Lezione 28

Espressioni contenenti decimali e frazioni e operazioni fra di essi.

ES. 1

$3{,}6 \cdot 0{,}\overline{1} + 2{,}\overline{1} : 0{,}8\overline{3} - 0{,}9\overline{3} =$

$= \frac{36}{10} \cdot \frac{1}{9} + \left(\frac{21-2}{9}\right) : \left(\frac{83-8}{90}\right) - \left(\frac{93-9}{90}\right) =$

$= \frac{18}{5} \cdot \frac{1}{9} + \frac{19}{9} : \frac{75}{90} - \frac{84}{90} =$

$= \frac{2}{5} + \frac{19}{9} \cdot \frac{90}{75} - \frac{14}{15} = \frac{2}{5} + \frac{19}{5} \cdot \frac{6}{5} - \frac{14}{15} = \frac{2}{5} + \frac{38}{15} - \frac{14}{15} = \frac{24}{15} = \frac{8}{5}$

$= 2$

$\frac{8}{5} + \frac{2}{5} = \frac{8+2}{5} = \frac{10}{5} = 2$

ES 2

$$\left\{\frac{2}{3}-\left[\left(\frac{1}{2^3}+\frac{1}{2^2}\right)\cdot\frac{2}{3}\right]\right\}:\left[3+\left(\frac{1}{3}\right)^4:\left(\frac{1}{3}\right)^3\right]+\left[\left(\frac{1}{3}\right)^{10}+\left(\frac{1}{3}\right)^6:\left(\frac{1}{3}\right)^4\right]\cdot\left(\frac{1}{2}\right)^3=$$

$$=\left\{\frac{2}{3}-\left[\left(\frac{1}{8}+\frac{1}{4}\right)\cdot\frac{2}{3}\right]\right\}:\left[\frac{3}{1}+\left(\frac{1}{3}\right)^1\right]+\left[1+\left(\frac{1}{3}\right)^1\right]\cdot\left(\frac{1}{2}\right)^3=$$

$$=\left\{\frac{2}{3}-\left[\left(\frac{1+2}{8}\right)\cdot\frac{2}{3}\right]\right\}:\left[\frac{9+1}{3}\right]+\left[\frac{3+1}{3}\right]\cdot\left(\frac{1}{2}\right)^3=$$

$$=\left\{\frac{2}{3}-\left[\frac{\cancel{3}^{1}}{\cancel{8}_{4}}\cdot\frac{\cancel{2}^{1}}{\cancel{3}_{1}}\right]\right\}:\frac{10}{3}+\frac{4}{3}\cdot\left(\frac{1}{2}\right)^3=$$

$$=\left\{\frac{2}{3}-\frac{1}{4}\right\}:\frac{10}{3}+\frac{\cancel{4}^{1}}{3}\cdot\frac{1}{\cancel{8}_{2}}=\left\{\frac{8-3}{12}\right\}:\frac{10}{3}+\frac{1}{6}=\frac{\cancel{8}^{1}}{\cancel{12}_{4}}\cdot\frac{\cancel{3}^{1}}{\cancel{10}_{2}}+\frac{1}{6}=$$

$$=\frac{1}{8}+\frac{1}{6}=\frac{3+4}{24}=\boxed{\frac{7}{24}}$$

$$\left[\left(\frac{1}{6}-\frac{1}{3}-\frac{3}{4}+1\right)^{-2} : \left(\frac{1}{2}-\frac{1}{3}\right)^{-3}\right] \cdot \left[\left(\frac{4}{13}\right)^{2} : \left(\frac{3}{4}+\frac{5}{2}\right)^{-2}\right]^{-1} =$$

$$= \left[\left(\frac{2-4-9+12}{12}\right)^{-2} : \left(\frac{3-2}{6}\right)^{-3}\right] \cdot \left[\left(\frac{4}{13}\right)^{2} : \left(\frac{3+10}{4}\right)^{-2}\right]^{-1} =$$

$$= \left[\left(\frac{1}{12}\right)^{-2} : \left(\frac{1}{6}\right)^{-3}\right] \cdot \left[\left(\frac{4}{13}\right)^{2} : \left(\frac{13}{4}\right)^{-2}\right]^{-1} =$$

$$= \left[\left(\frac{12}{1}\right)^{2} : \left(\frac{6}{1}\right)^{3}\right] \cdot \left[\left(\frac{4}{13}\right)^{2} : \left(\frac{4}{13}\right)^{2}\right]^{-1} =$$

$$= \frac{(12)^2}{1} \cdot \frac{1}{6^3} = \frac{12^2}{6^3} = \frac{(2\cdot 6)^2}{6^3} = \frac{2^2 \cdot 6^2}{6^3} = \frac{2^2}{6^1} = \frac{4}{6} = \frac{2}{3}$$

$$6^2 : 6^3 = 6^{-1} = \frac{1}{6}$$

$$12 = 2 \cdot 6$$