

DRAWING COVALENT BONDS

Introduction:

A **covalent bond** forms between nonmetals. Covalent bonds involve **sharing pairs of electrons** between two atoms so that each atom gains a full outer valence shell. Sharing 1 pair of electrons creates a **single covalent bond**, sharing 2 pairs of electrons creates a **double covalent bond**, and sharing 3 pairs of electrons creates a **triple covalent bond**.



How to Draw Single Covalent Bond Diagrams	
1.	Draw the electron dot diagrams for each element. <i>NOTE: This will help you see the number of unpaired valence electrons for each element.</i>
2.	Count the total number of valence electrons between all atoms. <i>NOTE: The total number of valence electrons should be 8 in most cases, except 2 hydrogens. If there are not 8, add more atoms of the element with the least number of valence electrons to start.</i>
3.	Determine which element is the central atom in the molecule, if needed. <i>NOTE: The central atom is typically the atom with the largest valence number or the atom that there is only one of in the formula. If there are only 2 atoms in the formula, there is no central atom!</i>
4.	Pair up single electrons from different atoms to form covalent bonds and circle each pair. <i>NOTE: Keep doing this until each single electron from all atoms have been paired up. You may need to use double or triple bonds to make this work. This step takes trial and error. If one arrangement is not working, try adding another element or trying a new structure. Practice makes perfect!</i>

Activity: Drawing Covalent Bond Diagrams

- For each covalent compound, you have been given the element names and the chemical formula.
- Follow the steps listed above to create a covalent bonding diagram for the compound.
- Remember, this takes trial and error. The first 2 have been done for you as examples.

#	Nonmetal	Nonmetal	Formula	Bonding Diagram
A.	hydrogen H • <i>(must share 1)</i>	chlorine • Cl • <i>(must share 1)</i>	HCl <i>(Formula shows 1 H and 1 Cl)</i>	
B.	hydrogen H • <i>(must share 1)</i>	oxygen • O • <i>(must share 2)</i>	H ₂ O <i>(Formula shows 2 H and 1 O)</i>	

Biology If8765 Ionic Vs Covalent Bonding Answer Key

**James M. Postma, Julian Roberts, J.
Leland Hollenberg**



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this example shows you how to create a substructure and use it four times in the model as a leg support for storage vessel

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a substructure database is the set of files that describe the mechanical and geometrical properties of a substructure and abaqus writes all substructure data to the substructure database during the substructure generation analysis

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dec 17 2013 i have created a substructure in abaqus as output i will like to see the substructure matrices mass stiffness and damping matrices however i m only able to write the mass and stiffness matrices to an output file mtx does anyone know how to create an output file including both the mass stiffness and damping matrices of the substructure

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the basic substructuring idea is to consider a substructure a part of the model separately and eliminate all but the degrees of freedom needed to connect this part to the rest of the model so that the substructure appears in the model as a substructure a collection of finite elements whose response is defined by the stiffness and mass o

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limitations of structural elements membrane elements cannot be used to overlay a substructure that consists of second order three dimensional brick elements of type c3d20 r h if the substructure will be used as a slave surface normally abaqus standard automatically converts c3d20 r h brick elements to elements with midface nodes c3d27 r h because this

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in abaqus standard the response within a substructure once it has been reduced to a substructure is considered to be a linear perturbation about the state of the substructure at the time it is made into a substructure

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set this parameter equal to yes default if the substructure eigenproblem needs to be solved during substructure generation in abaqus substructure eigenvectors can be used to define substructure modal damping for a given substructure abaqus standard will evaluate the stiffness associated with frequency dependent springs and dashpots at

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the purpose of this example is to provide basic demonstration and verification of the substructuring capabilities in abaqus problem description the example is a frame consisting of two columns connected by a beam figure 1 16 1 1 the columns and the beam are each modeled with 10 elements of type b21 once a substructure has been