

ORDER OF OPERATIONS WITH FRACTIONS

Just follow the same BEDMAS rule when operating with fractions.

<p>1) $4 - \frac{2}{5} \div \frac{2}{3}$</p> $= 4 - \frac{2}{5} \times \frac{3}{2}$ $= 4 - \frac{2 \times 3}{5 \times 2}$ $= 4 - \frac{6}{10} \text{ GCF: 2 reduce } \frac{6}{10}$ $= \frac{4}{1} - \frac{3}{5} \text{ express 4 as a fraction. LCD: 5}$ $= \frac{4 \cdot 5}{1 \cdot 5} - \frac{3}{5} \rightarrow \frac{20-3}{5}$ $= \frac{20}{5} - \frac{3}{5} = \frac{17}{5}$	<p>2) $\frac{-3}{5} \times \frac{4}{3} \div (-3)$</p> $= \frac{-3 \times 4}{5 \times 3} \div (-3) \rightarrow \text{express } -3 \text{ as a fraction } \frac{-3}{1}$ $= \frac{-12}{15} \div \frac{-3}{1}$ $= \frac{-12}{15} \times \frac{1}{-3}$ $= \frac{-12 \times 1}{15 \times -3}$ $= \frac{-12}{-45} \text{ GCF: 3}$ $= \frac{4}{15}$
<p>3) $(\frac{2}{3} + \frac{1}{2}) \div (\frac{-3}{4} - (\frac{-2}{5}))$ BEDMAS</p> $= (\frac{2 \cdot 2}{3 \cdot 2} + \frac{1 \cdot 3}{2 \cdot 3}) \div (\frac{-3 \cdot 5}{4 \cdot 5} + \frac{2 \cdot 4}{5 \cdot 4})$ $= (\frac{4}{6} + \frac{3}{6}) \div (\frac{-15}{20} + \frac{8}{20})$ $= (\frac{4+3}{6}) \div (\frac{-15+8}{20}) \rightarrow = \frac{7 \times 20}{6 \times -7}$ $= (\frac{7}{6}) \div (\frac{-7}{20}) = \frac{140}{-42} \text{ GCF: 14}$ $= \frac{7}{6} \times \frac{20}{-7} = \frac{-10}{3}$	<p>4) $5\frac{1}{4} \times \frac{3}{5} \div (-2\frac{1}{3}) \div 4$</p> $= \frac{5 \cdot 4 + 1}{4} \times \frac{3}{5} \div (\frac{-2 \cdot 3 + 1}{3}) \div 4$ $= \frac{21}{4} \times \frac{3}{5} \div (\frac{-7}{3}) \div \frac{4}{1}$ $= \frac{21 \times 3}{4 \times 5} \times \frac{-3}{7} \times \frac{1}{4}$ $= \frac{63}{20} \times \frac{-3}{7} \times \frac{1}{4}$ $= \frac{63 \times -3 \times 1}{20 \times 7 \times 4}$ $= \frac{-189}{560} \text{ GCF=7}$ $= \frac{-27}{80}$
<p>5) $-2\frac{2}{3} + (-1\frac{3}{4} - \frac{5}{6})^2$</p> $= -\frac{2 \cdot 3 + 2}{3} + (-\frac{1 \cdot 4 + 3}{4} - \frac{5}{6})^2$ $= -\frac{8}{3} + (\frac{-7 \times 3}{4 \times 3} - \frac{5 \times 2}{6 \times 2})^2$ $= -\frac{8}{3} + (\frac{-21}{12} - \frac{10}{12})^2$ $= -\frac{8}{3} + (\frac{-21-10}{12})^2$ $= -\frac{8}{3} + (\frac{-31}{12})^2$ $= \frac{-8 \cdot 48}{3 \cdot 48} + \frac{961}{144}$ $= \frac{-384}{144} + \frac{961}{144}$ $= \frac{577}{144}$	<p>6) $(\frac{9}{2} + \frac{5}{2}) \div \frac{11}{2} \div \frac{1}{5}$</p> $= (\frac{9+5}{2}) \div \frac{11}{2} \div \frac{1}{5}$ $= \frac{14}{2} \div \frac{11}{2} \div \frac{1}{5}$ $= 7 \div \frac{11}{2} \div \frac{1}{5}$ $= \frac{7}{1} \times \frac{2}{11} \times \frac{5}{1}$ $= \frac{7 \times 2 \times 5}{1 \times 11 \times 1}$ $= \frac{70}{11}$

