$\begin{aligned}\frac{17}{11} + \frac{2}{3} &= \frac{51}{33} + \frac{22}{33} \\ &= \frac{51 + 22}{33} = \frac{73}{33}\end{aligned}$$

$$\begin{aligned}\frac{3}{4} - \frac{2}{5} &= \frac{15}{20} - \frac{8}{20} \\ &= \frac{15 - 8}{20} = \frac{7}{20}\end{aligned}$$

$$\begin{aligned}\frac{7}{1} - \frac{2}{3} &= \frac{21}{3} - \frac{2}{3} \\ &= \frac{21 - 2}{3} = \frac{19}{3}\end{aligned}$$

$$\begin{aligned}\frac{3}{25} + \frac{7}{10} - \frac{2}{5} &= \frac{6}{50} + \frac{35}{50} - \frac{20}{50} \\ &= \frac{6 + 35 - 20}{50} \\ &= \frac{21}{50}\end{aligned}$$

$$\begin{aligned}\frac{9}{7} - \frac{3}{14} + \frac{2^1}{21_7} &= \frac{18}{14} - \frac{3}{14} + \frac{2}{14} \\ &= \frac{18 - 3 + 2}{14} \\ &= \frac{17}{14}\end{aligned}$$

OPTELLEN EN AFTREKKEN VAN POSITIEVE EN NEGATIEVE BREUKEN

Stap 1: Tekens zo eenvoudig mogelijk

Stap 2: Vereenvoudigen

Stap 3: Gelijksnamig maken

Stap 4: Tellers optellen/ aftrekken
Noemer behouden

$$\rightarrow \frac{4}{7} - \left(-\frac{2}{3}\right) = \frac{4}{7} + \frac{2}{3} = \frac{12}{21} + \frac{14}{21} = \frac{12 + 14}{21} = \frac{26}{21}$$

$$\frac{1}{42} + \left(-\frac{3}{28}\right) = \frac{1}{42} - \frac{3}{28} = \frac{1}{42} - \frac{63}{42} = \frac{1 - 63}{42} = -\frac{62}{42} = -\frac{31}{21}$$

$$-\left(-\frac{2}{5}\right) + \frac{11}{3} = \frac{2}{5} + \frac{11}{3} = \frac{6}{15} + \frac{55}{15} = \frac{6 + 55}{15} = \frac{61}{15}$$

BREUKEN VERMENIGVULDIGEN

Algemeen: T · T N · N

$$\rightarrow \frac{2}{5} \cdot \frac{2}{3} = \frac{2 \cdot 2}{5 \cdot 3}$$

$$= \frac{4}{15}$$

$$\rightarrow -\frac{1}{2} \cdot \left(-\frac{9}{8}\right) = + \frac{1 \cdot 9}{2 \cdot 8}$$

$$= \frac{9}{16}$$

$$\frac{3}{8} \cdot \frac{5}{12} = \frac{\overset{1}{\cancel{3}} \cdot 5}{8 \cdot \underset{4}{\cancel{12}}}$$

$$= \frac{5}{32}$$

$$-\frac{4}{5} \cdot \frac{5}{2} = -\frac{\overset{2}{\cancel{4}} \cdot \overset{1}{\cancel{5}}}{\underset{1}{\cancel{5}} \cdot \underset{1}{\cancel{2}}}$$

$$= -2$$

$$\frac{7}{8} \cdot \frac{3}{5} = \frac{7 \cdot 3}{8 \cdot 5}$$

$$= \frac{21}{40}$$

$$\begin{aligned} \frac{3}{16} \cdot \frac{-2}{3} \cdot \frac{-4}{9} &= \frac{\overset{1}{\cancel{3}} \cdot \overset{1}{\cancel{2}} \cdot \overset{1}{\cancel{4}}}{\underset{4}{\cancel{16}} \cdot \underset{1}{\cancel{3}} \cdot \underset{1}{\cancel{9}}} \\ &= \frac{1 \cdot 1 \cdot 1}{2 \cdot 1 \cdot 9} \\ &= \frac{1}{18} \end{aligned}$$

$$\begin{aligned} \frac{-12}{15} \cdot \frac{2}{3} \cdot \frac{-2}{8} \cdot (-6) &= -\frac{\overset{1}{\cancel{12}} \cdot \overset{1}{\cancel{2}} \cdot \overset{1}{\cancel{2}} \cdot \overset{1}{\cancel{6}}}{\underset{5}{\cancel{15}} \cdot \underset{1}{\cancel{3}} \cdot \underset{4}{\cancel{8}} \cdot \underset{1}{\cancel{1}}} \\ &= -\frac{1 \cdot 2 \cdot 1 \cdot 2}{5 \cdot 1 \cdot 1 \cdot 1} \\ &= -\frac{4}{5} \end{aligned}$$

BREUKEN DELEN

Algemeen: eerste breuk maal omgekeerde tweede breuk

$$\begin{aligned}\rightarrow \frac{1}{2} : \left(-\frac{1}{3}\right) &= \frac{1}{2} \cdot \left(-\frac{3}{1}\right) \\ &= -\frac{1 \cdot 3}{2 \cdot 1} = -\frac{3}{2}\end{aligned}$$

$$\begin{aligned}\frac{3}{7} : \frac{23}{28} &= \frac{3}{7} \cdot \frac{28}{23} \\ &= \frac{3 \cdot \cancel{28}^4}{\cancel{7} \cdot 23} = \frac{12}{23}\end{aligned}$$

$$\begin{aligned}\frac{7}{9} : \frac{12}{20} &= \frac{7}{9} \cdot \frac{20}{12} \\ &= \frac{7 \cdot \cancel{20}^{10^5}}{9 \cdot \cancel{12}_3} = \frac{35}{27}\end{aligned}$$

$$\begin{aligned}\frac{-8}{15} : \left(-\frac{52}{36}\right) &= -\frac{8}{15} \cdot \left(-\frac{36}{52}\right) \\ &= + \frac{\cancel{8}^2 \cdot \cancel{36}^{12}}{\cancel{15}_5 \cdot \cancel{52}_{13}} \\ &= \frac{2 \cdot 12}{5 \cdot 13} \\ &= \frac{24}{65}\end{aligned}$$