

Physics 112

Monday, February 15/16

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1. Assignment - Metric System -> **1 Day Late**
 2. Last Check -> Worksheet - Conversions and Rearranging Formulas
 3. Quiz - Basic Skills -> **Tomorrow, Feb. 16/16**
 4. Physics Lab - Experiment 2.1: Measuring Length
Due - **Thursday, Feb. 18/16**
-

Quiz: Basics Skills- Topics

1. definition of physics
2. SI system - quantities and 7 base units (names/symbols) *chart*
 - derived units (m/s, N*)
3. SI prefixes - names, symbols and powers of ten
4. Significant Digits - in a given measurement *digits after dec.*
 - apply precision (+ and -) and certainty (x and ÷) rules *SD.*

5. metric conversions (3)

6. rearranging equations

7. accuracy/precision

12.47 m	1.00 m <i>3SD</i>
$1. \text{ m}$	$\times 2.5 \text{ m}$ <i>2SD</i>
<hr style="border: 0; border-top: 1px solid black;"/> 13.47 m	<hr style="border: 0; border-top: 1px solid black;"/> 2.5 m^2 <i>2SD</i>

13 m

Science 122

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1. Quiz - Complex Circuit - Today
2. Sample Problem - Complex Circuit - Tuesday, Feb. 16/16 7-10

3. Gravitational Waves <https://www.youtube.com/watch?v=hbbMpe17fzA>
4. Topic 2 - Magnetism
5. Electric Charge vs Magnetic Poles
6. Lodestones and Ferromagnetic Materials
7. Magnetic Domains
8. Magnetic Field Lines
9. Activity

Science 10

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Noon Supervision

1. Assignment - Autobiographical Poem - **5 Days Late**
 2. Assignment - Your Name in Chemical Symbols
- **1 Day Late**
 3. Quiz - Matter to Simple Binary Ionic Compounds
- **Tuesday, Feb. 16/16**
- Questions?
 4. Check -> Worksheet #3
Ionic Compounds Containing Polyatomic Ions
 5. Transition Elements
 6. Multivalent Metals
 7. Worksheet #4 - Ionic Compounds Containing Transition Metals
-
8. Worksheet #5 - Ionic Compounds Summary
 9. Assignment - All Ionic Compounds - _____

Science 10

Quiz - Matter to Simple Binary Ionic Compounds

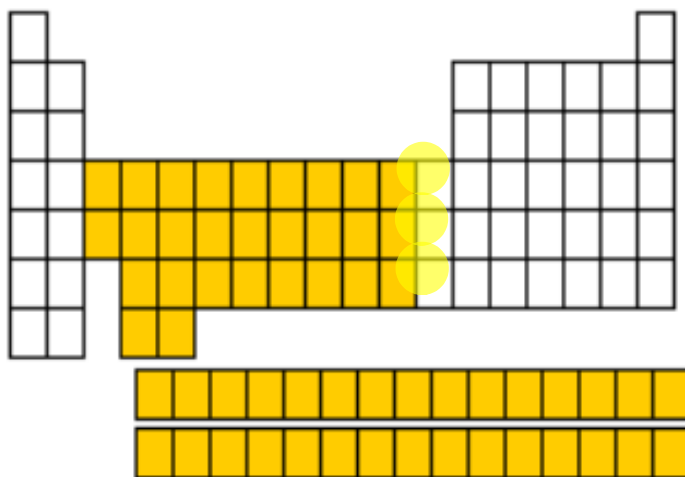
Topics:

1. matter -> has mass and takes up space
2. physical properties -> observed with senses
 - > color, texture, odor, taste, lustre, malleability, ductility, brittleness, solubility, state of matter (solid, liquid, gas)
3. chemical properties -> ability/inability to undergo a change that alters its composition like corrosion, tarnishing, rusting, exploding
4. distinguish between physical and chemical changes
5. evidence that a chemical reaction has occurred
 - color change
 - formation of a precipitate (solid)
 - heat or light given off
 - odor produced
 - production of bubbles
 - change in temperature
6. pure substances (elements and compounds)
7. atoms -> building blocks of matter
 - > three subatomic particles: p^+ , n , e^-
 - > electrically neutral: $\#p^+ = \#e^-$
8. atomic number = number of protons
9. periodic table of the elements - consist of periods (rows) and groups/families (columns)
 - be able to label family and period names
 - elements are represented by chemical symbols
 - be able to draw staircase line
 - locate metals, nonmetals and metalloids
10. characteristics of metals and nonmetals
11. ions -> atoms that have gained or lost electrons
 - > cations/positive ions/metallic ions
 - > anions/negative ions/nonmetallic ions
 - > be able to state ion names, number of protons, number of electrons and ion charges
 - > be able to name monatomic ions
12. ionic bonds - formed when electrons are transferred from metals to nonmetals
13. simple binary ionic compounds - consist of 2 elements
 - electrically neutral
 - be able to name and provide chemical formulas

You will need your two periodic tables.

