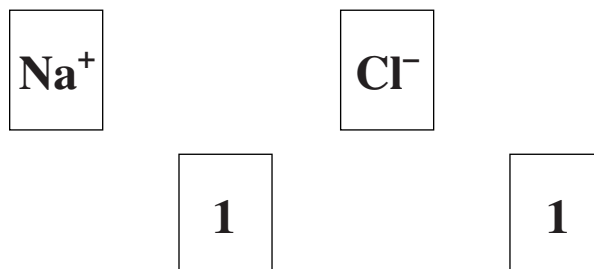


# Chemdeck Card Games Instructions

- The Chemdeck consists of three types of cards: *cations*, *anions*, and the *numbers* “1,” “2,” and “3” to be used as *subscripts*.
- The object of all of the games is to form a compound. To form a compound, four (4) cards are needed—a *cation*, an *anion*, and *two* (2) *numbers*. A compound in your hand of cards should look like this:



*Note:* Even though the subscripts are ones and are not typically shown when a +1 cation and -1 anion are combined, the cards with a “1” on them must be present.

- Games that can be played with the Chemdeck are:
  - Seven-card draw “poker”**—Each player is dealt seven cards. A player can discard four cards from his/her hand and draw up to four cards from the Chemdeck pile to make a compound. Each player can draw *only one time*. The winning hand is the correct compound formula with the *highest formula mass*, so be sure to have a periodic table with you. On the Record Sheet, fill in the following information:
    - The compound’s formula (including charges on the ions);
    - The compound’s name;
    - The compound’s molar mass;
    - The compound’s solubility;
    - The signatures of your opponents.

When all games have been played, turn in the sheet to your instructor.

*b. Five-card draw “poker”*—Same rules as for seven-card draw “poker” *except* only five cards are dealt *and* only three cards can be discarded and replaced by drawing from the Chemdeck pile. Information to be turned in to the instructor is the same as that listed in 3*a*.

*c. Gin*—Each player is dealt twelve cards from the Chemdeck. The object of the game is to form *three compounds*. The Chemdeck cards not dealt to players make a supply pile to be placed in the center of the table. The top card is turned face up. The player to the dealer’s left begins play. A player discards one card and may draw as a replacement card the face-up card or he/she may draw from the supply pile. Players may lay down each compound as they form it, or they may hold all compounds and declare “gin” when they have completed all three compounds in their hand. Information to be turned in to the instructor is the same as that listed in 3*a*.

