

Espressioni con frazioni di frazioni. Livello avanzato. Completi di soluzione guidata.
Evaluating Expressions Involving Complex Fractions – With solutions

1.
$$\frac{\left(2 - \frac{1}{2} - \frac{1}{3}\right) : \left(2 - \frac{1}{2} + \frac{1}{3}\right) \cdot \left(1 + \frac{1}{2} + \frac{1}{3}\right)}{2 + \frac{1}{2} - \frac{2}{3}}$$
 $\left[\frac{7}{11}\right]$
[soluzione](#)
2.
$$\frac{\left(\frac{1}{2} - \frac{1}{6} + \frac{3}{9}\right) \cdot \frac{3}{4}}{\left(\frac{2}{3} + \frac{3}{4} + \frac{5}{6} - \frac{7}{12}\right) \cdot \frac{2}{10}}$$
 $\left[\frac{3}{2}\right]$
[soluzione](#)
3.
$$\frac{1 + \frac{1}{2} + \frac{1}{3} - \frac{1}{4} \cdot \left(1 + \frac{2}{3}\right)}{\frac{17}{6} : \frac{17}{2} + \frac{7}{5} : \frac{14}{5}}$$
 $\left[\frac{17}{10}\right]$
[soluzione](#)
4.
$$\frac{\frac{5}{3} - \left(\frac{1}{3} - \frac{1}{9}\right)}{\left(\frac{7}{2} - \frac{4}{5}\right) \cdot \left(\frac{1}{3} + \frac{2}{9}\right) \cdot \frac{2}{9}}$$
 $\left[\frac{13}{3}\right]$
[soluzione](#)
5.
$$\frac{\left(\frac{3}{2} + \frac{1}{4}\right) \cdot \left(1 - \frac{9}{14}\right)}{\left(1 - \frac{7}{22}\right) \cdot \left(\frac{3}{5} - \frac{5}{12}\right)}$$
 $[5]$
[soluzione](#)
6.
$$\frac{\left(\frac{23}{4} - \frac{31}{8}\right) : \left(\frac{29}{6} - \frac{11}{3}\right)}{\left(\frac{4}{7} + \frac{5}{4}\right) : \frac{17}{7}}$$
 $\left[\frac{15}{7}\right]$
[soluzione](#)
7.
$$\frac{\left(\frac{18}{10} - \frac{145}{100}\right) : \left(1 - \frac{1}{2}\right)}{\left(\frac{1}{10} + \frac{33}{100} - \frac{355}{1000}\right) : \left(1 - \frac{4}{5}\right)}$$
 $\left[\frac{28}{25}\right]$
[soluzione](#)
8.
$$1 - \left(\frac{3}{8}\right)^2 : \frac{7}{\frac{12}{7}} \cdot \left(\frac{2}{3}\right)^2$$
 $\left[\frac{3}{4}\right]$
[soluzione](#)

9.
$$20: \frac{\frac{32}{3} \cdot \left(1 - \frac{1}{2}\right)^3}{3 \cdot \left(\frac{2}{3} - \frac{1}{2}\right)^2 - \frac{1}{20}}$$
 $\left[\frac{1}{2}\right]$
[soluzione](#)
10.
$$\frac{3}{16} + \frac{7}{8} : \frac{\frac{6}{5} + \left(\frac{7}{3} - \frac{2}{15}\right) \cdot \left(\frac{2}{11} - \frac{1}{11}\right)}{\frac{13}{4} : \left(2 - \frac{1}{7}\right) + 1 - \frac{1}{4}}$$
 $\left[\frac{7}{4}\right]$
[soluzione](#)
11.
$$\frac{1}{3} + \frac{5}{3} - \frac{1}{5} \cdot \frac{4 + \frac{39}{4} : \left(\frac{5}{2} - \frac{1}{3}\right)}{2 + \frac{1}{6} : \left(\frac{5}{4} + \frac{1}{12}\right)}$$
 $\left[\frac{6}{5}\right]$
[soluzione](#)
12.
$$\frac{1 - \frac{4}{7}}{1 + \frac{2}{7}} : \frac{\frac{1}{4}}{1 - \frac{3}{4}} - \frac{1}{2} + \frac{2 - \frac{5}{3}}{1 - \frac{2}{3}}$$
 $\left[\frac{7}{6}\right]$
[soluzione](#)
13.
$$\frac{\frac{5}{2} - \left\{ \frac{3}{4} + \left[\left(\frac{16}{3} + \frac{5}{12} \right) - \frac{7}{8} \right] \cdot \frac{2}{13} \right\}}{\left(\frac{1}{6} + \frac{3}{4} \right) \cdot \left(\frac{3}{2} - \frac{15}{14} \right) + \left(\frac{5}{4} - \frac{7}{6} \right) : \left(\frac{1}{3} \right)^2}$$
 $\left[\frac{8}{7}\right]$
[soluzione](#)
14.
$$\frac{1 + \frac{3}{5} - \left(\frac{3}{4} + \frac{1}{2} \right)}{\left(1 + \frac{1}{6} \right) \cdot \left(\frac{1}{4} - \frac{1}{10} \right)} \cdot \frac{\left(1 + \frac{1}{2} - \frac{4}{11} \right) : \left(1 - \frac{6}{11} \right)}{3 + \frac{3}{4} - \left(\frac{1}{2} + 2 \right)}$$
 $[4]$
[soluzione](#)
15.
$$\left[2 - \frac{4}{9} : \left(2 - \frac{2}{3} \right)^2 + \frac{1}{18} \right] : \frac{\frac{1}{2} - \frac{5}{21} : \frac{5}{3} \cdot \frac{7}{5}}{\left(\frac{1}{12} + \frac{3}{5} \cdot \frac{1}{9} \right)^2}$$
 $\left[\frac{13}{96}\right]$
[soluzione](#)
16.
$$\frac{\left[\left(\frac{9}{12} + \frac{10}{4} \right) : \frac{26}{4} + \left(\frac{10}{8} - \frac{21}{18} \right) : \frac{10}{12} \right] \cdot \left[\left(\frac{9}{15} + \frac{4}{2} - \frac{5}{3} \right) : \frac{35}{45} \right]}{\left[\left(\frac{15}{25} - \frac{2}{6} \right) \cdot \frac{9}{12} + \left(\frac{4}{15} - \frac{11}{45} \right) \cdot \frac{10}{2} \right] : \frac{7}{9}}$$
 $\left[\frac{9}{5}\right]$
[soluzione](#)
17.
$$\frac{\frac{7}{6} : \left(\frac{1}{3} + 2 \right)}{\frac{3}{2}} + \frac{\frac{5}{6} : \left(\frac{1}{3} - 1 \right)}{1 + \frac{3}{2}}$$
 $\left[\frac{5}{6}\right]$
[soluzione](#)

