

16.1 Naming Binary Compounds

Chemistry

Summarize main points from each video.

Video Title / topic _____

Video Title / topic _____

Video Title / topic _____

Topic Introduction



Summarize your understanding of each paragraph.

In the earliest years of chemistry as a science, scientists had not yet settled on a consistent way to name elements and compounds. Many of the earliest names used are still used today. These are referred to as a “common name.”

In an ideal world, a system for naming would exist so that anyone familiar with the naming system could identify an element, a compound, or a formula. While the common names still are used, today there are several “rules” for naming compounds.

In addition to the “rules” for naming a compound – chemistry students must also memorize several names that do not follow those rules. The names for compounds that “break the rules” are often some of the most frequently cited compounds.

One straight-forward rule for naming “Type I” ionic compounds is to list the cation first – and the anion second. A good example of this is table salt. Table salt has the chemical formula of NaCl. The two ions for the compound are Na⁺ and Cl⁻. The name is sodium chloride.

Read/Summarize Text



1. Read the passage.
2. Underline key expressions in each sentence.
3. Re-write each word (or expression) you underlined.
4. Summarize the passage.

Rules for Naming Binary Ionic Compounds

1. The full name of the cation is listed first.
2. The root of the anion name is listed second and is followed by the suffix "ide."
3. If the compound contains a transition metal, a Roman numeral is included after the metal name to indicate the oxidation number of the metal.

Examples

NaCl – sodium chloride

BaF₂ – barium fluoride

NH₄OH – ammonium hydroxide

www.stetson.edu/~wgrubbs/genchem1/namingcompounds

Re-write words you underlined

Using a complete sentence, summarize or rephrase the passage

Read Text for Comprehension

Read this article for deeper understanding. No summary is required, although you may want to circle, underline, or mark key ideas and words.

Binary compounds are compounds that consist of two elements. There are three types of binary compounds. Binary compounds containing:

- ➔ • two nonmetals (eg - CO)
- metals with fixed ionic charges (eg - AgCl)
- metals with variable ionic charges (eg - FeS)

In naming, each type of binary compound follows its set of rules.

➔ Binary compounds containing two nonmetals

Rules for naming binary compounds containing two nonmetals:

1. Name the first element by its name.
2. The second element has the ending -ide.
3. The number of atoms of each element is indicated with Greek prefixes. In the case of mono-, it is only used for the second nonmetal. When no prefix appears, one atom is assumed.
4. If two vowels appear next to each other, the vowel from the Greek prefix is dropped. This is for ease of pronunciation.
 - monoxide becomes monoxide
 - tetraoxide becomes tetroxide
 - pentaoxide becomes pentoxide

Examples

CO -	carbon monoxide
CO ₂ -	carbon dioxide
CCl ₄ -	carbon tetrachloride
SO ₂ -	sulfur dioxide
N ₂ O ₄ -	dinitrogen tetroxide

Draw Illustration



Copy and Label the Illustration in the Space Provided

Illustration

Cations		Anions	
Name	Formula	Name	Formula
Hydrogen	H^+	Hydroxide	OH^-
Sodium	Na^+	Chloride	Cl^-
Potassium	K^+	Nitrate	NO_3^-
Ammonium	NH_4^+	Acetate	CH_3COO^-
Silver	Ag^+	Bicarbonate	HCO_3^-
Calcium	Ca^{2+}	Sulfide	S^{2-}
Iron(II)	Fe^{2+}	Oxide	O^{2-}
Copper	Cu^{2+}	Sulfate	SO_4^{2-}
Lead	Pb^{2+}	Carbonate	CO_3^{2-}
Iron(III)	Fe^{3+}		
Aluminum	Al^{3+}		

<https://sites.google.com/site/xyuhanliu99x/letter/readingassignment5textbookchapter6ionicbonding>