Transition Elements

Transition elements are located in the middle of the periodic table.



Multivalent Metals and Their Ions ✓

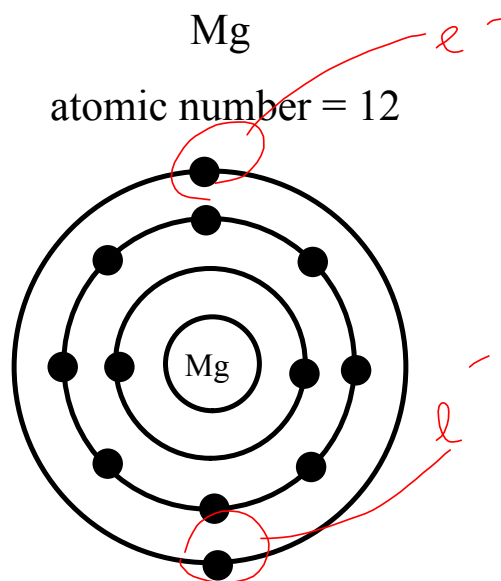
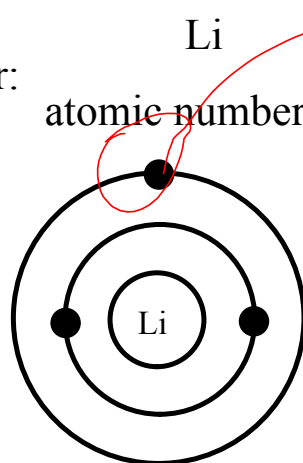
Many transition elements can form more than one ion. These elements are called multivalent metals.

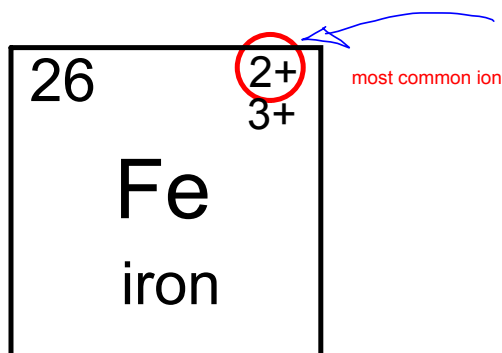
→ valent electrons.

Valence electrons are the electrons in the outer shell of an atom.

They are the ones involved in forming bonds.

Remember:





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
1	2	3	4	5	6	7	8	9	10

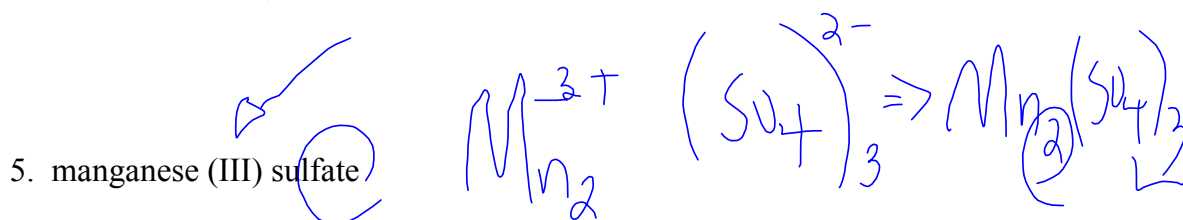
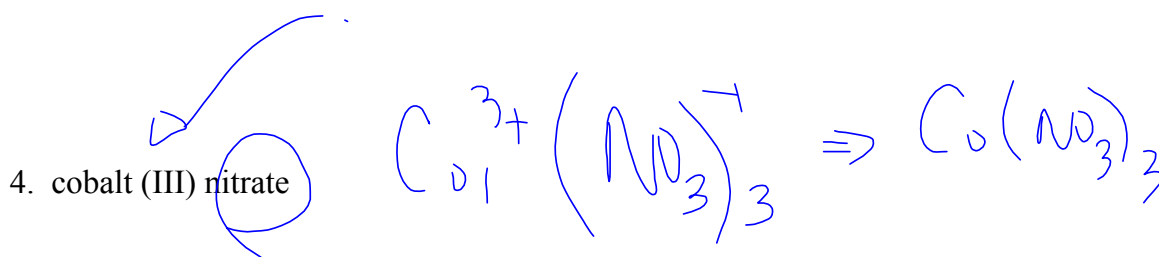
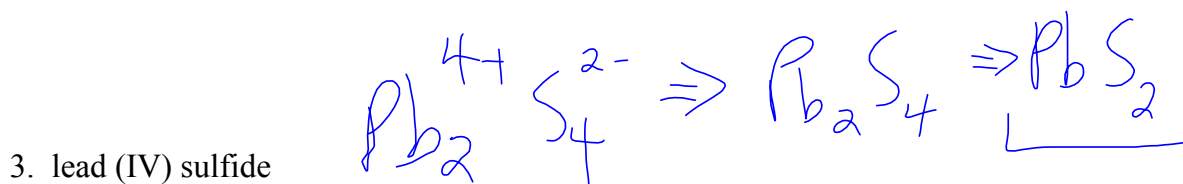
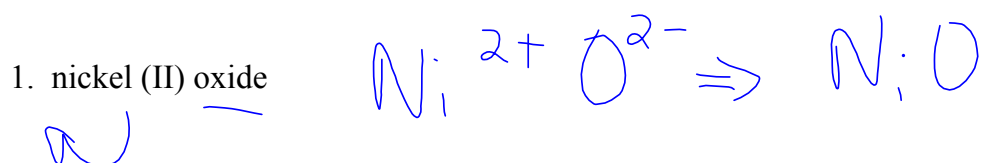
Fe^{2+} = iron (II) ion