$$18. \frac{\left(\frac{2}{5} + \frac{7}{9} - \frac{3}{20}\right) \cdot \frac{6}{5} - \frac{5}{6}}{\left(\frac{1}{9} : \frac{5}{18} + \frac{19}{9} \cdot \frac{6}{5}\right) - \frac{2}{5} : \frac{3}{2}} \quad \left[\frac{3}{20}\right]$$

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$$19. \frac{1 + \frac{1}{5}}{\left(\frac{1}{2} + 2\right) : \left(\frac{5}{4} - 1\right)} : \frac{\frac{2}{5}}{\frac{4}{3}} \quad \left[\frac{2}{5}\right]$$

[soluzione](#)

$$20. \frac{1 - \frac{1}{5}}{\left(\frac{2}{5} + 2\right) : \left(\frac{5}{4} + 1\right)} - \frac{1 - \frac{1}{3}}{1 + \frac{1}{3}} \quad \left[\frac{5}{8}\right]$$

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$$21. \frac{\left\{\left[\left(\frac{2}{7} - \frac{1}{5}\right) \cdot \frac{70}{3} - \left(\frac{3}{8} + \frac{3}{4}\right) \cdot \frac{2}{3}\right] : \frac{25}{8} - \frac{1}{5}\right\} \cdot \frac{10}{3}}{\left\{\frac{7}{3} - \frac{10}{5} + \left(9 - \frac{3}{2}\right) \cdot \left(1 - \frac{13}{15}\right) + \frac{15}{2}\right\} : \frac{106}{9} + \frac{5}{12} + \frac{1}{3}} \cdot \frac{2}{3} \quad \left[\frac{2}{3}\right]$$

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$$22. \frac{\left(\frac{11}{10} - \frac{4}{15}\right) : \left(1 - \frac{7}{12}\right)}{\frac{14}{5} - \frac{2}{15}} \cdot \left(1 - \frac{19}{21}\right) \quad \text{soluzione}$$

$$23. \frac{\frac{5}{2} + \frac{3}{4} - \left(\frac{1}{4} - \frac{16}{15}\right)}{\frac{11}{10} - \left(\frac{1}{6} - \frac{2}{15}\right)} \cdot \left(1 - \frac{28}{29}\right) \quad \text{soluzione}$$

$$24. \frac{\left(1 - \frac{1}{4}\right) \cdot \left(1 - \frac{1}{4}\right)^2}{\left(1 - \frac{1}{2}\right)^2} \cdot \frac{\frac{3}{2} - \left(1 - \frac{1}{2}\right)^2}{1 - \frac{1}{5}} \cdot \left(\frac{4}{15}\right)^2 \quad \text{soluzione}$$

$$25. 2 \cdot \left(\frac{\frac{1}{3} - \frac{1}{4}}{1 - \frac{5}{6}}\right)^2 - \left(\frac{\frac{1}{3} + \frac{1}{4}}{1 + \frac{1}{6}}\right)^2 \quad \text{soluzione}$$

$$26. \left(\frac{\frac{1}{3} + \frac{1}{4}}{\frac{2}{3} : \frac{4}{3}}\right)^2 - 2 \cdot \left(\frac{\frac{1}{3} - \frac{1}{4}}{\frac{2}{7} : \frac{4}{7}}\right)^2 \quad \text{soluzione}$$

Soluzioni

$$\frac{\left(2 - \frac{1}{2} - \frac{1}{3}\right) : \left(2 - \frac{1}{2} + \frac{1}{3}\right) \cdot \left(1 + \frac{1}{2} + \frac{1}{3}\right)}{2 + \frac{1}{2} - \frac{2}{3}}$$

Risoluzione diretta	Riduzione a una divisione
$\frac{\left(2 - \frac{1}{2} - \frac{1}{3}\right) : \left(2 - \frac{1}{2} + \frac{1}{3}\right) \cdot \left(1 + \frac{1}{2} + \frac{1}{3}\right)}{2 + \frac{1}{2} - \frac{2}{3}} =$ $= \frac{\frac{12-3-2}{6} : \frac{12-3+2}{6} \cdot \frac{6+3+2}{6}}{\frac{12+3-4}{6}} =$ $= \frac{\frac{7}{6} : \frac{11}{6} \cdot \frac{11}{6}}{\frac{11}{6}} =$ $= \frac{7}{6} \cdot \frac{6}{11} \cdot \frac{11}{6} = \frac{7}{11}$	$\left[\left(2 - \frac{1}{2} - \frac{1}{3}\right) : \left(2 - \frac{1}{2} + \frac{1}{3}\right) \cdot \left(1 + \frac{1}{2} + \frac{1}{3}\right)\right] : \left(2 + \frac{1}{2} - \frac{2}{3}\right) =$ $= \left(\frac{12-3-2}{6} : \frac{12-3+2}{6} \cdot \frac{6+3+2}{6}\right) : \left(\frac{12+3-4}{6}\right) =$ $= \left(\frac{7}{6} \cdot \frac{6}{11} \cdot \frac{11}{6}\right) : \left(\frac{11}{6}\right) =$ $= \frac{7}{6} \cdot \frac{6}{11} =$ $= \frac{7}{11}$

