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Brainpop chemical bonds quiz answers

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Chlorine takes that electron very well, in order to fill its outer shell. 5 Of cats and ions, as we said, sodium and chloride are a coincidence made in heaven. • As sodium gives away its electron, it becomes a positive ion - this is called cation. • When chlorine receives the electron, it becomes a negative ion - this is called anion. As we said, sodium and chloride are a combination made in the sky. • As sodium gives away its electron, it becomes a positive ion - this is called cation. • When chlorine receives the electron, it becomes a negative ion - this is called anion. 6 Why, I ask? • So, after the electron moves, the positive sodium ion is immediately attracted to the negative chloride ion. Why are they attracted to each other? • So, after the electron moves, the positive sodium ion is immediately attracted to the negative chloride ion. Why are they attracted to each other? 7 Well, for... opposites attract! 8 1. Chemical bonding and atomic structure 9 ion bonds - This bond is called an ion bond, because electrons are transferred from one atom to another, creating an attraction between opposite loads. In other words, the 1-element atom is going to give electrons, and the other will take them. • These bonds are not limited to a single pair of atoms. At NaCl, each Na⁺ is attracted to all neighboring chloride ions. Similarly, each Cl⁻ is attracted to all neighboring sodium atoms. • NaCl video NaCl - This link is called an ion link, because electrons are transferred from one atom to another, creating an attraction between opposite loads. In other words, the 1-element atom is going to give electrons, and the other will take them. • These bonds are not limited to a single pair of atoms. At NaCl, each Na⁺ is attracted to all neighboring chloride ions. Similarly, each Cl⁻ is attracted to all neighboring sodium atoms. • NaCl Video NaCl 10 11 Ionic Links - These ions are formed in a repeated 3-dimensional called glass lattice. • This means that positive and negative atoms are arranged in alternate patterns. This is why is formed into cubes. • These ions are formed in a repeated 3-dimensional pattern called glass lattice. • This means that positive and negative atoms are arranged in alternate patterns. • This is why salt is formed in cubes. 12 Examples of Ionic Bonds : The main example of an ion bond is NaCl, but there are many more examples of ion bonds. • See how 1 calcium atom is needed to bind with 2 chlorine atoms. Also, notice how calcium is now Ca 2+. Why? Well, because calcium lost 2 electrons, leaving it with an overall charge of 2+. In contrast, each chlorine gained 1 electron, each leaving with a general charge of 1-. • This new compound would be written as CaCl 2. The main example of an ion link is NaCl, but there are many more examples of ion links. • See how 1 calcium atom is needed to bind with 2 chlorine atoms. Also, notice how calcium is now Ca 2+. Why? Well, because calcium lost 2 electrons, leaving it with an overall charge of 2+. In contrast, each chlorine gained 1 electron, each leaving with a general charge of 1-. • This new compound would be written as CaCl 2. 13 2. The ion junction 14 ions example #2 - This is another example. • I have two ions: H 1+ and (SO 4) 2- - This time, the superscript (high) represents the charge number. • Remember that the subscript (low) refers to the number of atoms. • How many hydrogens does it take to pair with ion sulfate (OS 4)? 2 : I need 2 positive charges to match the charge of 2. • The final compound would be H 2 OS 4 - This is another example. • I have two ions: H 1+ and (SO 4) 2- - This time, the superscript (high) represents the charge number. • Remember that the subscript (low) refers to the number of atoms. • How many hydrogens does it take to pair with ion sulfate (OS 4)? 2 : I need 2 positive charges to match the charge of 2. • The final compound would be H 2 OS 4 15 3. Ionic union with sodium and chlorine 16 proves it! Remember, positive ions can only be linked to negative ions, and vice versa. • See if you can write the chemical formula for each of the two ions. Remember, positive ions can only be linked to negative ions, and vice versa. Cation (+)Anion (-)Compound Li 1+ S 2- Li 2 S Mg 2+ Cl 1- Al 3+ (PO 4) 3- 17 Try it! Cation (+)Anion (-)Compound Li 1+ S 2- Li 2 S Mg 2+ Cl 1- Al 3+ (PO 4) 3- 18 Try it! Cation (+)Anion (-)Compound Li 1+ S 2- Li 2 S Mg 2+ Cl 1- MgCl 2 To 3+ (PO 4) 3- 19 Try it! Cation (+)Anion (-)Compound Li 1+ S 2- Li 2 S Mg 2+ Cl 1- MgCl 2 To 3+ (PO 4) 3- Al(PO 4) 20 #4. Ionic Bond Review 21 Quick Information - More details to come... • 3 types of bonuses: 1. Ionic: electron take/delivery 2. Covalent: he went to Kindergarten and learned to share!! (Share electrons- more information about this coming time) 3. Metal Bonds - More details to come... • 3 types of bonuses: 1. Ionic: electrons 2. Covalent: he went to Kindergarten and learned to share!! Share!! electrons- more information about this next time) - 3. Metal bonds 22 Metal bonds ... a metal link is the force of attraction between a positively charged metal ion and the electrons in a metal. • Metal atoms are so tight that their electron shells overlap. • This allows electrons to move freely from one atom to another. • THIS allows the metal to conduct electricity and change shape easily (ductility, malleability). • Cool Animation: Click here (Take NOTES!) click here, Quickly... a metal link is the force of attraction between a positively charged metal ion and the electrons in a metal. • Metal atoms are so tight that their electron shells overlap. • This allows electrons to move freely from one atom to another. • THIS allows the metal to conduct electricity and change shape easily (ductility, malleability). • Cool Animation: Click here (Take NOTES!) click here 23 Metal Bonds - A common feature of metallic elements is that they contain only one to three electrons in the outer shell. • When an element has only one, two or three valence electrons (i.e. electrons in the outer shell), the link between these electrons and the nucleus is relatively weak. Thus, for example, when aluminum atoms are grouped into a block of metal, external electrons leave individual atoms to be part of the common electron cloud. • A common feature of metallic elements is that they contain only one to three electrons in the outer shell. • When an element has only one, two or three valence electrons (i.e. electrons in the outer shell), the link between these electrons and the nucleus is relatively weak. Thus, for example, when aluminum atoms are grouped into a block of metal, external electrons leave individual atoms to be part of the common electron cloud. 24 Bond Comparison - It is very important that you understand the difference between covalent bonds. CovalentIonic Share ElectronsTransfer/give-take Electrons Creates moleculesCreate Bond ions consists of 2 electrons Form of bonds with all neighbors charged oppositely Non-metallic - Non-metallic - Non-metallic 25 5. Ionic and Covalent Union

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