

## Lösungen Laufblatt Postenlauf „Stöchio I“

| Posten | Lösung (a-d) | Gedanken / Tipps   |
|--------|--------------|--|
| 1a     | B            | Aluminiumhydrogencarbonat = $\text{Al}(\text{HCO}_3)_3$ ; $n = m/M$ ; $M = 210.03\text{g/mol} \Rightarrow n = 1.638\text{mol}$   |
| 12d    | D            | $N = n \cdot N_A$ ; $N_A = 6.022 \cdot 10^{23}\text{mol}^{-1}$ ; $n = m/M$ ; $25\text{g NaCl} = 0.017\text{mol} \Rightarrow N = 2.57 \cdot 10^{23}$ Teilchen   |
| 7w     | C            | 1 Atom N = $14.007\text{u} = 2.337 \cdot 10^{-23}\text{g}$ ; 12 Atome = $2.79 \cdot 10^{-22}\text{g}$  |
| 17u    | B            | $6\text{NO} + 4\text{NH}_3 \Rightarrow 5\text{N}_2 + 6\text{H}_2\text{O} \Rightarrow$ Summe der Koeffizienten = $6+4+5+6 = 21$   |
| 3i     | A            | Massenverhältnis = $3 \cdot m(\text{Cu}) / 2 \cdot m(\text{P}) = 190.65 / 61.95 = 3.07 = \text{ca. } 3:1$  |
| 10g    | D            | Anzahlverhältnis = 1:2 (1x Ca zu 2x Cl)  |
| 8s     | B            | $\text{Ni}(\text{OH})_3$ ; $M = 109.71\text{g/mol}$ ; $m = n \cdot M = 191.99\text{g}$   |
| 4t     | A            | $4\text{Na} + \text{CO}_2 \Rightarrow 2\text{Na}_2\text{O} + \text{C}$ ; $200\text{g Natriumoxid} = 3.23\text{mol} \Rightarrow n(\text{Na}) = 6.46\text{mol} \Rightarrow m = 148.37\text{g}$             |
| 14z    | C            | $\text{Fe}(\text{NO}_3)_2$ ; $n = m/M$ ; $M = 179.858\text{g/mol} \Rightarrow n = 0.097\text{mol}$   |
| 2g     | D            | $N = n \cdot N_A$ ; $N_A = 6.022 \cdot 10^{23}\text{mol}^{-1}$ ; $n = m/M$ ; $M = 289.89\text{g/mol}$ ; $188\text{g Mangan(III)-carbonat} = 0.648\text{mol} \Rightarrow N = 3.91 \cdot 10^{23}$ Teilchen |
| 13w    | A            | 1 Atom Rh = $102.91\text{u} = 1.709 \cdot 10^{-22}\text{g}$ ; 35 Atome = $5.98 \cdot 10^{-21}\text{g}$   |
| 5j     | B            | $3\text{Mg} + \text{KClO}_3 \Rightarrow 3\text{MgO} + \text{KCl} \Rightarrow$ Summe der Koeffizienten = $3+1+3+1 = 8$  |
| 16c    | B            | Massenverhältnis = $1 \cdot m(\text{Ba}) / 2 \cdot m(\text{F}) = 137.33 / 37.976 = 3.62 = \text{ca. } 3.6 : 1$   |
| 17a    | D            | Anzahlverhältnis = 2:1 (2xMg zu 1xC)   |
| 9o     | A            | $\text{AuI}_2$ ; $m = n \cdot M$ ; $M = 450.77\text{g/mol} \Rightarrow m = 2353.02\text{g}$  |
| 19v    | B            | $\text{CH}_4\text{O} + 2\text{O}_2 \Rightarrow \text{CO}_2 + 2\text{H}_2\text{O}$ ; $100\text{g Methanol} = 3.12\text{mol} \Rightarrow n(\text{CO}_2) = 3.12\text{mol} \Rightarrow m = 137.35\text{g}$   |
| 15t    | C            | $\text{W}_3\text{N}_4$ ; $n = m/M$ ; $M = 607.548\text{g/mol} \Rightarrow n = 0.036\text{mol}$   |
| 14b    | A            | $2\text{HCl} + \text{CaCO}_3 \Rightarrow \text{CaCl}_2 + \text{CO}_2 + \text{H}_2\text{O} \Rightarrow$ Summe der Koeffizienten = $2+1+1+1+1 = 6$   |
| 21r    | D            | $\text{TiO}$ ; $m = n \cdot M$ ; $M = 63.866\text{g/mol} \Rightarrow m = 21.08\text{g}$  |
| 20q    | B            | $2\text{K} + 2\text{H}_2\text{O} \Rightarrow 2\text{KOH} + \text{H}_2$ ; $450\text{g Kalium} = 11.509\text{mol} \Rightarrow n(\text{H}_2) = 5.75\text{mol} \Rightarrow m = 11.567\text{g}$               |