$$\begin{aligned}
 &= \frac{\left(\frac{1}{2} - \frac{1}{6} + \frac{3^1}{9_3}\right) \cdot \frac{3}{4}}{\left(\frac{2}{3} + \frac{3}{4} + \frac{5}{6} - \frac{7}{12}\right) \cdot \frac{2^1}{10_5}} = \\
 &= \frac{\left(\frac{3-1+2}{6}\right) \cdot \frac{3}{4}}{\left[\frac{8+9+10-7}{12}\right] \cdot \frac{1}{5}} = \\
 &= \frac{\frac{4}{6} \cdot \frac{3}{4}}{\frac{20}{12} \cdot \frac{1}{5}} = \\
 &= \frac{\frac{2}{3} \cdot \frac{3}{4}}{\frac{5}{3} \cdot \frac{1}{5}} = \\
 &= \frac{\frac{2}{1} \cdot \frac{1}{4}}{\frac{1}{3} \cdot \frac{1}{1}} = \\
 &= \frac{1}{2} = \frac{1}{2} : \frac{1}{3} = \frac{1}{2} \cdot \frac{3}{1} = \frac{3}{2}
 \end{aligned}$$

$$\begin{aligned}
 & \frac{1 + \frac{1}{2} + \frac{1}{3} - \frac{1}{4} \cdot \left(1 + \frac{2}{3}\right)}{\frac{17}{6} : \frac{17}{2} + \frac{7}{5} : \frac{14}{5}} = \\
 & = \frac{1 + \frac{1}{2} + \frac{1}{3} - \frac{1}{4} \cdot \left(\frac{3+2}{3}\right)}{\frac{17}{6} \cdot \frac{2}{17} + \frac{7}{5} \cdot \frac{5}{14}} = \\
 & = \frac{1 + \frac{1}{2} + \frac{1}{3} - \frac{1}{4} \cdot \frac{5}{3}}{\frac{1}{3} + \frac{1}{2}} = \\
 & = \frac{1 + \frac{1}{2} + \frac{1}{3} - \frac{5}{12}}{\frac{2+3}{6}} = \\
 & = \frac{12+6+4-5}{\frac{12}{6}} = \\
 & = \frac{17}{2} : \frac{5}{6} = \frac{17}{12} \cdot \frac{6}{5} = \frac{17}{2} \cdot \frac{1}{5} = \frac{17}{10}
 \end{aligned}$$

$$\begin{aligned}
 & \frac{\frac{5}{3} - \left(\frac{1}{3} - \frac{1}{9}\right)}{\left(\frac{7}{2} - \frac{4}{5}\right) \cdot \left(\frac{1}{3} + \frac{2}{9}\right) \cdot \frac{2}{9}} = \\
 & = \frac{\frac{5}{3} - \left(\frac{3-1}{9}\right)}{\frac{35-8}{10} \cdot \frac{3+2}{9} \cdot \frac{2}{9}} = \\
 & = \frac{\frac{5}{3} - \frac{2}{9}}{\frac{27}{10} \cdot \frac{5}{9} \cdot \frac{2}{9}} = \\
 & = \frac{15-2}{\frac{3}{2} \cdot \frac{2}{9}} = \\
 & = \frac{13}{\frac{1}{3}} = \frac{13}{9} \cdot \frac{1}{3} = \frac{13}{9} \cdot \frac{3}{1} = \frac{13}{3}
 \end{aligned}$$

$$\begin{aligned}
 & \frac{\left(\frac{3}{2} + \frac{1}{4}\right) \cdot \left(1 - \frac{9}{14}\right)}{\left(1 - \frac{7}{22}\right) \cdot \left(\frac{3}{5} - \frac{5}{12}\right)} = \\
 & = \frac{\frac{6+1}{4} \cdot \frac{14-9}{14}}{\frac{22-7}{22} \cdot \frac{36-25}{60}} = \\
 & = \frac{\frac{7}{4} \cdot \frac{5}{14}}{\frac{15}{22} \cdot \frac{11}{60}} = \\
 & = \frac{\frac{1}{4} \cdot \frac{5}{2}}{\frac{1}{2} \cdot \frac{1}{4}} = \frac{5}{8} \cdot \frac{1}{8} = \frac{5}{8} \cdot \frac{8}{1} = 5
 \end{aligned}$$

$$\begin{aligned}
 & \frac{\left(\frac{23}{4} - \frac{31}{8}\right) : \left(\frac{29}{6} - \frac{11}{3}\right)}{\left(\frac{4}{7} + \frac{5}{4}\right) : \frac{17}{7}} = \\
 & = \frac{46 - 31}{8} : \frac{29 - 2}{6} = \\
 & = \frac{15}{8} : \frac{7}{6} = \\
 & = \frac{15}{8} \cdot \frac{6}{7} = \\
 & = \frac{15 \cdot 3}{4 \cdot 1} = \\
 & = \frac{45}{4} = \frac{45}{28} : \frac{3}{4} = \frac{45}{28} \cdot \frac{4}{3} = \frac{15}{7}
 \end{aligned}$$

$$\begin{aligned}
 & \frac{\left(\frac{18}{10} - \frac{145}{100}\right) : \left(1 - \frac{1}{2}\right)}{\left(\frac{1}{10} + \frac{33}{100} - \frac{355}{1000}\right) : \left(1 - \frac{4}{5}\right)} = \\
 & = \frac{\left(\frac{180 - 145}{100}\right) : \left(\frac{1}{2}\right)}{\left(\frac{100 + 330 - 355}{1000}\right) : \left(\frac{1}{5}\right)} = \\
 & = \frac{\left(\frac{35}{100}\right) \cdot \frac{2}{1}}{\left(\frac{125}{1000}\right) \cdot \frac{5}{1}} = \\
 & = \frac{\left(\frac{35}{50}\right)}{\left(\frac{5}{200}\right) \cdot \frac{5}{1}} = \\
 & = \frac{\frac{7}{10}}{\left(\frac{1}{40}\right) \cdot \frac{5}{1}} = \frac{7}{10} \cdot \frac{1}{8} = \frac{7 \cdot 1}{10 \cdot 8} = \frac{7}{80}
 \end{aligned}$$

