

Lösungen zu den Übungen zu linearen Gleichungen mit Brüchen

$\frac{2}{3} + x = \frac{11}{12}$	$x = \frac{11}{12} - \frac{2}{3} \Leftrightarrow x = \frac{11}{12} - \frac{8}{12} \Leftrightarrow x = \frac{3}{12} = \frac{1}{4}$ Alternative: Man multipliziert zuerst die gesamte Gleichung mit dem kgV, sodass alle Brüche verschwinden: $\frac{2}{3} + x = \frac{11}{12} / \cdot 12$ kgV(3,12) = 12 $\Leftrightarrow 8 + 12x = 11$
$x - \frac{5}{27} = \frac{5}{18}$	$x = \frac{5}{18} + \frac{5}{27} \Leftrightarrow x = \frac{15}{54} + \frac{10}{54} = \frac{25}{54}$
$x + \frac{3}{5} = -\frac{3}{20}$	$x = -\frac{3}{20} - \frac{3}{5} \Leftrightarrow x = -\frac{3}{20} - \frac{12}{20} = -\frac{15}{20} = -\frac{3}{4}$
$\frac{2}{21} - x = \frac{5}{14}$	$-x = \frac{5}{14} - \frac{2}{21} \Leftrightarrow -x = \frac{15}{42} - \frac{4}{42} \Leftrightarrow -x = \frac{11}{42} \Leftrightarrow x = -\frac{11}{42}$
$\frac{7}{24} \cdot x = \frac{21}{48}$	$x = \frac{21}{48} \cdot \frac{24}{7} \Leftrightarrow x = \frac{3}{2}$
$\frac{49}{18} \cdot x = \frac{7}{6}$	$x = \frac{7}{6} \cdot \frac{18}{49} \Leftrightarrow x = \frac{3}{7}$
$\frac{15}{16} \cdot x = -\frac{3}{8}$	$x = -\frac{3}{8} \cdot \frac{16}{15} \Leftrightarrow x = -\frac{2}{5}$
$2x = -\frac{12}{7}$	$x = -\frac{12}{7} \cdot \frac{1}{2} \Leftrightarrow x = -\frac{6}{7}$
$-\frac{7}{12} \cdot x = \frac{14}{3}$	$x = \frac{14}{3} \cdot \left(-\frac{12}{7}\right) \Leftrightarrow x = -8$
$x : \frac{2}{5} = \frac{4}{15}$	$x = \frac{4}{15} \cdot \frac{2}{5} \Leftrightarrow x = \frac{8}{75}$
$x : \frac{144}{35} = -\frac{7}{12}$	$x = -\frac{7}{12} \cdot \frac{144}{35} \Leftrightarrow x = -\frac{12}{5}$
$4x + \frac{15}{28} = \frac{5}{14}$	$4x = \frac{5}{14} - \frac{15}{28} \Leftrightarrow 4x = \frac{10}{28} - \frac{15}{28} \Leftrightarrow 4x = -\frac{5}{28} \Leftrightarrow x = -\frac{5}{28} \cdot \frac{1}{4} \Leftrightarrow x = -\frac{5}{112}$
$3x + \frac{8}{63} = \frac{5}{9}$	$3x = \frac{5}{9} - \frac{8}{63} \Leftrightarrow 3x = \frac{35}{63} - \frac{8}{63} \Leftrightarrow 3x = \frac{27}{63} \Leftrightarrow x = \frac{9}{63} = \frac{1}{7}$
$\frac{5}{21}x + 5 = -5$	$\frac{5}{21}x = -10 \Leftrightarrow x = -10 \cdot \frac{21}{5} \Leftrightarrow x = -42$

$-\frac{9}{8}x + \frac{27}{16} = 0$	$-\frac{9}{8}x = -\frac{27}{16} \Leftrightarrow x = -\frac{27}{16} \cdot \left(-\frac{8}{9}\right) \Leftrightarrow x = \frac{3}{2}$
$\frac{2}{3}x + 4 = \frac{4}{9}$	$\begin{aligned} \frac{2}{3}x + 4 &= \frac{4}{9} \quad / - 4 \\ \Leftrightarrow \frac{2}{3}x &= \frac{4}{9} - 4 \\ \Leftrightarrow \frac{2}{3}x &= \frac{4}{9} - \frac{36}{9} = -\frac{32}{9} \quad / \cdot \frac{3}{2} \\ \Leftrightarrow x &= -\frac{32}{9} \cdot \frac{3}{2} = -\frac{16}{3} \end{aligned}$
$\frac{5}{8}x - \frac{7}{12} = \frac{2}{4}$	$\begin{aligned} \frac{5}{8}x - \frac{7}{12} &= \frac{2}{4} \quad / + \frac{7}{12} \\ \Leftrightarrow \frac{5}{8}x &= \frac{2}{4} + \frac{7}{12} = \frac{6}{12} + \frac{7}{12} = \frac{13}{12} \quad / \cdot \frac{8}{5} \\ \Leftrightarrow x &= \frac{13}{12} \cdot \frac{8}{5} = \frac{26}{15} \end{aligned}$
$-\frac{3}{16}x - \frac{5}{8} = -\frac{1}{4}$	$\begin{aligned} -\frac{3}{16}x - \frac{5}{8} &= -\frac{1}{4} \quad / + \frac{5}{8} \\ \Leftrightarrow -\frac{3}{16}x &= -\frac{1}{4} + \frac{5}{8} = -\frac{2}{8} + \frac{5}{8} = \frac{3}{8} \quad / \cdot \left(-\frac{16}{3}\right) \\ \Leftrightarrow x &= \frac{3}{8} \cdot \left(-\frac{16}{3}\right) = -2 \end{aligned}$