Draw (Copy) the Illustration Here

Interpret a Graph



Write the title of the graph _____

Circle the type of chart this represents

Bar Chart Line Chart Pie Chart Other

If applicable,

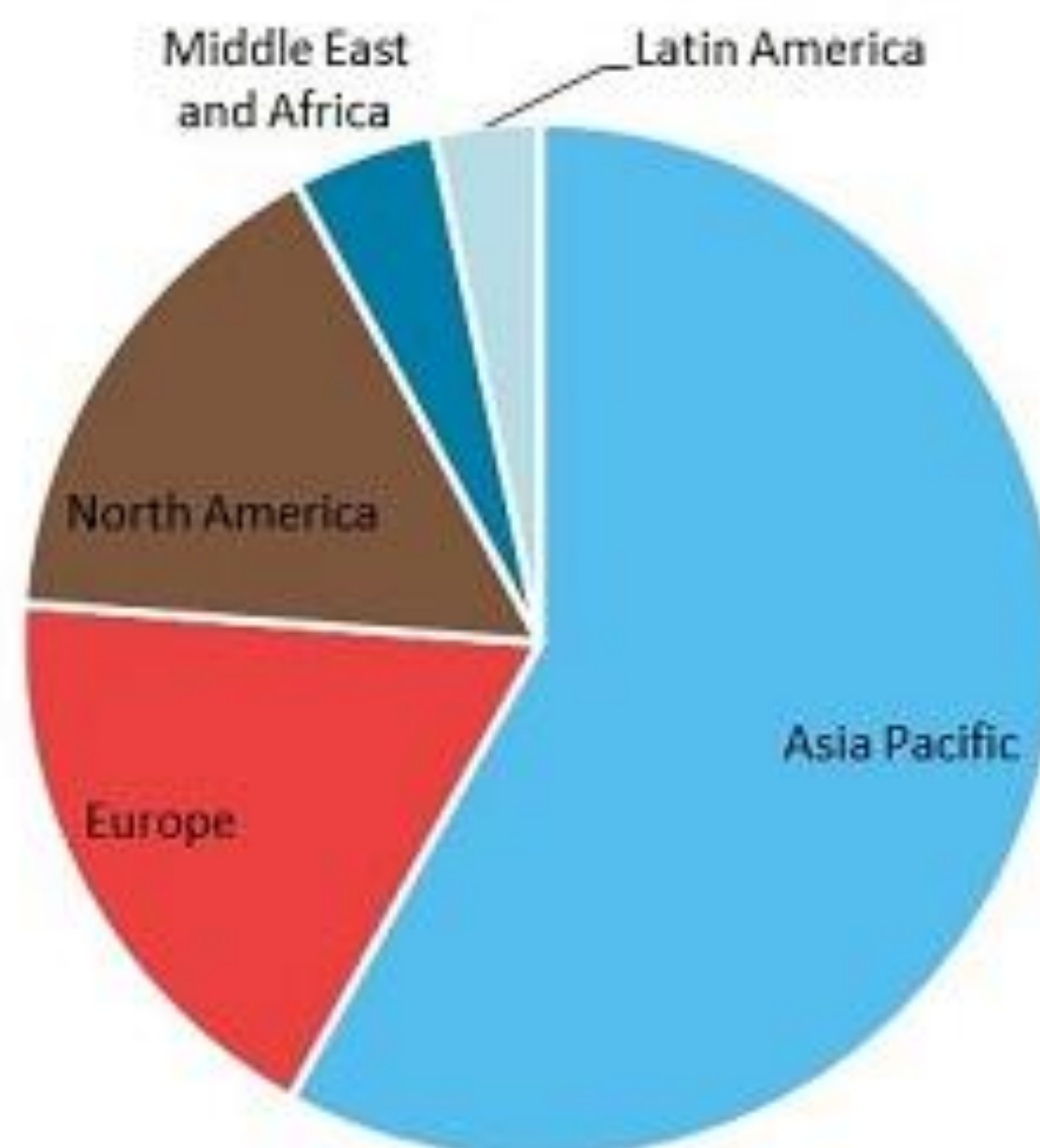
What does the X-axis represent _____

What does the Y-axis imply _____

Summarize what this graph represents or conveys

<https://mcgroup.co.uk/researches/caustic-soda>

Global Caustic Soda Capacity by Region



Show-Off Your Smarts!



Instructions

- Complete as an individual or small group.
- Discuss your ideas/answers/responses in a small group.
- Select one person to present your responses to the class.

Q1. How can this information be applied to a young-person's life?

Q2. How does this information apply to (or impact) communities?

Q3. When do scientists need to apply this information? How?

