

AP Chemistry Summer School: Writing Ionic & Covalent Formulas

Name _____

Please determine whether each compound is ionic or covalent. Then write the formula for the compound.

- | | | | |
|-----|---------------------------|-------|-------|
| 1) | Carbon dioxide | _____ | _____ |
| 2) | Potassium chloride | _____ | _____ |
| 3) | Tetraphosphorus decoxide | _____ | _____ |
| 4) | Nitrogen monoxide | _____ | _____ |
| 5) | Aluminum fluoride | _____ | _____ |
| 6) | Calcium nitride | _____ | _____ |
| 7) | Sulfur trioxide | _____ | _____ |
| 8) | Hydrogen phosphate | _____ | _____ |
| 9) | Aluminum hydroxide | _____ | _____ |
| 10) | Magnesium phosphate | _____ | _____ |
| 11) | Iron (II) oxide | _____ | _____ |
| 12) | Dinitrogen pentoxide | _____ | _____ |
| 13) | Trihydrogen arsenide | _____ | _____ |
| 14) | Tetraphosphorus heptoxide | _____ | _____ |
| 15) | Iron (II) hydroxide | _____ | _____ |
| 16) | Potassium sulfate | _____ | _____ |
| 17) | Potassium nitride | _____ | _____ |
| 18) | Nitrogen pentachloride | _____ | _____ |
| 19) | Iron (II) phosphate | _____ | _____ |
| 20) | Sodium hydroxide | _____ | _____ |
| 21) | Arsenic triiodide | _____ | _____ |
| 22) | Copper (III) oxide | _____ | _____ |
| 23) | Sulfur hexabromide | _____ | _____ |

- | | | | |
|-----|---------------------------|-------|-------|
| 24) | Chromium (I) phosphate | _____ | _____ |
| 25) | Chromium (II) perchlorate | _____ | _____ |
| 26) | Chromium (III) acetate | _____ | _____ |
| 27) | Chromium (IV) carbonate | _____ | _____ |
| 28) | Chromium (V) nitride | _____ | _____ |
| 29) | Chromium (VI) cyanide | _____ | _____ |
| 30) | Oxygen dichloride | _____ | _____ |
| 31) | Aluminum dichromate | _____ | _____ |
| 32) | Zinc (III) bicarbonate | _____ | _____ |
| 33) | Sodium carbonate | _____ | _____ |
| 34) | Potassium phosphite | _____ | _____ |
| 35) | Ammonium sulfide | _____ | _____ |
| 36) | Ammonium sulfate | _____ | _____ |
| 37) | Ammonium sulfite | _____ | _____ |
| 38) | Ammonium phosphide | _____ | _____ |
| 39) | Ammonium phosphate | _____ | _____ |
| 40) | Ammonium hypochlorite | _____ | _____ |
| 41) | Nickel (III) perchlorate | _____ | _____ |
| 42) | Aluminum oxalate | _____ | _____ |
| 43) | Calcium formate | _____ | _____ |
| 44) | Calcium phosphite | _____ | _____ |
| 45) | Calcium bromide | _____ | _____ |
| 46) | Boron trichloride | _____ | _____ |
| 47) | Silicon tetrabromide | _____ | _____ |
| 48) | Gold (I) oxalate | _____ | _____ |
| 49) | Silver (I) phosphate | _____ | _____ |

Please identify each one as ionic formula units or covalent molecules. Then name the compound.

- | | | | |
|-----|---|-------|----------------|
| 1) | SO ₂ | _____ | _____ |
| 2) | (NH ₄) ₃ P | _____ | _____ |
| 3) | Ca ₃ N ₂ | _____ | _____ |
| 4) | Al(NO ₃) ₃ | _____ | _____ |
| 5) | NiO | _____ | _____ |
| 6) | Cr ₂ (SO ₄) | _____ | _____ |
| 7) | N ₂ O ₅ | _____ | _____ |
| 8) | Zn(OH) ₅ | _____ | _____ |
| 9) | HF | _____ | _____ |
| 10) | Sn ₃ (PO ₄) ₄ | _____ | _____ |
| 11) | MnS ₂ | _____ | _____ |
| 12) | Na(CN) | _____ | _____ |
| 13) | AlBr ₃ | _____ | _____ |
| 14) | Cu ₂ O ₃ | _____ | _____ |
| 15) | PI ₅ | _____ | _____ |
| 16) | (NH ₄) ₂ (Cr ₂ O ₇) | _____ | _____ |
| 17) | Co(CrO ₄) ₂ | _____ | _____ |
| 18) | H(OH) | _____ | _____ or _____ |
| 19) | K ₃ As | _____ | _____ |
| 20) | Ag(NO ₃) | _____ | _____ |
| 21) | AuP | _____ | _____ |
| 22) | Mg(ClO ₄) ₂ | _____ | _____ |
| 23) | H ₃ N | _____ | _____ |
| 24) | BaSe | _____ | _____ |

