IntoChemistry | Writing Ionic Compound Formulas

INSTRUCTOR ANSWER KEY

Directions: For each named compound, write a neutral ionic formula in the smallest whole-number ion ratio. Use parentheses for repeated polyatomic ions.

No atomic masses needed. Show ion-charge reasoning for each answer.

1. sodium chloride

   Answer: $NaCl$

   Charge check: 1 Na^{1+} = +1; 1 Cl^{-} = −1; total = 0.

2. calcium chloride

   Answer: $CaCl_2$

   Charge check: 1 Ca^{2+} = +2; 2 Cl^{-} = −2; total = 0.

3. aluminum oxide

   Answer: Al_2O_3

   Charge check: 2 Al^{3+} = +6; 3 O^{2-} = −6; total = 0.

4. magnesium nitride

   Answer: Mg_3N_2

   Charge check: 3 Mg^{2+} = +6; 2 N^{3-} = −6; total = 0.

5. potassium sulfide

   Answer: K_2S

   Charge check: 2 K^{1+} = +2; 1 S^{2-} = −2; total = 0.

6. lithium oxide

   Answer: Li_2O

   Charge check: 2 Li^{1+} = +2; 1 O^{2-} = −2; total = 0.

7. sodium carbonate

   Answer: Na_2CO_3

   Charge check: 2 Na^{1+} = +2; 1 CO_3^{2-} = −2; total = 0.

8. calcium nitrate

   Answer: $Ca(NO_3)_2$

   Charge check: 1 Ca^{2+} = +2; 2 NO_3^{-} = −2; total = 0.

9. ammonium sulfate

Answer: $(NH_4)_2SO_4$

Charge check: 2 NH_4^{1+} = +2; 1 SO_4^{2-} = −2; total = 0.

10. barium hydroxide

Answer: $Ba(OH)_2$

Charge check: 1 Ba^{2+} = +2; 2 OH^- = −2; total = 0.

11. ammonium phosphate

Answer: $(NH_4)_3PO_4$

Charge check: 3 NH_4^{1+} = +3; 1 PO_4^{3-} = −3; total = 0.

12. potassium permanganate

Answer: $KMnO_4$

Charge check: 1 K^{1+} = +1; 1 MnO_4^- = −1; total = 0.

13. iron(III) oxide

Answer: Fe_2O_3

Charge check: 2 Fe^{3+} = +6; 3 O^{2-} = −6; total = 0.

14. iron(II) chloride

Answer: $FeCl_2$

Charge check: 1 Fe^{2+} = +2; 2 Cl^- = −2; total = 0.

15. copper(II) sulfate

Answer: $CuSO_4$

Charge check: 1 Cu^{2+} = +2; 1 SO_4^{2-} = −2; total = 0.

16. zinc phosphate

Answer: $Zn_3(PO_4)_2$

Charge check: 3 Zn^{2+} = +6; 2 PO_4^{3-} = −6; total = 0.

17. chromium(III) chloride

Answer: $CrCl_3$

Charge check: 1 Cr^{3+} = +3; 3 Cl^- = −3; total = 0.

18. lead(II) nitrate

Answer: $Pb(NO_3)_2$

Charge check: 1 Pb^{2+} = +2; 2 NO_3^- = −2; total = 0.