$$\begin{aligned}
 7) 12 - \left(\frac{8}{5} + 3 \div \frac{2}{3}\right) &= 12 - \left(\frac{8}{5} + 3 \times \frac{3}{2}\right) \\
 &= 12 - \left(\frac{8}{5} + \frac{9}{2}\right) \\
 &= 12 - \left(\frac{16}{10} + \frac{45}{10}\right) \\
 &= 12 - \left(\frac{16+45}{10}\right) \\
 &= \frac{12}{1} - \left(\frac{61}{10}\right) \quad \text{LCD}=10 \\
 &= \frac{120}{10} - \frac{61}{10} \\
 &= \frac{120-61}{10} \\
 &= \frac{59}{10}
 \end{aligned}$$

$$\begin{aligned}
 8) 4 - \frac{4}{3} \times \frac{5}{4} + \frac{11}{6} &= 4 - \frac{4 \times 5}{3 \times 4} + \frac{11}{6} \\
 &= \frac{4}{1} - \frac{5}{3} + \frac{11}{6} \quad \text{LCD: 6} \\
 &= \frac{24}{6} - \frac{10}{6} + \frac{11}{6} \\
 &= \frac{24-10+11}{6} \\
 &= \frac{25}{6}
 \end{aligned}$$

$$\begin{aligned}
 9) \frac{1}{2} \div \frac{9}{4} \times \left(\frac{11}{3} - \frac{4}{3}\right) &= \frac{1}{2} \div \frac{9}{4} \times \left(\frac{33}{3} - \frac{4}{3}\right) \\
 &= \frac{1}{2} \div \frac{9}{4} \times \left(\frac{33-4}{3}\right) \\
 &= \frac{1}{2} \times \frac{4}{9} \times \frac{29}{3} \\
 &= \frac{116}{54} \quad \text{GCF: 2} \\
 &= \frac{58}{27}
 \end{aligned}$$

$$\begin{aligned}
 10) \left(\frac{11}{2} - \frac{7}{3} + 2\right) \div \frac{2}{5} &= \left(\frac{11 \cdot 3}{2 \cdot 3} - \frac{7 \cdot 2}{3 \cdot 2} + \frac{2 \cdot 6}{1 \cdot 6}\right) \div \frac{2}{5} \\
 &= \left(\frac{33}{6} - \frac{14}{6} + \frac{12}{6}\right) \div \frac{2}{5} \\
 &= \left(\frac{33-14+12}{6}\right) \div \frac{2}{5} \\
 &= \frac{31}{6} \div \frac{2}{5} \\
 &= \frac{31}{6} \times \frac{5}{2} \\
 &= \frac{31 \times 5}{6 \times 2} \\
 &= \frac{155}{12}
 \end{aligned}$$

$$\begin{aligned}
 11) \frac{-2}{3} - \left(\frac{1}{3} - \frac{2}{4} \div \frac{2}{4}\right) &= \frac{-2}{3} - \left(\frac{1}{3} - \frac{2}{4} \times \frac{4}{2}\right) \\
 &= \frac{-2}{3} - \left(\frac{1}{3} - \frac{2 \times 4}{4 \times 2}\right) \\
 &= \frac{-2}{3} - \left(\frac{1}{3} - \frac{8}{8}\right) \\
 &= \frac{-2}{3} - \left(\frac{1}{3} - \frac{1}{1}\right) \\
 &= \frac{-2}{3} - \left(\frac{1}{3} - \frac{3}{3}\right) \\
 &= \frac{-2}{3} - \left(\frac{1-3}{3}\right) \\
 &= \frac{-2}{3} - \left(\frac{-2}{3}\right) \\
 &= \frac{-2}{3} + \frac{2}{3} \\
 &= \frac{0}{3} \\
 &= 0
 \end{aligned}$$

$$\begin{aligned}
 12) \left(\left(\frac{1}{2}\right)^3 + \frac{3}{2} \div \frac{2}{3}\right) &= \left[\left(\frac{1}{2}\right)\left(\frac{1}{2}\right)\left(\frac{1}{2}\right) + \frac{3}{2} \times \frac{3}{2}\right] \\
 &= \left(\frac{1}{8} + \frac{9}{4}\right) \\
 &= \frac{1}{8} + \frac{18}{8} \\
 &= \frac{1+18}{8} \\
 &= \frac{19}{8}
 \end{aligned}$$