

Lösungen Laufblatt Postenlauf „Stöchio II“

Posten	Lösung (a-d)	Gedanken / Tipps
1a	B	Aluminiumchlorid = AlCl_3 ; $c = n/V = m/M \cdot V$; $M = 133.33\text{g/mol} \Rightarrow c = 0.66\text{mol/L}$
12d	D	$c_1 \cdot V_1 = c_2 \cdot V_2$; $V_2 = 8\text{L}$ (mit weiteren 5L verdünnt) $\Rightarrow c_2 = 0.13\text{mol/L}$
7w	C	Molares Volumen $\Rightarrow n = 1\text{mol}$; $pV = nRT$; $T = 353.15^\circ\text{C}$, $p = 60000\text{Pa} \Rightarrow V = 0.0489\text{m}^3 \Rightarrow 48.9\text{L}$
17u	B	$\text{Zn} + 2\text{HCl} \Rightarrow \text{ZnCl}_2 + \text{H}_2$; $300\text{g Zn} = 4.59\text{mol} \Rightarrow 4.59\text{mol H}_2 \Rightarrow 4.59\text{mol} \cdot 22.4\text{L/mol} \Rightarrow 102.8\text{L}$
3i	A	22.4L
10g	D	$1\text{mol} = 22.4\text{L} \Rightarrow 1\text{L} = 1/22.4\text{mol} = 0.7603\text{g} \Rightarrow 1\text{mol} = 22.4 \cdot 0.7603\text{g} = 17\text{g} \Rightarrow$ molare Massen zusammenrechnen $\Rightarrow 17\text{g/mol} = \text{NH}_3$
8s	B	Natriumcarbonat = Na_2CO_3 ; $n = c \cdot V = 1.5\text{mol}$; $m = n \cdot M$; $M = 105.99\text{g/mol} \Rightarrow m = 158.98\text{g}$
4t	A	Kaliumsulfat = K_2SO_4 ; $c = n/V = m/M \cdot V$; $M = 174.259\text{g/mol} \Rightarrow c = 1.72\text{mol/L}$
14z	C	$c_1 \cdot V_1 = c_2 \cdot V_2$; $V_2 = 3.1\text{L}$ (mit weiteren 2.5L verdünnt) $\Rightarrow c_2 = 0.02\text{mol/L}$
2g	D	Molares Volumen $\Rightarrow n = 1\text{mol}$; $pV = nRT$; $T = 393.15^\circ\text{C}$, $p = 90000\text{Pa} \Rightarrow V = 0.0363\text{m}^3 \Rightarrow 36.3\text{L}$
13w	A	$2\text{H}_2(\text{g}) + \text{O}_2(\text{g}) \Rightarrow 2\text{H}_2\text{O}(\text{l}) \Rightarrow 100\text{g Wasser} = 5.55\text{mol}$; $n(\text{Sauerstoff}) = 1/2n(\text{Wasser}) \Rightarrow 2.78\text{mol} = 62.17\text{L}$
5j	B	$1\text{mol} = 22.4\text{L} \Rightarrow 1\text{L} = 1/22.4\text{mol} = 3.1652\text{g} \Rightarrow 1\text{mol} = 22.4 \cdot 3.1652\text{g} = 70.9\text{g} \Rightarrow$ molare Massen zusammenrechnen $\Rightarrow 70.9\text{g/mol} = \text{Cl}_2$
16c	B	Ammoniumnitrat = NH_4NO_3 ; $n = c \cdot V = 1.5\text{mol}$; $m = n \cdot M$; $M = 80.043\text{g/mol} \Rightarrow m = 120.06\text{g}$
17a	D	Bariumphosphid = Ba_3P_2 ; $c = n/V = m/M \cdot V$; $M = 473.94\text{g/mol} \Rightarrow c = 0.179\text{mol/L}$
9o	A	$c_1 \cdot V_1 = c_2 \cdot V_2$; $V_2 = 10.5\text{L}$ (mit weiteren 7L verdünnt) $\Rightarrow c_2 = 0.8\text{mol/L}$
19v	B	Molares Volumen $\Rightarrow n = 1\text{mol}$; $pV = nRT$; $T = 513.15^\circ\text{C}$, $p = 85000\text{Pa} \Rightarrow V = 0.0502\text{m}^3 \Rightarrow 50.2\text{L}$
15t	C	$2\text{C}(\text{s}) + \text{O}_2(\text{g}) \Rightarrow 2\text{CO}(\text{g})$; $1\text{kg C} = 83.26\text{mol} \Rightarrow n(\text{CO}) = 83.26\text{mol} \Rightarrow V = 1865\text{L}$
14b	A	Mangan(III)-hydrogencarbonat = $\text{Mn}(\text{HCO}_3)_3$; $n = c \cdot V = 3.75\text{mol}$; $m = n \cdot M$; $M = 237.98\text{g/mol} \Rightarrow m = 892.443\text{g}$
21r	D	Kupfer(II)-phosphat = $\text{Cu}_3(\text{PO}_4)_2$; $c = n/V = m/M \cdot V$; $M = 380.58\text{g/mol} \Rightarrow c = 0.168\text{mol/L}$
20q	B	$2\text{Pb}(\text{NO}_3)_2 \Rightarrow 2\text{PbO} + 4\text{NO}_2 + \text{O}_2$; $350\text{g Pb}(\text{NO}_3)_2 = 1.0567\text{mol} \Rightarrow n(\text{NO}_2) = 2.11\text{mol} \Rightarrow 47.26\text{mol}$