La mole, unité de quantité de matière

L'abus d'alcool est mauvais pour la santé

1. $M(C_2H_6O) = 2M(C) + 6M(H) + M(O)$
   $\Rightarrow M(C_2H_6O) = 2 \times 12{,}0 + 6 \times 1{,}00 + 16{,}0 = 46{,}0\ g.mol^{-1}$
2. $m_{eth} = \rho_{alcool} V_{eth} = 0{,}79 \times 20 = 16\ g$
3. $n_{eth} = \frac{m_{eth}}{M(C_2H_6O)} = \frac{16}{46{,}0} = 0{,}35\ mol$

A consommer avec modération

1. $v = d°V = \frac{12}{100} \times 0{,}750 = 9{,}0.10^{-2}\ L = 90\ mL$
2. $n = \frac{m}{\boldsymbol{M(C_2H_6O)}} = \frac{d\rho_{eau}v}{\boldsymbol{M(C_2H_6O)}} = \frac{0{,}79 \times 1{,}00 \times 90}{46{,}0} = 1{,}5\ mol.$
3. $\mathcal{N} = nN_A = 1{,}5 \times 6{,}02.10^{23} = 9{,}0.10^{23}$ molécules d'éthanol.

P inconnu !

1. $n_{CuSO_4} = \frac{m_2}{M(CuSO_4)} = \frac{3{,}20}{159{,}6} = 2{,}01.10^{-2}\ mol.$
2. $m_{eau} = m_1 - m_2 = 5{,}00 - 3{,}20 = 1{,}80\ g$
   $\Rightarrow n_{eau} = \frac{m_{eau}}{M(H_2O)} = \frac{1{,}80}{18{,}0} = 0{,}100\ mol$
3. $n_{eau} = 5n_{CuSO_4} \Rightarrow p = 5$

La solution de Picsou

1. $n_0 = \frac{m_0}{M(AgNO_3)} = \frac{8{,}5}{169{,}9} = 5{,}0.10^{-2}\ mol$
2. $n_1 = C_0V_1 = \frac{n_0}{V_0}V_1 = \frac{5{,}0.10^{-2}}{200} \times 50 = 1{,}3.10^{-2}\ mol$

Quelques calculs avant de partir en camping

1. $M(C_4H_{10}) = 4M(C) + 10M(H) = 4 \times 12{,}0 + 10 \times 1{,}00 = 58{,}0\ g.mol^{-1}$
2. $n_b = \frac{m}{M(C_4H_{10})} = \frac{420}{58{,}0} = 7{,}24\ mol$
3. $V_l = \frac{m}{\rho_{butane\ liq}} = \frac{420}{0{,}601} = 699\ mL$