$$1 - \left(\frac{3}{8}\right)^2 : \frac{12}{7} \cdot \left(\frac{2}{3}\right)^2 =$$

$$1 - \frac{9}{64} \cdot \frac{7}{12} \cdot \frac{4}{9} =$$

$$= 1 - \frac{9}{64} \cdot \frac{7}{3} \cdot \frac{12}{7} \cdot \frac{4}{9} =$$

$$= 1 - \frac{1}{64} \cdot \frac{1}{1} \cdot \frac{4}{1} \cdot \frac{4}{1} = 1 - \frac{1}{4} = \frac{3}{4}$$

$$20 : \frac{\frac{32}{3} \cdot \left(1 - \frac{1}{2}\right)^3}{3 \cdot \left(\frac{2}{3} - \frac{1}{2}\right)^2 - \frac{1}{20}} =$$

$$20 : \frac{\frac{32}{3} \cdot \left(\frac{1}{2}\right)^3}{3 \cdot \left(\frac{4-3}{6}\right)^2 - \frac{1}{20}} =$$

$$= 20 : \frac{\frac{32}{3} \cdot \frac{1}{8}}{3 \cdot \frac{1}{36} - \frac{1}{20}} =$$

$$= 20 : \frac{\frac{4}{3}}{\frac{1}{12} - \frac{1}{20}} =$$

$$= 20 : \frac{\frac{4}{3}}{\frac{5-3}{60}} =$$

$$= 20 : \left(\frac{4}{3} \cdot \frac{60}{2}\right) = 20 \cdot \frac{1}{40} = \frac{1}{2}$$

$$\begin{aligned}
 & \frac{3}{16} + \frac{7}{8} : \frac{\frac{6}{5} + \left(\frac{7}{3} - \frac{2}{15}\right) \cdot \left(\frac{2}{11} - \frac{1}{11}\right)}{\frac{13}{4} : \left(2 - \frac{1}{7}\right) + 1 - \frac{1}{4}} = \\
 & = \frac{3}{16} + \frac{7}{8} : \frac{\frac{6}{5} + \frac{35-2}{15} \cdot \frac{2-1}{11}}{\frac{13}{4} : \frac{14-1}{7} + 1 - \frac{1}{4}} = \\
 & = \frac{3}{16} + \frac{7}{8} : \frac{\frac{6}{5} + \frac{33}{15} \cdot \frac{1}{11}}{\frac{13}{4} : \frac{13}{7} + 1 - \frac{1}{4}} = \\
 & = \frac{3}{16} + \frac{7}{8} : \frac{\frac{6}{5} + \frac{1}{5}}{\frac{13}{4} : \frac{7}{13} + 1 - \frac{1}{4}} = \\
 & = \frac{3}{16} + \frac{7}{8} : \frac{\frac{7}{5}}{\frac{7}{4} + 1 - \frac{1}{4}} = \\
 & = \frac{3}{16} + \frac{7}{8} : \frac{\frac{7}{5}}{\frac{7+4-1}{4}} = \\
 & = \frac{3}{16} + \frac{7}{8} : \left(\frac{7}{5} : \frac{10^2}{4_5}\right) = \\
 & = \frac{3}{16} + \frac{7}{8} : \left(\frac{7}{5} \cdot \frac{2}{5}\right) = \\
 & = \frac{3}{16} + \frac{7}{8} : \frac{14}{25} = \\
 & = \frac{3}{16} + \frac{7}{8} \cdot \frac{25}{14_2} = \\
 & = \frac{3}{16} + \frac{25}{16} = \\
 & = \frac{3+25}{16} = \frac{28}{16} = \frac{14}{8} = \frac{7}{4}
 \end{aligned}$$

$$\begin{aligned}
 & \frac{1}{3} + \frac{5}{3} - \frac{1}{5} \cdot \frac{4 + \frac{39}{4} : \left(\frac{5}{2} - \frac{1}{3}\right)}{2 + \frac{1}{6} : \left(\frac{5}{4} + \frac{1}{12}\right)} = \\
 & = \frac{1+5}{3} - \frac{1}{5} \cdot \frac{4 + \frac{39}{4} : \frac{15-2}{6}}{2 + \frac{1}{6} : \frac{15+1}{12}} = \\
 & = \frac{6}{3} - \frac{1}{5} \cdot \frac{4 + \frac{39}{4} : \frac{13}{6}}{2 + \frac{1}{6} : \frac{16}{12}} = \\
 & = 2 - \frac{1}{5} \cdot \frac{4 + \frac{39}{4} \cdot \frac{6}{13}}{2 + \frac{1}{6} \cdot \frac{12}{16}} = \\
 & = 2 - \frac{1}{5} \cdot \frac{4 + \frac{3 \cdot 6}{4 \cdot 1}}{2 + \frac{1}{1} \cdot \frac{2}{16}} = \\
 & = 2 - \frac{1}{5} \cdot \frac{4 + \frac{3 \cdot 3}{2 \cdot 1}}{2 + \frac{2}{16}} = \\
 & = 2 - \frac{1}{5} \cdot \frac{4 + \frac{9}{2}}{2 + \frac{1}{8}} = \\
 & = 2 - \frac{1}{5} \cdot \frac{\frac{8+9}{2}}{\frac{16+1}{8}} = \\
 & = 2 - \frac{1}{5} \cdot \left(\frac{17}{2} \cdot \frac{8}{17}\right) = 2 - \frac{1}{5} \cdot \frac{4}{1} = 2 - \frac{4}{5} = \frac{10-4}{5} = \frac{6}{5}
 \end{aligned}$$

