

Lesson 2 Compounds, Chemical Formulas, and Covalent Bonds

Predict three facts that will be discussed in Lesson 2 after reading the headings. Record your predictions in your Science Journal.

Main Idea

From Elements to Compounds

I found this on page _____.

I found this on page _____.

I found this on page _____.

Covalent Bonds—Electron Sharing

I found this on page _____.

I found this on page _____.

I found this on page _____.

I found this on page _____.

Details

Recall information about elements and compounds. Read each statement. If it is true, write T in the center column. If it is false, write F in the center column and rewrite the underlined words to make the statement true.

Statement	T or F	Correction
<u>Compounds</u> are chemical combinations of <u>elements</u> .	T	
Compounds <u>usually</u> have the same properties as the <u>bonds</u> they are made from.	F	The book says the don't have the same property's
Atoms form bonds by sharing <u>physical</u> <u>properties</u> .	F	The sharing of electrons causes bonds

Define covalent bond.

Is a chemical bond formed when two atoms share one or more electrons.

Describe types of covalent bonds.

Covalent Bond	Description of Valence Electron Sharing	Comment on the Strength of the Bond
Single	When two hydrogen atoms bond, they form a single covalent bond	In a single covalent bond, 1p Covalent Bond electrons is shared between) H:H atoms. Each H atom shares 1, electron with the other.
Double	When one carbon atom bonds with two oxygen atoms, two double	In a double covalent bond, 2 pairs of electrons are shared between two atoms. One O atom and the C atom each share 2 valence electrons with the other.
Triple	When two nitrogen atoms bond they form a triple covalent bond	In a triple covalent bond, 3 pairs of electrons are shared between two atoms. Each N atom shares 3 valene electrons with the other.

Main Idea

Covalent Compounds

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Details

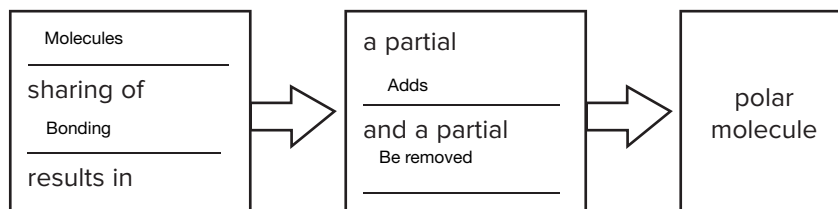
Identify 4 common properties of covalent compounds.

- The boiling/melting points of covalent compounds are low.
They are soft in nature and relatively flexible.
- These compounds do not possess electrical conductivity.
They have lower values of enthalpy of fusion/vaporization.
- _____
- _____

Complete the analogy.

Atom is to element as _____ Share _____ is to compound.

Summarize the structure of polar molecules.



Explain why water is a polar molecule.

A molecule that has a partial positive end and a partial negative end because of unequal sharing of electrons

Differentiate polar and nonpolar molecules with regard to shared electrons.

Polar Molecules	Nonpolar Molecules
A water molecule is polar because the shared electrons are pulled closer to the oxygen atom than the hydrogen atoms.	A carbon dioxide molecule is non-polar because the shared electrons are pulled equally by the carbon atom and the oxygen atoms

Relate the saying “like dissolves like” to the ability of compounds to dissolve one another.

Suger dissolves in water | _____

Lesson 2 | Compounds, Chemical Formulas, and Covalent Bonds (continued)

Main Idea

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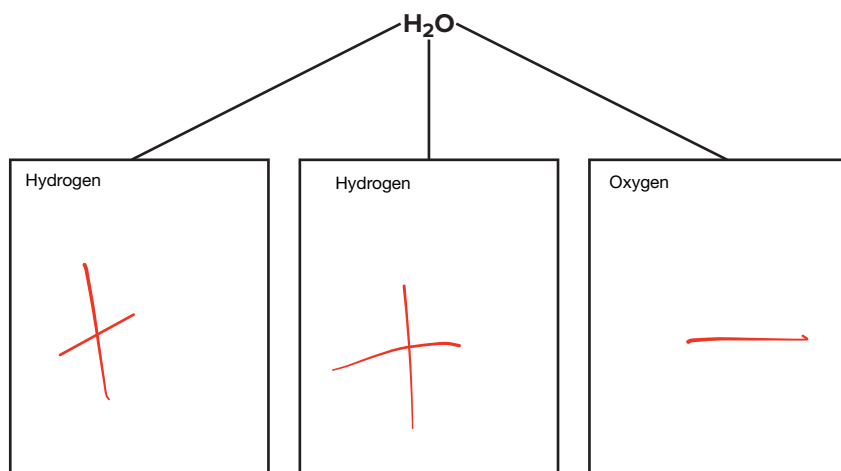
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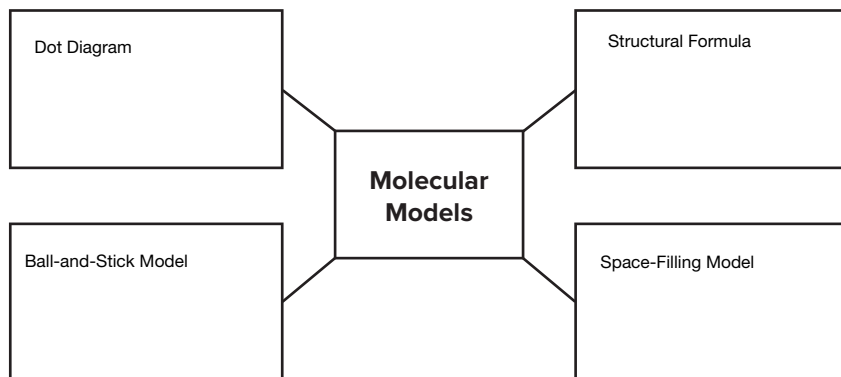
Define chemical formula.

Is a group of chemical symbols and number of atoms of each element that makes up a compound.

Explain the chemical formula for a molecule of water. Describe what each symbol represents.



Identify four types of molecular models.



Connect It Explain why there are many more covalent compounds than there are pure elements.

Because you have to mix chemicals to form a compound