Pb^{4+} = lead (IV) ion

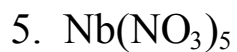
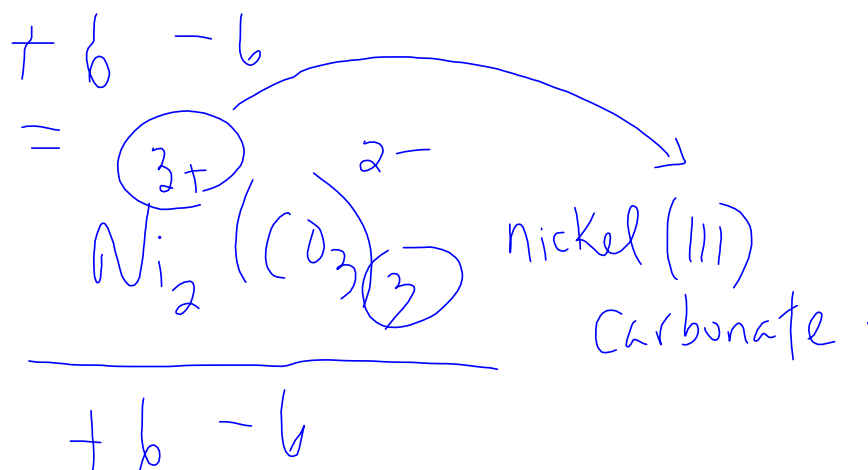
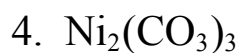
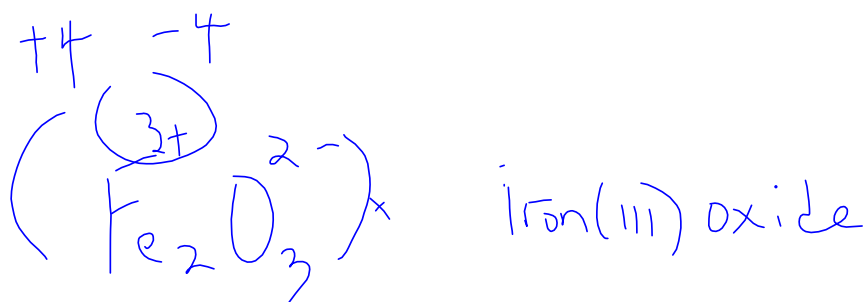
Cr^{3+} = chromium (III) ion

Ionic Compounds Involving Multivalent Metals

Write chemical formulas for the following:



Write the names of the following compounds:



Worksheet #4 - Ionic Compounds Containing Transition Metals

Study for tomorrow's quiz. Worksheet #4 can be worked on if someone finishes the quiz before the period is over. It will be homework for Wednesday.

If there is no school tomorrow, the quiz will be Wednesday.

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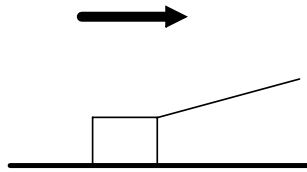
1. Formative Assessment - Type I
2. Check -> Worksheet - Type II - Simple
3. Force Problems - Type II - Suspended Objects - Complex
- To Be Continued

4. Worksheet - Type II - Complex

Formative Assessment - Type I - Pull Problem

Monday - February 15/16

A 25.0 kg block is pulled along a horizontal surface by a string. The string makes an angle of 30° to the horizontal and is pulled by a 100 N force. If the coefficient of friction between the surface and block is 0.23, what is the acceleration of the block?



$$\begin{aligned}
 F_x - F_f &= ma \\
 F \cos 30 - \mu N &= ma \\
 F \cos 30 - \mu(W - F_y) &= ma \\
 F \cos 30 - \mu(mg - F \sin 30) &= ma \\
 a &= \frac{F \cos 30 - \mu(mg - F \sin 30)}{m}
 \end{aligned}$$

$$a = \frac{100 \cos 30 - 0.23(25.0 \times 9.80 - 100 \sin 30)}{25.0}$$

$$a = 1.7 \text{ m/s}^2$$

$$\begin{aligned}
 N + F_y - W &= 0 \\
 N &= W - F_y
 \end{aligned}$$

$$N \neq W$$

The acceleration of the block is 1.7 m/s^2 , right.