$$\begin{aligned}
 & \frac{1 - \frac{4}{7}}{1 + \frac{2}{7}} : \frac{\frac{1}{4}}{1 - \frac{3}{4}} - \frac{1}{2} + \frac{2 - \frac{5}{3}}{1 - \frac{2}{3}} = \\
 & = \frac{\frac{7-4}{7}}{\frac{7+2}{7}} : \frac{\frac{1}{4}}{\frac{4-3}{4}} - \frac{1}{2} + \frac{\frac{6-5}{3}}{\frac{3-2}{3}} = \\
 & = \frac{\frac{3}{7}}{\frac{9}{7}} : \left(\frac{1}{4} : \frac{1}{4} - \frac{1}{2} \right) + \frac{\frac{1}{3}}{\frac{1}{3}} = \\
 & = \left(\frac{3}{7} \cdot \frac{7}{9} \right) : \frac{1}{2} + \left(\frac{1}{3} : \frac{1}{3} \right) = \\
 & = \frac{1}{3} \cdot \frac{1}{2} + 1 = \\
 & = \frac{1}{6} + 1 = \frac{7}{6}
 \end{aligned}$$

$$\begin{aligned}
 & \frac{\frac{5}{2} - \left\{ \frac{3}{4} + \left[\left(\frac{16}{3} + \frac{5}{12} \right) - \frac{7}{8} \right] \cdot \frac{2}{13} \right\}}{\left(\frac{1}{6} + \frac{3}{4} \right) \cdot \left(\frac{3}{2} - \frac{15}{14} \right) + \left(\frac{5}{4} - \frac{7}{6} \right) : \left(\frac{1}{3} \right)^2} = \\
 & = \frac{\frac{5}{2} - \left\{ \frac{3}{4} + \left[\left(\frac{64+5}{12} \right) - \frac{7}{8} \right] \cdot \frac{2}{13} \right\}}{\left(\frac{2+9}{12} \right) \cdot \left(\frac{21-15}{14} \right) + \left(\frac{15-14}{12} \right) : \left(\frac{1}{9} \right)} = \\
 & = \frac{\frac{5}{2} - \left\{ \frac{3}{4} + \left[\frac{69^{23}}{12_4} - \frac{7}{8} \right] \cdot \frac{2}{13} \right\}}{\left(\frac{11}{12} \right) \cdot \left(\frac{6}{14} \right) + \left(\frac{1}{12} \right) \cdot \left(\frac{9}{1} \right)} = \\
 & = \frac{\frac{5}{2} - \left\{ \frac{3}{4} + \frac{46-7}{8} \cdot \frac{2}{13} \right\}}{\left(\frac{11}{2} \right) \cdot \left(\frac{1}{14} \right) + \left(\frac{1}{4} \right) \cdot \left(\frac{3}{1} \right)} = \\
 & = \frac{\frac{5}{2} - \left\{ \frac{3}{4} + \frac{39}{8} \cdot \frac{2}{13} \right\}}{\left(\frac{11}{2} \right) \cdot \left(\frac{1}{14} \right) + \left(\frac{1}{4} \right) \cdot \left(\frac{3}{1} \right)} = \\
 & = \frac{\frac{5}{2} - \left\{ \frac{3}{4} + \frac{3}{4} \cdot \frac{1}{1} \right\}}{\left(\frac{11}{2} \right) \cdot \left(\frac{1}{14} \right) + \left(\frac{1}{4} \right) \cdot \left(\frac{3}{1} \right)} = \\
 & = \frac{\frac{5}{2} - \frac{6}{4}}{\frac{11}{28} + \frac{3}{4}} = \\
 & = \frac{10-6}{11+21} = \\
 & = \frac{4}{28} = \\
 & = \frac{4}{8 \cdot 32} = 1 \cdot \frac{8}{7} = \frac{8}{7}
 \end{aligned}$$

$$\begin{aligned}
 & \frac{1 + \frac{3}{5} - \left(\frac{3}{4} + \frac{1}{2}\right)}{\left(1 + \frac{1}{6}\right) \cdot \left(\frac{1}{4} - \frac{1}{10}\right)} \cdot \frac{\left(1 + \frac{1}{2} - \frac{4}{11}\right) : \left(1 - \frac{6}{11}\right)}{3 + \frac{3}{4} - \left(\frac{1}{2} + 2\right)} \\
 &= \frac{\left(\frac{5+3}{5}\right) - \left(\frac{3+2}{4}\right)}{\left(\frac{6+1}{6}\right) \cdot \left(\frac{5-2}{20}\right)} \cdot \frac{\left(\frac{22+11-8}{22}\right) : \left(\frac{11-6}{11}\right)}{\left(\frac{12+3}{4}\right) - \left(\frac{1+4}{2}\right)} = \\
 &= \frac{\frac{8}{5} - \frac{5}{4}}{\frac{7}{6} \cdot \frac{3}{20}} \cdot \frac{\frac{25}{22} : \frac{5}{11}}{\frac{15}{4} - \frac{5}{2}} = \\
 &= \frac{\frac{32-25}{20}}{\frac{7}{40}} \cdot \frac{\frac{5}{2}}{\frac{15-10}{4}} = \\
 &= \frac{\frac{7}{40} \cdot \frac{5}{4}}{\frac{7}{40} \cdot \frac{5}{4}} = \\
 &= \left(\frac{7}{20} \cdot \frac{40}{7}\right) \cdot \left(\frac{5}{2} \cdot \frac{4}{5}\right) = 4
 \end{aligned}$$