- | | | | |
|-----|--|-------|-------|
| 25) | OF_2 | _____ | _____ |
| 26) | $\text{Sr}(\text{ClO}_3)_2$ | _____ | _____ |
| 27) | Li_3As | _____ | _____ |
| 28) | $\text{V}(\text{PO}_3)$ | _____ | _____ |
| 29) | $\text{Ca}(\text{C}_2\text{O}_4)$ | _____ | _____ |
| 30) | P_4O_7 | _____ | _____ |
| 31) | $(\text{NH}_4)\text{Br}$ | _____ | _____ |
| 32) | CO_2 | _____ | _____ |
| 33) | CO | _____ | _____ |
| 34) | $\text{Fe}_2(\text{Cr}_2\text{O}_7)_5$ | _____ | _____ |
| 35) | $\text{Mn}(\text{PO}_4)_2$ | _____ | _____ |
| 36) | $\text{Ga}_2(\text{CO}_3)_3$ | _____ | _____ |
| 37) | $\text{Co}_2(\text{Cr}_2\text{O}_7)$ | _____ | _____ |
| 38) | NCl_3 | _____ | _____ |
| 39) | CBr_4 | _____ | _____ |
| 40) | $\text{Na}_2(\text{CO}_3)$ | _____ | _____ |

Please determine whether each compound is ionic or covalent. Then write the formula for the compound.

1)	Carbon dioxide	Covalent mc	CO ₂
2)	Potassium chloride	Ionic fu	KCl
3)	Tetraphosphorus decoxide	Covalent mc	P ₄ O ₁₀
4)	Nitrogen monoxide	Covalent mc	NO
5)	Aluminum fluoride	Ionic fu	AlF ₃
6)	Calcium nitride	Ionic fu	Ca ₃ N ₂
7)	Sulfur trioxide	Covalent mc	SO ₃
8)	Hydrogen phosphate	Ionic fu	H ₃ PO ₄
9)	Aluminum hydroxide	Ionic fu	Al(OH) ₃
10)	Magnesium phosphate	Ionic fu	Mg ₃ (PO ₄) ₂
11)	Iron (II) oxide	Ionic fu	FeO
12)	Dinitrogen pentoxide	Covalent mc	N ₂ O ₅
13)	Trihydrogen monarsenide	Covalent mc	H ₃ As
14)	Tetraphosphorus heptoxide	Covalent mc	P ₄ O ₇
15)	Iron (II) hydroxide	Ionic fu	Fe(OH) ₂
16)	Potassium sulfate	Ionic fu	K ₂ SO ₄
17)	Potassium nitride	Ionic fu	K ₃ N
18)	Nitrogen pentachloride	Covalent mc	NCl ₅
19)	Iron (II) phosphate	Ionic fu	Fe ₃ (PO ₄) ₂
20)	Sodium hydroxide	Ionic fu	NaOH
21)	Arsenic triiodide	Covalent mc	AsI ₃
22)	Copper (III) oxide	Ionic fu	Cu ₂ O ₃
23)	Sulfur hexabromide	Covalent mc	SBr ₆

24)	Chromium (I) phosphate	Ionic fu	Cr_3PO_4
25)	Chromium (II) perchlorate	Ionic fu	$\text{Cr}(\text{ClO}_4)_2$
26)	Chromium (III) acetate	Ionic fu	$\text{Cr}(\text{C}_2\text{H}_3\text{O}_2)_3$
27)	Chromium (IV) carbonate	Ionic fu	$\text{Cr}(\text{CO}_3)_2$
28)	Chromium (V) nitride	Ionic fu	Cr_3N_5
29)	Chromium (VI) cyanide	Ionic fu	$\text{Cr}(\text{CN})_6$
30)	Oxygen dichloride	Covalent mc	OCl_2
31)	Aluminum dichromate	Ionic fu	$\text{Al}_2(\text{Cr}_2\text{O}_7)_3$
32)	Zinc (III) bicarbonate	Ionic fu	$\text{Zn}(\text{HCO}_3)_3$
33)	Sodium carbonate	Ionic fu	Na_2CO_3
34)	Potassium phosphite	Ionic fu	K_3PO_3
35)	Ammonium sulfide	Ionic fu	$(\text{NH}_4)_2\text{S}$
36)	Ammonium sulfate	Ionic fu	$(\text{NH}_4)_2\text{SO}_4$
37)	Ammonium sulfite	Ionic fu	$(\text{NH}_4)_2\text{SO}_3$
38)	Ammonium phosphide	Ionic fu	$(\text{NH}_4)_3\text{P}$
39)	Ammonium phosphate	Ionic fu	$(\text{NH}_4)_3\text{PO}_4$
40)	Ammonium hypochlorite	Ionic fu	NH_4ClO
41)	Nickel (III) perchlorate	Ionic fu	$\text{Ni}(\text{ClO}_4)_3$
42)	Aluminum oxalate	Ionic fu	$\text{Al}_2(\text{C}_2\text{O}_4)_3$
43)	Calcium formate	Ionic fu	$\text{Ca}(\text{HCOO})_2$
44)	Calcium phosphite	Ionic fu	$\text{Ca}_3(\text{PO}_3)_2$
45)	Calcium bromide	Ionic fu	CaBr_2
46)	Boron trichloride	Covalent mc	BCl_3
47)	Silicon tetrabromide	Covalent mc	SiBr_4
48)	Gold (I) oxalate	Ionic fu	$\text{Au}_2\text{C}_2\text{O}_4$
49)	Silver (I) phosphate	Ionic fu	Ag_3PO_4