Q4. How would a person from 100 years ago view this information?

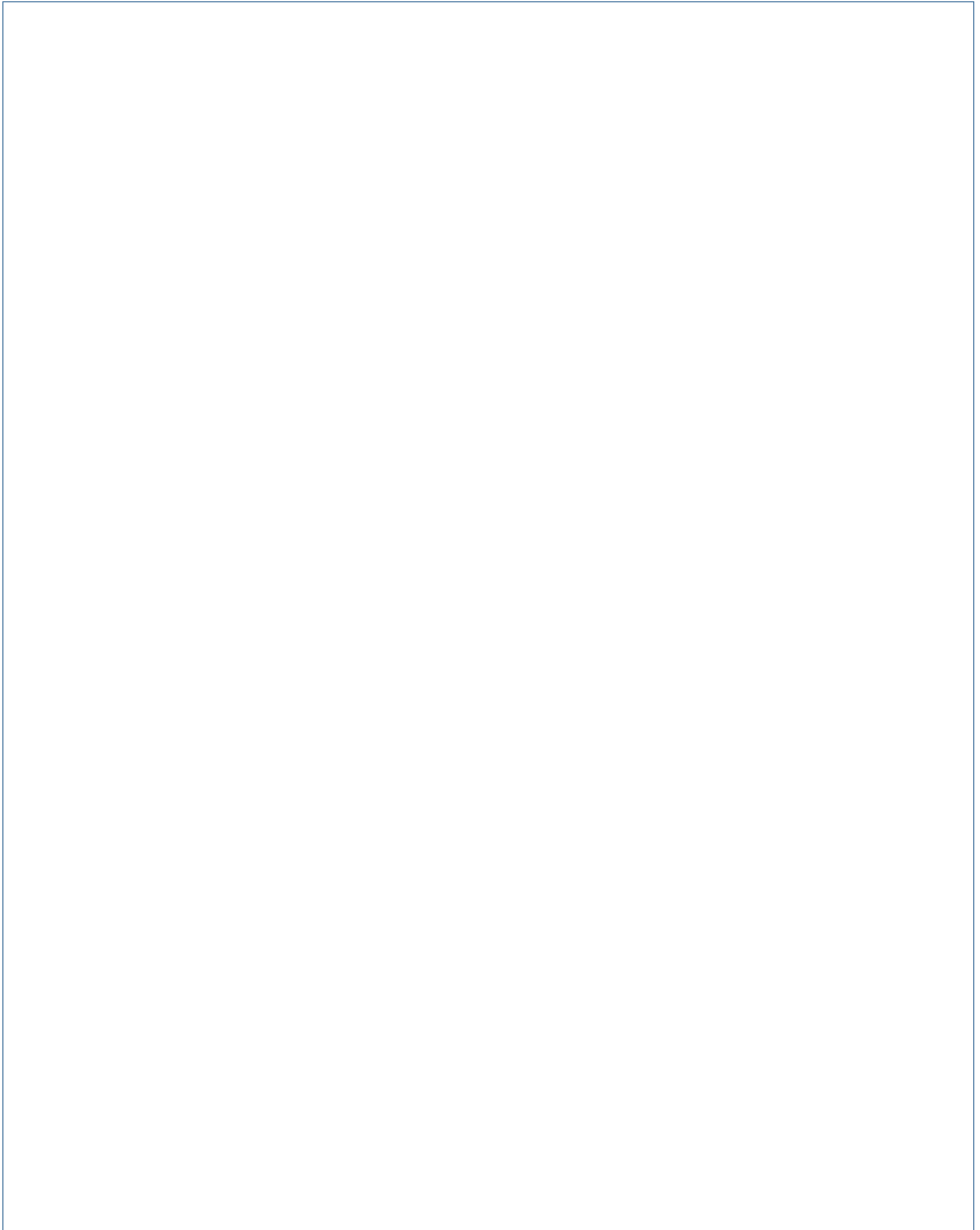
Q5. How does this topic connect to other science topics or math?

Write down at least three words introduced or covered by this topic.

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

Make a Poster

In the space provided here, create/draw a poster which conveys the concepts you have learned on this topic.

A large, empty rectangular box with a thin blue border, intended for the student to create a poster. The box occupies the majority of the page below the instructions.