

Worksheet #3.  
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1. Sodium chromate



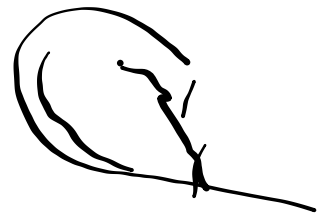
2.  $\text{Ca}^{2+} \text{CO}_3^{2-}$

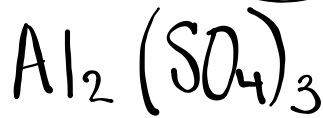
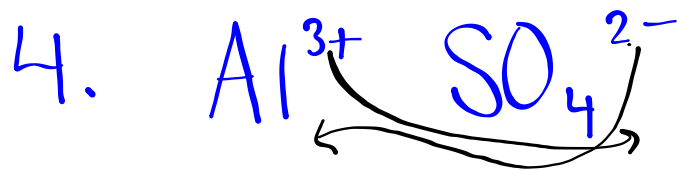


4-6

11-14

3.  $\text{Mg}^{2+} \text{NO}_3^-$





11.  $\text{KCH}_3\text{CO}_2$   $\text{CH}_3\text{COO}^-$   
 potassium acetate
12.  $\text{Mg}_3(\text{PO}_4)_2$  magnesium phosphate
13.  $\text{Al}(\text{ClO}_3)_3$  Aluminum chlorate
14.  $\text{CaSO}_4$   
 Calcium Sulfate



	(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)
1 (1s)	1 H Hydrogen 1.008								2 He Helium 4.003
2 (2s)	3 Li Lithium 6.941	4 Be Beryllium 9.012							
3 (3s)	11 Na Sodium 22.99	12 Mg Magnesium 24.31							
4 (4s)	19 K Potassium 39.10	20 Ca Calcium 40.08							
5 (5s)	37 Rb Rubidium 85.47	38 Sr Strontium 87.62							
6 (6s)	55 Cs Cesium 132.91	56 Ba Barium 137.33							
7 (7s)	87 Fr Francium (223)	88 Ra Radium (226)							

Atomic number	80	Oxidation states	+1
Elemental symbol	Hg		
Atomic mass	200.59		

Hg Liquid at 25 °C  
 Zn Solid at 25 °C  
 He Gas at 25 °C

Metal (light blue)  
 Metalloid (green)  
 Nonmetal (white)

3 (3B)	4 (4B)	5 (5B)	6 (6B)	7 (7B)	8 (8B)	9 (8B)	10 (8B)	11 (11B)	12 (12B)
21 Sc Scandium 44.96	22 Ti Titanium 47.87	23 V Vanadium 50.94	24 Cr Chromium 52.00	25 Mn Manganese 54.94	26 Fe Iron 55.85	27 Co Cobalt 58.93	28 Ni Nickel 58.69	29 Cu Copper 63.55	30 Zn Zinc 65.41
39 Y Yttrium 88.91	40 Zr Zirconium 91.22	41 Nb Niobium 92.91	42 Mo Molybdenum 95.94	43 Tc Technetium (98)	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.91	46 Pd Palladium 106.42	47 Ag Silver 107.87	48 Cd Cadmium 112.41
71 Lu Lutetium 174.97	72 Hf Hafnium 178.49	73 Ta Tantalum 180.95	74 W Tungsten 183.84	75 Re Rhenium 186.21	76 Os Osmium 190.23	77 Ir Iridium 192.22	78 Pt Platinum 195.08	79 Au Gold 196.97	80 Hg Mercury 200.59
103 Lr Lawrencium (262)	104 Rf Rutherfordium (267)	105 Db Dubnium (268)	106 Sg Seaborgium (271)	107 Bh Bohrium (267)	108 Hs Hassium (269)	109 Mt Meitnerium (276)	110 Ds Darmstadtium (281)	111 Rg Roentgenium (280)	

5 (5p)	6 (6p)	7 (7p)
31 Al Aluminum 26.98	32 Ga Gallium 69.72	33 In Indium 114.82
13 B Boron 10.82	14 Si Silicon 28.09	15 P Phosphorus 30.97
6 C Carbon 12.01	7 N Nitrogen 14.01	8 O Oxygen 16.00
17 Cl Chlorine 35.45	18 Ar Argon 39.95	19 K Potassium 39.10
35 Br Bromine 79.90	36 Kr Krypton 83.80	37 Rb Rubidium 85.47
51 Sb Antimony 121.76	52 Te Tellurium 127.60	53 I Iodine 126.90
81 Tl Thallium 204.38	82 Pb Lead 207.2	83 Bi Bismuth 208.98
113	114	115

