



BALANCE THE GIVEN CHEMICAL EQUATIONS

Worksheet - 30

1. $\underline{\quad}$ $\text{KIO}_3 + 10 \text{NaHSO}_3 = 2 \text{I}_2 + 5 \text{Na}_2\text{SO}_4 + \underline{\quad} \text{H}_2\text{SO}_4 + 2 \text{K}_2\text{SO}_4 + 2 \text{H}_2\text{O}$
2. $\underline{\quad} \text{Na}_2\text{SO}_3 + 2 \text{KLO}_3 + \text{H}_2\text{SO}_4 = \text{L}_2 + \underline{\quad} \text{Na}_2\text{SO}_4 + \text{K}_2\text{SO}_4 + \text{H}_2\text{O}$
3. $\underline{\quad} \text{Co}(\text{NO}_3)_2 + 26 \text{NH}_3 + 10 (\text{NH}_4)_2\text{CO}_3 + \text{H}_2\text{O}_2 = 10 [\text{Co}(\text{NH}_3)_4\text{CO}_3]\text{NO}_3 + \underline{\quad} \text{NH}_4\text{NO}_3\text{OH}$
4. $\text{MnO}_4 + \underline{\quad} \text{NaI} + 4 \text{H}_2\text{SO}_4 = 3 \text{Na}_2\text{SO}_4 + \text{MnSO}_4 + 4 \text{H}_2\text{O} + \underline{\quad} \text{I}_2$
5. $\text{ZnCl}_2 + \underline{\quad} \text{KOH} = \underline{\quad} \text{KCl} + \text{Zn}(\text{OH})_2$
6. $\text{B} + \underline{\quad} \text{HNO}_3 + 4 \text{HF} = \text{HBF}_4 + \underline{\quad} \text{NO}_2 + 3 \text{H}_2\text{O}$
7. $\text{Pb}(\text{NO}_3)_2(\text{aq}) + \underline{\quad} \text{NaCl}(\text{aq}) = \text{PbCl}_2(\text{s}) + \underline{\quad} \text{NaNO}_3(\text{aq})$
8. $4 \text{CaO} + \underline{\quad} \text{NH}_3\text{Cl} = \text{NH}_4 + 4 \text{H}_2\text{O} + \underline{\quad} \text{CaCl} + 3 \text{N}$
9. $2 \text{NH}_3 + \underline{\quad} \text{H}_2\text{O} + \text{Cu}(\text{NO}_3)_2 = \underline{\quad} \text{NH}_4\text{NO}_3 + \text{Cu}(\text{OH})_2$
10. $\underline{\quad} \text{P} + 3 \text{KOH} + 3 \text{H}_2\text{O} = \underline{\quad} \text{KH}_2\text{PO}_2 + \text{PH}_3$
11. $20 \text{KMNO}_4 + \underline{\quad} \text{NANO}_2 + \text{H}_{20} = \underline{\quad} \text{MNO}_2 + 20 \text{NANO}_3 + 20 \text{KOH}$
12. $\underline{\quad} \text{Sm}_{800}\text{Zr}_{587}\text{P}_{1441}\text{O}_{5843} = 347 \text{P}_4 + 4672 \text{ZrO}_2 + 5876 \text{SmZr}_4\text{P}_6\text{O}_{24} + 32524 \text{SmPO}_4$
13. $(\text{NH}_4)_3\text{PO}_4 = \text{H}_3\text{PO}_4 + \underline{\quad} \text{NH}_3$
14. $\underline{\quad} \text{HCl} + \text{MnO}_2 = \text{MnCl}_2 + \underline{\quad} \text{H}_2\text{O} + \text{Cl}_2$
15. $\text{SiCl}_4 + \underline{\quad} \text{H}_2\text{O} = \text{H}_4\text{SiO}_4 + 4 \text{HCl}$
16. $\text{Cu} + \underline{\quad} \text{H}_2\text{SO}_4 = \text{CuSO}_4 + \text{SO}_2 + 2 \text{H}_2\text{O}$
17. $4 \text{LiNO}_3 = \underline{\quad} \text{Li}_2\text{O} + 4 \text{NO}_2 + \text{O}_2$
18. $\text{SiCl}_4 + 2 \text{H}_2\text{O} = \text{SiO}_2 + \underline{\quad} \text{HCl}$
19. $4 \text{Ag} + \text{NO}_3 + 4 \text{H}^{(+)} = \underline{\quad} \text{Ag}^{(+)} + \text{NO} + 2 \text{H}_2\text{O}$
20. $3 \text{LiClO}_4 + \underline{\quad} \text{Cr} + 24 \text{HCl} = 8 \text{CrCl}_3 + \underline{\quad} \text{LiCl} + 12 \text{H}_2\text{O}$