Please identify each one as ionic formula units or covalent molecules. Then name the compound.

- 1) SO_2 Covalent mc sulfur dioxide
- 2) $(\text{NH}_4)_3\text{P}$ Ionic fu ammonium phosphide
- 3) Ca_3N_2 Ionic fu calcium nitride
- 4) $\text{Al}(\text{NO}_3)_3$ Ionic fu aluminum nitrate
- 5) NiO Ionic fu nickel (II) oxide
- 6) $\text{Cr}_2(\text{SO}_4)$ Ionic fu chromium (I) sulfate
- 7) N_2O_5 Covalent mc dinitrogen pentoxide
- 8) $\text{Zn}(\text{OH})_5$ Ionic fu zinc (V) hydroxide
- 9) HF Covalent mc hydrogen monofluoride
- 10) $\text{Sn}_3(\text{PO}_4)_4$ Ionic fu tin phosphate
- 11) MnS_2 Ionic fu manganese (IV) sulfide
- 12) $\text{Na}(\text{CN})$ Ionic fu sodium cyanide
- 13) AlBr_3 Ionic fu aluminum bromide
- 14) Cu_2O_3 Ionic fu copper (III) oxide
- 15) PI_5 Covalent mc phosphorus pentiodide
- 16) $(\text{NH}_4)_2(\text{Cr}_2\text{O}_7)$ Ionic fu ammonium dichromate
- 17) $\text{Co}(\text{CrO}_4)_2$ Ionic fu cobalt (IV) chromate
- 18) $\text{H}(\text{OH})$ Covalent mc hydrogen hydroxide or water
- 19) K_3As Ionic fu potassium arsenide
- 20) $\text{Ag}(\text{NO}_3)$ Ionic fu silver (I) nitrate
- 21) AuP Ionic fu gold (III) phosphide
- 22) $\text{Mg}(\text{ClO}_4)_2$ Ionic fu magnesium perchlorate
- 23) H_3N Covalent mc trihydrogen mononitride
- 24) BaSe Ionic fu barium selenide

25)	OF_2	Covalent mc	oxygen difluoride
26)	$\text{Sr}(\text{ClO}_3)_2$	Ionic fu	strontium chlorate
27)	Li_3As	Ionic fu	lithium arsenide
28)	$\text{V}(\text{PO}_3)$	Ionic fu	vanadium (III) phosphite
29)	$\text{Ca}(\text{C}_2\text{O}_4)$	Ionic fu	calcium oxalate
30)	P_4O_7	Covalent mc	tetraphosphorus heptoxide
31)	$(\text{NH}_4)\text{Br}$	Ionic fu	ammonium bromide
32)	CO_2	Covalent mc	carbon dioxide
33)	CO	Covalent mc	carbon monoxide
34)	$\text{Fe}_2(\text{Cr}_2\text{O}_7)_5$	Ionic fu	iron (V) dichromate
35)	$\text{Mn}(\text{PO}_4)_2$	Ionic fu	manganese (VI) phosphate
36)	$\text{Ga}_2(\text{CO}_3)_3$	Ionic fu	gallium carbonate
37)	$\text{Co}_2(\text{Cr}_2\text{O}_7)$	Ionic fu	cobalt (I) dichromate
39)	CBr_4	Covalent mc	carbon tetrabromide
38)	NCl_3	Covalent mc	nitrogen trichloride
40)	$\text{Na}_2(\text{CO}_3)$	Ionic fu	sodium carbonate