$$\begin{aligned}
 & \left[2 - \frac{4}{9} : \left(2 - \frac{2}{3} \right)^2 + \frac{1}{18} \right] : \frac{\frac{1}{2} - \frac{5}{21} : \frac{5}{3} \cdot \frac{7}{5}}{\left(\frac{1}{12} + \frac{3}{5} \cdot \frac{1}{9} \right)^2} = \\
 & \left[2 - \frac{4}{9} : \left(\frac{6-2}{3} \right)^2 + \frac{1}{18} \right] : \frac{\frac{1}{2} - \frac{1^1 5}{21} \cdot \frac{3^1}{1} \cdot \frac{7^1}{5}}{\left(\frac{1}{12} + \frac{1^1 3}{5} \cdot \frac{1}{9_3} \right)^2} = \\
 & = \left[2 - \frac{4}{9} : \left(\frac{6-2}{3} \right)^2 + \frac{1}{18} \right] : \frac{\frac{1}{2} - \frac{1^1 5}{21} \cdot \frac{3^1}{1} \cdot \frac{7^1}{5}}{\left(\frac{1}{12} + \frac{1^1 3}{5} \cdot \frac{1}{9_3} \right)^2} = \\
 & = \left[2 - \frac{4}{9} : \left(\frac{4}{3} \right)^2 + \frac{1}{18} \right] : \frac{5-2}{\left(\frac{5+4}{60} \right)^2} = \\
 & = \left[2 - \frac{4^1}{9} \cdot \frac{9^1}{16_4} + \frac{1}{18} \right] : \frac{5-2}{\left(\frac{9^3}{60_{20}} \right)^2} = \\
 & = \left[\frac{72-9+2}{36} \right] : \frac{\frac{3}{9}}{400} = \\
 & = \frac{65}{36} : \left(\frac{1^1 3}{10} \cdot \frac{400}{9_3} \right) = \\
 & = \frac{1^3 65}{12 36} \cdot \frac{3^1}{40_8} = \frac{13}{96}
 \end{aligned}$$

$$\begin{aligned}
 & \frac{\left[\left(\frac{9}{12} + \frac{10}{4} \right) : \frac{26}{4} + \left(\frac{10}{8} - \frac{21}{18} \right) : \frac{10}{12} \right] \cdot \left[\left(\frac{9}{15} + \frac{4}{2} - \frac{5}{3} \right) : \frac{35}{45} \right]}{\left[\left(\frac{15}{25} - \frac{2}{6} \right) \cdot \frac{9}{12} + \left(\frac{4}{15} - \frac{11}{45} \right) \cdot \frac{10}{2} \right] : \frac{7}{9}} = \\
 & \frac{\left[\left(\frac{9^3}{12_4} + \frac{10^5}{4_2} \right) : \frac{26^{13}}{4_2} + \left(\frac{10^5}{8_4} - \frac{21^7}{18_6} \right) : \frac{10^5}{12_6} \right] \cdot \left[\left(\frac{9^3}{15_5} + \frac{2}{1} - \frac{5}{3} \right) : \frac{35^7}{45_9} \right]}{\left[\left(\frac{15^3}{25_5} - \frac{1}{3} \right) \cdot \frac{3}{4} + \left(\frac{4}{15} - \frac{11}{45} \right) \cdot \frac{5}{1} \right] : \frac{7}{9}} = \\
 & = \frac{\left[\left(\frac{3+10}{4} \right) \cdot \frac{2}{13} + \left(\frac{15-14}{12} \right) \cdot \frac{6}{5} \right] \cdot \left[\left(\frac{9+30-25}{15} \right) \cdot \frac{9}{7} \right]}{\left[\left(\frac{9-5}{15} \right) \cdot \frac{3}{4} + \left(\frac{12-11}{45} \right) \cdot \frac{5}{1} \right] \cdot \frac{9}{7}} = \\
 & = \frac{\left[\frac{13}{4_2} \cdot \frac{2^1}{13} + \frac{1}{12_2} \cdot \frac{6^1}{5} \right] \cdot \left[\left(\frac{14^2}{15_5} \right) \cdot \frac{9^3}{7} \right]}{\left[\frac{4}{15_5} \cdot \frac{3}{4} + \frac{1}{45_9} \cdot \frac{5}{1} \right] \cdot \frac{9}{7}} = \\
 & = \frac{\left[\frac{1}{2} + \frac{1}{10} \right] \cdot \frac{6}{5}}{\left[\frac{1}{5} + \frac{1}{9} \right] \cdot \frac{9}{7}} = \\
 & = \frac{\frac{6}{10_5} \cdot \frac{6^3}{5}}{\frac{14}{45} \cdot \frac{9}{7}} = \\
 & = \frac{18}{25} = \frac{18^9}{25_5} \cdot \frac{5}{2} = \frac{9}{5}
 \end{aligned}$$

$$\begin{aligned} & \frac{7}{6} : \left(\frac{1}{3} + 2 \right) + \frac{5}{6} : \left(\frac{1}{3} - 1 \right) = \\ & \frac{7}{\frac{3}{2}} + \frac{5}{1 + \frac{3}{2}} = \\ & = \frac{7 \cdot \frac{3}{2}}{\frac{3}{2}} + \frac{5 \cdot \frac{3}{2}}{\frac{2+3}{2}} = \\ & = \frac{1}{\frac{2}{3}} + \frac{5}{\frac{5}{2}} = \\ & = \frac{1}{2} \cdot \frac{2}{3} + \frac{5}{4} \cdot \frac{2}{5} = \\ & = \frac{1}{3} + \frac{1}{2} = \\ & = \frac{2+3}{6} = \frac{5}{6} \end{aligned}$$

$$\begin{aligned}
 & \frac{\left(\frac{2}{5} + \frac{7}{9} - \frac{3}{20}\right) \cdot \frac{6}{5} - \frac{5}{6}}{\left(\frac{1}{9} \div \frac{5}{18} + \frac{19}{9} \cdot \frac{6}{5}\right) - \frac{2}{5} \div \frac{3}{2}} = \\
 & = \frac{72 + 140 - 27}{180} \cdot \frac{6}{5} - \frac{5}{6} = \\
 & = \frac{\left(\frac{1}{9} \cdot \frac{18}{5} + \frac{19}{3} \cdot \frac{2}{5}\right) - \frac{2}{5} \cdot \frac{2}{3}}{\frac{185}{180} \cdot \frac{6}{5} - \frac{5}{6}} = \\
 & = \frac{\left(\frac{2}{5} + \frac{38}{15}\right) - \frac{4}{15}}{\frac{37}{15} - \frac{5}{6}} = \\
 & = \frac{\frac{30}{6+38} - \frac{4}{15}}{\frac{37-25}{15}} = \\
 & = \frac{\frac{30}{44} - \frac{4}{15}}{\frac{12}{15}} = \\
 & = \frac{\frac{30}{44-4}}{\frac{12}{15}} = \frac{2}{5} \cdot \frac{15}{40} = \frac{3}{20}
 \end{aligned}$$

