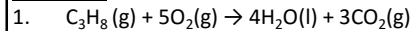


Correction exercices: Quantité de matière, tableau d'avancement.

Exercice 1:



2.

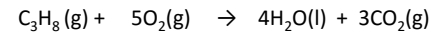
$$C_3H_8(g) + 5O_2(g) \rightarrow 4H_2O(l) + 3CO_2(g)$$

El (mol)	2,0	7,0	0	0
En cours de trans (mol)	2,0 - x	7,0 - 5x	4.x	3.x
EF (mol)	2,0 - x _m	7,0 - 5.x _m	4.x _m	3.x _m
	0,6	0	5,6	4,2

* $2,0 - x_m = 0$ ~~$x_m = 2,0 \text{ mol}$~~

* $7,0 - 5.x_m = 0$ $x_m = 1,4 \text{ mol}$

O₂ est en défaut



El (mol)	1,5	7,5	0	0
En cours de trans (mol)	1,5 - x	7,5 - 5x	4.x	3.x
EF (mol)	1,5 - x _m	7,5 - 5.x _m	4.x _m	3.x _m
	0	0	6,0	4,5

* $1,5 - x_m = 0$ $x_m = 1,5 \text{ mol}$

* $7,5 - 5.x_m = 0$ $x_m = 1,5 \text{ mol}$

C₃H₈ et O₂ sont introduits dans les proportions stoechiométriques.

$m(H_2O) = n \times M = 6,0 \times 18,0 = 1,1.10^2 \text{ g}$

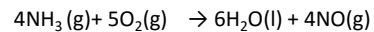
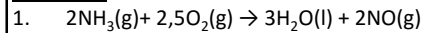
$M(H_2O) = 2 \times 1,00 + 16,0 = 18,0 \text{ g/mol}$

1,00 mole de CO₂ ↔ 24L

4,5 moles de CO₂ ↔ x L

$x = 24 \times 4,5 = 1,1.10^2 \text{ L}$

Exercice 2:



2. a. b. c. $n(NH_3) = \frac{m_1}{M(NH_3)} = \frac{340}{17,0} = 20,0 \text{ mol}$ $n(O_2) = \frac{m_2}{M(O_2)} = \frac{480}{32,0} = 15,0 \text{ mol}$

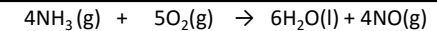
$$4NH_3(g) + 5O_2(g) \rightarrow 6H_2O(l) + 4NO(g)$$

El (mol)	20,0	15,0	0	0
En cours de trans (mol)	20,0 - 4x	15,0 - 5x	6.x	4.x
EF (mol)	20,0 - 4.x _m	15,0 - 5.x _m	6.x _m	4.x _m
	8,00	0	18,0	12,0

* $20,0 - 4.x_m = 0$ ~~$x_m = 5,00 \text{ mol}$~~

* $15,0 - 5.x_m = 0$ $x_m = 3,00 \text{ mol}$

2.d.



El (mol)	20,0	n'	0	0
En cours de trans (mol)	20,0 - 4x	n' - 5x	6.x	4.x
EF (mol)	20,0 - 4.x _m	n' - 5.x _m	6.x _m	4.x _m
	0	0	18,0	12,0

* $20,0 - 4.x_m = 0$ $x_m = 5,00 \text{ mol}$

* $n' - 5.x_m = 0$ $n' = 5.x_m = 25,0 \text{ mol}$

$m' = n' \times M = 25,0 \times 32,0 = 800 \text{ g}$

3. masse totale **initiale**: 340 + 380 = 820 g

masse totale **finale**:

$m = n \times M$

	n (mol)	M (g/mol)	m (g)
NH ₃	8,00	17,0	136
O ₂	0	32,0	0
H ₂ O	18,0	18,0	324
NO	12,0	30	360

Conclusion : Au cours d'une réaction la masse se conserve.

820 ← total à l'état **final**

Exercice 3:

a. $n(\text{Cl}^-) = C(\text{Cl}^-) \times V_1 = 1,0 \cdot 10^{-2} \times 1,00 \cdot 10^{-1} = 1,0 \cdot 10^{-3} \text{ mol}$

$n(\text{Ag}^+) = C(\text{Ag}^+) \times V_1 = 1,0 \cdot 10^{-2} \times 1,00 \cdot 10^{-1} = 1,0 \cdot 10^{-3} \text{ mol}$

b. et c.

	$\text{Ag}^+(\text{aq}) + \text{Cl}^-(\text{aq}) \rightarrow \text{AgCl}(\text{s})$		
El (mmol)	1,0	1,0	0
En cours de trans (mmol)	1,0 - x	1,0 - x	x
EF (mmol)	1,0 - x _m 0	1,0 - x _m 0	x _m 1,0

* $1,0 - x_m = 0$ $x_m = 1,0 \text{ mmol}$

* $1,0 - x_m = 0$ $x_m = 1,0 \text{ mmol}$

d.

$m(\text{AgCl}) = n \times M = 1,0 \cdot 10^{-3} \times 143,4 = \mathbf{0,14 \text{ g}}$

$M(\text{AgCl}) = 107,9 + 35,5 = 143,4 \text{ g/mol}$