ANSWERS

- $4 \text{KIO}_3 + 10 \text{NaHSO}_3 = 2 \text{I}_2 + 5 \text{Na}_2\text{SO}_4 + 3 \text{H}_2\text{SO}_4 + 2 \text{K}_2\text{SO}_4 + 2 \text{H}_2\text{O}$
- $5 \text{Na}_2\text{SO}_3 + 2 \text{KIO}_3 + \text{H}_2\text{SO}_4 = \text{I}_2 + 5 \text{Na}_2\text{SO}_4 + \text{K}_2\text{SO}_4 + \text{H}_2\text{O}$
- $10 \text{Co}(\text{NO}_3)_2 + 26 \text{NH}_3 + 10 (\text{NH}_4)_2\text{CO}_3 + \text{H}_2\text{O}_2 = 10 [\text{Co}(\text{NH}_3)_4\text{CO}_3]\text{NO}_3 + 8 \text{NH}_4\text{NO}_3\text{OH}$
- $\text{MnO}_4 + 6 \text{NaI} + 4 \text{H}_2\text{SO}_4 = 3 \text{Na}_2\text{SO}_4 + \text{MnSO}_4 + 4 \text{H}_2\text{O} + 3 \text{I}_2$
- $\text{ZnCl}_2 + 2 \text{KOH} = 2 \text{KCl} + \text{Zn}(\text{OH})_2$
- $\text{B} + 3 \text{HNO}_3 + 4 \text{HF} = \text{HBF}_4 + 3 \text{NO}_2 + 3 \text{H}_2\text{O}$
- $\text{Pb}(\text{NO}_3)_2(\text{aq}) + 2 \text{NaCl}(\text{aq}) = \text{PbCl}_2(\text{s}) + 2 \text{NaNO}_3(\text{aq})$
- $4 \text{CaO} + 4 \text{NH}_3\text{Cl} = \text{NH}_4 + 4 \text{H}_2\text{O} + 4 \text{CaCl} + 3 \text{N}$
- $2 \text{NH}_3 + 2 \text{H}_2\text{O} + \text{Cu}(\text{NO}_3)_2 = 2 \text{NH}_4\text{NO}_3 + \text{Cu}(\text{OH})_2$
- $4 \text{P} + 3 \text{KOH} + 3 \text{H}_2\text{O} = 3 \text{KH}_2\text{PO}_2 + \text{PH}_3$
- $20 \text{KMNO}_4 + 20 \text{NANO}_2 + \text{H}_2\text{O} = 20 \text{MNO}_2 + 20 \text{NANO}_3 + 20 \text{KOH}$
- $48 \text{Sm}_{800}\text{Zr}_{587}\text{P}_{1441}\text{O}_{5843} = 347 \text{P}_4 + 4672 \text{ZrO}_2 + 5876 \text{SmZr}_4\text{P}_6\text{O}_{24} + 32524 \text{SmPO}_4$
- $(\text{NH}_4)_3\text{PO}_4 = \text{H}_3\text{PO}_4 + 3 \text{NH}_3$
- $4 \text{HCl} + \text{MnO}_2 = \text{MnCl}_2 + 2 \text{H}_2\text{O} + \text{Cl}_2$
- $\text{SiCl}_4 + 4 \text{H}_2\text{O} = \text{H}_4\text{SiO}_4 + 4 \text{HCl}$
- $\text{Cu} + 2 \text{H}_2\text{SO}_4 = \text{CuSO}_4 + \text{SO}_2 + 2 \text{H}_2\text{O}$
- $4 \text{LiNO}_3 = 2 \text{Li}_2\text{O} + 4 \text{NO}_2 + \text{O}_2$
- $\text{SiCl}_4 + 2 \text{H}_2\text{O} = \text{SiO}_2 + 4 \text{HCl}$
- $4 \text{Ag} + \text{NO}_3 + 4 \text{H}^{(+)} = 4 \text{Ag}^{(+)} + \text{NO} + 2 \text{H}_2\text{O}$
- $3 \text{LiClO}_4 + 8 \text{Cr} + 24 \text{HCl} = 8 \text{CrCl}_3 + 3 \text{LiCl} + 12 \text{H}_2\text{O}$



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