$$\begin{aligned}
 & \frac{1 + \frac{1}{5}}{\left(\frac{1}{2} + 2\right) : \left(\frac{5}{4} - 1\right)} : \frac{\frac{2}{5}}{\frac{4}{3}} = \\
 & = \frac{\frac{6}{5}}{\left(\frac{5}{2}\right) : \left(\frac{1}{4}\right)} : \left(\frac{2}{5} \cdot \frac{3}{4}\right) = \\
 & = \frac{\frac{6}{5}}{\left(\frac{5}{2}\right) \cdot \left(\frac{4}{1}\right)} : \frac{3}{10} = \\
 & = \frac{\frac{6}{5}}{\frac{10}{1}} \cdot \frac{10}{3} = \frac{6^2}{5} \cdot \frac{1}{10} \cdot \frac{10}{3} = \frac{2}{5}
 \end{aligned}$$

$$\begin{aligned}
 & \frac{1 - \frac{1}{5}}{\left(\frac{2}{5} + 2\right) : \left(\frac{5}{4} + 1\right)} - \frac{1 - \frac{1}{3}}{1 + \frac{1}{3}} = \\
 & = \frac{\frac{5-1}{5}}{\left(\frac{2+10}{5}\right) : \left(\frac{5+4}{4}\right)} - \frac{\frac{3-1}{3}}{\frac{3+1}{3}} = \\
 & = \frac{\frac{4}{5}}{\frac{12}{5} \cdot \frac{4}{9}} - \frac{\frac{2}{3}}{\frac{4}{3}} = \\
 & = \frac{\frac{6}{5}}{\frac{4}{5} \cdot \frac{4}{3}} - \frac{2}{3} \cdot \frac{3}{4} = \\
 & = \frac{6}{5} \cdot \frac{15}{16} - \frac{1}{2} = \\
 & = \frac{3}{1} \cdot \frac{3}{8} - \frac{1}{2} = \\
 & = \frac{9}{8} - \frac{1}{2} = \\
 & = \frac{9-4}{8} = \frac{5}{8}
 \end{aligned}$$

$$\begin{aligned}
 & \frac{\left\{ \left[\left(\frac{2}{7} - \frac{1}{5} \right) \cdot \frac{70}{3} - \left(\frac{3}{8} + \frac{3}{4} \right) \cdot \frac{2}{3} \right] : \frac{25}{8} - \frac{1}{5} \right\} \cdot \frac{10}{3}}{\left\{ \frac{7}{3} - \frac{10}{5} + \left(9 - \frac{3}{2} \right) \cdot \left(1 - \frac{13}{15} \right) + \frac{15}{2} \right\} : \frac{106}{9} + \frac{5}{12} + \frac{1}{3} \right\} \cdot \frac{2}{3}} = \\
 & = \frac{\left\{ \left[\left(\frac{10-7}{35} \right) \cdot \frac{70}{3} - \left(\frac{3+6}{8} \right) \cdot \frac{2}{3} \right] \cdot \frac{8}{25} - \frac{1}{5} \right\} \cdot \frac{10}{3}}{\left\{ \left[\frac{7}{3} - 2 + \left(\frac{18-3}{2} \right) \cdot \left(\frac{15-13}{15} \right) + \frac{15}{2} \right] \cdot \frac{9}{106} + \frac{5}{12} + \frac{1}{3} \right\} \cdot \frac{2}{3}} = \\
 & = \frac{\left\{ \left[\frac{3}{35} \cdot \frac{70}{3} - \frac{9}{8} \cdot \frac{2}{3} \right] \cdot \frac{8}{25} - \frac{1}{5} \right\} \cdot \frac{10}{3}}{\left\{ \left[\frac{7}{3} - 2 + \frac{15}{2} \cdot \frac{2}{15} + \frac{15}{2} \right] \cdot \frac{9}{106} + \frac{5}{12} + \frac{1}{3} \right\} \cdot \frac{2}{3}} = \\
 & = \frac{\left\{ \left[2 - \frac{3}{4} \right] \cdot \frac{8}{25} - \frac{1}{5} \right\} \cdot \frac{10}{3}}{\left\{ \left[\frac{7}{3} - 2 + 1 + \frac{15}{2} \right] \cdot \frac{9}{106} + \frac{5}{12} + \frac{1}{3} \right\} \cdot \frac{2}{3}} = \\
 & = \frac{\left\{ \left[2 - \frac{3}{4} \right] \cdot \frac{8}{25} - \frac{1}{5} \right\} \cdot \frac{10}{3}}{\left\{ \left[\frac{7}{3} - 2 + 1 + \frac{15}{2} \right] \cdot \frac{9}{106} + \frac{5}{12} + \frac{1}{3} \right\} \cdot \frac{2}{3}} = \\
 & = \frac{\left\{ \frac{2}{5} - \frac{1}{5} \right\} \cdot \frac{10}{3}}{\left\{ \left[\frac{14-12+6+45}{6} \right] \cdot \frac{9}{106} + \frac{5}{12} + \frac{1}{3} \right\} \cdot \frac{2}{3}} = \\
 & = \frac{\frac{1}{5} \cdot \frac{10}{3}}{\left\{ \frac{53}{6} \cdot \frac{9}{106} + \frac{5}{12} + \frac{1}{3} \right\} \cdot \frac{2}{3}} = \\
 & = \frac{\frac{2}{3}}{\left\{ \frac{3}{4} + \frac{5}{12} + \frac{1}{3} \right\} \cdot \frac{2}{3}} = \\
 & = \frac{\frac{2}{3}}{\left\{ \frac{9+5+4}{12} \right\} \cdot \frac{2}{3}} = \frac{\frac{2}{3}}{\frac{18}{12} \cdot \frac{2}{3}} = \frac{2}{3}
 \end{aligned}$$

