

Operaciones combinadas con números enteros y con fracciones.

1. Realizar las siguientes operaciones con números enteros (4.5 puntos)

a) $5 + 4 \cdot 3 - [(-3) \cdot 2 + (10 - 2 \cdot 3) \cdot 8]$

b) $9 - 6 \cdot 2 - (3 - 5) \cdot 9 + 6 \cdot (4 - 10) - 5 \cdot 4$

c) $(4 - 8 + 6 \cdot 5 - 20) \cdot [6 + (5 + 3) \cdot 3 - 5 \cdot (2 + 2)]$

2. Realizar las siguientes operaciones combinadas con fracciones (5.5 puntos):

a) $- + - - \frac{4}{3} + \frac{7}{8}$

b) $\frac{3}{5} \cdot \frac{4}{3} + \frac{7}{10} \cdot \frac{3}{5} - \frac{3}{5} : \frac{3}{5}$

c) $\frac{3}{4} + \frac{5}{5} \cdot \left(\frac{5}{8} - \frac{7}{8} \right) - \frac{7}{10}$

d) $\left(\frac{4}{3} \cdot \frac{4}{5} + \frac{9}{9} \cdot \frac{3}{10} \right) : \left(\frac{10}{15} + \frac{10}{12} - \frac{3}{10} \right)$

Solución

1. Realizar las siguientes operaciones con números enteros (4.5 puntos)

$$\begin{aligned} \text{a) } & 5 + 4 \cdot 3 - [(-3) \cdot 2 + (10 - 2 \cdot 3) \cdot 8] = \\ & = 5 + 12 - [-6 + (10 - 6) \cdot 8] = 17 - (-6 + 4 \cdot 8) = \\ & = 17 - (-6 + 32) = 17 - 26 = -\underline{\underline{9}} \end{aligned}$$

$$\begin{aligned} \text{b) } & 9 - 6 \cdot 2 - (3 - 5) \cdot 9 + 6 \cdot (4 - 10) - 5 \cdot 4 = \\ & = 9 - 12 - (-2) \cdot 9 + 6 \cdot (-6) - 20 = \\ & = -3 + 18 - 36 - 20 = -\underline{\underline{41}} \end{aligned}$$

$$\begin{aligned} \text{c) } & (4 - 8 + 6 \cdot 5 - 20) \cdot [6 + (5 + 3) \cdot 3 - 5 \cdot (2 + 2)] = \\ & = (4 - 8 + 30 - 20) \cdot (6 + 8 \cdot 3 - 5 \cdot 4) = \\ & = 6 \cdot (6 + 24 - 20) = 6 \cdot 10 = \underline{\underline{60}} \end{aligned}$$

2. Realizar las siguientes operaciones combinadas con fracciones (5.5 puntos):

$$\text{a) } \frac{1}{2} + \frac{2}{6} - \frac{4}{3} + \frac{7}{8} = \frac{12 + 8 - 32 + 21}{24} = \frac{9}{24} = \frac{3}{\underline{\underline{8}}}$$

$$\begin{array}{l} 2 = 2 \\ 6 = 2 \cdot 3 \\ 3 = 3 \\ 8 = 2^3 \end{array} \left\{ \begin{array}{l} \text{m.c.m.}(2, 6, 3, 8) = 2^3 \cdot 3 = 24 \end{array} \right.$$

$$b) \frac{2}{5} \cdot \frac{4}{3} + \frac{7}{10} \cdot \frac{3}{2} - \frac{3}{6} : \frac{2}{5} = \frac{8}{15} + \frac{21}{20} - \frac{15}{12} =$$

$$= \frac{32 + 63 - 75}{60} = \frac{20}{60} = \frac{2}{6} = \underline{\underline{\frac{1}{3}}}$$

$$\left. \begin{array}{l} 15 = 3 \cdot 5 \\ 20 = 2^2 \cdot 5 \\ 12 = 2^2 \cdot 3 \end{array} \right\} \text{m.c.m.}(15, 20, 12) = 2^2 \cdot 3 \cdot 5 = 60$$

$$c) \frac{3}{4} + \frac{2}{5} \cdot \left(\frac{5}{2} - \frac{11}{8} \right) - \frac{7}{10} = \frac{3}{4} + \frac{2}{5} \cdot \frac{40 - 22}{16} - \frac{7}{10} =$$

$$= \frac{3}{4} + \frac{2}{5} \cdot \frac{18}{16} - \frac{7}{10} = \frac{3}{4} + \frac{2 \cdot 18}{5 \cdot 16} - \frac{7}{10} = \frac{3}{4} + \frac{9}{20} - \frac{7}{10} =$$

$$= \frac{15 + 9 - 14}{20} = \frac{10}{20} = \underline{\underline{\frac{1}{2}}}$$

$$\left. \begin{array}{l} 4 = 2^2 \\ 20 = 2^2 \cdot 5 \\ 10 = 2 \cdot 5 \end{array} \right\} \text{m.c.m.}(4, 20, 10) = 2^2 \cdot 5 = 20$$

$$d) \left(\frac{2}{3} \cdot \frac{4}{5} + \frac{9}{2} \cdot \frac{3}{10} \right) : \left(\frac{2}{15} + \frac{10}{12} - \frac{3}{10} \right) = \left(\frac{8}{15} + \frac{27}{20} \right) : \frac{8 + 50 - 18}{60} =$$

$$= \frac{32 + 81}{60} : \frac{40}{60} = \frac{113}{60} : \frac{40}{60} = \frac{113 \cdot 60}{40 \cdot 60} =$$

$$= \underline{\underline{\frac{113}{40}}}$$

$$\left. \begin{array}{l} 20 = 2^2 \cdot 5 \\ 15 = 3 \cdot 5 \\ 12 = 2^2 \cdot 3 \\ 10 = 2 \cdot 5 \end{array} \right\} \begin{array}{l} \text{m.c.m.}(15, 12, 10) = 2^2 \cdot 3 \cdot 5 = 60 \\ \text{m.c.m.}(15, 20) = 2^2 \cdot 3 \cdot 5 = 60 \end{array}$$