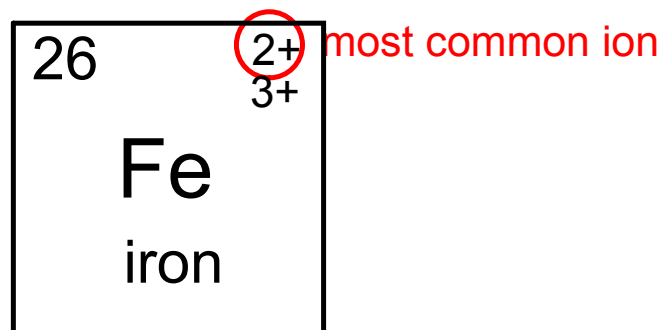
6 (4f)	57 La Lanthanum 138.91	58 Ce Cerium 140.12	59 Pr Praseodymium 140.91	60 Nd Neodymium 144.24	61 Pm Promethium (145)	62 Sm Samarium 150.36	63 Eu Europium 151.96	64 Gd Gadolinium 157.25	65 Tb Terbium 158.93	66 Dy Dysprosium 162.50	67 Ho Holmium 164.93	68 Er Erbium 167.26	69 Tm Thulium 168.93	70 Yb Ytterbium 173.04
7 (5f)	89 Ac Actinium (227)	90 Th Thorium 232.04	91 Pa Protactinium 231.04	92 U Uranium 238.03	93 Np Neptunium (237)	94 Pu Plutonium (244)	95 Am Americium (243)	96 Cm Curium (247)	97 Bk Berkelium (247)	98 Cf Californium (251)	99 Es Einsteinium (252)	100 Fm Fermium (257)	101 Md Mendelevium (258)	102 No Nobelium (259)

Masses are IUPAC 2005 standard atomic weights as approved at the 43rd IUPAC general assembly, August 2005. (to be published) modified from Atomic Weights of the Elements 2001 (IUPAC technical report)  
 For elements that have no stable isotopes, mass number in parentheses indicates mass number of most stable isotope  
 Periodic Table of the Elements, Copyright © 2006, Peter A. Doucens

## Multivalent Metals and Their Ions

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Transition elements are located in the middle of the periodic table. Many of them have more than one ionic charge. These elements are called multivalent metals.



When naming the ions of multivalent metals, you must include a roman numeral. The roman numeral is equal to the charge on the ion.

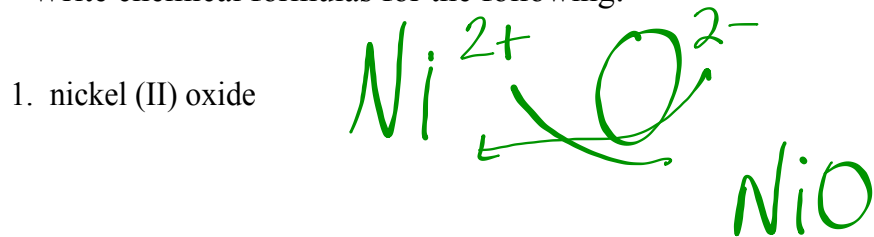
I   II   III   IV   V   VI   VII   VIII   IX   X



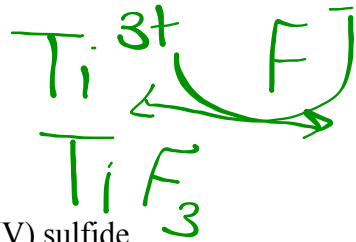
## Ionic Compounds Involving Multivalent Metals

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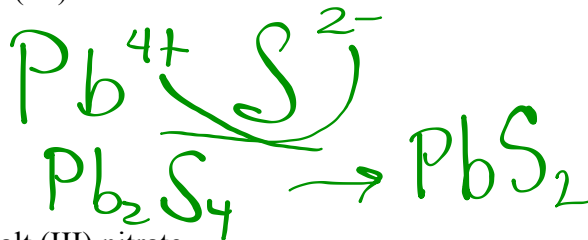
Write chemical formulas for the following:



2. titanium (III) fluoride



3. lead (IV) sulfide



4. cobalt (III) nitrate

5. manganese (III) sulfate

## Attachments

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Science 10 - Grade 9 Chem Topics.docx

Science 10 - Grade 9 Chem - What Do You Know.docx

Science 10 - Activity - Molecular Models.docx

Science 10 - Answer Key - Ions and Subatomic Particles.pdf