$$\begin{aligned}
 & \frac{\left(\frac{11}{10} - \frac{4}{15}\right) : \left(1 - \frac{7}{12}\right)}{\frac{14}{5} - \frac{2}{15}} \cdot \left(1 - \frac{19}{21}\right) = \\
 & = \frac{\frac{5}{6} : \frac{5}{12} \cdot \frac{2}{21}}{\frac{8}{3}} = \\
 & = \frac{2}{8} \cdot \frac{2}{21} = \\
 & = \frac{3}{4} \cdot \frac{2}{21} = \frac{1}{14}
 \end{aligned}$$

$$\begin{aligned}
 & \frac{\frac{5}{2} + \frac{3}{4} - \left(\frac{1}{4} + \frac{16}{15}\right)}{\frac{11}{10} - \left(\frac{1}{6} - \frac{2}{15}\right)} \cdot \left(1 - \frac{28}{29}\right) = \\
 & = \frac{\frac{5}{2} + \frac{3}{4} - \frac{79}{60}}{\frac{11}{10} - \frac{1}{30}} \cdot \frac{1}{29} = \\
 & = \frac{\frac{29}{15}}{\frac{16}{15}} \cdot \frac{1}{29} = \\
 & = \frac{29}{16} \cdot \frac{1}{29} = \frac{1}{16}
 \end{aligned}$$


$$\begin{aligned}
 & \frac{\left(1 - \frac{1}{4}\right) \cdot \left(1 - \frac{1}{4}\right)^2 \cdot \frac{3}{2} - \left(1 - \frac{1}{2}\right)^2}{\left(1 - \frac{1}{2}\right)^2 \cdot 1 - \frac{1}{5}} \cdot \left(\frac{4}{15}\right)^2 \\
 &= \frac{\frac{3}{4} \cdot \frac{9}{16} \cdot \frac{3}{2} - \frac{3}{4}}{1 - \frac{1}{5}} \cdot \frac{16}{225} = \\
 &= \frac{27}{64} \cdot \frac{5}{4} \cdot \frac{16}{225} = \\
 &= \frac{27}{16} \cdot \frac{25}{16} \cdot \frac{16}{225} = \frac{3}{16}
 \end{aligned}$$


$$\begin{aligned}
 & 2 \cdot \left(\frac{\frac{1}{3} - \frac{1}{4}}{1 - \frac{1}{6}}\right)^2 - \left(\frac{\frac{1}{3} + \frac{1}{4}}{1 + \frac{1}{6}}\right)^2 = \\
 &= 2 \cdot \left(\frac{\frac{1}{12}}{\frac{1}{6}}\right)^2 - \left(\frac{\frac{7}{12}}{\frac{7}{6}}\right)^2 = \\
 &= 2 \cdot \left(\frac{1}{2}\right)^2 - \left(\frac{1}{2}\right)^2 = \\
 &= 2 \cdot \frac{1}{4} - \frac{1}{4} = \frac{1}{4}
 \end{aligned}$$


$$\begin{aligned}
 & \left(\frac{\frac{1}{3} + \frac{1}{4}}{\frac{2}{3} \cdot \frac{1}{4}}\right)^2 - 2 \cdot \left(\frac{\frac{1}{3} - \frac{1}{4}}{\frac{2}{7} \cdot \frac{1}{4}}\right)^2 = \\
 &= \left(\frac{\frac{4+3}{12}}{\frac{2}{3} \cdot \frac{1}{4}}\right)^2 - 2 \cdot \left(\frac{\frac{4-3}{12}}{\frac{2}{7} \cdot \frac{1}{4}}\right)^2 = \\
 &= \left(\frac{7}{12} \cdot \frac{1}{2}\right)^2 - 2 \cdot \left(\frac{1}{12} \cdot \frac{1}{2}\right)^2 = \\
 &= \left(\frac{7}{6}\right)^2 - 2 \cdot \left(\frac{1}{6}\right)^2 =
 \end{aligned}$$


$$\begin{aligned} &= \frac{49}{36} - 2 \cdot \frac{1}{36} = \\ &= \frac{49}{36} - \frac{2}{36} = \frac{47}{36} \end{aligned}$$


Keywords

 *Matematica, Aritmetica, Frazioni, Espressioni Q, addizione, sottrazione, moltiplicazione, divisione, esercizi con soluzioni*

 *Math, Arithmetic, Fraction expressions, Fraction, Expression, Addition, Subtraction, Multiplication, Division, Fraction expressions solved*

 *Matemática, Aritmética, Fracción, Expresiones, Resta, Sustracción, Suma, Adición, Multiplicación, División*

 *Mathématique, Arithmétique, Fraction, Problèmes avec fractions, Addition, Soustraction, Multiplication, Division*

 *Mathematik, Arithmetik, Bruchrechnung, Bruch, Subtraktion, Addition, Multiplikation, Division*

Arabic: كَسْر

Chinese (Simplified): 分数

Chinese (Traditional): 分數

Czech: zlomek

Danish: brøkdæl

Dutch: deel, breuk

Estonian: murd(arv)

Finnish: murtoluku

French: fraction

Greek: κλάσμα

Hungarian: hányad, tört(rész)

Icelandic: brot

Indonesian: pecahan

Japanese: 分数

Korean: 분수

Lithuanian: trupmena

Norwegian: brøk(del)

Polish: ułamek

Portuguese (Brazil): fração

Portuguese (Portugal): fracção

Romanian: fracție

Russian: дробь

Slovak: zlomok

Slovenian: ulomek

Swedish: del

Turkish: kesir