# Chemdeck Record Sheet

## Game #1

Opponent's Score and Signature

Compound Formula \_\_\_\_\_

\_\_\_\_\_

Compound's Name \_\_\_\_\_

\_\_\_\_\_

Compound's Molar Mass \_\_\_\_\_

\_\_\_\_\_

Compound's Solubility \_\_\_\_\_

\_\_\_\_\_

## Game #2

Opponent's Score and Signature

Compound Formula \_\_\_\_\_

\_\_\_\_\_

Compound's Name \_\_\_\_\_

\_\_\_\_\_

Compound's Molar Mass \_\_\_\_\_

\_\_\_\_\_

Compound's Solubility \_\_\_\_\_

\_\_\_\_\_

## Game #3

Opponent's Score and Signature

Compound Formula \_\_\_\_\_

\_\_\_\_\_

Compound's Name \_\_\_\_\_

\_\_\_\_\_

Compound's Molar Mass \_\_\_\_\_

\_\_\_\_\_

Compound's Solubility \_\_\_\_\_

\_\_\_\_\_

## Game #4

Opponent's Score and Signature

Compound Formula \_\_\_\_\_

\_\_\_\_\_

Compound's Name \_\_\_\_\_

\_\_\_\_\_

Compound's Molar Mass \_\_\_\_\_

\_\_\_\_\_

Compound's Solubility \_\_\_\_\_

\_\_\_\_\_

# Flinn Scientific Periodic Table of the Elements

		IA	IIA	IIIB	IVB	VB	VIB	VIIIB	IB	IIB	IIIA	IVA	VA	VIA	VIIA	VIIIA
1	<b>H</b> Hydrogen 1.008															2 <b>He</b> Helium 4.005
2	<b>Li</b> Lithium 6.94	<b>Be</b> Beryllium 9.01														10 <b>Ne</b> Neon 20.18
3	<b>Na</b> Sodium 22.99	<b>Mg</b> Magnesium 24.31														18 <b>Ar</b> Argon 39.95
4	<b>K</b> Potassium 39.10	<b>Ca</b> Calcium 40.08	<b>Sc</b> Scandium 44.96	<b>Ti</b> Titanium 47.87	<b>V</b> Vanadium 50.94	<b>Cr</b> Chromium 52.00	<b>Mn</b> Manganese 54.94	<b>Fe</b> Iron 55.85	<b>Cu</b> Copper 63.55	<b>Zn</b> Zinc 65.38	<b>Ga</b> Gallium 69.72	<b>Ge</b> Germanium 72.64	<b>As</b> Arsenic 74.92	<b>Se</b> Selenium 78.96	<b>Br</b> Bromine 79.90	36 <b>Kr</b> Krypton 83.80
5	<b>Rb</b> Rubidium 85.47	<b>Sr</b> Strontium 87.62	<b>Y</b> Yttrium 88.91	<b>Zr</b> Zirconium 91.22	<b>Nb</b> Niobium 92.91	<b>Mo</b> Molybdenum 95.96	<b>Tc</b> Technetium (98)	<b>Ru</b> Ruthenium 101.1	<b>Rh</b> Rhodium 102.9	<b>Pd</b> Palladium 106.4	<b>In</b> Indium 114.8	<b>Sn</b> Tin 118.7	<b>Sb</b> Antimony 121.8	<b>Te</b> Tellurium 127.6	<b>I</b> Iodine 126.9	54 <b>Xe</b> Xenon 131.3
6	<b>Cs</b> Cesium 132.9	<b>Ba</b> Barium 137.3	<b>La-Lu</b> ★	<b>Hf</b> Hafnium 178.5	<b>Ta</b> Tantalum 180.9	<b>W</b> Tungsten 183.8	<b>Re</b> Rhenium 186.2	<b>Os</b> Osmium 190.2	<b>Ir</b> Iridium 192.2	<b>Pt</b> Platinum 195.1	<b>Au</b> Gold 197.0	<b>Pb</b> Lead 207.2	<b>Bi</b> Bismuth 209.0	<b>Po</b> Polonium (209)	<b>At</b> Astatine (210)	86 <b>Rn</b> Radon (222)
7	<b>Fr</b> Francium (223)	<b>Ra</b> Radium (226)	<b>Ac-Lr</b> #	<b>Rf</b> Rutherfordium (267)	<b>Db</b> Dubnium (268)	<b>Sg</b> Seaborgium (271)	<b>Bh</b> Bohrium (272)	<b>Hs</b> Hassium (270)	<b>Rg</b> Roentgenium (280)	<b>Cn</b> Copernicium (285)	<b>Uut</b> Ununtrium (285)	<b>Uuq</b> Ununquadium (289)	<b>Uup</b> Ununpentium (288)	<b>Uuh</b> Ununhexium (293)	<b>Uus</b> Ununseptium (294)	118 <b>Uuo</b> Ununoctium (294)

★	57 <b>La</b> Lanthanum 138.9	58 <b>Ce</b> Cerium 140.1	59 <b>Pr</b> Praseodymium 140.9	60 <b>Nd</b> Neodymium 144.2	61 <b>Pm</b> Promethium 146.9	62 <b>Sm</b> Samarium 150.4	63 <b>Eu</b> Europium 152.0	64 <b>Gd</b> Gadolinium 157.3	65 <b>Tb</b> Terbium 158.9	66 <b>Dy</b> Dysprosium 162.5	67 <b>Ho</b> Holmium 164.9	68 <b>Er</b> Erbium 167.3	69 <b>Tm</b> Thulium 168.9	70 <b>Yb</b> Ytterbium 173.0	71 <b>Lu</b> Lutetium 175.0
#	89 <b>Ac</b> Actinium 227.0	90 <b>Th</b> Thorium 232.0	91 <b>Pa</b> Protactinium 231.0	92 <b>U</b> Uranium 238.0	93 <b>Np</b> Neptunium 237.0	94 <b>Pu</b> Plutonium 244.1	95 <b>Am</b> Americium 243.1	96 <b>Cm</b> Curium 247.1	97 <b>Bk</b> Berkelium 247.1	98 <b>Cf</b> Californium 251.1	99 <b>Es</b> Einsteinium 252.1	100 <b>Fm</b> Fermium 257.1	101 <b>Md</b> Mendelevium 258.1	102 <b>No</b> Nobelium 259.1	103 <b>Lr</b> Lawrencium 260.1

Atomic Number — 3

Symbol — **Li**

Name — Lithium

Molar Mass — 6.94

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# Solubility Rules Table

1. All compounds containing Group 1 cations and those compounds containing the ammonium,  $\text{NH}_4^+$ , cation are soluble.
2. Most compounds containing chloride anion, bromide anion, and iodide ion are soluble. Exceptions are those compounds containing either the silver cation,  $\text{Ag}^+$ , the lead(II) cation,  $\text{Pb}^{2+}$ , or the mercury(I) cation,  $\text{Hg}_2^{2+}$ .
3. Compounds containing any of the following anions are soluble: nitrate,  $\text{NO}_3^-$ , perchlorate,  $\text{ClO}_4^-$ , chlorate,  $\text{ClO}_3^-$ , and acetate,  $\text{CH}_3\text{COO}^-$ . [Exception, Mercury(I) cation,  $\text{Hg}_2^{2+}$ ]
4. Most compounds containing the sulfate anion,  $\text{SO}_4^{2-}$ , are soluble. The exceptions are those compounds containing the strontium cation,  $\text{Sr}^{2+}$ , the calcium cation,  $\text{Ca}^{2+}$ , the barium cation,  $\text{Ba}^{2+}$ , the lead(II) cation,  $\text{Pb}^{2+}$ , or the mercury(I) cation,  $\text{Hg}_2^{2+}$ .
5. Most compounds containing the hydroxide anion,  $\text{OH}^-$ , are *insoluble*. Exceptions are those compounds containing any of the group 1 cations, the strontium cation,  $\text{Sr}^{2+}$ , the calcium cation,  $\text{Ca}^{2+}$ , or the barium cation,  $\text{Ba}^{2+}$ .
6. Most compounds containing the phosphate anion,  $\text{PO}_4^{3-}$ , the sulfide anion,  $\text{S}^{2-}$ , the carbonate anion,  $\text{CO}_3^{2-}$ , or the sulfite anion,  $\text{SO}_3^{2-}$ , are insoluble. Exceptions are those compounds containing any of the group 1 cations or the ammonium cation,  $\text{NH}_4^+$ . (Rule 1)